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The Reconciliation of Introduced Species in New Zealand: Understandings from Three ‘Exceptional’ Case Studies

Jamie Ernest Sherred Steer

All the time we were indulging in courtliness there had been light gunfire on the cliffs, where several men were shooting at black cormorants; and it developed that everyone in Cape San Lucas hates cormorants. They are the flies in a perfect ecological ointment. The cannery cans tuna; the entrails and cuttings of the tuna are thrown into the water from the end of the pier. This refuse brings in schools of small fish which are netted and used for bait to catch tuna. This closed and tight circle is interfered with by the cormorants, who try to get at the bait-fish. They dive and catch fish, but also they drive the schools away from the pier out of easy reach of the baitmen. Thus they are considered interlopers, radicals, subversive forces against the perfect and God-set balance on Cape San Lucas. And they are rightly slaughtered, as all radicals should be…

John Steinbeck, *The Log from the Sea of Cortez* (1951, p. 120).
Abstract

From around the mid-19th century, introduced species have often been considered an undesirable form of wildlife in many countries. Introduced ‘invasive’ species have been routinely identified for removal in the belief that they damage or otherwise compromise the natural purity or integrity of ecosystems. However, diverse literatures within both the natural and social sciences over the past few decades have questioned some of the assumptions underpinning these beliefs. In contrast to the relatively static and human-exclusive constructions of nature in the past, many authors now emphasise a nature characterised by indeterminacy, flux, interconnectedness, and hybridity. In consequence, discursive moves toward more reconciliatory approaches to the understanding of introduced species have become increasingly common. Noting these developments, this thesis investigates whether changing discourses of nativism and authenticity are influencing the reconciliation of introduced species into socio-environmental systems in New Zealand.

Recognising its efficacy for exploring discourses of ‘nature’ and ‘the environment,’ I employed biopolitical theory, along with concepts from the wider constructionist literature. Biopolitics focuses attention on the expression of power over life itself and its attendant consequences. It highlights the discursive means through which ‘exceptions,’ such as introduced species, are delineated and removed. An analysis grounded in a biopolitical framework asks not only why death is considered necessary, but also why this death in particular is justifiable. It thus offers a powerful means of exploring contestation over the supposed place or role of introduced species within constructions of an appropriate nature. I employed a critical discourse approach to interviewing, documentary research, and observations to investigate three case studies on introduced game species in New Zealand’s North Island. Introduced game species were selected because they do not fit with common understandings of introduced wildlife in New Zealand, often being both demonstrably ‘damaging’ to native ecosystems and valued. As such, they provided a vehicle for exploring both the types of discourse that may be necessary to reconcile introduced species more generally and how effects might be discursively rationalised.
I found that species, whether native or introduced, were reconciled primarily as a factor of their perceived contribution to the national identity and economy. Species that were not considered useful were marginalised or ignored. Despite the optimistic contributions of many authors arguing for the reconciliation of introduced species, I show that any broad-scale reconciliation – at least in terms of a compassionate reconsideration – may be unlikely in New Zealand. As evidence, I show that notions of ecological balance and human-exclusivity remain popular in constructions of nature in New Zealand. These beliefs necessarily exclude human introductions and, perhaps more notably, construct a belonging for humans in New Zealand as guardians or ‘archivists’ of native wildlife. Furthermore, a positioning of humans as ‘moral predators’ against a foreign invasion of introduced species reconciles peoples’ own place in nature. Though often accepted as inaccurate, rhetorics of warfare work by suppressing nascent doubts about the need to kill introduced species. I show that human tensions with certain introduced species are only reinforced by the truth discourses of science, which further promote moral predation, and the economics of pest management, which have created an important industry out of introduced species’ removal. Together, these findings suggest that any reconciliation of introduced species, though intellectually compelling, is unlikely to be advanced on any broad-scale in New Zealand until alternative human roles within nature are identified and propagated.
Dedication

This thesis is dedicated to the memory of Dr Hiroki Ogawa and Nicole Sutton, who died together in a mountaineering tragedy in October 2013. Hiroki was a fellow PhD student with whom I shared a room and Nicole was a work colleague at Boffa Miskell. Two kind and generous people who were too young to go.
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Chapter One: Introduction

This thesis investigates understandings of introduced wildlife in New Zealand, asking whether species that are currently considered to be pests could come to be reconciled into conceptions of acceptable biodiversity. Introduced species (also known as ‘exotic’ or ‘alien’ species) are broadly defined as those that have been directly introduced to a particular range by humans and remain in a wild state. In New Zealand, these species have long been considered a regrettable component of the biota. They may be tolerated when not obviously detrimental to human interests, particularly in relation to certain native species, but are otherwise actively eliminated. Nevertheless, in the following chapters, I argue that the rationale behind the widespread control and elimination of introduced species in New Zealand deserves critique. In particular, discourses of restoration that seek to recreate certain historic states or processes through the removal of introduced species often conflict with emerging understandings that point to the flux and indeterminacy of nature, and the advantages of this dynamism. Whilst noting the resonance of these counter discourses, however, I argue that any broad-scale reconciliation of introduced species may be unlikely in the immediate term. I show that the death of many introduced species will likely remain important to the preservation of many New Zealander’s sense of national identity. These deaths will likely also remain important to the industries constructed around the protection of native nature and its ‘defence.’ I argue that any broad-scale reconciliation of introduced species will therefore require a more active and conscious intervention into the rhetorics that sustain the supposed necessity of introduced species’ deaths.

This study is necessary for several reasons. Foremost among these is the realisation that introduced species now constitute a significant and growing component of New Zealand’s biota. The ability to sustainably control or manage many of these species, in many areas, has come into increasing question (R.B. Allen & Lee, 2006; Moles et al., 2012). This elevates the importance of investigations that ask whether to kill rather than just how to kill. As I will discuss below, many of the discourses employed to justify control and eradications of introduced species have also come into question (Davis et al., 2011).
Notably, contributions from social and natural scientists over the past few decades have stressed the need to move towards a more nuanced view of introduced wildlife that takes into consideration not only their effects, but also their benefits to receiving environments (Carroll, 2011). They have emphasised the importance of re-analysing some of the assumptions that have underpinned moves to exclude introduced species in the past (Sagoff, 2013). This includes the assumption that introduced species are valuable only insofar as they contribute to the conservation of natives. It is also notable that in recent years contributors to the literature on ecological restoration have become more critical of attempts to re-create former states or processes. A more genuine recognition of the values of ‘novel’ ecosystems is emerging in the restoration literature, underlining the importance of analyses that look at the likely extent or repercussions of these developments.

Whilst offering some compelling arguments for reconciliation, however, the full implications of these literatures remain unrealised. For example, while natural science appraisals have been useful, they have struggled to adequately address the extent to which beliefs about introduced species are socially constructed (Goedeke & Herda-Rapp, 2005). Unfortunately, this has meant that quantitative analyses are still often inappropriately relied upon to resolve disputes over value judgements. Quantitative analyses that demonstrate the utility of certain introduced species, for instance, may be swamped by studies offering equally compelling analyses of the opposite. Such studies sometimes fail to acknowledge the extent to which science may be being used merely as a rhetoric of legitimisation. This thesis employs ‘biopolitical’ theory (see Section 1.3), alongside understandings from the wider social constructionist literature, as a way of interpreting the mechanisms and motives behind how introduced species are interpreted. As I will explain in Section 1.3, biopolitics focuses attention on how the death of ‘exceptions,’ including many introduced species, are rationalised and perpetuated and how alternative understandings might be supressed or brought into being.

Throughout the thesis, I show how any widespread reconciliation of introduced species in New Zealand, though in some ways compelling, may prove problematic. Different introduced species are conceptualised in contradictory and often confounding ways that make it difficult to generalise. Of note, however, may be the extent to which certain widely held understandings of introduced species reflect peoples’ beliefs about
their own places and roles as humans in the natural world. The ways that introduced species are conceptualised, in other words, may highlight more about the prevailing anxieties, phobias, and convictions of people than about the species those frames seek to encapsulate. In Section 1.1 and 1.2, I provide further justifications for this research. Therein, I trace a brief overview of some of the debates and emerging understandings this thesis seeks to address and how my research will contribute to these. In Section 1.3, I argue the ways that a biopolitical frame of analysis can offer fresh understandings to debates around the construction of introduced species. These are encapsulated in my research objectives, which I briefly describe in Section 1.4. In Section 1.5 I introduce and justify my use of case studies, foreshadowing how they, and my supporting methods, will contribute to resolving my research objectives. Finally, in Section 1.6, I provide a précis of my thesis structure, showing how this format supports the presentation of my argument.

1.1 Debates over the construction of introduced species

Over the past few decades, work on the social construction of nature has shown that ‘nature’ as a concept is not a fixed, universal entity, but rather one that is malleable and dynamic (C. R. Warren, 2011). The ways that nature is defined, moreover, generally serves the purposes of some peoples, animals, concepts, identities and so on, over others, meaning that definitions need to be constantly revisited (Hytten, 2009). Importantly, environmental discourses over the past few centuries have shifted from promoting a generally negative presentation of nature to one that is mostly positive (Lowenthal, 1997, 2005). This has been reflected in changed attitudes toward introduced species which have moved from worthwhile and valuable components of the biota of many countries to the status of ‘outsiders’ that require removal. This shift in understanding can be traced, at least in part, to the nationalisation of nature that accelerated in the 19th century (N. Smith, 2011). Over this period, wild native species came to be associated almost exclusively with national identity, and wild introduced species were often relegated to the status of weeds and pests. However, more recently, understandings of a ‘pure’ national culture have been challenged by notions of hybridity and belonging, which resist recourse to past states and nativity in isolation (Bhabha, 1994; Trudgill, 2008; C. R. Warren, 2007). New understandings suggest that the changes wrought by introduced species could be reconciled within new notions of local identity.
Despite such promising new directions, any widespread reconciliation of introduced species remains otherwise forestalled by frames that position them as 'outsiders' and 'enemies.' Indeed, a common criticism of policies aimed at preventing the colonisation of introduced species is their apparent concordance with jingoistic and xenophobic political rhetoric (M. Clifton, 2011; Lohmann, 2000). These similarities are a source of considerable unease among commentators who fear the implications of conflating attitudes to introduced species with those of immigrant peoples, and different races and cultures (Groning & Wolschke-Bulmahn, 2003; Olwig, 2003; C. R. Warren, 2007). Rather than being victims of globalisation, the 'immigrant' frame suggests that introduced species are actively, and perhaps wilfully, supporting changes that are considered disagreeable by humans. This understanding is supported by the use of militant language in conservation discourses which suggests that 'aggression' must be actively countered (Larson, Nerlich, & Wallis, 2005; Slobodkin, 2001). It can be argued that perpetuating divisive and militant types of language only exacerbates already polarised conceptualisations of introduced species (Larson, 2005). They contribute to a semantic field of war that positions conflict and unrest in the present as the necessary corollaries of past introductions. In this sense, debate concerning the place or roles of introduced species, and how they are rhetorically positioned, may be important not only for these species but also for how humans view their own place in the natural world.

Another potential impediment to reconciliation lies in the way that not only the lives of valued native species, but also the death of introduced species, has now been incorporated into capitalist processes of production. As is well recognised, nature conservation has become synonymous with ‘big money’ (Timms, 2011, p. 1363). Protected areas and species are often sponsored by organisations whose funding is tied to corporate sponsors. Nevertheless, this revenue is not the only way in which the conservation of nature tends to support certain industries and corporations. Rather, the removal of threats to valued native species and other forms of capital constitute another, if less acknowledged, industry (Schuttler, Rozzi, & Jax, 2011). This industry is tasked with controlling the introduced species delineated as weeds and pests. The business of pest management has become a multi-billion dollar worldwide industry (Pimentel, Lach, Zuniga, & Morrison, 2000). Although the costs of this industry are frequently alluded to, these conceal the fact that significant gains accrue to those who work in the business of
removing pests. Costs do not necessarily translate into benefits as many initiatives fail to achieve the
goals to which they are assigned (Sagoff, 2009a). Ultimately, the realities of multi-billion dollar pest
management industries offer a further potential impediment to reconciliation that deserves further
exploration.

Lastly, reconciliation can be frustrated by the work of scientific discourses that present introduced species
as harmful to life. Natural scientists such as ecologists and invasion biologists have often portrayed the
cultural notion that introduced species are fundamentally 'bad' through their work (Eskridge & Alderman,
2010; Sagoff, 2009b). Rather than distancing themselves from some of the aforementioned rhetoric,
many scientists have instead frequently been at the forefront of this quasi-propaganda (see Davis, 2012;
Schlaepfer, Sax, & Olden, 2011). However, over the past few decades in particular, many of the cultural
assumptions natural scientists have used to underpin their work have been proven false or misleading
and now require revision (Smout, 2011). In fact, even some of the most fundamental concepts in ecology
such as 'introduced' and 'invasive' have been drawn into question (C. R. Warren, 2011). Scientists have
promoted a 'biosecurity' apparatus in relation to introduced species that has worked to remove not only
threats to native biodiversity, but also emergent threats (see Section 1.3). This has mimicked racialized
fears from within the social realm, unproductively discriminating against introduced species that are
frequently no more likely to precipitate harm than natives (Moles et al., 2012; Sagoff, 2009a). A growing
literature now points to the need to further investigate the scientific construction of introduced species
(see Selge, Fischer, & van der Wal, 2011). Further contributions from the social sciences, though
growing, are urgently needed to make sense of some longstanding issues with respect to the construction
of wild introduced species and their roles in nature.

1.2 Moves from restoration to reconciliation

Since its inception in the 1980s, restoration ecology has tended to foster a hostile approach towards
introduced species that positions them as threats to the re-creation of former states (see Davis, 2009;
Marris, 2009). However, in recent years this hostility has come into question, and less strict approaches
toward introductions are gaining ground within the restoration literature (Ewel & Putz, 2004; Hobbs,
Higgs, & Harris, 2009; J. W. Williams & Jackson, 2007). In consequence, many of the concepts once
considered central to ecology have been revised, and these have important implications for understanding the mechanics of ecological management (Wallington, Hobbs, & Moore, 2005). Most important has been a shift away from equilibrium conceptions and toward non-equilibrium understandings (Jelinski, 2010; Lugo, 2012). A new ‘flux of nature’ paradigm emphasises dynamism and unpredictability across space and time, highlighting the understanding that ecosystems are complex and non-linear (Pickett, Kolasa, & Jones, 2007). Importantly, the changes brought about by the introduction of species are seen as less extraordinary than previously thought. These developments are supported by contributions from various disciplines within the social sciences and critical arts (Bhattacharyya, Slocombe, & Murphy, 2011; Rotherham & Lambert, 2011; Trigger, 2011).

Restorationist discourses have also often promoted a dualistic distinction between nature and culture that positions humans, and their introductions, as outside the frame of legitimate ecological systems. However, after years of intense scholarly debate a solidifying consensus is that any rigid delineation between nature and human society must be rejected (Coombes, Johnson, & Howitt, 2011; Gamborg, Gremmen, Christiansen, & Sandoe, 2010). Human effects on environments are now all-pervasive, shifting discourses of nature toward how humans can sustainably live with other species, and away from how they can preserve or restore past states or processes (Bade, 2010; Giam, Clements, Aziz, Chong, & Miettinen, 2011). It is now well recognised that returning ecosystems to past, generally pre-human conditions is deeply problematic (Carroll, 2011; M. L. Morrison, 2009). Indeed, retracing any semblance of previous times is prevented by the environmental realities of mass species introductions, widespread habitat modification, extinctions, and ongoing climatic changes (Lugo, 2009; Suding, 2011). There are also considerable technical difficulties with restoration, making most initiatives difficult, if not impossible, to achieve and fraught with unintended consequences (Lindenmayer & Hunter, 2010). Emerging understandings of the rapidity of evolution and the extent of hybridisation show that attempts to restore to past ‘purities’ are often misguided or even detrimental to the vitality of future ecosystems (M. Clifton, 2011; Lopez-Pujol, Garcia-Jacas, Susanna, & Vilatersana, 2012). These realisations may come to have important consequences for the framing of introduced species.
Although the restoration literature has tended to emphasise the negatives of introductions, studies pointing to the positive aspects of introductions are becoming increasingly common and the importance of this should not be ignored (Garcia-Quijano & Carlo-Joglar, 2010; Sagoff, 2005). In fact, it is now realised that many introduced species provide significant ecological benefits to their receiving environments (Rotherham, 2010b; Sagoff, 2007). Many local peoples have also come to cherish introduced species that are otherwise deemed to be conservation pests, and oppose attempts to remove them (Simberloff, 2011; Trigger, 2008). These forms of resistance are not based merely on ignorance of species origins, as is sometimes suggested, but rather in a genuine support for the contemporary biota. Although introduced species are frequently constructed by scientists as detrimental to biodiversity, identifying the most important forms of biodiversity is fraught with uncertainty and, in any case, often beyond the realms of science (Bouville, 2008). Many natural scientists have attempted to judge what forms of biodiversity are valuable and legitimise those judgements through the rhetoric of scientific discourse. In response, some have suggested that the determination of value stemming from questions of diversity should be opened to a wider field of stakeholders as it is in the social and cultural realms (Lindenmayer, Fischer, et al., 2008; Lindenmayer, Hobbs, et al., 2008). Moves to an appreciation of ‘novel’ ecosystems within the restoration literature may point the way to new perspectives that embrace a more holistic reading of biodiversity that incorporates the now-vast introduced biota of many countries (Hobbs et al., 2006; Hobbs et al., 2009).

1.3 Contributions of biopolitical theory

In recent years, many authors have productively integrated ‘biopolitical’ theory into their social, political and economic analyses (see Revel, 2009). This literature has encouraged contributors to investigate questions that fall either outside, or on the cusp, of traditional disciplinary boundaries (Lemke, 2011). While it has been interpreted in various ways, most contemporary biopolitical scholars follow Foucault’s (2003 [1976]) conception of biopolitical theory. Foucaultian biopolitics focuses on the strategies adopted by the state and other institutions to constitute and govern human populations, and the ways that governance is made possible through specialised forms of knowledge (e.g. scientific) and the assent of the governed (Raman & Tutton, 2009). Nevertheless, while biopolitical scholarship has tended to be directed toward the problematics of humans, there is much to be gained from analyses of the
interpretation and treatment of other species, including wildlife (Biermann & Mansfield, 2014). Foucault’s biopolitics thus also provides a platform through which to interrogate some longstanding ideas about nature and how different species might ‘fit’ within it. The benefit of a Foucaultian analysis to the study of marginalised introduced species, in particular, is that it focuses on the mechanisms used to delineate and eliminate ‘exceptions’ and to ask questions thereof not commonly posed by other perspectives.

Foucault (2007 [1978]) argued that the modern biopolitical state is preoccupied with upholding the ‘norm’ and protecting it from threats. Unlike traditional sovereign power, which was exercised in the interests of the rulers, biopower is concerned with promoting life itself, and with protecting and enhancing the ‘population,’ as it is defined by the state (H. Buller, 2008). This focus on the population is replicated in understandings from within scientific disciplines, such as conservation biology which focus on the species body, often at the expense of the individual. This shift in emphasis from ‘taking life’ to ‘letting live’ widens the necessity of death, insisting that any and all threats to the imagined pure or stable state, whether community, ecosystem or species, should be lethally counteracted. According to Foucault (1976), this has been legitimised through the mechanism of state racism, which provides an ostensibly palatable explanation for death. He argued that racism of varying sorts fulfils two important roles. Conceiving of the state as a relatively homogenous entity, racist understandings portray the existence of exploitable divisions ‘between what must live and what must die’ (Ibid., p. 254). They also define the steps necessary to re-create the ancestral pure society, highlighting the need to remove the enemies from within. Secondly, rather than providing a mere programmatic solution, racism backs up this murderous discrimination with an emotive hook. The death of certain races is not only necessary, but desirable, being ‘something that will make life in general healthier’ (Ibid., p. 255). These twin logics of racism are also central to ecological restoration, with its focus on the protection of past states or processes, and with its imperative to remove foreign individuals for the good of the native population.

As I will argue in Chapter Two, biopolitical theorisation around the concept of ‘biosecurity’ provides a useful frame of reference for understanding the ways that certain lives are valued over others (Hinchcliffe & Bingham, 2008). For example, I show that the designation of ‘good’ forms of life routinely coincides with profitable forms of life, and ‘bad’ with lives that are not readily exploitable. According to scholars such as
Hardt and Negri (2000, 2004), these connections are to be expected, flowing directly out of the logics of
global capitalism. Biopolitical contributions centred on the concept of biosecurity also highlight the ways
that closure or fixity employed using borders or other dividing mechanisms may be ultimately illusory, and
how they may be used to challenge the spatial assumptions of the ‘death function’ when based on
concepts such as ‘race’ or ‘nation’ (Anderson, 2011; Vaughan-Williams, 2010). Lastly, they emphasise
the mechanisms through which resistance to exclusions are turned aside, such as through the rhetorics of
‘emergency’ and ‘crisis,’ and the tropes of endless ‘war’ (Biermann & Mansfield, 2014; Dillon, 2007a; M.
Smith, 2009).

Several authors have suggested the ways in which the brutalising outcomes of ‘biopower’ may be
resisted. Lundborg and Vaughan-Williams (2011), for example, argued that despite attempts to control
and regulate circulations of ‘good’ and ‘bad’ life, power over the movement and composition of life is
ultimately illusory. They suggested that concepts such as Deleuze and Guattari’s (1987 [1980]) ‘molar’
and ‘molecular’ categories may be used as a way of expressing resistance. In contrast to molar
understandings, which tend to view living beings as fixed, rigid compositions, molecular frames highlight
more open modes of composition that acknowledge fluctuating boundaries and fluid identities. These
concepts provide useful tools for exploring the fluid and hybrid nature of biological systems. In addition to
such forms of resistance, recent interpretations take a brighter view of the origins of biopolitics,
suggesting that the creation of the marginalised and dispossessed is not a characteristic of biopolitical
governance and hinting that such iniquities may gradually be overcome (Hannah, 2011; Ojakangas,
2005a, 2005b). For Esposito (2008 [2004], 2013), affirmative understandings of biopolitics open the door
to frames that resist the imperative to divide between valued lives and threats to valued lives. According
to such authors, it is not resistance to biopower that is required but rather resistance to various
‘corruptions’ of biopower. These theoretical tools hint at the steps that may be necessary to accurately
position and interrogate discourses on marginalised aspects of nature, such as introduced species, and to
suggest the ways that reconciliation may be fruitfully entertained in future.
1.4 Research objectives

My central research question is:

*How do changing discourses of nativism and authenticity influence the reconciliation of introduced species into socio-environmental systems in New Zealand?*

This is supported by the following objectives:

- Scrutinise the rhetorics used to justify both why some introduced species are allowed to live and why others are required to die, exploring why some frames are so enduring.

- Investigate whether there is any relationship between the removal of surplus lives and the imperatives of capital accumulation and, if so, indicate how this might affect notions of reconciliation.

- Explore the motivations behind why science is used to answer certain questions about introduced species and not others, asking whether science could be used in different ways, and if other perspectives might also be needed.

- Highlight the consequences of prevailing discourses on introduced species and indicate the means through which they might be capable of changing.

1.5 The ‘exception’ of game species

This thesis focuses on the analysis of exceptions in two ways. Firstly, it works with exceptions in the sense of abnormality or difference as a focus within biopolitical theory. Many introduced species sit outside the rubric of acceptable wildlife. As exceptions, they are targets for control or elimination under the assumption that their removal will make life healthier. Investigating the logics and mechanisms behind how certain species are deemed to be exceptions is central to unearthing the ways through which they might instead be reconciled. Secondly, this thesis works with the concept of exceptions in a methodological sense. Rather than focus attention on introduced species that are currently deemed pests, or on introduced species *per se*, this thesis instead takes a case study approach that focuses on a subset of introduced species that do not meet the typical characteristics of pests. The thesis investigates
three introduced game animals – deer, trout and mallards – and their construction in three areas of New Zealand’s North Island (see Chapters 5 and 6). Although highly disruptive of native biodiversity, these game species are currently considered valued members of the biota, or in the case of deer, their status is at least in contention. This is in contrast with most wild introduced species that have demonstrably negative direct effects on native species, which are typically considered invasive. Later, I show how the complex histories of these case studies help to illuminate the discourses that may be necessary to reconcile introductions.

When considering the place of introduced species in New Zealand, qualitative research is often required but has frequently been lacking or overshadowed by quantitative contributions in the literature (Goedeke & Herda-Rapp, 2005). In this thesis I argue that a discursive constructionist approach to discourse analysis is a useful qualitative means of accessing reconciliatory discourse on introduced species. My empirical work provided the necessary depth and context by ‘triangulating’ information collected from specific local case areas through semi-structured interviews, observations and documentary research. A focus on the construction and perpetuation of discourse provides a powerful medium through which to challenge dominant understandings of introduced species and to identify fruitful avenues for future dialogue. Although I acknowledge that people are limited by the discursive resources of their time and context, I do not assume that discourses are reified or unchangeable. Rather, I suggest that dominant constructions are able to be resisted, modified and reworked. Given this, I argue that my research is well positioned to uncover the underlying meanings behind the construction of introduced species, why certain constructions might resist change, and how new understandings might need to offer new intersubjectivities or other complex ways of seeing if they are to offer serviceable alternatives to current perceptions.

1.6 Structure of thesis

This thesis has been structured into ten chapters, each addressing a specific aspect of the research process and contributing to the arguments employed. In Chapter Two, I explain why a constructionist theoretical framework focusing on the biopolitical literature was a useful way of exploring discourses on introduced species. In Chapters Three and Four, I use this theory to interpret contributions to the
environmental literature on the role of introduced species as a component of nature or biodiversity. There, I emphasise a growing disquiet among diverse scholars on the interpretation of introduced species and the extent to which it is at variance with prevailing social discourses. In Chapter Five, I provide context on the introduction of species to New Zealand, highlighting the deterioration in regard for introduced species from the late 19th century. I also provide context on each of my case studies, showing why each was useful for investigating discourses of reconciliation. Chapter Six outlines my methodological framework, arguing for the necessity of further qualitative research on introduced species and noting the strengths of my particular approach.

The next three chapters present the findings from my empirical research. In Chapter Seven, I demonstrate some of the consequences of an enduring rhetoric of ‘responsibility’ to native species, both showing and contesting the ways in which the current sense of duty to native populations obscures the ‘necessary’ death of countless introduced individuals. I suggest that New Zealanders reconcile their own place or role in the country through two functions: firstly, as biological ‘archivists’ and, secondly, as ‘moral predators.’ I also show how war metaphors and other forms of conservation rhetoric work not only to legitimise the work of killing, but also to translate these deaths into economic opportunities. In Chapter Eight, I demonstrate how the increasing complexity of life in New Zealand is continually denied by frames that perpetuate simplistic understandings. Focusing on the relationship between introduced mallards and native grey ducks, I show how hybridisation is generally presented as a loss, suppressing the notion that there could be any gains from novel interactions. Evolutionary changes, or precursors of such, are denied in favour of static conceptions that frame changes on geological timeframes as exclusively characteristic of ‘genuine evolution.’ Morphological changes to introduced species are interpreted as signs of ‘poor health’ rather than as adaptations to new environments. In Chapter Nine, I assess whether attempts at reconciliation, particularly concerning introduced game species, may highlight the discursive means through which some of these static discourses may be resisted or challenged. I demonstrate throughout the chapter that while moves towards reconciliation may be intellectually compelling, there is little evidence of their empirical fruition. Lastly, Chapter Ten synthesises my research contributions, reflecting on the consequences of the research and suggesting further avenues of investigation.
Chapter Two: The Biopolitics of ‘Biosecurity’ and its Utility for Understanding Social Constructions of Nature

2.1 Introduction

In this chapter I argue that biopolitical theory, along with concepts from the wider constructionist literature, provides a useful theoretical framework for both exploring and contesting constructions of ‘nature,’ especially in relation to introduced species. This argument is furthered, firstly, by presenting a brief history of biopolitical thought highlighting the important contributions of Michel Foucault and those who have elaborated and built on his work. Foucault argued that the enhancement of life was built upon a ‘death function’ central to biopolitical governance and operationalised through the mechanism of state racism. This function tends to both normalise ‘good’ populations and to define and work to eliminate the ‘defective’ or ‘abnormal’ lives that supposedly threaten it. The benefit of a Foucaultian analysis to the study of marginalised introduced species is that it focuses on the mechanisms used to delineate and persecute these ‘exceptions’ and to ask questions thereof not commonly posed by other perspectives. Secondly, in Section 2.3, I argue that the incorporation of a constructionist epistemology helps in understanding how counter discourses are disempowered. Constructionism also draws attention to how interpretations of introduced species are grounded, not in objective truth, but in social interpretations of the world that are themselves often based on tremulous, contingent assumptions. Because the focus of constructionist approaches is not on objects, but processes, they may be able to better signal when, how and why change has taken place, and to offer suggestions for alternative paths.

Thirdly, in Section 2.4, I argue that biopolitical theorisation around the concept of ‘biosecurity’ provides a useful frame of reference for understanding the particular ways that certain lives are valued over others. For example, I show that the designation of ‘good’ forms of life routinely coincides with profitable forms of life and ‘bad’ with surplus life. According to scholars such as Hardt and Negri (2000, 2004), these connections are to be expected, flowing directly out of the logics of global capitalism. Biopolitical
discussions on the concept of biosecurity highlight the paucity and unreliability of borders and other dividing mechanisms. They challenge the assumption that the removal or death of threats will ultimately lead to safer lives for those protected by biosecurity apparatuses and interrogate the rhetorics used to justify them. Finally, in Section 2.5, I present some of the ways in which the brutalising outcomes of ‘biopower’ may be theoretically resisted. I also include recent interpretations that take a brighter view of the origins of biopolitics, suggesting that the creation of the marginalised and dispossessed is not a characteristic of biopolitical governance and hinting that such iniquities may gradually be overcome. In conclusion, I argue that the above framework provides the tools necessary to accurately position and interrogate discourses on marginalised aspects of nature, such as introduced species, and to suggest the ways that reconciliation may be fruitfully entertained. I caution, nonetheless, that such outcomes provide only hopeful speculations for the future and do not to constitute predictions or generalizable solutions.

2.2 Biopolitics, or the politics of life itself

In recent years, a wide range of authors from history, philosophy and the social sciences have fruitfully integrated biopolitical theory into their analyses (Revel, 2009). The range of phenomena that has been assessed in this literature over the last decade alone has been vast, including such disparate topics as race (Macey, 2009), climate change (Cupples, 2012), financial markets (M. Cooper, 2010), livestock breeding (L. Holloway et al., 2009), biotechnology (Raman & Tutton, 2009), border security (Vaughan-Williams, 2010), Native Americans (Rifkin, 2009), war (Barder & Debrix, 2011), globalisation (M. Smith, 2009) and conservation (S. Sullivan, 2012). In the tradition of constructionist scholarship (see further below), the focus has typically been on highlighting the injustices and inconsistencies of biopolitical regimes and suggesting alternative paths for positive social transformation. This literature has encouraged contributors to investigate questions that fall either outside of, or on the cusp of, traditional disciplinary boundaries (Lemke, 2011). Therein, the concept of ‘biopolitics’ has often served as an interpretive tool for understanding why the fostering and support of certain valued lives has often worked in tandem with the marginalisation and death of certain ‘others.’

Below, I briefly sketch some the origins of biopolitics, tracing them to an ongoing concern with the interplay between humans and their environments. I note that life itself, which is central to biopolitics, has
historically been theorised as both the subject of politics, and the driver or underlying force behind politics. In either case, there remained a reluctance to acknowledge the extent to which the two are inextricably linked. This linkage was brought to the fore by Foucault (1976, 1979) who theorised a state of ‘biopower’ characterised by twin political technologies of ‘discipline’ and ‘biopolitics.’ These technologies, he suggested, facilitated the rise of the nation state through its capacity to mould and condition ‘populations’ into ‘norms.’ They also positioned the state in the role of guardian or protector of life. Paradoxically, however, the enhancement of life was built upon a ‘death function’ central to biopolitical governance and operationalised through the mechanism of state racism. These, and other aspects of Foucault’s biopolitics, have since been elaborated upon by other contributors, of which Giorgio Agamben, along with Michael Hardt and Antonio Negri, constitute some of the most notable. I note the commonalities of such contributions, emphasising the problematisation of ‘good’ and ‘bad’ categories and the consequences of such frames. Finally, I argue that Foucaultian biopolitics provides a good basis for exploring and contesting the marginalised place of certain human and nonhuman populations.

2.2.1 The origins of biopolitics

Biopolitics denotes a politics that deals with life. However, as Lemke (2011, p. 2) noted, this is only ‘where the problems start.’ It could be argued, for instance, that all politics actually deals with life of some sort, or on some level. Moreover, interpretations of what biopolitics is, or what it means, are various and shifting. Indeed, any casual reader of the literature may be frustrated by divergent interpretations of biopolitics. As an attempt at classification, Lemke (2011, p. 3, emphases mine) distinguished between ‘naturalistic’ and ‘politician’ interpretations which take, respectively, ‘life as the basis of politics’ and ‘life processes as the object of politics.’ Both interpretations are based on the assumption of a stable hierarchy that positions life and politics as separate entities (see further in Chapter 3). However, while advocates for a ‘naturalist’ interpretation regard life as being beneath politics, those for a ‘politician’ conception see politics as being above life processes. That is to say, ‘either biology accounts for politics, or politics regulates biology’ (Ibid., p. 4). For Lemke, both poles failed to explain the complexity and nuances between life and politics. He suggested, therefore, that it was only after the theoretical contributions of Michel Foucault, in the
1970s, that biopolitics assumed its modern utility as a body of critical theory. While I will discuss this below, it is important to first recount some of the pre-Foucaultian foundations of biopolitical theory.

A ‘naturalist’ conception of biopolitics first emerged in the early 20th century in the writings of the Swedish political scientist Rudolf Kjellen, and many of his contemporaries (Lemke, 2011). Kjellen saw the state as a form of life in itself, characterised by ‘ethnic individuality’ and social struggles between classes and groups. This ‘organicist’ interpretation conceived of the state as more than just a legal entity. Rather, the state was an original form of life that preceded individuals. With the development of National Socialism in Germany in the 1920s this organicist reading of the state took on a racist overtone. The German nation became ‘the people’s body’ in which the ‘true’ state was defined as a racially homogenous community with a common genetic heritage. Political problems were attributed to biological causes, specifically the intrusion and genetic pollution of unwanted and impure outsiders, such as Jewish peoples, who were sulllying the natural ‘purity’ of the nation (Groning & Wolschke-Bulmahn, 2003). The future of Germany, as other nations, would be defined by hereditary biological facts. Again, life was beneath politics, forever determining appropriate decision making. Political leaders merely needed to select and encourage the biologically ‘valuable’ and eliminate the ‘inferior’ to ensure a strong future nation. As is well documented, this racial delusion encouraged mass genocide and a raft of additional atrocities perpetuated in the name of the supposed natural superiority of the Germanic ‘race.’

Though they have by no means disappeared, ‘naturalistic’ interpretations of biopolitics largely declined after the Second World War. It became clear that interpretations of an organicist state based on theories of ancestral biological purity often encouraged gross injustices. In Chapters Three and Four I note, nevertheless, that many of these notions of ancestral purity remain integral to understandings of introduced species. By the 1960s, however, biopolitics was being redirected into a new ‘politicist’ problematic. Rather than life being the basis of politics, it instead became the object of biopolitical governance. After Rachael Carson’s Silent Spring (1962), for example, life in the form of ‘nature’ became the focus of an emerging environmental politics focused on saving the world from degradation. Familiar, nevertheless, was the notion that a ‘crisis’ had emerged that required resolution (see further in Section 2.4.3). Just as ‘pure’ Germans suffered a ‘racial crisis’ through ‘genetic pollution’ by foreign races, the
'pure' natural world was suffering an ‘ecological crisis’ characterised by industrial pollution and other increasingly recognised threats. Also familiar to both, moreover, was the continuing notion that life was connected but still ultimately inextricable from politics. For National Socialists, for instance, nature irrevocably determined the order and status of racial groups. Races could be improved upon, but their foundations, bound to nature, ultimately determined their worth. Similarly, for conservationists, humans only imposed on nature. There was no sense in which the two might fruitfully interconnect. Nature could be ‘restored’ but it could not be noticeably altered, lest it fall into the grey realms of domestication. Therefore, it can be argued that both polarizations of biopolitics failed to capture the essential facets of biopolitical processes. As I will argue below, the work of Foucault challenged both the notion that political processes could be traced back to biological determinants and the contrasting notion that politics could work on life from the ‘outside.’

2.2.2 Foucault’s contributions to biopolitical theory

Foucault’s interpretation of biopolitics was systematically introduced in the first volume of his History of Sexuality (1976). He theorised that a fundamental change in the nature of sovereign power occurred in 18th century Europe. This change was the result of the need to manage newly concentrated populations during a period of unprecedented urbanisation (L. Holloway et al., 2009). The focus of control at this point shifted from the right ‘to take life or let live’ to the right ‘to foster life or disallow it to the point of death’ (Foucault, 1976, p. 138). In effect, life began to be exercised in the name of everyone – the ‘population’ – not just the sovereign ruler (Youatt, 2008). According to Foucault, threats to the population were thence countered by two coexisting forms of ‘biopower:’ discipline and biopolitics. Discipline focuses on the human body, ‘seeking to maximise its forces and integrate it into efficient systems’ (Rabinow & Rose, 2006, p. 196). The human body was conceived of as a complex machine. Rather than attempting to control this machine, discipline works to focus and structure systems of self-governance to maximise productivity. In contrast, biopolitics focuses on the population or ‘species body’ and the mechanisms of life including birth, morbidity, mortality, and longevity (Ibid.). Technologies of regulation and control, such as public vaccination drives and demographic censuses, function to ensure a kind of homeostasis that protects the population from internal dangers. These prevent or compensate for dangers and risks that
result from the existence of the population as a biological entity (Lemke, 2011). Rather than polarities, Foucault conceived of these two facets of biopower as two sides of a global political technology directed at controlling humans, both as individuals and as a species.

Holloway et al. (2009) noted that the rise of the nation state in the 18th century was crucial to the rising popularity of this concept of ‘population.’ They summarised Foucault’s thoughts on the changing nature of population from his 1977-1978 lecture series entitled Security, Territory, Population (2007 [1978]). Foucault argued that prior to the 17th century the size of a population was directly related to the power the sovereign ruler could exercise over it. However, during the 18th century, populations came to be seen as ‘resources’ which could be utilised, but which demanded regulation in order to retain productivity. During the latter part of the 18th century the meaning of population changed again. From this point, population came to be considered as a set of ‘natural processes.’ Rather than seeing these populations as groups of individuals that can be predictably forced to perform in certain ways, populations as natural processes are difficult to direct, unpredictable and uncertain. Indeed, as Foucault (2007 [1978], p. 71, emphasis mine) summarised, ‘if one says to a population “do this,” there is not only no guarantee that it will do it, but there is [also] quite simply no guarantee that it can do it.’

Regarded as a set of natural processes, populations need to be kept under constant surveillance to determine their current status and future trajectory. This is achieved by monitoring populations using quantitative tools to assess their deviation from norms and to formalise the level of deviation that is to be considered acceptable (Hinchliffe, Allen, Lavau, Bingham, & Carter, 2012). The rise of the notion of populations as natural processes coincided with the increased use of scientific research and knowledge from the 18th century. It was therefore scientists that were required to determine the range of diversity and interpret the bounds of desirability. Buller (2008, p. 1592) described how biopolitical governance is now routinely exercised through processes of standardisation and organisation. Foucault’s process of ‘normalisation’ fates individuals to be ordered, classified, measured and regulated into self-defining and self-regulating populations: ‘[d]iversity, where it exists, becomes subjugated, in some cases through division and isolation, into the norm’ (Ibid.). Individuals are subsumed into cohorts that are said to display ‘behavioural characteristics and correlations’ (Dillon & Lobo-Guerrero, 2008, p. 267). Moreover, state
intervention over natural processes is not only desirable, but necessary to reduce the insecurity of this ‘naturality’ (see Section 2.4.2) (Terranova, 2009).

Foucault’s conception of biopower refers, consequently, to the ‘conjunction of strategies adopted by the state and a diverse range of institutions and agencies to constitute and govern the population, made possible by forms of specialised knowledge and self-governing participants’ (Raman & Tutton, 2009, p. 5). The great Victorian public health strategies are one of the classic examples of biopolitics in the 19th and early 20th centuries. Designed to prevent the spread of disease and employing urban sanitation systems and public hygiene initiatives on a broad-scale, they were established on the grounds of self-interest as much as that of the governing authorities. Nevertheless, they also facilitated the development of the modern state. People were encouraged to participate in the interests of their personal health, and yet, in doing so, they became subjugated and normalised to the controlling interests of the state. As I have already hinted this ‘normalising’ function of biopower was central to Foucault’s thesis. While the historical sovereign state was concerned with upholding the ‘right,’ the modern biopolitical state is more concerned with maintaining the ‘norm.’ Appealing to the notion of a society that is internally homogeneous, disturbances to the norm necessitate periodic interventions for the purposes of maintaining state ‘security’ or ‘equilibrium’ (Anderson, 2011). Moreover, while sovereign power is exercised in the interests of the rulers, biopower is exercised in the name of life itself. Rather than freeing biopolitical regimes from the necessity to ‘take life’ in the interests of perpetuating the interests of the rulers, therefore, life must thenceforth be protected from any and all threats, effectively widening the scope of the ‘death function’ (Foucault, 2003 [1976]).

It is here that biopolitical regimes faced a potential impediment to their fruition. This is because if biopower is principally concerned with ‘letting live’ and otherwise promoting life, it might seem incongruous that this would be achieved through destroying life. For Foucault, however, this is the point at which state racism intervenes, providing an ostensibly palatable explanation for death. Building on earlier naturalistic conceptions of racism, Foucault argued that discrimination on the grounds of ‘race’ – whether biological, social, or otherwise – fulfilled two important roles within biopolitical regimes (Biermann & Mansfield, 2014). Conceiving of the state as a relatively homogeneous entity, it imagined the existence of
exploitable divisions ‘between what must live and what must die’ (Foucault, 2003 [1976], p. 254). The distinction of ‘good’ and ‘bad’ races, or ‘high’ and ‘low’ races, created schisms within society. Racism also defined the steps that would be necessary to achieve the ancestral ‘pure’ society of yore. The enemies within society would need to be purged. Secondly, rather than providing a mere programmatic solution, racism backed up this murderous discrimination with an emotive hook. The death of ‘unhealthy’ or ‘inferior’ races was not only necessary, but desirable. As Foucault wrote, ‘...the death of the other, the death of the bad race, of the inferior race...is something that will make life in general healthier’ (Ibid., p. 255). It provided the ideological foundation for the perpetual purification of ‘others,’ constituting the means through which society would be normalised and thus controlled. In Chapter Three, I show how introduced species are a form of such ‘others’ and how their removal is seen as a way of making life healthier.

2.2.3 Contributions post-Foucault

Foucault’s identification of racism as a crucial component of biopolitical governance has been adopted and elaborated upon by other authors. Perhaps the most celebrated, and controversial, of those are the contributions of Giorgio Agamben (1998, 2005). For Agamben, the fundamental political binary is not between friend and enemy, or insider and outsider, but between ‘bare life’ and political existence (B. Evans, 2010). ‘Bare lives’ are those that sit at the fringes of acceptable life and which are commonly manipulated and even extinguished with little compunction. In Homo sacer (1998), Agamben defined his inspiration for the term in an archaic roman person labelled in law as someone that could be killed with impunity. Banned from political existence, homines sacri were reduced only to their physical presence, being essentially neither citizen nor enemy. As such, they could be used or abused without regard for the ethical considerations that would be applied to citizens. Rather than arguing that these people were peculiarities, Agamben argued that they were actually commonplace and integral to the mechanisms of biopolitical governance.

Even democratic societies required these ‘othered’ beings to function effectively. Agamben identified the Nazi concentration camps, for instance, as the epitome of this process. Prisoners therein were reduced to their biological material, having no rights and being entirely dependent on humanitarian assistance. For the Nazis, prisoners were a kind of unnecessary and detrimental life that could be unproblematically
extinguished. However, whilst acknowledging that this was a striking illustration of the instrumental rationality of biopolitical governance, Agamben suggested that this was no aberration. He listed, instead, a host of other representations of *homo sacer*, both historical and modern, including asylum seekers, refugees and the brain dead. Although all human, and included within the ambit of state power, the liberties of these groups are significantly curtailed. For these groups, the protections of the state are an act of magnanimity rather than an entitlement, as illustrated in the way the rights of these groups are more easily withdrawn relative to ‘normal’ people (Rifkin, 2009). Agamben argued that these ‘exceptions,’ whether prisoners of war, asylum seekers, or similar, were in fact increasingly the rule. Biopolitical governance was premised on the identification of bare life and its division or removal for the good of all. In this regard, the modern era only distinguished itself, according to Agamben, through the increasing extent to which bare life has shifted from the margins to the centre of the political domain.

Another widely acknowledged set of contributions to Foucault’s biopolitics has come from Michael Hardt and Antonio Negri (Hardt & Negri, 2000, 2004; Negri, 1991). These authors have highlighted the extent to which the identification and exploitation of Agamben’s ‘exceptions’ feeds into the logic of industrial capitalism. In fact, they argued that biopolitics stands for a new stage of capitalism; one which increasingly blurs the boundaries between economics and politics. This globalised capitalist system pays little regard to traditional boundaries such as between nation states or peoples. Instead, all spheres of life are subordinated to the imperative of accumulation. As they wrote, there is ‘nothing…no external standpoint, that can be posed outside this field permeated by money; nothing escapes money’ (Hardt & Negri, 2000, p. 32). Production and reproduction overlap and are almost indistinguishable. Life becomes subsumed and coterminous with capitalist dominance. For Hardt and Negri, a new relationship has thus formed between biology and politics, or between ‘nature’ and ‘culture.’ While nature was once defined as everything that was external to the production process, it now constitutes merely a new accumulation frontier. Rather than protecting nature, economic discourses now focus on how to open it up to commercial exploitation, preserving only those components that can be profitably exploited. This understanding also encourages an analysis of ‘exceptions’ that pays careful attention to who benefits economically from such delineations.
I expand on the work of both Agamben, and Hardt and Negri in Section 2.4. Theirs are, nonetheless, only some of the most renowned interpretations and expansions on Foucault's theorisation of biopolitics and I will therefore incorporate the contributions of many others. Despite the diversity of topics addressed, biopolitical scholarship is characterised by several commonalities. Rabinow and Rose (2006) identified at least three universal dimensions of studies concerned with exploring the ramifications of biopower. Firstly, they require 'knowledge of one or more truth discourses about the 'vital' character of living human beings, and an array of authorities considered competent to speak that truth' (Ibid., p. 197). This necessitates a consideration of which parties are granted legitimacy in speaking truth to power. In environmental discourse, this particularly requires an assessment of the role of scientific knowledge (see Section 2.3.3). Secondly, they require an analysis of the 'strategies for intervention upon collective existence in the name of life and health' (Ibid.). Biopolitical studies look critically at what forms of life are considered valuable and what forms are considered dispensable. They also ask who benefits from this process of 'necessary' elimination and who is forced to bear the costs (see Section 2.4.1). Thirdly, they require an analysis of the 'modes of subjectification through which individuals are brought to work on themselves' (Ibid.). This calls for an enquiry into the ways that people are convinced to act in certain ways. They investigate the specific means through which people are persuaded, for instance, that they are superior to others, the ways that they are granted legitimacy as the facilitators of 'better' or 'healthier' states, or the ways that they are taught to believe that their actions are emancipatory and progressive, rather than destructive (e.g. see Section 2.3.2).

Although the majority of biopolitical scholarship has been directed at the problematics of humans, there is now a rich vein of contributions directed at nonhuman animals (e.g. see Collard, 2012; Biermann & Mansfield, 2014; Shukin, 2009). These studies show that there is much to be gained from biopolitical analyses of the interpretation and treatment of other species. Darier (1999) argued that Foucaultian biopolitical theory provides a powerful theoretical framework for assessing concepts of 'nature' and 'the environment.' Indeed, he was preceded in this endeavour by authors such as Palmer (1996) and Luke (1997) (see Rinfret, 2009). For Biermann & Mansfield (2014), biopolitical analyses that focus on nonhumans are important because they reveal the ways through which nature and society are co-produced. It is sometimes claimed that Foucault himself was disinterested in nature, rarely referencing it
in his lectures or writing and seemingly dismissing it out of hand in personal communications (e.g. 'my back is turned to it' in Rutherford, 2007, p. 294). Another interpretation is that Foucault had simply not come to fully consider it before his untimely death, leaving his thoughts on the topic incomplete. Regardless, this does not preclude the validity of Foucaultian approaches to environmental topics (see Lorimer & Driessen, 2011). On the contrary, as Rutherford (2007, pp. 294-295) wrote:

Nature…is one area in which the messy politics of representation, articulation, essentialism and discursive construction come to the fore, making it a particularly interesting site to interrogate the exercise of power. The ways in which the environment is constructed as in crisis, how knowledge about it is formed, and who then is authorized to save it become important for understanding the ways that the truth about the environment is made, and how that truth is governed.

In Section 2.4, I build on understandings introduced here to argue that the construction of introduced species is one of many facets of marginalised ‘nature’ that can be better understood through the application of biopolitical theory. As I have begun to demonstrate, Foucaultian biopolitical analyses ask questions not typically entertained by other perspectives. Above all, they focus attention on the exceptions to the norm and examine why those abnormalities exist and how they are rationalised. As well as emphasising the justifications for the preservation and enhancement of valued lives, they look critically at how and why other ‘unvalued’ lives can be cast aside and ‘legitimately’ discarded. Before furthering this ontology, however, I clarify my epistemological stance and widen the frame of analysis to incorporate understandings and approaches from the wider constructionist literature.

2.3 The contributions of a social constructionist approach

Foucaultian biopolitics is itself grounded in the wider constructionist approaches that have been such a feature of the social sciences since Rorty’s (1967) ‘linguistic turn.’ In that sense, it constitutes merely one of many constructionist literatures. It is important to note, moreover, that Foucault was an important contributor to constructionism in general and is thus an important bridge between these literatures (e.g. see Section 2.3.2). Therefore, although I structure my analysis around biopolitics I also lean considerably on the wider theoretical approaches of social constructionism and the contributions from constructionists.
of various stripes (as does L. Holloway et al., 2009). As I will show below, both biopolitics and constructionist literatures in general, share a scepticism of the dominant ideas and institutions that are less frequently questioned by more ‘realist’ literatures (Weinberg, 2008). They are both concerned, for instance, with how power is attained and exercised, and with the mechanisms that are used to perpetuate the dominance of certain ideas, peoples, species, and so on, over others. One of the main ways that biopolitics differs from other constructionist approaches lies in the extent to which it focuses on the ‘abnormal’ or the ‘exception’ (Lorimer & Driessen, 2011). Nevertheless, this focus does not preclude the fact that biopolitical studies remain largely constructionist in orientation.

Below I argue that a biopolitical analysis grounded in a constructionist epistemology provides a useful lens for investigating ‘environmental’ problematics. A constructionist stance understands that ‘the environment’ is a diffuse concept that can mean many different things (Yearley, 2002). It also highlights how particular discourses become hegemonic and how interested parties use rhetorical strategies to convince the public of their positions (Hannigan, 2006). I show that a constructionist approach facilitates a focus on these rhetorical strategies and resists the urge to focus on the overarching ‘truth’ of competing claims. Constructionism’s emphasis on challenging the ‘unquestionable’ or the ‘obvious’ encourages investigation into areas generally deemed uninteresting. In particular, the truth discourses of science are critically examined to identify how they support certain ways of seeing. Finally, constructionist studies emphasise the ways that power is reinforced and how counter discourses are quashed. Ultimately, I argue that a constructionist epistemology provides a good framework for understanding how interpretations of introduced species are grounded, not so much in the ‘real’ world, but in social interpretations of the world.

2.3.1 Knowledge must be questioned

As I have suggested, constructionism is not a single, unified position but rather ‘an unfolding dialogue among participants who vary considerably in their logics, values and visions’ (M. Gergen & Gergen, 2003, p. 2). Different disciplines have also interpreted and modified constructionism from the standpoint of their unique disciplinary histories and theoretical traditions (Hosking, 2011; Restivo & Croissant, 2008). In addition, the methods used in constructionist research vary considerably (see Chapter 6). This can mean
that what actually counts as constructionist research is not always straightforward (also see Demeritt, 2002). Weinberg (2008, p. 14), however, took the:

...very inclusive view that constructionist studies are those that seek, at least in part, to replace fixed, universalistic, and sociohistorically invariant conceptions of things with more fluid, particularistic, and sociohistorically embedded conceptions of them.

According to this view, it does not matter whether an author explicitly identifies their work with social constructionism or not. If their analyses extend the reach of the social sciences into areas that were once considered ‘unquestionable’ then they can be seen to be constructionist in orientation (Weinberg, 2008). Taken in this way, constructionism it is often regarded as the ‘intellectual sinew’ that draws together the various dialogues of discontent in the social sciences (in R. A. Young & Collin, 2004, p. 376).

Indeed, social constructionism is widely used to convey the notion that something that has been considered beyond the scope of social influence is actually the result of eminently identifiable social influences. For this reason, constructionism is particularly popular with scholars interested in the study of matters such as beauty, gender, morality, pathology, race and sexuality (Weinberg, 2009). While many of these phenomena were once believed to be divided into fixed, invariant or ‘natural’ categories, constructionist work has since demonstrated the extent to which they may be culturally relative and historically specific categories (Bhattacharyya et al., 2011). These contributions seek to transcend simplistic frameworks of understanding, enabling an ‘unconstrained and unlimited outlook’ that rejects the designation of ‘ingroups’ and ‘outgroups’ and the corollary stigmatisation of ‘others’ (Benwell & Stokoe, 2006; Hibberd, 2005, p. 2; Shields & Harvey, 2010). Bhabha (1994), for example, used the concept of ‘hybridity’ to destabilise traditional binaries and myths of cultural homogeneity. In Chapter Three, I similarly work to destabilise what I show to be the elastic understandings of ‘introduced’ and ‘invasive’ species in the context of wildlife management. For constructionists, categories are no longer fixed and inevitable and social groups can freely choose to replace old ideas, theories, or ideologies, with new ones.

A common tenet of constructionist approaches, therefore, is that the problematic conditions of the world, as they are commonly conceived, might not be as ‘obvious’ as they seem (S. R. Harris, 2008; Hosking,
2011). What is often accepted as self-evident or ‘common-sense’ might, on closer inspection, be found to be contingent and capable of being alternatively viewed or remade (Demeritt, 2002). People make choices based on what they understand to be their alternatives at the time and these choices then go on to constrain future decisions. Many of these choices are latterly lost from sight, becoming unquestioned assumptions and ‘cultural blind spots’ (Best, 2008; Capek, 2005, p. 213). Similarly, it may be found that many stigmatised peoples, animals or other phenomena are not inherently so, but rather constructed as such through socially mediated channels that, over time, become unquestioned (Conrad & Barker, 2010). Consequently, both assumptions and presuppositions, and the categories and moral pronouncements that follow from them, need to be constantly tested and re-evaluated. This understanding is particularly important when considering widely-held beliefs regarding the legitimacy of current ‘ingroups’ and ‘outgroups.’ As I argue in Chapter Three, introduced species are widely regarded as ‘outsiders’ that naturally do not belong. The insistence of constructionism on challenging the commonsensical nature of such an understanding is vital to exploring the potential for reconciliation.

2.3.2 Power and hegemony

Discussions of power within a constructionist framework typically begin, like much of the biopolitical literature, by acknowledging the pervasive influence of Michel Foucault. From the early 1960s to the mid-1980s Foucault argued that discourses provide institutions with a means of incorporating individuals into wider spheres of domination (Hannigan, 2006). He felt that claims to truth were always claims to power. At the least, discourses define what is meaningful and prescribe the appropriate wielders of power. Such power can be divided into two forms: coercive and hegemonic (Pfohl, 2008). The former is a brutal form of power propagated through violence which smashes apart any competition or resistance. This can be seen, for example, in the power of traditional authoritarian religious forces, gangs, and conquerors. In biopolitics, it is represented by the sovereign state. Hegemonic power, in contrast, is more subtle, relying on manufacturing consent and social engineering than on brute domination (Benwell & Stokoe, 2006); in other words, it is symptomatic of the governance of biopolitical states. Proponents facilitate the formation of hegemonic ideas that become rationalised into the common consciousness; often using elegant theoretical justifications that indicate how a particular material condition should be conceptualised, whilst
subsequently framing ‘problems’ and prescribing ‘solutions’ (Dobbins et al., 2007). According to Antonio Gramsci, hegemony ‘refers to the ritual production of what passes for social consensus or common sense’ (in Pfohl, 2008, p. 657). Adherence to hegemonic ideas builds the impression that a fundamental consensus has been reached on a topic which then becomes woven into the fabric of society (Ateljevic & Doorne, 2002). As Gergen (2000, p. 204) wrote, ‘when ideology is hegemonic, it is not open to dialogue or critique; its furtherance is primarily served through dissemination of ideas, images, symbols...it is fortified through the silencing of alternatives.’ For fear of being labelled a heretic, one is discouraged from challenging what Foucault (1976, 1979) called the ‘dominant discourse.’

Constructionists also realise, however, that hegemonic ideologies are not always the result of the success of dominant positions. On the contrary, they are often the result of compromises between polarised positions. As Fischer and Marshall (2010, p. 188) explained, social actors are compelled to ‘strike a balance’ between competing discourses. When presented with a continuum of positions, actors often choose to shun the ‘extremes’ in favour of more ‘moderate,’ non-confrontational positions – which may be accorded legitimacy through a semblance of balance, temperance and social justice (Ibid.). In Chapter Five, for instance, I show that introduced trout are constructed as valued members of the biota in New Zealand despite negative impacts on native species comparable to other introduced ‘pests.’ Their acceptance is a compromise between maintaining native biodiversity and maintaining a valued sports fishery. In a sense, the prevailing ‘truth’ then, is an agreement based not only on the ‘facts,’ but on what seems fair and reasonable – a negotiation between multiple discursive strands.

Some of the subtleties of dominant or hegemonic discourses are further illustrated by Cass and Pettenger (2007) in their study on climate change. They suggested that the contemporary climate change debate fuses discourses of territoriality and sovereignty. Within this framework, climate change is viewed through ‘the twin lenses of national security and national economic strategy in a globalizing economy’ (Ibid., p. 237). Herein, the state forms the ‘master discourse,’ acting to legitimise other discourses. This emphasis on the state marginalises alternative discourses, such as those of indigenous peoples. The voices of elites, states and regions are represented in international negotiations, while counterhegemonic discourses are masked or ignored. Furthermore, developing states distrust the discourses of developed
states, suspecting the latter of neo-colonialism. Cass and Pettenger argued that a change in the course of the climate change debate will only come about with a change in the underlying discourses, particularly regarding the need for alternative conceptions of climate change to be heard. In this and other ways, constructionist analyses of power, therefore, tend to focus on the abuse thereof and the need to reconsider marginalised or silenced voices.

When the prevailing reality is seen as the outcome of competing claims to knowledge we may be able to better understand why so many policies and activities aimed at managing the environment are contradictory and directed toward inconsistent and incompatible aims (Jacobs & Manzi, 2000). To constructionists, inconsistency and apparent incoherency in public policy are to be expected because actions are not instigated according to the understanding of some higher objective truth but, rather, by the ‘current truth’ propagated by the most vigorous or powerful ‘claims-makers.’ Hence, ‘power (who has it and who does not, and how it is used) and knowledge (what we know and how we know it) play an integral role in the formation of…policies’ (Cass & Pettenger, 2007, p. 246). Without the tools offered by constructionism, fluctuations in power and the role of knowledge may be misperceived or misunderstood.

Recognising that social forces matter facilitates a better understanding of why current policies, and the prevailing perspectives they represent, have emerged. This, according to Pettenger (2007), is one of the great benefits of constructionism. In giving primacy to the material and ideational, as well as the agents and structures of understanding, constructionism holds the promise to better understand change. Because the focus is not on objects (agents, structures), but processes (creation, learning), constructionists are able to signal when, how and why change has taken place (Linders, 2008). Understanding these changes also helps to uncover the direction understandings of environmental phenomena may be heading and to offer suggestions for alternative paths.

2.3.3 The social construction of science

As already intimated, constructionists are sceptical of the ‘textbook’ view of scientific progress – with theory driven by experimental data – siding instead with Kuhn’s (1962) view that such an interpretation of the history of science is as probable as the ‘image of a national culture presented in a tourist brochure’ (in Mallon, 2007, p. 95). Instead, constructionists hold that scientific theory is a negotiated achievement,
intimately attached and attendant to the social climate in which it is practised (Teubert, 2010). One cannot speak as if there were such a thing as a single scientific style or perspective (Sismondo, 2004). 'Science,' on the contrary, is many different things to many different people. It is multiform and variable, not a single, uncontested way of understanding the world (Newton, Deetz, & Reed, 2011). Weinberg (2008, p. 22) noted the influence of Feyerabend (1978) in communicating the understanding that science is not a unified 'method' that can always be easily distinguished from non-science. It is not 'discontinuous with the rest of culture, or equipped to capture the empirical world in a manner untainted by theoretical preconceptions' (Ibid.). This malleability of science is important to capture and interrogate because of the overwhelming importance of science in communicating truths about the environment.

Natural scientists such as Davis (2009, p. 163) regularly acknowledge that 'our access to external reality is not unrestricted, and that our descriptions and understandings are approximations of the external world, often only rough approximations.' Constructionists go a step further, emphasising that those approximations are themselves also mediated by the scientific paradigm of the day, and the ways those paradigms are influenced by other social, economic and geopolitical processes (see Chapter 5). Indeed, some form of social construction is always involved in scientific theorizing and empirical enquiry (Hosking, 2011). Furthermore, what Pearce (2010, n.p.) called the 'everyday jealousies, rivalries and tribalism of human relationships' occurs in scientific culture as much as in any other. The claimed superiority of scientific knowledge rests on the assumption that scientists are actually practising science in the somewhat linear, textbook fashion to which it is often presented to the public. This image, however, is likely to be only an approximation of the actual process of science, and constructionists have had great success in revealing the various social, cultural, political, and economic interests at work in the constitution of scientific knowledge and the propagation of scientific theories (Cass & Pettenger, 2007; Latour & Woolgar, 1979; Restivo & Croissant, 2008). I add to this literature elsewhere in this thesis, particularly in Chapter Nine, where I emphasise not only the contingent nature of much research, but also the drivers for the lack of research in some areas of wildlife management and the motivations for sometimes inflating few studies into vast generalisations. As a consequence of such work, constructionists do not automatically privilege the understandings of established experts (Koppl, 2010;
Pedynowski, 2003). Instead, all understandings, whether scientific or otherwise, are fairly assessed and given voice.

For constructionists, facts never ‘speak for themselves,’ they are both ‘etymologically and practically, fabrications’ (R. Holt & Mueller, 2011, p. 75). Instead of simply taking facts on face value, they instead need to be placed within an interpretive context. It is not just ‘what the facts are’ but also ‘which the facts are’ and why those facts specifically were selected in discourse and argumentation (Carolan & Bell, 2003, p. 236). Debates over climate change illustrate, on a massive scale, that even when the same facts are used, different interpretations can be offered. For example, in a recent series of academic articles on the idea that climate change is fuelling more intense storms, scientists on both sides of the debate interpreted the same facts but arrived at conflicting conclusions (Cass & Pettenger, 2007). Because this was eroding the credibility of the argument that human-induced climate change is responsible for changing weather patterns, many scientists claimed that, although there were differences of opinion regarding the facts, ‘the consensus’ sides with the views of the International Panel on Climate Change. Schlesinger (2005, p. 2) was critical of this position, noting that despite repeated assertions that there is a ‘scientific consensus,’ ‘there is neither a consensus nor is consensus science.’ Nevertheless, most constructionists would probably disagree with Schlesinger. True, an idealised version of science holds it to be a matter of truth slowly winning out over falsity. The actual practice of science, conversely, that practised day-to-day, is a socially negotiated one with consensuses, ‘academic head counts,’ compromises, and other ‘unscientific’ elements playing an integral role. A constructionist approach brings this understanding to the fore, requiring that scientific knowledge be questioned to the same extent as other forms of knowledge. This is vital in the context of environmental problematics which are so frequently grounded in scientific knowledge. As I will argue in Chapter Three, the persecution of introduced species is widely propagated through scientific channels meaning that these justifications cannot be taken at face value.

In summary, a biopolitical analysis, grounded in the assumptions of a wider constructionist approach, offers many theoretical benefits to the study of introduced species and other ‘environmental’ phenomena. As Lemke (2011) concluded, it provides historical, empirical and, perhaps most importantly, critical utility. It shows that,
[b]iological phenomena are not the result of anthropologically rooted drives, evolutionary laws, or universal political constraints. Rather, they have to be grounded in social practice and political decision-making. These processes do not follow a necessary logic but are subject to specific and contingent rationalities and incorporate institutional preferences and normative choices. The task of an analytics of biopolitics is to reveal and make tangible the restrictions and contingencies, the demands and constraints, that impinge upon it (Ibid., p. 122).

This analytics does not simply reject what exists. Rather, it challenges the status quo to consider new possibilities and perspectives. It does not seek to construct a new representation of reality, but to further suggestions that acknowledge their own ‘particularity, partiality and selectivity’ (Ibid.). Below, I return to the biopolitical literature to show the ways in which this work can add and productively elaborate on such understandings. Specifically, I show how the frame of ‘biosecurity’ is being used to uncover the hidden structures of power that are at stake in wildlife management, and how various forms of resistance to this power are being articulated.

2.4 The biopolitical construction of ‘biosecurity’

In recent years, a rich current of biopolitical literature has centred on the notion of ‘biosecurity’ (Hinchliffe & Bingham, 2008). This concept has, in fact, become the ‘master frame’ for debates on the threats to human and nonhuman populations from the movement of biota around the world (Maye, Dibden, Higgins, & Potter, 2012). Biosecurity speaks to a range of concerns and practices, principally over the management and movement of agricultural pests and diseases, the effects of ‘invasive’ species on native biota, and the purposeful and inadvertent spread of biological agents into the human population (Hinchliffe & Bingham, 2008). However, it can be interpreted more widely as a response ‘to a perceived spectrum of threat that includes everything from zoonotic disease to (bio)terrorist attack to volatile weather events’ (Shukin, 2011, p. 491). Dillon and Lobo-Guerrero (2008, p. 266) considered the notion of security to be central to biopolitics, bluntly writing that ‘there is no biopolitics of this, or biopolitics of that. When one says biopolitics one says security, albeit in a certain way.’
Most social science work on biosecurity examines ‘the measures and strategies of segregation, containment, quarantine, surveillance, monitoring, inspection, and isolation which separate out and organise the circulation of matter into ‘good’ and ‘bad’ categories’ (Maye et al., 2012, p. 151). In general, these approaches tend to highlight the ‘prophylactic’ nature of biosecurity in which a somewhat equilibrial ‘nature immobile is set against a sometime welcome attitude to human cosmopolitanism and movement’ (Hinchliffe & Bingham, 2008, p. 1535). The focus is on the border control measures – self-declaration forms, surveillance technologies, and other targeting methodologies – that are used to regulate the movement of living or not long dead tissues, and on the containment and eradication of identifiable ‘pests’ (Baldwin, 2012). However, while,

…disciplinary practices structure space by isolating, concentrating and enclosing bodies in order to enable some form of control over them, biopolitical apparatuses of security work precisely by allowing circulation, flow and movement, in order to govern mobile populations in an increasingly expansive space (Vaughan-Williams, 2010, p. 1078, emphasis mine).

This is not to say that biopolitical forms of biosecurity necessarily promote circulation, but rather to suggest that circulation is recognised as being as important as containment and quarantine. Indeed, the move to a biopolitics of biosecurity recognises that the task of ‘making life safe’ is never accomplished, never a case of pure quarantine. ‘Biosecurity’ is thus better viewed as an ongoing process of ‘biosecuring’ (Hinchliffe & Bingham, 2008, p. 1543). It is about differentiating, valuing, and regulating circulations as well as demarcating territories, identities and known enemies. This twin focus is important to investigating how and why the removal of unwanted lives might prove enduring and thus central to understanding any apparent reconciliation of introduced species.

In this section I employ the frame of biosecurity to explore some of the key concepts through which an ontology of biopolitics can be employed. Firstly, I re-emphasise the importance of capital accumulation as a mechanism for determining ‘good’ flows. Nature, in particular, has become increasingly commoditised to the extent that it is becoming an almost ‘innocent’ question to ask whether the preservation of certain species over others might coincide with profit motives. Secondly, recognition of both the contingent and emergent quality of life processes requires that all life must be monitored to weed out growths that could
impede desired functions. In addition to economic motives, notions of national and racial identity continue to be employed as ‘appropriate’ filters therein. Thirdly, truth discourses are employed to delineate who is qualified to speak about the policing of biosecurity. These voices also determine when a certain condition has become sufficiently dangerous to merit the declaration of a state of emergency. Although seemingly ephemeral in nature, these states frequently persist long after their declaration, continuing to suppress normal rules, considerations, and ethics in view of a supposed impending resolution. Lastly, frames of war and necessary death dramatise, glorify and institutionalise ongoing slaughter. I conclude that, while death cannot be expunged from biopolitical governance, it remains important to question why certain lives should necessarily be valued over others and to look carefully at the overarching justifications used to promote particular manifestations of ‘bare life.’

2.4.1 Biosecurity and capital

Anderson (2011, pp. 32-34) elaborated on the Foucaultian understanding of biosecurity, defining it as a meeting between biopower and contemporary capitalism (also see Terranova, 2009). He noted that Foucault (1976) saw discipline and biopolitics as essential elements in capitalism as they both work in tandem to incorporate life into the processes of production. Negri (1991) updated Foucault’s thoughts to show how surplus value is increasingly extracted from all forms of life, not merely those encompassed by the traditional capitalist sphere (e.g. wage labour, commodities). His ‘real subsumption of life’ under capital defines the process under which all living forms, whether in the traditional sphere (e.g. production animals) or otherwise (e.g. wildlife), are becoming productive centres of accumulation. For example, it is becoming difficult to talk of ‘nature’ – a construct once considered definitively external to capitalist spheres of production – outside of an economic discourse of costs and benefits (K. J. Hart, 2011). Rather, the ‘good’ circulations promoted by biosecurity are increasingly just those that correlate with profit maximisation (Maye et al., 2012).

As Dillon and Lobo-Guerrero (2009, p. 2) highlighted, the very word ‘species,’ so important to nature conservation, indicates ‘the close proximity of species as classification, species as biology and species as monetary value.’ Critiques of nature conservation within a biopolitical framework consistently point to the profit-driven influences underlying supposedly apolitical and universalist environmentalisms (see Pierce,
In Chapters Five and Seven, I show that both the protection of valued species and the deaths of ‘unvalued’ species sustain important industries. Hudson (2011, pp. 1672-1673) articulated – in no uncertain terms – her unease at this solidifying interrelationship:

If nature ever appeared as a space outside production…no such space remains. Nature has become so intertwined with culture that it is unavoidable that we view nature through the lens of capitalist value. This is equally true for our relationship to animals, whose value has begun to be determined by things like scarcity or use. Animals and nature are being replaced by “biodiversity”, to be managed as a kind of bank, while nature has become striated by the language of the stockbroker, where natural resources, eco-diversity, and genetic composition are bought, insured, patented, speculated on, and sold. Environmental groups that focus on preservation…mortify nature in that they, too, consider nature a static repository…Hemmed in by roadways, shipping lanes, aircraft flight paths, conserved spaces are abstract and artifactual rather than living spaces. Such abstraction is in keeping with capitalism. National parks and nature reserves have become nature’s ghettoes with animals reduced to their own kind of bare life: tagged, monitored, desexed, impounded and/or commodified…Natural space is today that which is containerized until that time when capital can make it productive.

For many, nature conservation has become synonymous with ‘big money,’ with the benefits of conservation ‘investments’ extending beyond the preservation of species to the economics of scientific research, pharmaceuticals, eco-tourism, payments for ecosystem services, and the attraction of foreign aid, among others (Timms, 2011, p. 1363). In many cases, the creation of protected areas and species is directly sponsored by conservation organisations whose funding is tied to the meeting of donor agendas, including corporate sponsors. Individuals or species that extend beyond the ability of capital to incorporate them become reduced to bare life. Hence the lives of rare (scarce) species are held in high regard while those of common (surplus) species are negotiable. As Hudson (2011, p. 1660) wrote, as ‘surplus populations expand…humanness’¹ is no longer regarded as sufficient to determine moral value.’

¹ Used here in the sense of being humane or compassionate rather than the sense of being human.
As I will elaborate in Section 2.4.4, economic discourses that demarcate valued lives necessarily exclude the ‘invaluable, the incalculable, the un-encodable, the irredeemably opaque, the defiant and the simply non-circulating’ (Dillon & Lobo-Guerrero, 2009, p. 5). This exclusion is never a ‘neutrally instrumental affair,’ but rather a ‘profoundly violent process’ (Ibid., p. 6).

2.4.2 Contingency, emergence and identity

Ultimately wedded to notions of internal equilibrium and homeostasis, the twin technologies of biopower that Foucault characterised – discipline and biopolitics – are no longer sufficient levers of power once value is extracted from all of life. Indeed, rather than viewing the uncertainties created by global movements of life exclusively as risks, a recognition of the potentially productive nature of contingency forms. Anderson (2011, p. 33) explained how,

On the one hand, productive life must be constantly secured in relation to the dangers that lurk within it. Life is tensed on the verge of disasters that may emerge in unexpected and unanticipated ways to disrupt, momentarily or permanently, value-producing activities…events ranging from terrorism to climate change [are thus] governed as economic emergencies, which threaten to interrupt productive activity. On the other hand, the securing of life must not be antithetical to the positive development of a creative relation with contingency. Life must be open to the unanticipated if the ‘freedom’ of commerce and self-fashioning individuals is to be enabled.

Contingency, therefore, is both threat and opportunity in a world in which value can be extracted from almost any living thing (Dillon, 2007a). As Dillon and Lobo-Guerrero (2008, p. 269) put it, ‘air travel circulates diseases as well as tourists, commerce and business’ (also see Hinchliffe et al., 2012; Maye et al., 2012). To address this double relation with contingency, security emerges as a new form of biopower to define the interplay between freedom and danger. Life cannot be secured from contingency but instead only through contingency (Dillon, 2008). Biopolitical security invites living things to maximise their ‘transactional interactions’ with their environments as a way of living with contingency, not as a means of avoiding it (Baldwin, 2012, p. 5). Circulation, therefore, must be encouraged, not retarded, but only in so far as it promotes the ‘right’ kind of flows.
The purpose of security is to stop disruptive events from occurring or, failing that, to prepare for an interval of ‘emergency’ between the identification of a threat and its removal (see further below). Like biopolitics, it is dispersive, acting on ‘circulation, flow and movement’ (Vaughan-Williams, 2010, p. 1078). However, rather than stopping flows altogether, security is instead premised on the notion that only ‘bad’ flows need to be pre-empted. In other words, ‘the object targets of ‘security,’ are ‘processes of emergence that may become determinate threats’ (Anderson, 2011, p. 34, emphasis in original). The consequence of this new form of biopower is that all of life is now a potential threat, reproducing racialized suspicions or fears. For example, many border control procedures tend to disproportionately search and interrogate certain ethnic groups and nationalities (Vaughan-Williams, 2010). Similarly, for conservation biologists, certain introduced taxa are disproportionately selected for study on the assumption that these species are more likely to be causing damage (see Chapter 4). This, concludes Anderson (2011, p. 34), is a bleak picture, ‘as production extends to all of life, all of life must be secured to ensure ‘good’ circulations amid threats that are imminent to life.’ Contingency is thus swamped by the need to forestall potential dangers.

As I argued in Section 2.4.1, those ‘good’ circulations are often dictated by economic discourses that identify which species can generate revenue and which are surplus to profitability. Further justifications for determining ‘good’ from ‘bad,’ nonetheless, are also often tied to notions of identity. Many biopolitical discussions of biosecurity draw on explorations of social identity theory from amongst the wider social constructionist literature, particularly as it relates to concepts of race (Shih, Bonam, Sanchez, & Peck, 2007; Smedley & Smedley, 2005; M. C. Waters, 2002) and national identity (Clunan, 2009; Shields & Harvey, 2010; Wodak, de Cillia, Reisigl, & Liebhart, 2009). These studies show that such concepts are not fixed, bounded entities, but are instead flexible, hybridised, open, and subject to change. Also common, however, is the insight that notions of purity and historical fidelity, however poorly grounded, ‘are likely to exert more influence in times of change’ (Clunan, 2009, p. 39). For example, in Chapter Seven I highlight the ways that New Zealanders enforce their identity and belonging in a rapidly changing social, ethnic and environmental climate partly through the denigration and slaughter of introduced ‘pests.’
Building on such understandings, authors such as Rose (2001) and Macey (2009) have expanded on Foucault’s thoughts on identity. Like Foucault, both authors saw race as a central pole in the genealogy of biopower and as a prism for the imagination of the nation from the 18th century onward (see Section 2.2). However, unlike Macey, Rose downplayed the ongoing importance of race and nationalism as levers of biopower. He argued that there is now a ‘scaling down’ of biopower from the national/race/population level to the small-group/individual level. He contended that the ‘molar’ state-administered concern with the health of the population has mutated into a new ‘molecular’ concern, with self-management by newly responsibilised individuals and small groups (an ‘ethopolitics’) the emerging norm. Alone, and together with Rabinow (2006), he argued that the encompassing constructs of race and nationalism hold a diminishing currency over biopolitical affairs.

This was disputed first by Braun (2007), who held that Rose’s version of biopolitics was incomplete, despite its validity in specific circumstances. Braun argued that his thesis failed to acknowledge the emergence of neo-colonial dividing practices at the global scale, overlooking the continuing importance of geopolitics (also see Hannah, 2011, pp. 6-8). Raman and Tutton (2009, p. 12), concurred, noting that,

…while we accept the “great biopolitical strategy” of coercive eugenics is no longer a part of state intervention, there are still normalized and more mundane population-based interventions, led or coordinated by governments, that represent important aspects of what we might call “state biopolitics”.

Macey, though not engaging directly with Rose, was similarly circumspect about the decline of racial or race-based modes of biopower. He noted that the idea of a ‘social body’ or ‘body politic’ that can be infected by aliens retains considerable weight (also see Schlosser, 2007). He cited, as illustration, the 2005 social disturbances in disaffected suburban estates around France. Nicholas Sarkozy – the then Minister of the Interior – described the young rioters, many of whom were immigrants, as ‘scum,’ suggesting that they should be flushed away using power hoses. Unwittingly, he called upon traditional racial and ethnic stereotypes, notably of an ‘unhealthy’ social body that had become ‘diseased’ and which required ‘disinfection.’ In Chapter Three, I show how metaphors of impurity and filth are also familiar tools for constructing introduced species. Such discourses, wrote Macey (2009, p. 201), ‘are all concerned,
haunted even, by the phantasy of a pure body, be it the individual body or the body politic itself.’ He argued that notions of purity, grounded in conceptions of race and national identity, continue to be central to the construction of the ‘insiders’ and ‘outsiders’ that define the ‘good’ and ‘bad’ circulations of which biosecurity is tasked with facilitating. As I argue in Chapter Three, despite the suggested wholesale ‘molecularisation’ of Rose, the process of rapid world globalisation and attendant homogenisations may only heighten such concerns.

2.4.3 Truth discourses and states of emergency

Surveillance and enforcement of good and bad circulations, and which is which, is often legitimised by recourse to the truth discourses of scientific expertise (Dillon, 2007a). Science provides the ‘technical and analytical tools necessary for liberal government to rationalise intervention, and the construction of multiple agencies and experts to mitigate...risks to society’ (K. J. Hart, 2011, pp. 46-47). Scientists also define the appropriate language dissenters will have to appropriate if they wish to enter the realm of ‘legitimate’ discourse. Voices that are not trained in current environmental ‘best practice’ are excluded. Thus, to be ‘allowed to put in a word about the forest one ought to be an agricultural engineer in forestry studies and preferably graduated at Ghent University’ too’ (quoted in Winkel, 2012, p. 89). Knowledge of ‘appropriate’ biosecurity interventions are determined by the complicated probabilistic rationales of ‘environmental impact assessments’ informed by ‘benchmarking,’ or in supposedly apolitical cost-benefit analyses (K. J. Hart, 2011, ch. 3). Decisions appear to be informed by complex, objective analyses whose conclusions are beyond debate or contestation (Rose, 2001). Writers such as Braun (2000) and Demeritt (2001) have shown the ways in which nature has been divided up and systematically (de)valued using such scientific knowledges. Statistics, for example, ‘allowed forests to be re-imagined as places that could be named, counted and measured so that they could be assessed based on their utility to the empire’ (K. J. Hart, 2011, p. 35). Alternative forest discourses that do not incorporate scientific rationalities are excluded because they do not inform governance of how to best exploit the ‘natural resource.’

Aside from facilitating what Negri (1991) – and many other biopolitical scholars – see as ‘primitive accumulation,’ the aim of these truth discourses is to identify emergent threats to the population and,

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2 Ghent University is a highly-ranked public university located in Ghent, Belgium.
once informed, to manage the pattern of disease (Hinchliffe & Bingham, 2008). Often, however, this screening process fails, a disease infiltrates the system, and the discourse shifts from monitoring the processes of ‘emergence’ to managing an ‘emergency.’ According to Agamben (2005), emergencies are defined by a ‘state of exception’ wherein a state’s usual rule of law is suspended for a time in the name of self-defence or national security. During this time, ‘extraordinary’ and ‘exceptional’ measures, such as martial law, or the suspension of normal democratic procedures such as deliberation, consultation and consent, are legitimised (Anderson & Adey, 2012; Lundborg & Vaughan-Williams, 2011; Timms, 2011). For example the global ‘war on terror’ was used to justify the Guantanamo Bay detention camp where prisoners were often held without trial (M. Smith, 2009). Under conditions of ‘emergency’ individuals are reduced to bare life (Agamben, 1998). Stripped, that is, of their political and ethical possibilities; their individuality subsumed into a discourse of transferable genetic information (M. Smith, 2009). Individuals, at this time, are reduced to mere ‘potential risks’ to the security of property, capitalism, morality, or ecology. These discourses of emergency have progressively become a taken-for-granted part of the political administration of capitalist societies, being employed to define a seemingly limitless range of events and processes,’ including famine, health, poverty, flooding, and austerity measures, among many others (Anderson & Adey, 2012, p. 25). For nonhuman animals, these discourses often go beyond the suppression of liberties to the removal of life itself.

Discourses of ‘environmental crisis’ invoke one familiar manifestation of this emergency frame. Proposing that the environment is in a state of emergency or crisis effectively legitimises the use of measures not considered appropriate during ‘normal’ conditions. These include the use of vast technological and military ‘fixes’ and the justification of state violence to enact them (M. Smith, 2009). For example, in New Zealand the widespread use of the poison ‘1080’ (sodium fluoroacetate) to kill certain introduced species is justified by scientists who warn that if such actions are not taken ‘our forests [will] die’ (J. Wright, 2011, pp. 5, 7). Concepts of ‘sustainability,’ and even ‘resilience,’ which assume that a certain condition or process can and should be maintained, are constantly threatened by the dynamism and unpredictability of life (D. J. Davidson, 2010). Indeed, under such conceptions, ‘crisis’ seems to be ever present. Integral to discourses of emergency is the notion, then, that these crises are only of a temporary nature. The end is expected to follow logically from the application of appropriate interventions. However, frequently the
extraordinary measures imposed actually come to constitute a new norm. Hence the use of ‘1080’ to control introduced species continues in New Zealand, despite having been employed since the 1950s. Continuing opposition remains suppressed because ‘we do not have the luxury of time’ (J. Wright, 2011, p. 20). ‘Emergency,’ suggests that unpleasant ways and means may need to be used in the short-term to control a disturbance to the norm, but that these will assuredly be discontinued in the foreseeable future as control is regained over the unusual conditions. However, again, in many situations there appears no end to the suppression of liberties and the employment of otherwise disagreeable means. Smith (2009, p. 107), therefore, quoted Walter Benjamin, who remarked that the ‘tradition of the oppressed teaches us that the ‘state of emergency’ in which we live is not the exception but the rule.’

2.4.4 The necessity of war and death

Although biopolitical regimes may employ a rhetoric of peace, states of emergency consistently facilitate violent approaches to governance. Whilst emphasising the protection of the ‘innocent,’ biosecurity actively eliminates the ‘guilty’ and the ‘inferior.’ At its limit, ‘security becomes war and life is killed to protect valued lives’ (Anderson, 2011, p. 34). In fact, rather than simply monitoring and waiting for an emergency to develop, increasingly nascent threats are countered in anticipation. In the United Kingdom and United States, for example, counterterrorism and counterinsurgency policies emphasise the use of ‘anticipatory action’ to secure the safety of ‘the environment.’ Biosecurity thus often works against both ‘emergence’ and ‘emergency.’ Anderson (2011, pp. 34, 40) wrote that this may herald a ‘new normal’ of ‘perpetual peace-war’ in which potential threats are located and eliminated before they can develop into emergencies. Rather than eliminating war, therefore, a new kind of war is simply created; what many have described as a ‘global civil war’ (Duffield, 2008; B. Evans, 2010). Humanity is encouraged therein to ‘do what is necessary out of global species necessity,’ a framing that avoids consideration of those tasked with bearing the brunt of this biosecurity mantra (B. Evans, 2010, p. 430).

Discourses of war, like those of emergency, decrease the effectiveness of opposition. They encourage the notion that opponents are unpatriotic or even heretical. Moreover, war glorifies the engagement. As I argue in Chapter Seven, a ‘war’ on introduced deer in New Zealand is seen as more rhetorically compelling than a problematic framed as the slaughter of innocent ‘Bambis.’ There may be an
exhilaration and urgency to the feeling that there is ‘fighting on many fronts,’ and the notion of a continual threat may enhance loyalties to the state (B. Evans, 2010, p. 430). Moreover, because these wars are fought both intra- and extra-territorially, Braun (2007, p. 25) suggested that what ‘appears to us [in the ‘developed’ world] in terms of an ethics of ‘care of self’ might appear to others, particularly in the ‘developing’ world, as ‘another expression of empire.’ Indigenous peoples throughout the 20th century were vacated from their lands, for example, under the aegis of an environmental crisis that dictated that their homes be ‘preserved’ (Coombes et al., 2011). Barder and Debrux (2011, p. 784) argued that this

...legitimacy of empire is derived from the capacity of violent and bellicose agents to create order as a certain way of life, and to maintain this order through a constant confrontation and often destruction of monstrous and larger-than-life enemies.

They wrote that discourses of endless war encourage policies of brutality through the serialisation and celebration of battles, invasions, conquests and ‘horrific heroes.’ The legitimacy of the state is derived from its ability to continually identify emerging ‘diseases’ in the nation and its ability to employ militarism, and militant discourses, to ruthlessly expunge them (Thacker, 2005).

Biopolitical analyses highlight the many ways in which the murderous potential of the state is both legitimised and actualised (B. Evans, 2010). Stevenson (2012) credited Agamben for suggesting that state-sanctioned death and genocide may be ever-present, inhering in the logic of biopolitics, not merely in the logic of racial discrimination. The enhancement of certain lives does, as a matter of fact, require death (Biermann & Mansfield, 2014). Most animals, for instance, live only by consuming other living or not-long-dead beings, whether plant or animal. Much of life thus requires death. There is no alternative. Therefore, although death may be a biopolitical ‘object of taboo,’ it is inescapably necessary to most lives (Foucault, 2003 [1976], p. 246). Cupples (2012) reflected that biosecurity is not about expelling death per se, but about deciding which life is promoted and which is left to die. The task, then, is not so much to identify why death is considered necessary, but rather why this death, in particular, is considered necessary. This is something that is often overlooked. For Evans (2010, p. 426), it is unfortunate that,
Violence is only rendered problematic...when it is associated with some act of unmitigated geopolitical excess...[because] [p]recluding any critical evaluation of the contemporary forms of violence that take place within the remit of humanitarian discourses and practices, there is a categorical failure to address how necessary violence continues to be an essential feature of the liberal encounter.

The death of introduced ‘pests,’ for example, is just such a practise. It is often considered unquestionably ‘good’ simply because it supports other valued aspects of the environment. This acceptance of necessary deaths, however, may conceal other underlying processes. Dillon and Reid (2009), for instance, followed Negri (1991) in suggesting, as I have above, that valued lives are delineated largely on the basis of their economic value. Derrida’s (1991) ‘noncriminal putting to death’ and Haraway’s (2008) ‘making killable’ define some of the other ways that certain animals are made dispensable on the basis of their species (Collard, 2012). These can be supported and furthered by additional analyses that actively question why this death is supportable.

Taken together, this section demonstrates some of the key problematics raised in biopolitical discussions of biosecurity. They suggest that the criteria used to select ‘outsiders’ and other marginalised beings should be of central interest. They highlight that conceptions of closure or fixity employed using borders or other dividing mechanisms of biosecurity are ultimately illusory, and also challenge the spatial assumptions of biosecurity when based, for example, on national or racial identity (Hinchliffe et al., 2012). They also highlight the mechanisms through which resistance to exclusions are turned aside, such as through the totalising rhetorics of ‘emergency,’ ‘crisis’ and ‘war.’ In the next section I argue that, despite the ongoing ‘successes’ that can be credited to divisive forms of biopolitics, forms of resistance to these consequences continue to challenge their pre-eminence. Resisting the imperative to divide between valued and ‘unvalued’ lives, attempts at resistance offer the hope that new modes and interpretations of biopower can offer a more inclusive and universalist ethic for the treatment of life.

2.5 Resistance to the murderous inclinations of biopower

The corollary of policing bio(in)secure space is the necessary creation of the marginalised and disenfranchised individuals and groups that are tasked with enduring the negatives of the security
problematic. The creation of borders necessarily excludes some while it includes others, while categorisations – whether explicitly ‘racial’ or otherwise – also tend to promote hierarchies and favouritisms. As Evans (2010, p. 425) wrote:

Having established that the principal task set for biopolitical practitioners is to sort out and adjudicate between the species…inevitably writes into that very script those lives that are retarded, backward, degenerate, wasteful and ultimately dangerous to the social order.

The injustices perpetrated therein are the focus of much recent biopolitical scholarship (see Collard, 2012; Cupples, 2012; Shukin, 2011). ‘What we learn from this literature,’ wrote Anderson (2011, p. 28), ‘is that to protect, care for and sustain valued lives is to abandon, damage and destroy other lives.’ For Lemm (2010) it is a politics of totalitarianism that insists that the preservation or enhancement of one species must be achieved at the expense of the life of another species. Yet, this is regularly the case. Thus Egypt recently ordered the slaughter of the entire national population of pigs (Sus scrofa) – some 300,000 animals – to avert the spread of swine flu (Shukin, 2011).

As I will discuss below, resistance to such stark and violent outcomes has taken two forms. Firstly, a variety of different modes of active resistance to biopower have been suggested, both by Foucault and by others since. These indicate the potential for new ways of seeing that may resist the imperative to construct and persecute ‘others.’ Secondly, and more recently, the ‘dark’ reading of biopower presented above has been resisted itself, suggesting that a more optimistic interpretation of biopower could be warranted. Together, these conceptions of biopower offer hope that the apparent brutalising outcomes of biopower can be overcome or, failing that, the foundations of biopower can be reinterpreted to suggest a more optimistic forecast for global biopolitical governance. In both cases, these readings may provide theoretical avenues for the reconciliation of introduced species which I will explore further in subsequent chapters.

2.5.1 **Modes of resistance**

For Foucault (2003, 2007), processes of resistance were always integral to the operation of biopower. He felt that the tendencies and forces that maintain the system of rule are also those that weaken and
challenge it. Revel (2009) related, therefore, how Foucault progressively came to see biopower as a space for contestation and ‘counter-conduct,’ and as a space to recognise life’s own capacity for creative ‘becoming’ (Deleuze & Guattari, 2004 [1984]). He saw that there is a continuous dialectic between power and resistance to power, recognising that both disciplinary and biopolitical strategies are vulnerable to challenge (Foucault, 2008 [1979]); the former, because there is no guarantee that individuals will understand and act upon themselves as ‘economic enterprises,’ and the latter, because there is no guarantee that a population can or will do as instructed (Foucault, 2007 [1978]). Nonhuman animals, for example, are capable of resisting the designations imposed on them. Because they constitutionally refuse to internalise human directions, they are active sites of resistance to the normalising will of biopower (Youatt, 2008). As Youatt suggested:

…they routinely confound predictability, within their own kinds of subjectivities. They respond to ecological change by unexpectedly shifting migration patterns and locations. They expand in unanticipated ways into ecological niches that humans open directly and indirectly. Some species mutate at evolutionary speeds that far exceed those of humans. They sometimes form new relations with other species to the detriment of humans. They remake ecosystems into new stabilities and undermine others (Ibid., p. 402).

No matter how much humans may wish to gain control over their ‘milieu,’ life forever evades total subservience. This supports Foucault’s (1979) notion that power is relational in character, not something that can be wholly possessed (Coppin, 2003). Ongoing resistance is therefore coterminous with biopolitical governance. Despite their insistence that society would likely be subsumed under capital, this was also understood by Hardt and Negri (2004). They maintained a revolutionary hope that the complete commodification of life could be counteracted. With this in mind, they introduced the concept of the ‘multitude’ to describe a ‘global countervailing force that signifies the possibility of liberation from domination and the prospect of new forms of life and work’ (Lemke, 2011, p. 72). This multitude was both a transformative force and a form of association that united different kinds of social resistance and evaded the stark racial distinction of peoples, nations, or class structures.
Lundborg and Vaughan-Williams (2011, p. 381) argued that, despite attempts to control and regulate circulations of ‘good’ and ‘bad’ life, power over the movement of life is ultimately illusory. They therefore suggested that Deleuze and Guattari’s (1987 [1980]) conception of ‘molar’ and ‘molecular’ categories may be a useful lens through which to view the expression of resistance³. Molar conceptions offer fixed, rigid compositions and separate segments that are able to be calculated and controlled: ‘[e]ach segment is assumed to have a function and follow a certain, repeatable pattern’ (Lundborg & Vaughan-Williams, 2011, p. 377). The molecular, in contrast, highlights an open mode of composition with ‘fluctuating boundaries and uncertain identities’ (Ibid.). Segments do not fit together predictably and are apt to fall apart and reconfigure anew. This molecular conception introduces an endless ‘becoming’ to life. The emphasis shifts to open sets of relations and unpredictability. Life cannot be calculated and controlled according to predefined systems or structures. It constantly eludes fixed descriptions and is forever in the process of transformation, or becoming something new.

Rather than viewing the processes of ‘emergence’ as threats to be countered they might instead be viewed as potentially fruitful adaptations to changing circumstances. As Dillon (2007a, p. 9) suggested, ‘to survive is to change, not simple quantitative change, but qualitative change in the very nature of the living thing itself.’ Baldwin (2012) noted that the ecological literature abounds with examples of ecosystems characterised by process rather than by stasis (see Chapter 3). As one example, he noted the transient nature of the boreal forest of northern North America. It has obtained iconic status as a carbon repository and yet it serves only as a ‘provisional stability,’ composed largely of a small number of tree species that have migrated to their current extents within the last few thousand years. The essence of this ecosystem is defined not by the species that inhere within it (i.e. its ‘molar’ composition), but by its emergent quality (i.e. its ‘molecular’ composition): ‘its capacity to pass out of phase with itself⁴’ (Ibid., p. 5). In Chapter Eight, I argue that the evolution of many introduced species in New Zealand is consistently ignored because it has been influenced by humans. The framing of an ‘extinction crisis’ amongst ‘genuinely’ evolved species means that the adaptive changes and emergent properties of introduced species are

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³ In discussing biopower, Rose (2001) used a similar molar-molecular frame (see Section 2.4.2). Note the different sense to which it is used here.

⁴ Here, Baldwin paraphrases Dillon and Lobo-Guerrero (2008).
trivialised. I note that some resistance to the trivialization of contemporary evolution might be effected by highlighting the extent to which puristic notions of ‘pre-human’ ecosystems and species are becoming progressively untenable.

Another potential mode of resistance may be to recognise that nonhuman animals are often an extension or embodiment of human concerns and human networks (see Biermann & Mansfield, 2014; Herda-Rapp & Goedeke, 2005). Constructions of animals, including anthropomorphisms of socially relevant characteristics, frame how environments should be seen and what aspects are important (H. Buller, 2008). They are tied into unwitting ‘alliances’ with human groups and are thus ‘collaborators and companions’ in the ongoing process of environmental change (Yusoff, 2010, p. 76). Holloway and Morris (2012, p. 66) used the construction of heterogeneous ‘biosocial collectivities’ as an expression of resistance in the case of livestock breeding. They saw livestock breeding as a process of co-production between humans and nonhumans (see also Coppin, 2003; van Dooren, 2008). Building on Rose (2007), they discounted the more passive sense to which populations are often understood, siding instead with the view that these heterogeneous co-productions are activist in nature. They argued that livestock breeders work on themselves,

...simultaneously with their work on their animals, aligning both with the sense of ‘enterprise’ that Foucault identifies as a central discourse of (human) subjectification. Genetic knowledge-practices imply investment and intervention in both the human and nonhuman members of such collectivities, inscribing discourses and practices of improvement and genetic ‘truth’ onto breeders and livestock animals alike.

In a previous paper with others (L. Holloway et al., 2009, p. 405, emphasis in original), they elaborated further on the sense to which these hybrid collectivities work in tandem:

While arguing that nonhuman animals can experience the same processes of reflexive, self-disciplinary subjectification that humans do is problematic, if the hybridity of collectivities such as breed societies is accepted, then we can move towards developing understandings of a decentred, or distributed subjectivity, in which disciplinary and subjectification processes act on livestock breeders and livestock animals together.
In this thesis, I take up their interpretation of heterogeneous biosocial collectivities as a further means of exploring contestation (see Chapters 4 and 8). Collectivities are not obvious and inevitable and are always subject to change. In fact, the same animals can be subsumed into different, competing collectivities. For example, French wolves (Canis lupus lupus) are insulated by collectivities in which they are paired with environmentalists that portray them as valued contributors to ‘biodiversity.’ Nevertheless, they are also constructed by competing collectivities, paired with hunters and farmers, that construct them as threats to ‘biosecurity’ (H. Buller, 2008, p. 1590). Human members, in both instances, ‘enrol animal members with particular implications for their bodies and ‘life” (L. Holloway & Morris, 2012, p. 66). But while collectivities may enrol species into their frame of biopower, nonhuman agents are not passive recipients of those conceptualisations and are forever capable of ambivalence, struggle and counter-conduct (Youatt, 2008).

### 2.5.2 Affirmative biopolitics

In place of the ‘dark’ conception of biopolitics epitomised by Agamben, several authors have recently presented a more ‘optimistic’ interpretation of the foundations of biopower. Foremost among these has been Roberto Esposito. In his book, *Bios: Biopolitics and Philosophy* (2008 [2004]), Esposito argued that biopolitics is characterised by a paradigm of ‘immunity.’ Where Agamben saw the Nazi death camps as the ultimate realization of biopolitical rationality, Esposito felt that such excesses were not illustrative of the realization of biopolitical regimes, but rather a reflection only of the potentially self-destructive logic of immunity. In developing his case, Esposito, like many before him (see Sections 2.2.1 and 2.4.2), used an analogy of the human body to talk of the body politic. For the human body, he noted, immunization against illnesses and disease, whether voluntary or otherwise, is necessary to ensure its survival. The body must accept small incursions of unwanted bacteria or viruses, and their destruction, if it is to develop its immunity to subsequent and larger threats. Immunity, therefore, is necessary to the preservation of life. It is only ‘when driven beyond a certain [unspecified] threshold’ that life is forced ‘into a sort of cage where not only our freedom gets lost but also the very meaning of our existence’ (Esposito, 2013, p. 84). Foucault’s (2003 [1976]) ‘death function,’ in other words, protects the body but it also impedes its development. Immunisation is neither good nor bad, it is merely necessary for survival, within limits.
In place of the self-destructive logic of immunity embodied in oppressive manifestations of biosecurity, Esposito presented a concept of 'community.' While immunity 'tends to shut our existence up into non-communicating circles or enclosures' community provides a passage that 'cuts through their boundary lines and mixes up the human experience, freeing it from its obsession with security' (Esposito, 2013, p. 85). This new concept recognises the openness and dynamism of bodies – whether human or political – offering to incorporate 'otherness,' rather than consistently viewing it as a threat to be repelled (Lemke, 2011). 'Infections,' for instance, could be seen as a gift between species as, despite causing illness in the short-term, they sometimes also ensure long-term immunity and protection. As Greenhough (2012, p. 293) suggested of human viruses, 'it seems the more humans and viruses are exposed to each other, the less virulent those relations become.' This understanding opens the door to a 'euphoric' interpretation of biopolitics that resists the imperative to divide between valued lives and threats to valued lives (Esposito, 2013). Instead, 'techniques and sensibilities are experimented with in order to cultivate 'turning points' through which new potentialities for life and living may be witnessed, invented and acted on' (Anderson, 2011, p. 29). 'Community' thus supports an 'affirmative biopolitics' that promotes a politics of life rather than a politics over life (Esposito in Lemm, 2010, p. 75). Whilst acknowledging that there has been little evidence of this ostensibly foundational mode of biopolitics during the 20th century, Esposito ventured that this did not invalidate a reappearance (Esposito, 2013).

Ojakangas (2005a, 2005b) concurred with Esposito, arguing that the foundations of biopolitics were not in violence, but rather in love and care for individual life. Biopower 'exerts a positive influence on life, [and] endeavours to administer, optimize, and multiply it' (Foucault in Ojakangas, 2005b, p. 6). He explained why he believed the 20th century had been characterised by war and murder and not the love that rests at the foundation of biopolitics. It was because, as Foucault had theorised, a 'demonic combination' had been at work, merging biopolitical states with earlier sovereign state rationalities (Ojakangas, 2005b, p. 21). According to Ojakangas (2005a), while the former are characterised by love, the latter are characterised by violence. Although he did not deny that racist discrimination is integral to biopower, he argued that it requires a sovereign logic to enact killing in the name of race. It was, thus, only through the combination of biopolitical and sovereign governmentality that state-sanctioned murder became a feature
of the 20th century. For that reason, Ojakangas insisted that Agamben’s example of the concentration camp as the ‘fruition’ of biopolitical governance required correction. Indeed, he argued that,

[t]he bio-political paradigm of the West is not the concentration camp, but, rather the present-day welfare society and, instead of homo sacer, the paradigmatic figure of the bio-political society can be seen, for example, in the middle-class Swedish social-democrat (Ojakangas, 2005b, p. 27).

This ‘affirmative’ interpretation of biopolitics has since been adopted by others. Hannah (2011, p. 17), for instance, suggested that an affirmative biopolitics has a core in biophilia, mobilised as ‘a form of solidarity to help combat injustice and inequality, and to make the world a better place.’ It would be ‘global and universalist, extending in principle at least to all of living humanity, and perhaps to other living beings as well’ (Ibid.). These authors suggest, therefore, that it is not resistance to biopower that is required but rather resistance to various ‘corruptions’ of biopower.

Regardless of whether resistance should be directed at biopower, or other agencies or forms of governance, the reconciliation of species considered ‘bare life,’ or close to it, would require active interventions in the current states of understanding. The biopolitical literature provides some of the conceptual tools that may be needed to challenge this status quo. It should not be assumed, on the other hand, that an overhaul of the existing state is necessarily possible. Despite the optimistic contributions of Esposito and colleagues, he acknowledged that evidence for affirmative modes of governance during the 20th century, at least, were far outweighed by negative modes (see Esposito, 2013). Although this does not negate what Esposito considers a reappearance of affirmative modes, it may bode poorly all the same. Foucault (2008 [1979]), for his part, considered that resistance was always present as a concomitant of power. However, again, this does not indicate that power is fated to dramatically change polarities, or that the current execution of power will necessarily soften in any way. He merely said that the oppressed would resist; not that that would mean that their resistance would inevitably be rewarded. Like Esposito, he was merely hopeful. In Chapter Nine, I analyse similarly hopeful arguments and evidence of resistance towards negative frames directed at introduced species with the optimistic view
that introduced species might be able to be reconciled. These may furnish the conditions required to accept at least some introduced species.

2.6 Conclusion

This chapter has highlighted how theoretical insights from biopolitics, in concert with understandings from the general constructionist literature, can be productively used to interrogate considerations of ‘nature.’ Biopolitics focuses attention on the expression of power over life itself and its attendant consequences. Most importantly, it highlights the discursive means through which ‘exceptions’ within supposedly homogenous populations are delineated, and the ways those ‘abnormalities’ are legitimately dispensed with either by the state or those it empowers. A biopolitical analysis asks not why death is necessary, but why this death in particular is warranted. This is particularly important to the study of constructions such as introduced species wherein so many common understandings have become reified to the extent that they often go almost unquestioned. As I will argue throughout this thesis, an analysis of apparent exceptions – whether species, conditions, or states of governance – regularly highlights inconsistencies, hypocrisies and injustices that would not be gleaned by focusing on the average or the norm.

As I will argue in Chapter Three, introduced species often fulfil the role of the exceptions in society. They do not fit with the ancestral purity of native species and their supposed natural places and roles, and they contradict narratives of national identity. The presence of introduced species also conflicts with the profitable exploitation of native species as tourist commodities. Understandings of an environmental ‘crisis’ have facilitated the need to eliminate these species for the good of the whole. As I argued above, an analysis of introduced species grounded in Foucaultian biopolitics asks questions that might not be asked by others. My analysis will focus, therefore, on how and why introduced species are constructed as ‘exceptions;’ how frames of ‘crisis’ or ‘emergency’ rationalise widespread killings; how scientific knowledge is employed and interpreted in relation to exceptions; how introduced species are believed to pollute impure states; how ‘guilt’ of such wrongdoing is ascribed to them; and who gains, not only from their absence, but from their deaths.
Chapter Three: The Social Construction of Introduced Species

3.1 Introduction

In Chapter Two, I highlighted how theoretical insights from biopolitics, when taken in concert with understandings from the general constructionist literature, are helpful for interrogating understandings of nature. I showed that a focus on ‘exceptions’ is a useful way of directing attention to the potential injustices of biopolitical regimes. In this chapter, I draw upon this framework to show how introduced species have increasingly been cast as the exceptions to common understandings of legitimate wildlife. I argue that although introduced species have been routinely erased from considerations of worth, the ways that this has been achieved and the ends it serves are often contentious and disputable. In Section 3.2, I begin by highlighting the ways that nature has been defined by social constructionists. These show that nature is not a fixed, universal entity, but rather one that is malleable and dynamic. They also show that the way nature is defined often serves some groups over others. Nature is often employed as a form of rhetoric to promote certain ideas and beliefs about the world and these require constant revision to ensure that certain ways of seeing do not become reified.

In Section 3.2.1, I show how environmental discourses over the last few centuries have shifted from promoting a generally negative presentation of nature to one that is mostly positive. Importantly, this has been reflected in revised attitudes toward introduced species which have moved from worthwhile and valuable components of the biota to the status of ‘foreigners’ and ‘outsiders’ that require removal. I show, in Section 3.2.2, that this shift from worthwhile life to ‘bare life’ has coincided with the nationalisation of nature, particularly from the 19th century onward. Over this period, native species have typically come to be associated with national identity, with introduced species outside of production environments relegated to weeds and pests. However, in Section 3.2.3 I show that understandings of a ‘pure’ national culture have been challenged by notions of hybridity and belonging that resist recourse to past states and nativity.
in isolation. New understandings suggest that the changes wrought by introduced species may be able to be reconciled within new notions of local identity.

In Section 3.3, I show how introduced species continue to be presented as threats. These ‘otherings’ perpetuate retrograde social discourses that imagine a pure body politic imperilled by insidious outside forces. I argue that the routine conflation between introduced species and immigrants, for example, is not only dangerous but wholly inaccurate. Acclimatisation brutally removed species from their native ranges, generally for the purposes of commercial exploitation. For that reason, it might more readily be compared with the history of slavery. The key discursive distinction between ‘slave’ and ‘immigrant’ is the move from ‘victim’ to ‘perpetrator.’ In Section 3.3.1, I argue that this is important because it furnishes people with the agency to invoke war frames in defence of what they see as theirs. These war frames are also inaccurate, if not ridiculous, but nevertheless persist because of their immense rhetorical power. Alongside others, I suggest that future discourses on introduced species should seek to abandon these frames in favour of alternatives that are more consistent with sustainable visions of biodiversity.

In Section 3.3.2, I argue that the death of introduced species has come to be subsumed into capitalist processes of production. Pest management has become a multi-billion dollar worldwide industry. I show that the costs of this industry do not necessarily equate with benefits and, more importantly, that the industry itself is now a major impediment to notions of reconciliation. Many livelihoods are tied to the removal of introduced species meaning that there are substantial interests vested in the industry’s perpetuation, regardless of its validity. In Section 3.3.3, I show how many natural scientists are similarly vested in ongoing assumptions about introduced species that predetermine the ways that research is framed. However, in recent years many of these assumptions have been proven false and now require revision. Scientists have promoted a biosecurity apparatus in relation to introduced species that has worked to remove not only threats to native biodiversity, but also emergent threats. This has reproduced ‘racial’ fears from within the social realm, unproductively discriminating against introduced species that are frequently no more likely to precipitate environmental harm than natives.
3.2 The construction of nature

In Chapter Two, I noted that the majority of biopolitical scholarship has been directed at the problematics of human populations, but that a rich vein of recent scholarship has begun to consider nonhuman populations through the same lens. This is understandable because biopolitical analyses centre on attempts to better understand how and why others have constructed certain roles for humans within their environment. Environmental discourses portray the considerable unease humans have with their overwhelming influence on the natural world, particularly the disadvantageous aspects of that influence. Concerns over the influence of human-introduced species replicate these same insecurities (Trudgill, 2001; Warren, 2011). As such, introduced species are ‘situated within broader deliberations about nature, naturalness and the ecological place of our own species in the ‘natural’ world’ (C. R. Warren, 2007, p. 438). These deliberations emphasise the need to understand what proper, rightful world they infringe upon. To understand constructions of the place or role of introduced species in the environment, therefore, it is important to first clarify the understanding of ‘nature’ itself. In this section, I undertake this through reference to four overarching themes that have emanated from the literature on the social construction of nature.

Firstly, social constructionists hold that ‘nature’ is not a fixed, physical object, rather it is a construction that assumes different meanings within different cultural contexts (D. Harker & Bates, 2007). This is not to deny that the natural world consists of material entities (e.g. rocks, trees) or that nature is merely a figment of the imagination. Rather, it is to suggest that prevailing interpretations of nature are the product of social interactions formed within a particular cultural milieu (Goedeke & Herda-Rapp, 2005). Nature takes on different meanings in society according to the way it is represented in social discourses. As Capek (2005, p. 199) wrote, ‘human beings constantly engage in the task of symbolically constructing nature as meaningful in particular ways.’ Nature embodies the various understandings and connotations groups ascribe to the environment to try to make sense of things and assign them to useful and meaningful categories. The social construction of nature is thus ‘intersubjective, reflexive and normative’ (D. Harker & Bates, 2007, p. 331). What is natural, what is not natural, and how people should act and
think about nature are reflections of the way nature is constructed by society. In this way, nature is not simply something ‘out there,’ removed from culture, but embedded within culture (Midgley, 2007).

That nature *is* socially constructed is indeed generally accepted, even to the point that it is seen as a truism (Newton, 2007). What is more controversial is the suggestion that understandings of nature informed by science are also socially constructed. Scientific disciplines such as ecology, conservation biology and invasion biology are often presented as applied sciences bracketed off from cultural concerns. They are commonly referred to as objective, impartial fields, seemingly divorced from value judgements (Newton et al., 2011). Midgley (2007), however, showed that this perception is illusory as scientific knowledge is contingent on understandings of nature that are grounded in cultural and social assumptions about the place of humans in the natural world (see Chapter 4). As scientists present arguments for privileging some aspects of the environment over others, they construct their own versions of an appropriate nature. Seemingly objective positions on matters such as ‘ecosystems’ and ‘biodiversity’ are instead wedded to value judgements grounded in ideals of natural beauty, purity and the desirability of ecological change (see Sheil & Meijaard, 2010; Smout, 2011; C. R. Warren, 2011). As scientists Sheil and Meijarrd (2010, p. 566) admitted in an issue of *Biotropica*, ‘we suspect that most of us have a tendency to develop our pet ideas based on emotions and intuition and then use science for support’ (*Ibid.*). Constructions of nature, therefore, are culturally negotiated both within and outside of scientific discourses.

A third overarching point to emphasise with regards to the construction of nature is its inherent dynamism. Nature is not static. Rather, understandings shift through time and space (Schlaepfer et al., 2011). A broad western historiography of the term is plotted in Sutton (2004, p. 19), beginning in the 13th century when nature was seen as ‘the essential quality or character of something’ (*Ibid.*). From the 14th century understandings were broadened to include nature as ‘the inherent force which directs either the world or human beings or both’ (*Ibid.*). Sutton delineated a key change in the 17th century when nature began to be associated with ‘the material world itself, taken as either including or not including human beings’ (*Ibid.* p. 20). Where it was once seen as a process, it could now also be seen as a ‘thing-like entity,’ able to be managed and protected like other physical objects (*Ibid.*). This change, it is argued, was a contributory
factor in the development of environmentalism with its emphasis on the delineation and preservation of ‘valuable things’ *(Ibid.)*. Goedeke and Herda-Rapp (2005) elaborated on this, arguing that new conceptions of nature attached to the scientific revolution cast off more organic, pagan understandings of nature in favour of mechanical understandings that set nature apart from civilisation. As Hardt and Negri (2000) argued, this meant that nature could be moved from something external to the production process to something that might now represent merely a further accumulation frontier.

Lastly, it should be highlighted that the discursive construction of nature has significant consequences. Reflecting on the now dominant, positive construction of nature in Western societies (see Section 3.3), Hansen (2006, p. 813) wrote that ‘appeals to nature or to natural qualities are...powerful because they invoke genuine, eternal and non-negotiable qualities’ noting that, among these, ‘it is perhaps the ‘non-negotiable’ that is the most important in terms of exercising discursive or rhetorical power.’ There is a real sense to which calling something natural makes it right and that doing so negates arguments to the contrary. As Sutton (2004, p. 13) commented, ‘for many contemporary environmentalists ‘nature’ or ‘the natural’ has something of a sacred character and should be treated, like all sacred things, with reverence and respect.’ Far from uncommon, such views may even represent the majority view of nature. Nevertheless, it should be acknowledged that this now dominant view of nature does service to some actors and disservice to others (Scarce, 2005). Hytten (2009, pp. 18-19) wrote that:

> …particular attention must be paid to the ambiguities and inconsistencies within discourses in order to determine how particular definitions of nature may serve the interests of particular groups and disempower other groups, other species, or other aspects of the environment.

Indeed, the pursuit of nature conservation has been branded as elitist and ethnocentric (Coombes, Johnson, & Howitt, 2012; Larson, 2007a; Lowenthal, 2005). Conservation activities in both the United States and Britain, for example, are said to reflect the narrow set of concerns of the white, middle-class

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5 In truth, the ability of ‘wilderness’ to achieve this kind of transcendental awe has been in evidence since antiquity. More recently it was displayed in the works of 19th century romantic authors such as Henry David Thoreau (e.g. see Thoreau, 2004 [1854]).
membership of the main environmental organisations (Hannigan, 2006; Larson, 2005). Murray (2005), similarly, described how conservation in South Africa is frequently framed as a shared alliance against a common enemy, namely introduced species. However, in reality South Africa’s history of environmentalism has been dominated by a white ‘paternalist-conservatism’ in which successive apartheid governments ‘exerted a vested interest for the benefit of white South Africans’ (Ibid., p. 135). In fact, the perceived relationship between indigenous peoples and nature, both pre- and post-colonisation, is one of the primary vehicles through which they have been disenfranchised from their homes (Adams & Hutton, 2007; Rutherford, 2007). This literature of ‘nature-talk’ demonstrates both the fluidity of nature definitions and the sometimes undisclosed ends they serve (Head & Muir, 2006). In the following sections of this chapter, and in Chapter Four, I show repeatedly how these understanding are useful in interpreting prevailing discourses on introduced species.

### 3.2.1 Improving upon nature

In this section I show how discourses of nature over the last few centuries have moved from primarily negative conceptions to those that mostly emphasise nature’s desirability. Historically, nature has often been presented as a threat to the security of human life. However, as understandings of the limits of human modifications have been realised, the value and worth of non-human lives has been increasingly emphasised. As I argued in Chapter Two, management of nature has shifted from the desire to destroy, remove and tame, to the wish to enhance the circulation of the ‘good’ and retard that of the ‘bad.’ As I discuss in Chapter Five, it is disconcerting to reflect on how rapidly those polarities have reversed and the sense to which species, both native and introduced, continue to be judged primarily on the basis of their commercial usefulness and value as symbols of national identity. However, what has not changed is the apparent need to continually distinguish worthwhile forms of wildlife from those that are not, and to insist upon the removal of the latter as a matter of paramount importance. Environmental discourses continue to foster the notion that certain forms of life must die to ensure the prosperity of the ‘good’ and the ‘right.’

The dynamism of discourses of nature is no more clearly illustrated than in the dramatically changed European beliefs about introduced species over the last few centuries. Over that period, discourse has broadly shifted from a hatred of nature and favouritism toward introduced species, to a love of nature and
dislike of many introduced species. The notion that nature has not always been loved is sometimes
difficult to comprehend for those schooled in late 20th century environmentalism. However, the concept of
nature as a good thing, ‘would have seemed quite alien to most people in the eighteenth and most of the
nineteenth century’ (Sutton, 2004, p. 13). Yet, historical animosity towards nature is clearly demonstrated
in European folklore and mythology: ‘the deep, dark forest represented by the brothers Grimm was a
fearsome, dangerous place’ (Dunlap, Michelson, & Stalker, 2002, p. 6). ‘Unpleasantness happening in the
forest’ comprised a common theme of traditional folk stories (I. R. Hunter, 2001, p. 279). Strange and
terrifying creatures, such as wolves, played a central role in folk stories such as Little Red Riding Hood
and Peter and the Wolf (G. L. Burns, 2008; Hannigan, 2006). Until the late Victorian era (1837-1901)
nature was regularly constructed as ‘capricious, vengeful and ruthless’ (Jelinski, 2005, p. 276). It was
routinely presented as an obstacle to human survival and the progress of civilisation. To early European
colonists in America, and elsewhere, nature was the ‘enemy’ in need of ‘conquest’ (J. A. Goldstein, 2009,
p. 702). Planned agricultural settlements, drained swamps and felled forests meant ‘progress.’ Moreover,
the very visible benefits of human modifications to nature, such as in agriculture and engineering, led
people to celebrate human impacts and welcome further modifications (Lowenthal, 2005). The ‘hideous’
and ‘wasteful’ character of God’s creation was seen to be in need of perfection by humans (Ibid., p. 83).
Non-human forms of life were resources that should be dominated and used in whatever way their
masters saw fit.

One of the most important ways in which this ‘improvement’ was facilitated was through the importation
and release of species not currently present in particular human-occupied ranges. These introductions
have a long history and, in many ways, have been integral to the expansion and prosperity of human
civilisations throughout the world. Europe, in particular, rose to prominence partly as a consequence of
the exploitation of introduced species (Crosby, 1986; McNeill, 2003). However, it was only from around
the mid-19th century that Europeans began to export biota in significant numbers, many of which had
previously been imported from elsewhere (McNeill, 2003). The ‘acclimatisation’ movement began with the
formation of the Societie Zoologique d’Acclimatation de Paris in 1854 (Star, 1997). It was followed by the
formation of a British equivalent in 1860 (Walrond, 2012). Their stated objectives were to continue the
ongoing process of importing and fostering the success of novel biota in their respective countries.
However, their activities in this respect were relatively short-lived. Instead, their more notable ‘success’ came in motivating the creation of countless Acclimatisation Societies throughout the world, particularly in their colonies (Lien, 2005).

These colonial landscapes were seen as ‘open areas, ready to be filled with whatever the settler might fancy, from wherever it might be obtained’ (Lien, 2005, p. 663). Existing biota were generally given very little consideration, and native species were more often ‘feared and despised in equal measure’ (van Sittert, 2003, p. 114). For example, writing on the development of a botanical garden in colonial South Africa, van Sittert (2003, p. 115) noted that the director of the garden dared not plant any natives for fear that ‘the public would have taken alarm at once.’ He protested that the colonists ‘care nothing for the prehistoric flora of the land they live in, compared with the newest hideous abortion in [introduced] chrysanthemums’ (Ibid.). The objective, therefore, was not only to introduce species but to ‘displace’ the existing biota (see Chapter 5). This ‘displacement’ would require the acclimatisation of as many introduced species as possible and, in fact, the scale of such introductions in many countries was enormous (McNeill, 2003; Moles et al., 2012). For example, over the 19th century Australian Acclimatisation Societies promoted the introduction of hundreds of foreign plant and animal species (Hyttten, 2009; N. Smith, 2011). Colonial governments also encouraged acclimatisation. At its most extreme, the United States Department of Agriculture supported the introduction of over 100,000 plant species between 1898 and 1933 alone (Sagoff, 2005). These introductions were supported by local scientists who ‘stressed the contrariety of what they observed’ in the native biota, suggesting that it was ‘a world that needed to be righted’ (Borowy, 2011; N. Smith, 2011, pp. 7-8).

Despite widespread support for acclimatisation, however, not everyone was convinced by this enthusiasm for introduced species. Rather, dislike for exotic biota was evident from as early as the 17th century as illustrated in the work of the Dutch physician Jan van Beverwyck (see A. Cooper, 2003). According to van Beverwyck, and many European intellectuals of his day, the importation of new organisms was violating the basic order of nature. God, he argued, ‘would never have forced miserable mortals to fetch things from distant lands’ (in A. Cooper, 2003, p. 55). Native biota lived in a natural ‘sympathy’ with one another – a harmonious relationship that ‘spoke to a deeper sense of natural and divine order, in which living
beings, and indeed non-living objects as well, ‘fit’ their environments in a perfect match’ (*Ibid.*). Introduced species upset this balance (see Chapter 4). They were, at best, unnecessary, and at worst, harmful. With parallels to the modern era, Cooper related how many Europeans in the 17th century were aware of the greatly changed and changing times in which they lived. He argued that this awareness manifested itself in increasing attention to the origins of things. ‘Native’ and ‘exotic’ were presented as polar opposites, and intellectuals ‘rushed to take sides…on the relative virtues and demerits of each’ (*Ibid.*, p. 52). The emphasis of many works on natural history at the time was on enhancing the reputation of the native and thus preserving – in this rapidly changing world – ‘some sense of intellectual and moral balance’ (*Ibid.*, p. 59). These continued until well into the 18th century when Europeans began to incorporate introduced species into their everyday routines, at which point ‘memories and understandings of natural objects inexorably shifted’ back in favour of exotics (*Ibid.*).

Just as acclimatisation was reaching its peak in the 19th century a revised understanding of nature rapidly began to colonise prevailing discourse, directly reflecting evolving colonial attitudes to ‘wilderness’ (Callicott, 2003). In America, for example, the frontier was closing and life in the cities was often characterised by unpleasantness due to noise, pollution, and overcrowding (Hannigan, 2006). By comparison, the country lifestyle and remaining expanses of open space were refreshing and uncluttered. Nature was no longer a threatening entity to be conquered. Instead, it was a diminishing, valuable resource in need of preservation. Where it was once common and overpowering, it was now increasingly rare and sought after. It was an antidote to the stresses and problems of everyday life in the cities, a source of nostalgia for agrarian simplicity, and a romantic invocation of timeless beauty (Hannigan, 2006; Lowenthal, 2005). The negative effects of humanity on the natural world were also becoming more apparent. During the 18th century Europeans had occasionally remarked on the damaging effects of deforestation, damming, and other widespread human activities (Lowenthal, 2005). However, it was not until George Perkins Marsh published *Man and Nature* (1864) that these effects began to be widely recognised (Lowenthal, 2005). At this point ‘man the improver became man the destroyer’ (*Ibid.*, p. 83). Although human technologies remained valuable, constant stewardship was now required to prevent such developments from destroying the organic basis of civilisation. The emphasis, in other words, was changing from the necessity to overpower nature to the need to ensure its preservation.
These reversals in attitudes towards nature were also becoming manifest in revised attitudes towards introduced species. From the 1830s introduced species began to be routinely singled out from natives by taxonomists. As is still common, an asterisk would follow the names of all introduced species. Though originally intended only as a biogeographic indicator, it would soon mark out those species’ perceived inferiority (Smout, 2011). An 1832 report published in New York concluded that many of the worst weeds in the region were the result of human activities, being foreign in origin (M. Hall, 2003). Marsh (1864) also included an extended passage on the potential threat of introduced species (Simberloff, 2012). In 1867 an article by J.D. Hooker helped to establish a growing antipathy toward the exotic. His Gardener’s Chronicle included a passage deploiring the introduction of European species to St Helena, contending that it would disturb the ‘evidence of evolutionary processes’ contained within the island’s native biota (in Chew, 2011, p. 147). Indeed, the late 19th century witnessed an explosion in native-loving and introduced-loathing. In South Africa, earlier affections for introduced species were now treated with misgivings. The ‘pernicious ‘booming’ of exotics was a source of regret (in van Sittert, 2003, p. 116). Previously dispensable, natives were now ‘better suited’ than exotics (Ibid.). While many native and introduced species were once considered pests, foreign species increasingly began to assume the bulk of this stigma.

Goldstein (2009) related how, in America, the early conservation movement provoked the first legal protections against introduced species. He wrote that while state codes had long included weed laws, weeds had not previously been identified as foreign per se. The everyday meaning of ‘weed’ was, of course, entirely subjective, defining ‘any plant that grows where it is not wanted’ (Ibid., p. 713). Weeds were nuisances, sure enough, but they were also seen as an accepted part of gardening or agriculture. However, Goldstein noted that by the end of the 19th century weeds began to be identified as foreign. They were, in other words, both troublesome and not from around here (also see Smout, 2003). As such, they were a problem that should – by the assumed natural order of things – not exist. In the next section I show how this division on the grounds of ancestral provenance created the intellectual and moral weight necessary to present introduced species as a threat to the nation state and therefore as a kind of ‘bare life’ to be unproblematically eliminated.
3.2.2 The nationalisation of nature

Wonders (2003) showed how the construction of European ethnic identities and the ‘musealization’ of folk culture in the 19th century served as an important basis for nation building and how this was then effectively mirrored in the presentation of national biotas. The development of the Swedish biological museum, for instance, included dioramas showing where each of the species of a particular region ‘fit.’ These taught the public which species belonged and which did not. Therein, ‘the notion of nativeness…was given more than just biological meaning; native meant that the animal or bird was part of a national identity’ (Ibid., p. 92). They were not simply the local biota, they were ‘ours,’ both representing and embodying national identities. As one of the creators of the first Swedish biological museum wrote: ‘Few countries have a richer and more beautiful nature than our own. Knowledge of this nature heightens patriotic love, one of the most noblest of all feelings’ (in Ibid., p. 95). Further connections between nativity and nationalism are explored in Chapters Five and Seven. The crucial point here is that nationalism provided the vehicle through which valued and valueless lives could be segregated. It created the exploitable divisions between ‘what must live and what must die’ and backed them up by providing the steps necessary to achieve the ancestral idealised society (Foucault, 2003 [1976], p. 254). In this section I argue that since the 19th century native species have consistently been presented as the primary wild biotic representatives of national identity in many countries. Nevertheless, in recent years a variety of literature has demonstrated that this stark, polarising presentation is no longer supportable. I show, in the section that follows, how the construction of native species as ‘insiders’ and introduced species as ‘outsiders’ has come into question, encouraging the search for fresh perspectives that more accurately consider the basis and purpose of national identities.

Acclimatisation itself had long been rooted in a desire to enhance the nation (Borowy, 2011; Carruthers et al., 2011). In this respect, European colonists had originally identified more with introduced species than native ones. They tended to view native species as they did indigenous people; that is, essentially as inferior. European introductions, being superior, would ‘displace’ natives and forge a new stronger civilisation in the ‘New Europes’ (see Chapter 5). However, within a generation settlers began to seek autonomy from ‘Old Europe,’ increasingly associating themselves with nativity in their new lands.
European colonists were now natives too. Having usurped the ‘original natives,’ colonists were taking up the mantle of the ‘new, true natives’ (Subramaniam, 2001, p. 34). For colonial-born Europeans, native species were no longer seen to be destined for displacement, instead becoming ‘strong, large and vital’ (J. A. Goldstein, 2009, p. 710). Hall (2003), for instance, related the case of the American Thomas Jefferson debating the Frenchman Comte de Buffon on the supposed superiority of each nation’s native biota in the late 18th century. For Jefferson, America’s native biota was ‘his’ biota and, as such, a source of both national pride and defence. Indeed, the early preservation movement made strong appeals to patriotism such that, by the end of the 19th century, ‘many Americans had come to believe that the source of the American national character was the American natural world’ (J. A. Goldstein, 2009, p. 712). They feared, consequently, that ‘the destruction of nature would destroy the American character’ (Ibid.).

These feelings were further accentuated in the 20th century as the concept of the nation became ever more prominent. The concurrent expansion of many scientific disciplines concerned with the geographical relationships and sometime fidelity of biota (e.g. biogeography) also fed notions of national belonging (Head & Muir, 2004). In Australia, Smith (2011, p. 7) believed that:

…for many conservationists (and people who would not think of themselves as such), getting rid of feral biota (and reintroducing native ones) is a way of making the country and themselves more Australian.

He wrote that ‘in contemporary Australia this equates with becoming more indigenous’ (Ibid.). The notion that recent human colonists could consider themselves in any way ‘indigenous’ is highly contested and frequently goes unexamined (Head & Muir, 2004; Helmreich, 2005; Warren, 2007). Despite this, numerous authors have argued that the rise of nativism through the 20th century was both concurrent and intimately related to the popularity and perpetuation of nationalism, a phenomenon sometimes known as the ‘nationalisation of nature’ (Carruthers et al., 2011; J. A. Goldstein, 2009, p. 689; Smout, 2011). Indeed, Garcia-Quijano and Carlo-Joglar (2010) found that a significant source of variation in the local framing of introduced species could be directly correlated to the extent to which the local community displayed a sense of national pride. Groups that were more nationalistic tended to be less inclined to view introduced species favourably. This is because introduced species are often constructed as ‘outsiders’ or
‘others’ that compromise national identity and unity (Eskridge & Alderman, 2010, p. 111). Again, the fact that humans are as much ecological ‘outsiders’ as the species they have introduced goes frequently disregarded in conservation discourses. Instead, humans and native species are packaged together as rightful inhabitants in opposition to the supposed corrupting outside forces of species humans have themselves introduced. This presentation conveniently redirects the frustrations of environmental degradation from the perpetrators (i.e. humans) to species with similarly doubtful claims to nativity (i.e. introduced species) and which are, further, powerless to defend themselves.

Writing in the journal Austral Ecology, Brown and Sax (2004, p. 530) naturalised these ‘othering’ activities by writing that, ‘there seems to be something deep in our biological nature, related to xenophobia toward other humans that colours our view’ of them. They felt that ‘there is a tendency to treat foreigners...with distrust, dislike even loathing’ (Ibid.). The arrival of the new, whether of humans or other organisms, tends to ‘evoke strong emotional responses, even from normally objective scientists’ (J. H. Brown & Sax, 2007, p. 17). Davis (2009, p. 164) argued that this tendency to aversely characterise perceived outsiders is universal in the human species. He noted how humans ‘seem to seek every opportunity to identify with a homeland, a home tribe, a home religion, a home team, and to declare someone else the opposition or enemy’ (Ibid.). Davis suggested that this belonging is also regularly extended to local wildlife, citing as an example, the way that most states, countries and provinces adopt native species as emblems (also see Carruthers et al., 2011). Even whole landscapes, such as prairies or particular mountain ranges, can assume national identities. According to Davis, any novel entities that contradict conceptions of the ‘home team’ can thus assume dubious moral undertones. If introduced species, for instance, do not conform to the stereotypical qualities of the local landscape they can soon be cast as threats. Subramaniam (2001), therefore, argued that the ‘battle’ against introduced species is merely ‘a symptom of a campaign that misplaces and displaces anxieties about economic, social, political, and cultural changes onto outsiders and foreigners’ (Ibid., p. 34). As I discuss in Section 3.6, humans concede their ‘guilt’ in promoting introductions in the first instance. However, the solutions proposed to alleviate that guilt (e.g. pest control) do not affect humans directly. Instead, the consequences are directed at introduced species that are as blameless and undeserving of retribution as native species (A. Potts, 2009).
Subramaniam (2001) believed that the fear of outsiders is intimately related to the process of globalisation. With the increased permeability of national borders and the growing homogeneity of certain aspects of popular culture, there is an enhanced awareness of precisely that which remains unique to a place. In addition, the speed of change facilitated by globalisation promotes insecurity and unease with regards to the permanence of contemporary inhabitants, and their practices and beliefs (Theodoropoulos, 2003). A common concern of globalisation is that it will displace ‘authentic’ local cultures and ultimately precipitate mass homogenisation of the planet (McKinney, 2008). Local cultures will be swamped by polluting outside influences that dilute, diminish and destroy their natural harmonies. Rootless ‘cosmopolitans’ will destroy regionally unique landscapes (J. A. Goldstein, 2009).

These fears are not limited to the social realm. Rather, fears of biotic homogenisation are as acute as social ones. These are ‘captured in such colourful descriptions of our future planet as: the geography of nowhere, planet of weeds, the new Pangaea and the Homogocene’ (McKinney, 2008, p. 1960). The finger of blame for this loss of local character is pointed directly at human introductions which are framed as a ‘matter out of place’ (Jerolmack, 2008, p. 73). As Blackburn et al. (2010, p. 227) wrote ‘introduced species are homogenizing the natural world, so that areas that have evolved or acquired distinctive faunas over thousands or millions of years are increasingly losing their unique identities.’ The balance of native species sustained through millennia is thus being disrupted and replaced with new ‘mongrel ecologies’ (Eskridge & Alderman, 2010; Hettinger, 2001a, p. 260). Goldstein (2009, pp. 722-723) argued that the threat posed by introduced species resonates particularly with many Europeans in former colonies because it,

…tells a familiar story. Before the arrival of Columbus, American natives – that is native plants and animals – lived in balance and harmony with surrounding species, as they had for millennia. Native species have ancient connections with American landscapes and are uniquely adapted to local conditions. Into the harmonious Eden, aliens arrived and upset the balance of nature. Most of the newly arrived plants and animals were benign, stayed in their own settlements, and caused no harm to the natives, but a few of the newcomers preyed on the natives took away their land, and displaced them from their long-established homes.
These invaders killed and eliminated many natives. They also brought diseases for which the natives had no resistance. Some of the surviving natives were assimilated by the aliens, while others were forced to live in separate enclaves. This narrative of colonisation, native displacement, and the establishment of a new national landscape dominated by immigrants and their naturalised descendants, has a familiar ring because, of course, it is the conventional history of the United States. The narrative of invasive species thus evokes the foundational American narrative.

Europeans living in former colonies scarcely need to be reminded of their often brutal histories of domination and aggression toward native peoples. Constructing themselves as the ‘new natives,’ therefore, sets up a potentially unsettling fate when faced with the prospect of successive waves of colonisation, whether human or otherwise. In many former colonies, Europeans have imposed a new, somewhat hastily-constructed national identity upon native peoples and biotas (see Chapter 5). In some respects this constitutes an attempt to ossify a new identity upon what is otherwise a rapidly evolving social and biological tableau. In the space of a few centuries, Europeans in North America, Australasia and other ‘New Worlds’ have moved themselves from invasive threats to natives. However, this movement was more social decision than ecological fact. As I explore in the next section, human attempts to reconcile themselves, but not others, may speak more to a wish to maintain and legitimise hegemony than to a desire to accept and incorporate change.

3.2.3 Understandings of hybridity

In spite of ongoing discourses of homogenisation and displacement, cultural understandings of hybridity over the last few decades have increasingly challenged the concept of a ‘pure’ social body that could or should be defended from globalising ‘outsiders’ (e.g. see Bhabha, 1994). In fact, the notion that local cultures are always victims of globalization presupposes a now dated version of indigeneity that assumes a kind of powerlessness in the face of change (Coombes, 2007). A growing literature instead suggests that neither colonists nor locals ‘win’ the encounter. Rather, both parties adapt to changed circumstances, with both original forms transformed. Furthermore, the notion of cultural purity as any kind of absolute has
been discarded due to the realisation that ‘heritage is everywhere mixed’ (Lowenthal, 2005, p. 88). Indeed, as Lowenthal suggested:

A cultural heritage derived from a single source is now less apt to be praised for purity than pitied for being impoverished: the hybrid, commingled, creolised medley of ancestral influences is most truly nourishing (Ibid.).

Moreover, the idea that ‘something is better because it belongs here’ has largely disappeared from social debates in recent years (Kendle & Rose, 2000, p. 29). In contrast, purist and nativist preferences have persisted and have even been encouraged within environmental circles (see Lowenthal, 2005; Peretti, 1998; C. R. Warren, 2007). Hettinger (2001a), for example, compared the effects of introduced species on biological diversity to the effects of global multinational corporations and technology on cultural diversity. He argued that:

…[the] logical end point of the massive, human-induced spread of exotics is that ecological assemblages in similar climatic and abiotic regions around the world will be composed of the same species. This biotic impoverishment is much like the impoverishment of cultural diversity resulting from economic globalization and the cosmopolitanization of humans. Keeping a dandelion (Taraxacum officinale) out of Yellowstone [National Park] is much like keeping Wal-Mart out of a small New England town or McDonalds out of India. Kudzu (Pueraria lobata) in the American South is like TV in Nepal, a threat to the diversity of the planet’s communities and ways of life (Ibid., p 260).

The problem with such an argument is that it assumes that local cultures and biotas are powerless in the face of change and will simply be displaced. Although globalisation is leading to the homogenisation of certain aspects of world culture, some of these changes are positive (e.g. tolerance of differences). Moreover, hyperbolic suggestions of impending ‘sameness’ are belied by an explosion of new cultural and sub-cultural identities and the now commonplace rejection of certain aspects of globalised culture, hence the rise of ‘alternative’ lifestyles. This resistance to homogenisation is mirrored in local biological diversities which have commonly increased as a result of globalisation (see Chapter 4). The notion that local ecologies in disparate regions of the world are in any way ‘the same’ typically relies on a superficial
understanding of the actual constituents of the biota (particularly invertebrates) or an overemphasis on cosmopolitan species such as certain macro fauna or trees. Trudgill (2008, p. 99) argued that conservation, ‘clings to unexamined locationally specific attachments which have arisen historically.’ He illustrated this point by considering the effects of environmental change in the United Kingdom. Some species move north and are lost from the south; others move south and are lost from the north. He explained that the result of this is a tendency, in any particular location, to both lament the losses and resent the new arrivals. Emotional attachments linked to specific locations dictate that, although species have a right to exist, ‘this is not just anywhere’ (Ibid.). A better approach, Trudgill suggested, might be to appreciate and even celebrate the fact that these species survive anywhere.

It can indeed be argued that the contribution of many introduced species is often underappreciated. Native species contribute to the local character of an area, sure enough, but so too do introduced species. Kendle and Rose (2000) used the example of native pine forests in Scotland, a valued part of the landscape in that country. In England, the same species has been introduced and is now considered an integral part of their landscape. In London, the introduced plane tree (Platanus × hispanica), though hardly unique, is seen as an integral part of the city’s local character. Moreover, local character is not only defined by things (e.g. species, historic buildings), but also by processes and influences that are considered distinctive.

Preventing the incursion of human introductions is often seen as a way of preserving the unique character of an area, but not when the local character is perceived to be one of constant change. Bardsley and Edwards-Jones (2006, p. 207), for instance, wrote of the character of the Mediterranean environment. Mediterranean respondents to a survey on local character felt that the unique character of the region, and indeed the ‘Old World’ in general, was one defined by sustained anthropogenic environmental change. In other words, change was the defining and valued feature of the area. It was argued, therefore, that the Mediterranean islands ‘should be allowed to continue to evolve within the changing cultural landscapes as they had for millennia’ (Ibid.). Similar sentiment is expressed in the ‘New World.’ Ariel Lugo, an ecologist in Puerto Rico, for instance,
...finds it difficult to despise invasive trees as he thinks his colleagues do, and even embraces the change. “My parents and their parents saw one Puerto Rico,” he says, “and I am going to see another Puerto Rico, and my children will see another” (Marris, 2009, p. 451).

For Lugo, constant change is also a characteristic of his part of the world – one he openly embraces. Notions of stability or relative staticity do not sit easily with such positions. It cannot be assumed, therefore, that maintaining the same things in the same general configurations for the foreseeable future is a universal goal. As I have demonstrated, some people appreciate change and even define their local character by it. Introduced species do not corrupt such conceptions of local character, instead they are integral to it.

I explore more of these alternative readings of hybridity and identity in Chapter Four. Here I emphasise simply that national identity has been consistently constructed as a defence of the norm. Therein the ‘population’ has often been defined as that which existed before human influence. As this section has shown, however, alternative perspectives are beginning to show that the population might be conceptually broadened to encapsulate humans and their introductions. This reading of national identity allows for the evolution of local identities and provides the grounds for a resistance to the borders and other dividing mechanisms of biosecurity. It suggests that any spatial assumptions of biosecurity that rely on notions of closure and fixity may become increasingly obsolete in a globalising world and that this obsolescence may indeed be overdue. In the next section I provide a commentary on the now much-debated comparisons between foreign people and foreign biota showing how approaches to introduced species can spill over into approaches to ‘othered’ humans. I suggest this as one illustration of the consequences of an attitude toward indigeneity in the biotic realm that is not consistent with the social, suggesting that this inconsistency is not only logically flawed but also demonstrably detrimental to ongoing human relations.

3.3 The threat of introduced species

In Chapter Two I noted that biopolitical discussions around the concept of biosecurity often draw on social identity theory, particularly as it relates to understandings of race and national identity. These
understandings present the idea of a pure body that is capable of corruption by outside influences (Macey, 2009). As I will argue in Section 3.3.1, they also further the need for a defence of the innocent. In Section 3.2.2, I explained how the nationalisation of nature has contributed to the now widespread belief that certain nations are, or should be, defined by their native national biotas. In this section I draw from the literature on the social construction of introduced species to show how exotics are often compared with foreign humans. Although these constructions are often inaccurate, and typically considered inappropriate in the social realm, they remain a routine mechanism for understanding the threat of introduced species. The use of comparisons between introduced species and humans remains commonplace despite longstanding opposition. Although often dismissed as isolated incidents, I argue that the use of these comparisons is integral to biopolitical governance.

A common criticism of policies aimed at preventing the colonisation of introduced species is their apparent similarity with jingoistic and xenophobic political rhetoric (M. Clifton, 2011; Lohmann, 2000). These similarities are a source of considerable unease among commentators who fear the implications of conflating attitudes toward introduced species with those of immigrant peoples, and different races and cultures (Groning & Wolschke-Bulmahn, 2003; Olwig, 2003; C. R. Warren, 2007). Head and Muir (2004, p. 201) wrote that:

…discourses concerning the threat of alien species to national landscapes have a curious tendency to bleed into discourses concerning the threat of alien races and cultures to the native people and culture of these same nations.

Indeed, descriptions of introduced species are often strewn with denigrating anthropomorphisms (Coates, 2011; Knight, 2000; Theodoropoulos, 2003). Introduced plants, for instance, are ‘misbehaving;’ ‘choking’ and ‘smothering’ native flora (see N. Smith, 2011). Introduced animals, similarly, are ‘aggressive,’ ‘rootless,’ and ‘malignant’ (see J. A. Goldstein, 2009). As Townsend (2005, p. 2) suggested, the types of ‘language that most would shudder to apply to humans we use with alacrity in relation to other species.’ These descriptions identify the ways that introduced species might be similar to problematic humans and thence point the way toward appropriate solutions (Larson et al., 2005). Such descriptions invoke outrage
and panic whilst also hinting at appropriate courses of action as they are defined in the social realm (i.e. prevention, punishment, retribution).

In the 1980s, environmental historian Alfred Crosby advised that weeds should not be moralised as either ‘good’ or ‘bad,’ but simply recognised as ‘the plants that tempt the botanist to use such anthropomorphic terms as aggressive and opportunist’ (in M. Hall, 2003, p. 6). However, such advice has been routinely ignored. Recently, Ilicheva (2010) lamented the ongoing use of anthropomorphism to describe the interaction between native and introduced species describing it as harmful, illogical and ridiculous. She noted, nevertheless, that no matter how far these anthropomorphisms escape from logic, they are important to the formation of ‘ethical landscapes’ (Ibid., p. 64). What is most unfortunate is that these landscapes often become surrogates for ‘deeply embedded cultural discords’ within communities (Goedeke & Herda-Rapp, 2005, p. 3). For example, Goldstein (2009, p. 724) wrote that once introduced species are framed as ‘aliens’ and their spread characterised as ‘invasions’ it is almost inevitable that the associated caricatures of immigration would follow. The presentation of the nasty and fecund foreigner taking the place of the good and rightful native becomes irresistible. Consequently, while we cannot know the motives of each and every individual,

...we do have a centuries-long track record of racism and xenophobia that does anything but ease concerns that the anti-exotics campaign informing ecological restoration in some way reproduces this history. The criticism is not about any individual’s personal intent, but rather the perpetuation of a discourse with a troubling genealogy that continues to guide the way we represent the immigrant Other. Putting the discussion to rest requires a discourse of restoration that accepts the complexities of globalization for humans and non-humans alike...Whether we are talking about protecting the ‘common culture’ of native human or non-human communities, retaining the nativist conceptualization of ‘the foreigner’ as first and foremost a negative influence will ensure that suspicions regarding racism and xenophobia will not go away (O’Brien, 2006, pp. 75-76).

These connections continue to be highlighted by social scientists, despite the fact that they have been repeatedly dismissed by others who contend that comparisons between nativism and other forms of
‘othering’ are invalid or inappropriate (e.g. see Hettinger, 2001a; Simberloff, 2011). Simberloff (2003, p. 179), for example, argued that any attempts to impute baser motives to the activities of conservationists were ‘unconvincing if not torturous.’ While he conceded that some early aspects of conservationism may have been connected to xenophobia, he believed that modern conservationists were purely motivated by the prevention of ecological or economic harm. To Simberloff, derisive anti-foreign rhetoric directed at introduced species was obviously ‘benign’ just as the same directed at humans was obviously ‘malignant’ (see C. R. Warren, 2007, p. 439). One must preserve natural diversity at all costs, but to follow the same approach with humans was preposterous.

Nonetheless, Simberloff’s confident delineation of nature and culture is not shared by many others. For example, Perretti (1998, p. 189) believed that ‘there are compelling arguments that nativist purism is undesirable in all spheres.’ Among other reasons, ‘there is always the disturbing possibility that ‘the aliens’ are potent symbols of our own worst selves whether in our continuing racism, sexisms and similar Otherings’ (Murray, 2005, p. 147). Smout (2003) expressed misgivings with reference to the threat of ‘genetic corruption’ by the immigrant ‘other’ arguing that it is impossible to distinguish the arguments for preserving native genotypes from those for preserving racial purity in human beings (also see Fenton, 1986; A. Macmillan, 2010). He noted that minority ethnic groups often find the conservationist view ‘at best insulting, at worst threatening’ (Smout, 2003, p. 19). If the concept of ‘genetic integrity’ applies to every one of the millions of species on the planet, he wondered how long it can really be before it will also be applied to humans: ‘Conservation organizations wonder why they have so few members from ethnic minorities, why environmentalism is so often a socially exclusive activity’ (Ibid., also see Kendle & Rose, 2000). One potential reason, argued Smout, is that the language of conservation can appear akin to a kind of neo-fascism.

Supporting this perspective is the consistent criticism from environmental ethicists that ecologists foster a mistaken assumption that individual sentient creatures have no value beyond their value to the population (Vucetich & Nelson, 2007). Whilst being careful to emphasise the ‘humanness’ of their pest management undertakings, ecologists ‘unknowingly embrace environmental fascism when they presume that the value of the collective is the only value’ (Ibid., p. 1271). The argument that only populations ultimately matter
when applied to humans ‘would clearly be absurd’ (*Ibid.*). As would the view that only the mode of killing (i.e. humane or inhumane) is a cause for concern, not the act of killing itself. Therefore, it is argued that ecologists too readily believe that such positions on non-human biota can be unproblematically divorced from the human sphere. This reliance on the notion that it is the population, not the individual that deserves fostering and support is central to biopolitics. It provides the mechanism for attributing the status of ‘exception’ to introduced species and the legitimisation of the death function in support of the health of the population. The conflation of introduced species with the worst kinds of human ‘othering’ works to conceal and necessitate the consequences of removing countless supposedly unnecessary individual lives.

Simberloff (2011, p. 129) suggested that unease over awkward comparisons between the presentation of introduced species and foreign humans represents nothing more than ‘a contrarian minority view.’ He contended that there was no evidence that the metaphors or stereotypes applied to introduced species had affected attitudes towards foreign humans. However, while he may be justified in lamenting the lack of direct research in this area (though that was probably not his intention) there is in fact much evidence to suggest that his confidence is misplaced. As I have argued, discourses on introduced species regularly borrow and intermingle with racist and xenophobic ones. The conflation of introduced species with immigrants, in particular, has become so commonplace that the terms are used almost interchangeably both within and outside of scientific discourse (see Section 3.3.3) (e.g. see Rotherham, 2010b; Russell, 2007). Far from a ‘minority view,’ recognition of this fact has become widespread among social scientists (Coates, 2011).

For Olwig (2003) it is disappointing that some natural scientists appear to be unaware of the potential parallels between alien species discourses and those of racist and national chauvinist discourses. He noted that the juxtaposition between human immigrants and invading species should come as no surprise, ‘having been prepared by centuries of discourse, represented by atlases, landscape prospects, theatre scenes, picture books, educational programmes and reference works’ (*Ibid.*, p. 72). As I argued in Section 3.2.2, national cultures have been built on the distinction of ‘insiders’ and ‘outsiders,’ categories that define the peoples, biota and landscapes that are appropriate to particular places. At its most
extreme, discourses on introduced species can clearly bleed into xenophobic racism. For example, Hettinger’s (2001b, p. 218) paper in *Environmental Values* entitled ‘Defining and evaluating exotic species’ made a direct comparison between the supposed homogenization of the biosphere with the threat of homogenisation in human ‘races:’

...just as it would be unfortunate for all ecological assemblages to become the same, so too it would be unfortunate to lose racial differences between people and for humans to instantiate one mongrel species. But marriage between blacks and whites in South Carolina (or worldwide for that matter) poses no real threat to the existence of these differing races.

According to Hettinger, the protection of ‘races’ would perhaps be appropriate were it currently considered a ‘real threat’ to biodiversity. More recently, an American state representative was quoted commenting on efforts to control introduced pigs by shooting them from helicopters, suggesting that ‘if shooting these immigrating feral hogs works, maybe we have found a (solution) to our illegal immigration problem’ (M. Clifton, 2011, n.p.). Hugh Raffles suggested that, despite cultural and political differences, American anti-immigrant campaigners such as the Minutemen and the Tea Party, and many nativist conservationists, are both essentially motivated by the same fear of being ‘swamped by outsiders’ (in M. Clifton, 2011, n.p.). Similarities in their discursive presentations of others were therefore unsurprising.

Although comparisons between introduced species and immigrant humans have been most pronounced in the last few decades, they have a long history. As early as the 1950s ecologist Charles Elton compared introduced species to immigrants. He felt that introduced species gained a foothold only by finding a vacant ‘niche’ or by evicting an existing species from its niche, ‘rather as an immigrant might try to find a job and a house, or start a family in a new country or big city’ (in Marris, 2011, p. 102). To this day, an alternative name for an introduced species is an ‘alien,’ the same word used for non-resident people (Subramaniam, 2001). Other, more direct, comparisons are also abundant. Subramaniam (2001, p. 28) quoted, as an example, the opening line of an article on introduced species: ‘The survey is not even halfway done, yet it has already revealed a disturbing trend: immigrants are forcing old-timers out of their homes.’ Low’s (2002) *Feral Future*, a book on the threats of introduced species to Australia, is similarly
littered with such allusions. He related his experience of a new lizard (*Hemidactylus frenatus*) introduction to Australia:

At night as I lie in bed I hear a new sound – the *chuk chuk chuk* of an Asian house gecko…these lizards first appeared in Brisbane in 1983, turning up at a container terminal, then at the wharves. Since then they have advanced across the city, taking over factories, shops and houses in dozens of inner-city and riverside suburbs. Even so, I never expected them to reach my bushy outer suburb which they accomplished in 1998, and it surprised me even more to hear them at my parents’ house a couple of months later, then at the homes of several of my friends…the sound of the Brisbane night has changed forever (*Ibid.*, p. 307).

If anything, such descriptions make it difficult *not* to see similarities in anti-immigrant rhetoric. The picture of rapid, aggressive expansion and ‘taking over’ is unmistakable. However, Low was unconcerned. He wrote that ‘immigration has always been a hot topic in Australia, racism and parochialism playing their part in the often heated debate,’ but, rather than distancing himself from such positions, he noted only that ‘the potential impact of human immigration pales into insignificance compared to that of non-human immigration’ (*Ibid.*, p. 207). In other words, rather than distinguishing his position from anti-immigrant rhetoric, he implied instead that ‘that problem’ is only the start. If you do not like Asians then you certainly will not be thrilled by Asian biota. As he concluded, ‘I for one do not want to end up living next door to a hive of Asian honeybees’ (*Ibid.*, p. 208).

The solutions to unwanted species also parallel the solutions to unwanted immigrants. For example, in the United States, authorities ‘enforce strict border controls to keep harmful species out of the country, eradicate any successful invaders, and restore American species to their rightful places’ (J. A. Goldstein, 2009, p. 688). Indeed, in the United States, authority for keeping introduced species out of the country was transferred, after September 11th, 2001, from the Department of Agriculture to the Department of Homeland Security (J. A. Goldstein, 2009). There, invasions of humans and non-humans alike are considered almost inseparable. The same authority deals, in like manner, with ‘fence jumping’ humans

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6 The period Low referred to coincided with the increase in Asian immigration to Australia following the abolition of the White Australia Policy in 1972.
and other organisms. America’s ‘tightly integrated’ native communities are susceptible to foreign infiltration, the appropriate response being to seal the borders (O’Brien, 2006). However there is one exception. Introduced species can, in fact, be useful. This is when ‘they know their rightful place as workers, labourers, and providers, and controlled commodities, their positions manipulated and controlled by the natives’ then, of course, their presence can be tolerated (Subramaniam, 2001, p. 35). It is only when they move out of this domesticated sphere to make nuisances of themselves that they become problematic. The problem then is not corn, or sheep, or rice. These are all good things – useful things. It is only when these same species move out of their ‘proper places’ and begin to compete and usurp the positions of natives that problems arise. As Fenton (1986, p. 16) wrote, ‘alien species are welcome in strictly defined areas (gardens) or where economically useful (crops) but must not be allowed to pollute the nature culture (the wider countryside).’ Again, the similarities between conceptions of introduced species and xenophobic caricatures of immigrant humans become apparent.

Accepting the conflation of immigrants and introduced species, Hugh Raffles argued nevertheless that countries such as the United States are built on such people and have enhanced rather than detracted from the worth of the nation (in M. Clifton, 2011). For him, continually designating some species and peoples native, and others alien, denies the ecological and social dynamism of the country and draws an arbitrary historical line ‘based as much on aesthetics, morality and politics as on science, a line that creates a mythic time of purity before places were polluted by interlopers’ (Ibid., n.p.). However, a less-explored counter-argument is that if comparisons are to be made between introduced species and humans, immigrants are clearly a misleading group to select. Immigrants willingly travel between countries, generally with a view to their own betterment. In contrast, the history of introduced species is commonly one of forced removal and release in new lands, generally with the explicit goal of commercial exploitation by acclimatisers. The fact that they have subsequently gone on to thrive in places where they do not ‘fit’ and sometimes prove a nuisance to their acclimatisers was not intended.

The progression from forceful abduction, to exploitation, sometime emancipation, and subsequent legacy of discrimination and hatred is not evocative of immigration, but rather of the history of slavery (see Chapter 5). These parallels are obvious but, I suggest, have rarely been employed because they do little
to further the claims of conservationists, indeed they undermine them. As former slaves, introduced species are 'victims.' However, as immigrants, introduced species are potential ‘perpetrators’ of harm. It is a fine but crucial discursive distinction. The continuing use of ‘immigrant’ as an identity for introduced species, despite its inaccuracy, and despite the fact that anti-immigrant discourse is widely considered retrograde, actually serves to valorise the work of conservationists. It taps into the nascent, and even quite explicit (see above), minority views of those that remain sceptical of the worth of immigrants and who are perhaps otherwise discouraged from voicing such concerns in the social arena. This is not to suggest that all who employ the ‘immigrant’ frame are nascent xenophobes but to highlight and query how a frame that should have been long-disputed has persisted relatively undisputed in conservation discourses.

This section has shown how ongoing attempts to conflate introduced species with immigrants continue to stoke a troubling and unnecessary form of ‘othering.’ As Macey (2009) suggested, the presentation of immigrants as threats to an imagined pure body politic has a long genealogy that seems to require little encouragement. It is both ironic and troubling, then, that the immigrant frame has also been misapplied to introduced species. As I argue below, the presentation of introduced species as perpetrators of harm has been integral to conservation discourses that seek to present them as enemies to be repelled in the defence of the innocent.

3.3.1 Nature must be defended

As I have noted, the key discursive distinction between ‘slave’ and ‘immigrant’ is the move from ‘victim’ to ‘perpetrator.’ Rather than being victims of globalisation, the ‘immigrant’ frame suggests that introduced species are actively, and perhaps wilfully, supporting changes that are considered disagreeable by humans. This agency is commonly supported by the use of militant language in conservation discourses which suggest that ‘aggression’ must be countered with like action (Larson et al., 2005; Slobodkin, 2001). These are promoted both within and outside of scientific channels (see Section 3.3.3). Like the use of the ‘immigrant’ frame, the frame of war deliberately sets up an oppositional encounter that justifies the use of force against outsiders. Similarly, the use of death to promote valued lives is employed to obscure the question of whether such deaths are truly necessary. As I highlight below, the rhetorical presentation of a
defence of nature obscures the necessary questioning of why certain lives should be favoured over others.

For Simberloff (2011, p. 131), ‘there is no evidence that the science of invasion biology has been pervaded...[or] scientific progress in understanding managing invasions...hindered by the use of military metaphors’ (also see Simberloff, 2003; Simberloff & Signatories, 2011). However, again this position is very difficult to sustain. In fact, concerns over the loss of scientific credibility due to their use have been voiced since at least the 1980s, and the objectivity of invasion biology (see below) has been repeatedly undermined by it (Davis, 2006; Theodoropoulos, 2003). Indeed, it is very difficult to sustain an argument that military metaphors are absent or even rare among conservation discourses whether scientific or otherwise. Rather, as MacMillan (2010, n.p.) lamented ‘almost daily we hear of the “march of the invasive grey squirrel”,’ or some other campaign against an introduced species, as if it were ‘some foreign military power invading our homeland.’

Introduced species are routinely anthropomorphised as combatants actively attacking human positions. Writing in a paper in Animal Conservation, Blackburn (2010, p. 228) for example related how ‘we are a long way from winning the war against invasive alien species’ but that scientists can nevertheless ‘provide the evidence that will make it easier to win individual battles.’ Patience is required as the war will be long and arduous. We are told that complacency is dangerous because in the ‘struggle against invasive species...continued aggressive intervention is needed,’ particularly as they ‘can suddenly occur in explosive outbreaks’ (Secretariat of the Convention on Biological Diversity, 2011, n.p.). Conservationists in this moralistic battlefield are meanwhile portrayed as ‘warrior poets patrolling the frontlines of the science-society interface’ (Child, 2009, p. 243). A rhetoric of militant, righteous ‘soldiers’ is employed, tirelessly combating a national and global biosecurity threat (O’Brien, 2006). The appropriate reaction to such an aggressive foreign invasion is, of course, a military response; a defence of the homeland.

The overriding message of these anthropomorphisms is that introduced species are not just instrumentally bad, they are also morally bad. Larson et al. (2005, p. 250) argued that this characterisation is grounded in the ‘balance of nature’ paradigm which positions introduced species as ‘thugs’ that ‘drive out better-mannered neighbours’ (see Chapter 4). As Townsend (2005, p. 2) wrote,
‘non-natives are conveniently anthropomorphised and ascribed a conscience and wilful purpose’ to perpetuate harm, just as native species are anthropomorphised as good, wholesome and balanced. Furthermore, once introduced species are presented as malicious the responses against them become warranted. When they are framed as cognisant ‘enemies’ who have ‘invaded with a deterministic intent to extinguish our gentle natives, viciously smothering them and robbing them of their birthright’ they are seen as more than just small, feral rodents or exotic flowers (Ibid.). They are not simply going about their lives as any other living creature but, instead, are actively and insidiously perpetuating harm against humans (Larson, 2005). Action against such malcontents seems more justified than against beings that have no concept of human desires. Indeed, on the contrary, it is inaction that now seems reprehensible (Eskridge & Alderman, 2010). If they are out to get us then surely we should ‘fight’ back.

Once again, it is troubling that the frames of ‘immigrant’ and ‘enemy’ are both so freely and interchangeably used to anthropomorphise introduced species. For Larson (2005), militant language continues to feed on fears of terrorism and armed invasions, polarising views into oppositional trajectories that suppress open debate. This fear-mongering can also backfire, such as when some groups come to relate more with the ‘enemy’ than the ‘warrior poet.’ For example, San Francisco City Supervisor Leland Yee defended the ‘enemy’ when he asked, ‘How many of us are ‘invasive exotics’ who have taken root in the San Francisco soil, have thrived and flourished here, and now contribute to the wonderful mix that constitutes present day San Francisco?’ (in Larson, 2005, p. 497). Larson (2005, p. 496) went on to point out that it is not only a war that cannot feasibly be won, but one that also ‘misdirects us towards biological solutions for what is largely a social issue.’ Introduced species are a consequence of human consumptive activities and global movement patterns. They are, in other words, the result of globalization, not a cause of it. Moreover, just as immigrants are mistakenly defined as synonyms for introduced species, a war categorically mistakes the encounter between humans and exotic life. Critically, a war requires at least two opposing sides, something that is obviously missing from militant constructions of introduced species (Larson, 2005). They are not aware of humans’ militant intentions, nor can they be aware of them. Although it is framed as a ‘battle,’ therefore, some more accurate descriptors for the engagement between conservationists and disvalued introduced species would be ‘extermination’ or ‘massacre,’ regardless of how it might be justified. The fact that such words are never employed points more to the
need to employ a justificatory and emboldening rhetoric than to a desire to present the engagement using the most accurate terminology.

Finally, war metaphors ‘contribute to a semantic field of war’ (Larson, 2005, p. 499). While war frames may not always be inappropriate’, perpetuating types of language that contribute to polarised conceptualisations of difficult encounters between different forms of life is likely short-sighted and counterproductive. Rather than stoking such polarities, we ‘instead…need to reflect upon alternatives that are more consistent with a vision of sustainable socioecological systems’ (Ibid.). As I demonstrate in Chapters Five and Seven, the perpetuation of war frames – though premised on the assumption of a coming end point – frequently become long-entrenched. The disagreeable ‘emergency’ measures enacted under the rhetoric of necessary warfare thus come to constitute new norms (Duffield, 2008; Evans, 2010). Rather than ‘fighting’ with the goal of ending warfare, therefore, combatants come to see ongoing war as the nature of existence, premising further goals, both environmental and social, on this cruel and unforgiving belief. This is itself one of the most troubling outcomes of the use of war metaphors directed at introduced species. Nonetheless, as I will discuss next, perhaps even more troubling is the extent to which this ‘war’ on introduced species feeds into the logics of industrial capitalism.

3.3.2 The profitable elimination of exceptions

In Chapter Two I noted how the protection of native species links directly into capitalist processes of production. Valuable species and the industries they support are protected while living threats are eliminated. Indeed, nature conservation has become synonymous with ‘big money,’ with protected areas and species often sponsored by organisations whose funding is tied to corporate sponsors (Timms, 2011, p. 1363). For example, the Wildlife Conservation Society helps their sponsors to ‘achieve goals and reach their target audiences in consumer, business and other sectors’ (Anon, 2014b, n.p.). They provide ‘corporations with many effective ways to tap into the loyalty and buying power of the 4 million plus consumers’ who visit their parks each year (Ibid.). This ‘conservation industry’ is built on the exhibition of rare and endangered native species – whether in the wild or in captivity – that are not able to be viewed elsewhere (A. Macmillan, 2010, n.p.). Alongside National Parks, native species thus remain central to the

7 Consider, for example, the ‘war’ on obesity or smoking.
global tourist industry (Adams & Hutton, 2007). Nevertheless, as I argue in subsequent chapters, this revenue is not the only way in which the conservation of nature tends to support certain industries and corporations. Rather the removal of threats to native nature and other forms of capital constitute another, if less acknowledged, industry. This industry is tasked with controlling the introduced species deemed to be weeds and pests.

In 2000, Pimentel et al. published a paper on the environmental and economic costs of introduced species in the United States. They estimated that introduced species cost the country approximately $138 billion annually. This paper has since been widely cited as justification for control of introduced species, not only in America, but also elsewhere around the world (see Reaser et al., 2007). In 2010, for instance, Feng and Zhu cited the paper in their introduction to an assessment of the effects of introduced species in China. They referred to the paper, as usual, as an example of the great costs associated with the existence of introduced species. Sagoff (2009a, p. 82) noted that the paper has become ‘so entrenched by constant and unquestioned citation that it now serves as the principal document to justify public spending for research in the burgeoning field of invasion biology.’ However, he lamented that rather than being treated with deference, as it commonly is, it should instead be treated with incredulity (also see L. D. Goldstein, 2011; Macdonald & Burnham, 2010). According to Sagoff (2009a), this is because the paper conflates costs with benefits. Pimentel et al. confuse the costs of controlling introduced species with the supposed damage they would otherwise cause. In an earlier article, Sagoff (2007) drew attention to the fact that the costs of ecological management initiatives are often not related to their benefits at all. In other words, spending $138 billion on controlling introduced species does not equal gaining or preventing the loss of $138 billion of value. He used the example of forest fires in the United States to illustrate this point. The United States Forest Service spent billions of dollars ‘fighting’ fires throughout the early 20th century only to conclude, in the 1960s, that the exercise had been mostly detrimental to forests, primarily because fire suppression created an excess of fuel wood, which contributed to catastrophic blazes. Furthermore, costs are shared unequally. In fact, many do not suffer costs at all, instead actually benefiting economically from the supposed need to control introduced species.
As Garcia-Llorente et al. (2008, p. 2970) wrote, ‘for every case of invasion some sector of society makes a profit.’ Invasion biologists, for example, benefit from increased research funding. As early as 1990, Soule (1990, p. 234) identified control of introduced species as a ‘growth industry,’ predicting that grant funds would flow to those who study ecological relations of exotic organisms. Enserink (1999, p. 1834) reported that ‘after a slow start’ invasion biologists ‘suddenly find themselves attracting more and more grants, students and postdocs.’ For Theodoropolous⁸ (2003, pp. 144-145), introduced species remain,

…a convenient ogre with which to scare up funding...[researchers] understand that their funding is related to the perceived severity of the problems they address. The invasion “crisis” has [thus] been cynically promoted to the public by agencies seeking a larger portion of the tax revenue “pie.”

This is not to suggest that academics are motivated to secure funding regardless of its source or use, but to suggest that the popular fear of ‘invasive’ introduced species, partly flamed by academics, may encourage a lack of critique on whether those frames are accurate or productive. Theodoropolous also considered the funding and influence from pesticide and herbicide manufacturers to be a ‘strong corrupting force’ determining the persistence of management programs (Ibid., p. 184). He wrote that ‘if we “follow the money,” we find that the [United States] Exotic Pest Plant Councils have received considerable funding from herbicide manufacturers’ (Ibid., p. 141). In fact, this remains the case, with the conferences of Exotic Pest Plant Councils generally supported through major sponsorships by prominent chemical manufacturers such as Alligare and Dupont (e.g. see Anon, 2014a). Once again, this is not to suggest a conspiratorial relationship between chemical manufacturers and practitioners but rather simply to note that there are substantial vested interests in ensuring that ‘solutions’ are geared towards the products currently offered by these companies, or towards others that can be provided by them in future.

⁸ Simberloff (2011, p. 128) dismissed Theodoropolous as a ‘crank,’ highlighting his use of a nom de plume and belittling him as a ‘seed salesmen’ rather than a scientist. He criticised others for citing Theodoropolous’s work in the ‘normal’ literature. Whilst I concede that Theodoropolous’s thesis is unconventional and probably suffers from a lack of peer review, I do not dismiss his views. I also do not see it necessary to exclude him because of his background or failure to conform to conventions that might otherwise have made his work more palatable to academics.
In the United States, Marris (2005, p. 272) interviewed a ‘strike team’ employed by the National Parks Service which is tasked with controlling introduced plant species such as common reed (*Phragmites australis*). The team employ high-tech gear to ‘pull, poison or burn anything that is out of place’ (*Ibid.*, p. 273). She recorded a communication between two employees spraying weeds from a 200-gallon tank of herbicide called ‘Habitat’,

Meyerhoeffer pays out more hose so Overstreet can work his way behind a ghostly stand of dead *Phragmites* from last year, which still shelters some persistent shoots. “I’m getting a few back here,” he calls. “I’m leaving the rest for job security.” After a pause, he adds: “That was a joke” (*Ibid.*).

Marris did not elaborate on this quotation, but her intent in its selection is implicit. The ‘strike team’ suffer a conflict of interest. They seek ultimately to eliminate introduced weeds. However, they might not want to be too successful at it, lest they could put themselves out of a job. Expressing similar sentiments, Rotherham and Lambert (2011, p. 13) noted that the eradication of coypu (*Myocastor coypus*) from eastern England in the late 1980s remains one of the few success stories of eradication in modern Britain, partly because of the enduring ‘economic problem that trappers would be reluctant to work themselves out of a job.’ Indeed, in many instances personal livelihoods are tied to continuing control of introduced species. For example, in a study on local perceptions toward the control of introduced species in Chile, Schuttler (2011, p. 182) reported that the local community supported control strategies for two reasons: firstly, to reduce the perceived negative impacts of invasive species but, secondly, to ‘create income.’

Similarly, in South Africa the ‘Working for Water’ program, initiated in 1995, is aimed at the control of vast swathes of introduced plants. However, a conjoint function is to provide employment for around 20,000 people per year. To date, Working for Water has spent $457 million controlling introduced species, though it is not clear that it has had any measurable long-term effect on target species (van Wilgen et al., 2012). Van Wilgen et al. noted that the labour-intensive nature of the work is seen by the government as a way of addressing chronic unemployment problems. Unfortunately, this reality also,

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9 ‘Habitat’ is produced by the German multinational BASF, one of the largest chemical manufacturers in the world.
...constrains Working for Water from allocating appropriate levels of funding to aspects of its operations that would improve its effectiveness...For example, any additional funding directed towards much-needed research, monitoring or assessment would come at the cost of employment. In addition, it is difficult to re-direct resources to new areas when priorities are re-assessed, as that would lead to the loss of employment in lower-priority areas. Even though employment would be created elsewhere, the fact that some workers would have to be disengaged is problematic. There is also the concern that effective biological control would replace the need for labour-intensive clearing (Ibid., p. 35).

Van Wilgen’s analysis of Working for Water starkly portrays some of the underlying problematics of the pest control industry. Once the removal of certain introduced species has been subsumed into capitalist processes of production it becomes difficult to subsequently extract these actions. In Chapters Seven and Nine I further discuss the degree to which the removal of introduced species has become an industry in its own right and the ways in which this economic relationship tends to counter any opposition to its continuation. The economics of pest control have consistently been presented only as ‘costs’ and these obscure the substantial economic ‘gains’ accruing to some (Timms, 2011). Here, I am not hinting at some economic conspiracy but rather recognising that it is important to analyse the factors that may work to prevent reconciliation and that it would simply be remiss to overlook hundred billion dollar industries as potential impediments thereof. For Negri (1991), the capitalisation of pest control would be an inevitable corollary of moves to enhance valued lives and biopolitical studies have since consistently pointed to the need to assess the economic influences reinforcing supposedly apolitical and universalist notions of environmentalism (Pierce, 2012). In the next section I follow the lead of many others in highlighted the extent to which the truth discourses of science require similar levels of critique.

3.3.3 The truth discourses of science

As I explained in Chapter Two, work on the social construction of science has shown that scientific knowledge is a negotiated achievement formed within a particular cultural milieu. The process of scientific discovery is a contestable one, characterised by assumptions, value judgements and compromise (Hosking, 2011). Consequently, constructionist analyses of science emphasise the need to question
scientific knowledge to the same extent as other knowledges (Newton et al., 2011). The biopolitical literature, for its part, has tended to emphasise the ways in which scientific knowledge is frequently used to emphasise particular beliefs about the world (Winkel, 2012). Below, I show how natural scientists, such as ecologists and invasion biologists, have employed scientific discourses to portray the cultural notion that introduced species are fundamentally ‘bad’ and damaging to ecosystems. Rather than distancing themselves from inaccurate and inflammatory populist rhetoric, scientists have frequently been at the forefront of this quasi-propaganda. With an emphasis on the scientific work of the last 30 years, I show how many ill-considered and potentially harmful allusions have been made between introduced species and other phenomena (also see above). I stress that, over the last decade in particular, many of the cultural assumptions natural scientists have used to underpin their work have been proven false and now require revision.

As noted in Section 3.2.1, widespread concern for the effects of introduced species on natives has been present since at least the mid-19th century. However, any integrated scientific assessment of these effects took at least another century to come to fruition. Although several others made contributions before him, Elton’s (2000 [1958]) *The Ecology of Invasions by Animals and Plants* is widely recognised as the earliest unified work on the ecology of invasions (see Robbins & Moore, 2013; Simberloff, 2012; Smout, 2011). It is notable that Elton’s choice of the word ‘invasion’ to describe the effects of introduced species may have been influenced by his experiences during the Second World War, before which his writing did not contain such phraseology (Davis, Thompson, & Grime, 2001). His use of anthropomorphisms such as ‘war’ and ‘immigrants’ (see above) to frame biological phenomena was relatively novel at the time and probably contributed to his popular success as an author. However, fear of introduced species in the mid-20th century was relatively muted. For example, although the genesis of modern environmentalism is generally dated to Rachel Carson’s *Silent Spring* (1962), she had little to say about the impact of introduced species and, in fact, was concerned more with warning of the side-effects of controlling them using chemical pesticides (Simberloff, 2011). MacArthur and Wilson’s (1967) *Theory of Island Biogeography* made the notion of an idealised equilibrial island in a sea of unbalanced or ‘disturbed’ habitat a potential argument for caution over the effects of new biological entrants (M. Clifton, 2011). However, it was not
until the 1980s that the potential effects of introduced species were widely brought to the public’s attention, mostly by scientists (Simberloff, 2011).

Invasion biology developed into a sub-discipline in the 1980s and into a field of its own in the 1990s (Robbins & Moore, 2013). Since its inception it has been ‘rooted in a starkly value-based distinction between native and nonnative’ (Davis, 2012, p. 217). According to this scheme, native species are almost always positive influences on ecosystems while introduced species are generally negative (Eskridge & Alderman, 2010; Groning & Wolschke-Bulmahn, 2003; Sagoff, 2009a). Slobodkin’s (2001, p. 7) characterisation of attitudes towards native wolves (Canis lupus) is typical. He wrote that while wolves were historically cast as wicked, today ‘there are no bad wolves, just wolves that have been misunderstood’ (Ibid.). As a generalisation he felt that ‘good’ species are typically seen as native species and the less successful the better. ‘Bad’ species are those that are introduced and thriving. Hall (2003, p. 8) agreed: ‘natives are almost universally praised while exotics are condemned’ (also see Lowenthal, 2005; J. H. Myers & Bazely, 2003). This belief has become so ingrained that it is often accepted without question, with ecologists determining value on the basis of nativity alone. Playing on this rigidly dichotomised worldview, dissenting ecologist Richard Hobbs would sometimes mischievously canvas the views of his colleagues: “I take them out to the native bush,” says Hobbs, with a twinkle in his eye. “Depending on whether you say it was native or not native they either like it or do not like it.” (in Marris, 2011, p. 128).

According to Theodoropolous (2003), invasion biologists have consistently interpreted their research so as to ensure this belief. Any ‘studies that fail to find a negative effect are likely underreported’ and the positive biological or social effects of introduced species have received relatively little attention (Schlaepfer et al., 2011, p. 429; Schuttler et al., 2011). For Reise et al. (2006), most current evaluations of the ecological effects of introduced species rely more on prejudice than on science (see Appendix 2). Researchers are predisposed to search out the negative aspects of introduced species and disregard any positives. For example, Theodoropolous (2003) noted how some studies conclude that fruit-bearing introduced plants are disadvantageous because they are competing for dispersal agents with natives. In other studies, introduced plants that do not bear fruit are harmful because they provide no food to native
animals. These conclusions reminded him of an African-American quotation relating to the rhetoric of racial persecution: “If I stand, I am loitering. If I walk, I am prowling. If I run, I am fleeing” (Ibid., p. 82).

Furthermore, because no species survives in isolation, and introduced species generally persist in environments they share with natives, it is simply a matter of finding the ways that introduced species interact with natives. Because the status quo (i.e. a ‘balanced’ native ecosystem, see Chapter 4) is defined as valuable, any new interaction, any change, will be seen as negative and undesirable (Sagoff, 2005). Change to the status quo is not capable of being positive (i.e. a ‘disturbed’ ecosystem). The enormous and growing number of introduced species deemed ‘invasive’ is therefore unsurprising (see Appendix 1 for a discussion on what constitutes an invasive species).

Schlaepfer et al. (2011) showed how qualitative assumptions are commonly made concerning the value of introduced species, and that these assumptions compromise the apparent objectivity of many scientifically-derived conclusions. They referred to a landmark study in which the response of biodiversity to several ‘natural’ and ‘anthropogenic’ drivers was predicted. In the study, introduced species were only considered as potential threats. It was considered impossible for them to contribute to a region’s species richness. Ariel Lugo noted, disapprovingly, that ‘that diversity doesn’t count because they are the wrong species’ (in Marris, 2011, p. 114, emphasis mine). Moreover, in studies in which an index of biological diversity is used, the presence of introduced species is taken as necessarily decreasing the index value, even if the introduced species has little or no detectable biological effect (Schlaepfer et al., 2011). In an article in the journal Conservation Biology, Patten and Erickson (2001) concluded that it is not possible for introduced species to be considered a component of biodiversity. In response to another author’s listing of introduced species among the fauna of Canada, they commented thus:

We are aghast...to find “concern” expressed for species present in Canada only as exotics...We contend that there are almost no instances in which non-native species should receive consideration for conservation concern...Aside from eradication, we can think of few instances in which the persistence of a non-native species needs to be considered when pondering the conservation and management of native species...Non-native species should be recognised for the scourges they generally are. Indeed, all should be treated as threats to
the native ecosystem unless proven otherwise. Such a stance may seem unduly harsh, but our collective goal in conservation biology is to protect biodiversity. That term is by necessity restricted to native species richness, whether the species evolved in situ or invaded the region under its own power. All organisms naturalized by humans, purposely or not, do not and cannot add to biodiversity…To view the world in any other way is to do a disservice to our collective goal (Ibid., p. 817).

Sagoff (2009b) noted how ecologists and invasion biologists generally rule out the possibility of introduced species contributing to biodiversity, but that this is more often implied than overt (also see Trigger, 2008). He noted that once ‘native’ is implied in the concept of ‘biodiversity,’ observational evidence becomes unnecessary. Instead, historical evidence (‘native or non-native?’) becomes the sole determinant of diversity.

Theodoropolous (2003, p. 142) noted that popular articles on introduced species often present them within an overarching narrative of doom, ‘each page littered with breathless rhetoric and scaremongering of a type elsewhere found only in the tracts of religious and political hysterias.’ Nonetheless, ecologists ‘have never once called the media to task for any alleged distortions,’ instead ‘actively participating in the hysteria mongering’ (Ibid., p. 143). Indeed, Theodoropolous described invasion biologists as the ‘architects’ of invasion fears. While opposition to introduced species was supported by scientists in the 19th century (see Chapter 5), therefore, it was really lead by scientists in the late 20th century. Books such as King’s (1985) Immigrant Killers10 – written by a scientist – rapidly popularised the notion that introduced species were an environmental threat that should be taken seriously. Over the 1990s and 2000s, scores of emotive and evocative books were written for popular audiences by ecologists and science journalists (see Davis, 2006). As early as 1986 Fenton was protesting at the extent to which this nativism had taken hold of ecology:

10 Although it is notable that King’s book is also highly critical of attempts to generalise the effects of certain ‘invasive’ species to introduced species as a whole. Her sympathetic appraisal of many introduced mammals in New Zealand, in particular, would now be seen as extraordinary.
Somebody ignorant of ecology may well appreciate all the plants and animals of the countryside – ignorance is bliss. But once you have eaten of the tree of knowledge and know that many species have been introduced by man [sic], are what are termed ‘alien species’, it is impossible nowadays for an ecologist to remain objective and impartial; you can never be at ease again, especially when you know that all the natural plant communities are disappearing fast. It is now the common conservation ethic that ‘Native is Good’, ‘Alien is Bad’; that introduced species should be removed from nature reserves and any new plantings or introductions should only be of native species (Fenton, 1986, p. 13).

If anything, this hyperbolised scientific presentation of introduced species has only become more pronounced in the years since. At its worst, any acceptance of introduced species has become to ‘watch passively as an accident victim bleeds to death’ (Noss, 2003, p. 444). For Reichard (2001) the discouragement of biotic dispersal altogether would be preferable to the dispersal of non-native species. Allendorf and Lundquist (2003) went a step further still, comparing introduced species to cancer. Writing in the journal Conservation Biology, they prescribed that,

As in the treatment of cancer, early detection is crucial. As soon as cancer is detected, action is immediately taken to remove the cells before they spread. Once it spreads, cancer becomes more difficult to remove. So it is with invasive species. Early removal of non-native species\(^\text{11}\) should take on a similar urgency’ (Ibid., p. 28).

They were preceded in this aggressive emotive presentation by Ruesink et al. (1995, p. 465) who employed a metaphor of criminality to whitewash all introduced species ‘guilty until proven innocent.’ Along with others, they argued that it was merely a sensible precaution to remove introduced species before they might become invasive. Phillips et al. (2012) illustrated a recent manifestation of this ‘precautionary approach’ in the eradication of rock pigeons (Columba livia) from the Galapagos Islands. Again, the action was led by scientists and in spite of opposition from some local people. They wrote that:

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\(^{11}\) Note the regrettably commonplace way in which ‘invasive’ is casually conflated with ‘non-native’ (see Appendix 1).
Although pigeons have not been linked to the decline or extinction of native species in the Galapagos the risk exists and the potential consequences are substantial. Applying the ‘precautionary principle,’ the Charles Darwin Research Station, in cooperation with the [Galapagos National Park Service] initiated a campaign to eradicate pigeons from the archipelago in 2000. In the long-term, eradication of pigeons will eliminate the potential risk to the native avifauna and obviate the need to conduct a more costly eradication campaign of a larger pigeon population in future…In 2007, after almost 7 years of sustained monitoring and removal efforts…pigeons were formally declared eradicated from the Galapagos Islands…The communication and education campaign facilitated removal efforts on Santa Cruz, however, residents on San Cristobal and Isabela were typically more recalcitrant. Several pigeon owners on the latter two islands ignored restrictions on keeping pigeons, requiring [the quarantine and inspection system for the Galapagos Islands] and the national police to intervene. Finally, accompanied by the local authorities, field personnel entered the lofts and removed the last remaining pigeons (Ibid., pp. 265, 268).

As they attest, in spite of no evidence for the negative effects of rock pigeons in the Galapagos Islands, and resistance from local people, eradication went forward under the assumption that introduced species are ‘potential’ threats and that it is simply ‘precautionary’ to eliminate them before they might develop into actual threats. However, the assumption that introduced species might be more likely to be damaging to ecosystems than native species rests on belief alone, particularly the now dated view that the introduction of species upsets otherwise balanced or equilibrial ecosystems. By the 2010s, over 10,000 papers had been published in invasion biology alone (Moles et al., 2012). Nevertheless, in spite of this enormous academic output there remains no unified paradigm to evaluate the risk of invasion and no quantitative way of distinguishing introduced from ‘invasive,’ let alone native from introduced (Davis, 2006; Moles et al., 2012; Sagoff, 2013). In other words, there is no case for presupposing that introduced species might be any more damaging to environments than natives. This only lends weight to the hypothesis that invasion biology is less a predictive natural science and more a means of legitimising the perpetuation of particular aesthetic interpretations of the environment (see Carruthers et al., 2011; Davis, 2012).
In this section I have argued that scientists have frequently been the main protagonists of anti-introduced species discourses. Though not without exception, these have consistently presented introduced species as categorically ‘bad’ and as a threat to biodiversity. Reflecting on my own short career as a natural scientist, it is with deep misgivings that I concede that my discipline has failed to promote a balanced or adequately measured discourse on these species and, unfortunately, has frequently mislead the public. A substantial literature now catalogues the abuses of scientists in this respect, over the last few decades in particular (Sagoff, 2013). Scientists have promoted a biosecurity apparatus that has worked to remove not only threats to native biodiversity, but also emergent threats. This activity has reproduced racialized fears from within the social realm, disproportionately discriminating against introduced species that may be just as likely to precipitate environmental ‘damage’ as natives. As I discuss in later chapters, it is telling that it is not native species in general that have tended to be protected through these actions but rather that subset of charismatic native species that generate revenue from tourist industries or that contribute to a perpetuation of puristic national identities. ‘Introduced’ and ‘invasive’ are socially constructed categories designed to further particular beliefs about the environment and, although unscientific, have been treated too often as absolutes, or as arguments in and of themselves. This state of affairs necessitates considerable further scrutiny.

3.4 Conclusion

This chapter has drawn attention to the various ways that introduced species have been constructed as negative environmental influences. Over the last few centuries many of the prevailing constructions of nature have changed from generally negative to mostly positive. Although people have tarnished themselves with the stigma of environmental damage, a significant portion of the blame has also been transferred to human introductions. These species have fallen outside common constructions of acceptable nature. A significant reason for this is that introductions have been presented as ‘outsiders’ or ‘imposters’ in relation to imagined pure national identities. To varying extents, humans have reconciled their own presence within newer ranges, partly by assigning themselves the status of new natives. However, many introduced species have been excluded from this revisionism, their supposed lack of belonging emphasised instead. Presentations of introduced species, both by scientists and others, have
continued to perpetuate retrograde framings that have long come to be seen as socially intolerable. Most alarmingly, introduced species are still regularly conflated with immigrants, a construction shown to be false, misleading and unproductive on several levels.

Negative framings of introduced species have supported militant discourses that misleadingly present them as conscious threats to an imagined stable state. In turn, war metaphors have fostered the notion of a crisis through which opposition to the removal of introduced species is suppressed. Therein, killing has become valorised with inaction constructed as reprehensible or even unpatriotic. This militancy has been literally capitalised upon by the businesses and organisations set up to carry out the death function. Regrettably, these biosecurity industries are now so enormous that notions of reconciliation become, not only a potential threat to valued native biodiversity, but also a threat to the security of employment and profitability for countless people. Far from distancing themselves from these problematics, natural scientists have instead actively inflamed and supported them. Nevertheless, in recent years this support has come under increasing attention as many of the assumptions previously used to guide ecological understandings of introduced species have been called into question. In the next chapter I further this critique of ecology to show how the assumptions underpinning restoration to past states are increasingly becoming unsupportable. I argue that moves to reconciliatory understandings of introduced species may prove more consistent with future social and biological realities.
Chapter Four: From Restoration to Reconciliation

4.1 Introduction

In Chapter Three I argued that many of the assumptions about introduced species underlying common social and scientific discourses require revision. Though introduced species are frequently cast as exceptions to be eliminated in the interests of the wider ecological good, this conception is becoming increasingly difficult to sustain. In this chapter, I extend this analysis to the wider ecological restoration literature, arguing that notions of restoration that advocate for the exclusion of introduced species may require revisiting, and furthering alternative discourses that portray the advantages of a softened approach to introduced biota. I begin, in Section 4.2, by briefly sketching why moves to reconciliation may be advantageous, noting that this might more fruitfully be achieved from within restoration, rather than by suggesting a paradigm shift. In Section 4.2.1, I show the connections between restoration ecology and traditional theology, arguing that restoration presented environmentalism through familiar and therefore more palatable biblical narratives. Restoration was originally fostered within an equilibrium paradigm that taught that ecological assemblages tended to follow relatively linear pathways towards predictable climax states. Although these have now been mostly discredited in favour of a ‘flux of nature’ paradigm the notion of a balanced nature retains considerable social currency. This belief tends to prevent the reconciliation of introduced species which are still regularly seen to only upset nature’s supposedly fragile balance.

In Section 4.2.2, I show that traditional biblical narratives also underlie ongoing resistance to the notion that humans are a part of, rather than apart from, nature. This estrangement fosters a discourse of tragedy, shame and self-loathing that offers restoration only as a means of redemption for past sins. The focus remains on returning environments to states that more closely approximate pre-human times, effectively denigrating and excluding the ongoing relationship those environments now have with humans and human introductions. This is especially troubling given that, as I argue in Section 4.3, there can be no
returning to past conditions. Indeed, retracing to any semblance of previous times is prevented by the environmental realities of mass species introductions, widespread habitat modification, extinctions, and ongoing climatic changes. I show that there are also considerable technical difficulties with restoration, making most restoration initiatives difficult if not impossible to achieve and fraught with unintended consequences. Emerging understandings of the rapidity of evolution and the extent of hybridisation show that attempts to restore past ‘purities’ are often misguided or even detrimental to the vitality of future ecosystems. I show, in Section 4.3.2, that moves to an appreciation of ‘novel’ ecosystems within the restoration literature may point the way to new perspectives that embrace a more affirmative and inclusive reading of biodiversity.

4.2 A shift to reconciliation

As I argued in Chapter Three, native species and ecosystems are presented as important manifestations of national identity with anything threatening them taking on the image of corrupting foreign influences that threaten the nation (Head & Muir, 2004; N. Smith, 2011; Woods & Moriarty, 2001). This framing, nevertheless, is incompatible with the modern image of the multicultural society that incorporates immigrants and benefits from the mixing and hybridisation of influences from other places. A social constructionist perspective is useful for showing how these approaches to restoration benefit some aspects of the environment (e.g. natives) while doing a disservice to others (e.g. exotics). It is also useful for indicating where understandings may be heading. In the restoration literature there appears to be an increasing realisation that the negative characterisation of introduced species is not a useful or sustainable approach long term (Davis et al., 2011; but see also Simberloff & Signatories, 2011). On account of this, a range of alternative discourses are emerging that challenge the dominant discourses and look to reconcile the place of introduced species within modern environments. I argue that these emerging perspectives point the way towards a more fruitful future discourse on introduced species.

Reconciliatory discourses, which seek to accept rather than repel introduced species, constitute a form of resistance to the existing mechanisms of biopower. According to Foucault (2008 [1979]), such discourses are to be expected as they form one arm of the continuous dialectic between power and opposition to power. These ongoing forms of resistance are therefore coterminous with biopolitical governance.
Conservationist discourses help to present certain wild native species as rare and valuable commodities for exhibition (e.g. as tourist attractions). When these species are threatened by introduced species they become impediments to profitability. However, as moves to remove these threats become formalised through pest management industries, they too become useful as industries in themselves for pest control operators. In this way, both valued natives and unwanted pests become entrained to biosocial collectivities (Holloway & Morris, 2012). Reconciliation challenges this matrix by suggesting that new ways of understanding the interactions between native and introduced may come to be understood.

My purpose is to show the ways that restoration would be improved by shifting closer to reconciliation. However, I do not wish to foster an either/or debate which simply discards restoration, but rather wish to suggest discursive frames that might be useful in updating the approach. Table 1 suggests some broad differences between restoration and reconciliation. In the discussion that follows I draw on these, presenting arguments from the literature that show why current perspectives in restoration may be unsustainable and why moves to a more reconciliatory approach might prove a beneficial course modification for wildlife management.
Table 1: Restoration and reconciliation compared.

<table>
<thead>
<tr>
<th>Restoration</th>
<th>Reconciliation</th>
</tr>
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<tbody>
<tr>
<td>Retrospective, conservative</td>
<td>Forward-looking, progressive</td>
</tr>
<tr>
<td>Enforcing nature-culture boundaries</td>
<td>Breaking down nature-culture boundaries</td>
</tr>
<tr>
<td>Patronised and supported by elites</td>
<td>Aimed at emancipation of marginalised groups</td>
</tr>
<tr>
<td>Militant, aggressive</td>
<td>Non-violent, peaceful</td>
</tr>
<tr>
<td>Technically impossible</td>
<td>Practicable</td>
</tr>
<tr>
<td>Negative toward humans and introductions</td>
<td>Positive toward humans, accepting of introductions</td>
</tr>
<tr>
<td>Incompatible with climate change</td>
<td>Incorporating climate change</td>
</tr>
<tr>
<td>Science-driven</td>
<td>A range of perspectives needed</td>
</tr>
<tr>
<td>Balance, equilibrium</td>
<td>Disequilibrium, resilience</td>
</tr>
<tr>
<td>Morbid, incriminatory, judgemental</td>
<td>Hopeful, optimistic, non-judgemental</td>
</tr>
<tr>
<td>Only sees negatives of globalisation</td>
<td>Sees globalisation as complex, sometimes positive</td>
</tr>
<tr>
<td>Sees nation state as native only</td>
<td>Sees nation state as fluid entity</td>
</tr>
<tr>
<td>Obsesses over rarity and extinction</td>
<td>Does not catastrophise extinction, does not obsess over rarity</td>
</tr>
<tr>
<td>Discourses of tragedy, blame, guilt</td>
<td>Discourses of appreciation and compassion</td>
</tr>
<tr>
<td>Wilderness</td>
<td>Wildness</td>
</tr>
</tbody>
</table>

Although there is no unified 'reconciliation literature,' ideas of reconciliation are increasingly being approached by authors from a range of different fields, most notably within natural science debates in conservation and restoration ecology (Ewel & Putz, 2004; Hobbs et al., 2009; J. W. Williams & Jackson, 2007), and from various disciplines within the social sciences and critical arts (Bhattacharyya et al., 2011;
Rotherham & Lambert, 2011; Trigger, 2011). In this chapter I primarily utilise the substantial restoration literature as a way of accessing reconciliation discourses. Numerous critiques within this literature point to the impossibility of restoring ecosystems to pre-human baselines and the great difficulties in control and eradication of introduced species for the purposes of native species and ecosystem conservation (see Section 4.3) (Bjorkman & Vellend, 2010; J. A. Lockwood & Latchininsky, 2008; J. H. Myers, Simberloff, Kuris, & Carey, 2000). Authors writing on the wider topic of restoration have also reflected on the overall futility and harm of many restoration efforts and suggested the need to better incorporate introduced species within wider ‘cultural landscapes’ (Peretti, 1998; Sagoff, 2009b; C. R. Warren, 2007). Therefore, while restoration per se is diametrically opposed to the concept of reconciliation, the literature on this topic offers a rich fount of fresh perspectives on the place of introduced species. I also argue that, rather than attempting to replace the dominant paradigm of restoration, a more fruitful approach might be to contribute to changes occurring within the field. The notion of what restoration is and what it represents, for example, is constantly changing and may conceivably come to incorporate reconciliation.

4.2.1 The path to ecological restorationism

Like invasion biology (see Chapter 3), restoration ecology emerged as a sub-discipline of ecology in the 1980s (Jordan & Lubick, 2012). In contrast to the environmental movements of preservation and conservation that preceded it, restoration is based on the assumption that ecosystems can be actively returned to something approximating their former states. According to restorationists, the role of humans is not only to protect ecosystems from human exploitation, but also to retrofit them based on biogeographic knowledge of historical biotic assemblages. The Society for Ecological Restoration, the leading proponent of restorationist science and ideals, was founded in 1987. Recognising the impact of industrialisation on global ecologies, it remains ‘dedicated to reversing this degradation and restoring the earth’s ecological balance for the benefit of humans and nature’ (Society for Ecological Restoration, 2014, n.p.). In this sense it seeks to actualise the vision (in)famously articulated by Leopold et al. (1963). Writing on the management of United States national parks, Leopold et al. suggested that:
A reasonable illusion of primitive America could be recreated, using the utmost in skill, judgement, and ecologic sensitivity. This, in our opinion, should be the objective of every national park and monument (Ibid., p. 33).

This vision is fundamentally underpinned by three assumptions about ecology: firstly, that changes to the environment are ‘reversible;’ secondly, that the earth has an ecological ‘balance’ to which it can be returned and; thirdly, that humans are distinct from nature. I analyse the second assumption in this section and the third in Section 4.2.2, leaving analysis of the first assumption for Section 4.3. Throughout these sections, I suggest that conceptions of balance and human-exclusivity from nature, however discredited, remain integral to restoration.

For Sagoff (2013, p. 253), 20th century ecological science, and restoration ecology in particular, substituted the word ‘Evolution’ for ‘God,’ ‘but otherwise retained a Great Chain of Being framework that came directly from natural theology.’ It built directly on the Enlightenment era’s confident delineation of ‘nature’ and ‘culture,’ which was hard-wired into the dominant Judeo-Christian worldview (Lovbrand, Stripple, & Wiman, 2009; Sagoff, 2009a; M. Townsend, 2005). Smout (2009) argued that this dichotomy is a relic of the pre-Darwinian intellectual world which was based on the divine pre-eminence of man. Darwinian science confounded this understanding, positioning humans on the tree of evolution as a product of natural processes, neither higher nor lower than other life forms. T.H. Huxley nonetheless made evolution more palatable to Victorian sensibilities by placing humans, alone, at the top of the tree. This intersubjectivity constituted a less radical position than Darwin’s, and was much less unsettling. Smout wrote that ecological science throughout the 20th century remained broadly content with Huxley’s positioning, continuing to imagine humans as somehow removed from nature. Importantly, it supported the concept of ‘wilderness’ which was so popular among preservationists. According to the ‘wilderness ideal,’ landscapes that incorporate humans are cultural or ‘artificial’ environments – cities, towns, and farms – categorically bracketed off from natural environments – forests, wetlands, grasslands – and never the twain shall meet. The United States Wilderness Act (1964), for example, designated wilderness as ‘an area where the earth and its community of life are untrammelled by man, where man is a visitor who does not remain’ (in C. Palmer, 2003, p. 27). Wilderness could be preserved, in other words, simply by
removing the influence of humanity which should be kept separate anyway. Sagoff (2013, p. 253) argued that the strength of ecosystem theory thus lay in its legitimisation and perpetuation of the popular religious belief that ‘human activity is external to and disturbs nature’s authentic balance’ (Ibid.).

Reinforcing the above is fact that the narrative of environmentalism parallels and lends from a familiar biblical mythology (see Larson, 2007b). According to creationists, God created the world and everything in it. In an act of beneficence, He gave dominion over the world to humans. Unfortunately, humanity became corrupt and sinful and betrayed its Creator. The harmonious natural paradise bequeathed by God was thus upset by human greed. For many conservationists, humankind has similarly ‘fallen’ or sinned against nature by ‘living profligate, subsidized, unsustainable, industrial lifestyles’ (Noss, 2003, p. 445; Sagoff, 2013). It remains a fundamental premise of conservation that human alteration of nature has destroyed nature’s ‘balance’ (Hettinger, 2001b). According to Fenton (1986, p. 16),

Conservationists have a vision…of the perfect world – the world as it was before man [sic] came along, when everything was in its correct place, fitting in with the natural order of things – Eden before the fall.

Creationists and conservationists alike are thus driven to atone for humanity’s excesses. As Larson (2007b, p. 995) put it, ‘there is a fall from grace, we are in error, and we have a nostalgic wish to return.’ For many conservationists, redemption for environmental wickedness can ultimately be achieved by removing the noxious influence of humans and returning the land to its divinely planned status quo (Sagoff, 2013).

Although this notion of ‘balance’ in nature is now almost universally considered deficient and inaccurate, its long gestation and harmony with other ideologies meant that it was widely accepted as fact until the late 20th century (Jelinski, 2010; Scoones, 1999). As Jelinski (2010, p. 40) suggested, ‘the myth that there is a balance of nature is part of most cosmologies and central to natural history.’ It has deep roots in western philosophy and science. Lockwood and Latchininsky (2008, p. 439), for instance, argued that the view of a balanced nature is grounded in the ancient Greek ideal of the ‘Golden Mean’ which posits that healthy, functional populations ‘should not exhibit erratic changes in abundance, and if disturbance does occur then the population is expected to reliably return to a steady state via dampened oscillations.’
Judeo-Christian religion is similarly enamoured with the concept of balance, believing that 'harmony in nature [expresses] the wisdom and benevolence of the Creator' (Jelinski, 2010, p. 276).

Just as Huxley made biological evolution more palatable by effectively excluding humans from nature, Eugenius Warming made the myth of a balanced nature more believable by imbuing it with scientific credibility (see Marris, 2011). In the late 19th century Warming introduced the concept of ‘succession’ to explain how he thought botanical assemblages were always moving in the direction of an eventual balanced state. This was later elaborated and extended upon by Frederic Clements (Bush, 2003). Clements (1916) argued that plant communities could be seen as a super-organism, growing from an embryonic stage to a mature stage he defined as the ‘climax’ equilibrium state. Disturbances to succession were unnatural – usually human-induced – and their effects would decrease over time as the biological ‘community’ became more stable or permanent (Jelinski, 2005). Once formed, it was considered difficult for new species to infiltrate this community as the existing species acted in concert to simultaneously support the existences of one another and repel unwanted ‘invaders’ (Hannigan, 2006). Stable, natural communities were always on a path to somewhere. They had an underlying, predictable strategy which would, in the absence of extraordinary circumstances, always play out.

In the 1930s Arthur Tansley objected to Clements use of the word ‘community.’ He argued that the super-organism analogy was misleading and that aggregations of plants could follow a range of potential successional trajectories (see Tansley, 1935). In preference to ‘community,’ he coined the term ‘ecosystem’ to refer to the complex arrangement of biological and physical inputs that constituted any given ecological assemblage (O'Neill, 2001). The emphasis on ‘systems’ highlighted the energy flows that were the principal structuring agents of the hitherto communities. As such, ecosystem thinking ‘emphasized and focused on some properties of nature, while ignoring and de-emphasizing others’ (Ibid., 2001, p. 3276). Whilst not predictable, these systems had a clearly defined order and boundaries preordained by the laws of thermodynamics (Jelinski, 2005). Despite Tansley’s insistence on a range of potential successional trajectories, his notion of the ‘ecosystem’ also came to be subsumed into the idea of a predictable, balanced steady state. Indeed, his theory contributed to what is now commonly referred to as the ‘equilibrium paradigm’ (see Pickett et al., 2007).
The overriding feature of the equilibrium paradigm in ecology has been the assumption that local species assemblages follow a linear path of ‘succession’ toward stable, ‘climax’ communities (Scoones, 1999; Wallington et al., 2005). Influences that upset stable communities are seen to be rare, with the objective of conservation managers being to dampen or eliminate any sources of ‘disturbance’ that might upset the balance. Moreover, because nature is ‘governed by mechanistic natural laws’ the endpoint of ecological succession is predictable and the assumed goal of management (Wallington et al., 2005, p. 3). Furthermore, the equilibrium paradigm suggests that nature is understandable and manageable. As Scoones (1999, p. 482) wrote, ‘population models identify carrying capacities and maximum sustainable yield levels’ through which nature can be predictably calculated, monitored and manipulated. This allows nature to be reliably incorporated into economic processes of production (Anderson, 2011). Equilibrium defines the norm to which the population will return and through which it can be controlled and exploited.

Ecology remained dominated by the equilibrium paradigm until at least the 1970s when ecologists such as Crawford Holling (1973) and Robert Whittaker (1975) began to make headway in challenging it (G. L. W. Perry, 2002; Scoones, 1999). Hollings’ concept of ‘resilience,’ in particular, has led to a much wider appreciation of the roles of uncertainty and surprise in ecology (J. Walker & Cooper, 2011). Since then, many of the concepts considered central to ecology have been revised, and these changes have important implications for understanding the mechanics of ecological management (Wallington et al., 2005). Most important has been a shift away from equilibrium conceptions and toward non-equilibrium understandings (Jelinski, 2010; Lugo, 2012; Rhode, 2005). The consolidating non-equilibrium or ‘flux of nature’ paradigm emphasises dynamism and unpredictability across space and time (Pickett et al., 2007, p. 199). It highlights the understanding that ecosystems are complex and non-linear. Rather than working toward some pre-ordained stability, ecosystems are instead ‘renewable but unrepeatable’, characterised by randomness and constant change (Trudgill, 2001). Disturbance therein is no longer seen as extraordinary, rather as the norm (Midgley, 2007).

The clockwork-like stability and predictability of equilibrium conceptions has been replaced by conceptions informed by chaos theory. As ecologist Mark Davis put it, ‘…the natural world out there is more like a swirling and boiling cauldron’ than an integrated super-organism (in Marris, 2005, p. 273). The
accumulation of long-term data on the function of many ecological systems has brought the assumptions of the equilibrium paradigm into clear view and thence into question (Pickett et al., 2007, p. 199). Notably, Clements’ former notions of order and stability now seem short-sighted. The plant communities he saw as stable have since been shown to be highly dynamic. For example, most plant communities in Clements’ home region in the eastern United States are relatively short-lived from a paleoecological perspective, having formed their current compositions within the last 4,000 to 8,000 years (Woods & Moriarty, 2001). All of this is vindication for the work of Charles Gleason who challenged the equilibrium paradigm as early as the 1920s (see Gleason, 1926). Branded a heretic at the time, his view of species distributed independently of other species, of no natural boundaries between communities, of random co-occurrences, and of illusions of balance taken from ‘snapshot’ views, are now well-established ecological positions (see Jelinski, 2005; Sagoff, 2013).

Nevertheless, not only have non-equilibrium views been slow on the uptake, they have often simply gone ignored or been implicitly rejected (Jelinski, 2010). For example, Fenton (1986, p. 13) lamented that many conservationists continue to dream ‘of the preservation or re-creation of completely natural systems untouched by the hands of men or women – a kind of pristine Garden of Eden as it was before the apple was eaten.’ Suzuki (1997, p. 135) thought that the, ‘diversity of species within any ecosystem is also a factor in maintaining balance and equilibrium within that community.’ He quoted E.O. Wilson who wrote that if humans were to vanish from the planet it would soon return to the supposed ‘fertile balance’ that existed in pre-human times (in Ibid., p. 155). More recently, Midgley (2007, p. 3324) related how the culling of deer is still seen as a means of achieving ‘natural balance’ wherein deer numbers are felt to be ‘in harmony’ with the forest. Even the Secretariat of the Convention on Biological Diversity (2014, n.p.) worried that invasive species were a threat to the ‘natural balance of species and ecosystems.’ Interviewing a wide cross-section of people in southern Chile, Schuttler et al. (2011) found that, despite the contested nature of the equilibrium paradigm, this still remained the predominant understanding of nature amongst respondents (also see Hull, Robertson, Richer, Seekamp, & Buhyoff, 2002). It can be argued, therefore, that non-equilibrium ecology has failed to be accepted by broad swathes of the public.
Scientists, too, often continue to struggle with the notion that ecosystems might not be on a path to stable equilibrium (see Jelinski, 2005; Larson, 2007b; Trudgill, 2001). For example, ecologists Myers and Bazely (2003, p. 10) wondered, perhaps hopefully, whether it might be possible for introduced species to be incorporated into a system such that a new ‘equilibrium state’ comes about. However, they placed ‘equilibrium state’ in inverted commas, perhaps to indicate the tentative, almost embarrassed, nature of their proposition. In their defence, the tendency to support equilibrium assumptions may be hard to resist. The ecological literature is littered with everyday terms that implicitly support the concepts of stability and balance (see Trudgill, 2001). For example, ‘change’ is rarely used. Instead ecosystems are ‘disturbed’ or ‘disrupted’ or, more emphatically, ‘collapse.’ If they move in a desired direction they ‘recover’ or they become ‘rehabilitated.’ Thus it can be argued that the prevailing scientific parlance continues to serve equilibrium conceptions, while doing disservice to non-equilibrium ones. Wallington et al. (2005) noted that, despite widespread agreement among ecologists that equilibrium conceptions are inadequate, conservation management plans rarely reflect revised perspectives. Instead, management still largely revolves around the science of the mid-20th century. The standard method remains one of purchasing blocks of land, isolating them from surrounding land uses, excluding humans, and preserving static species assemblages12 (Head & Muir, 2004).

Those who refuse to accept equilibrium-driven beliefs are often seen as heretics. For example, dissenting ecologist Ariel Lugo complained at being ‘scolded, yelled at, and abused by the ‘conservation priests’” (in Vince, 2011, p. 1384). His research and enthusiasm for ecosystems not meeting the popular definition of ‘natural’ met with ‘absolute silence and then, often, hostility…’ from his colleagues (in Ibid.). For Lugo the ‘right’ scientific knowledge was clearly that which confirmed the right social paradigm. Trudgill (2008, p. 103) added to this position, arguing that the most powerful accounts of nature negate evidence and deny other possibilities amounting, in effect, to ‘ecological faith.’ He wrote that:

12 This may partly reflect the intellectual background of senior conservation managers, who were often trained when equilibrium thinking was en vogue (Wallington et al., 2005). For Sagoff (2013, p. 254), the transition to concepts of flux, ‘since it must work through the replacement of one generation of ecologists by another, is slow but nevertheless inevitable.’
Concepts like the integrity of healthy ecosystems, the balance of nature and equilibrium are actually such beliefs. The ‘balance of nature’...is untenable when faced with evidence, but the idea is a strong article of faith. In Western society we readily reach for an Edenic myth of humans causing disharmony in the putative natural order of things...we shoulder the guilt laden notion that we have disturbed the natural order and it is now all wrong and our fault. This becomes very much a situating narrative and a personal motivation...What we are doing is no more than placing a guilt-laden... ethic into the Edenic myth. A new situation is just different, but we are reluctant to see it this way because it challenges our situational narratives (Ibid., emphasis in original).

Thus the notion that nature ex-humans might not be on a path to harmonious balance, and might have no ‘master plan,’ is a challenge to how people see the environment and themselves. Work on the social construction of nature reveals, therefore, that the notion of a balanced nature retains considerable social currency and may be unlikely to be fully retired any time soon. In the next section I argue that the distinction between ‘nature’ and ‘culture,’ though similarly discredited, retains a similar currency in social discourses.

4.2.2 Nature and culture

The dualistic distinction between nature and culture has been the focus of intense scholarly criticism for decades (see Gu, 2009; Head & Muir, 2004; Scoones, 1999). The solidifying consensus from such debate is that any rigid delineation between nature and human society must be rejected (see Coombes et al., 2011; Gamborg et al., 2010). For some, attempts to divorce humans from nature are now seen more as a problem to be counteracted than as a worthy goal. Indeed, for many, humans might more accurately be conceptualised as a ‘keystone’ species within many ecosystems rather than as an ‘interference’ to be removed (O'Neill, 2001). One fundamental problem with presenting nature divested of humans is the difficulty in finding any corners of the earth that might meet that description (Giam et al., 2011; Lovbrand et al., 2009). As Bade (2010, p. 35) reflected, ‘if one considers the notion of ecology and the interconnectedness of every aspect of the world, then it is clear that this distinction is at odds with the interrelated realities of the world.’ For example, many areas that might initially be termed ‘natural’ –
interpreted as free from human interference – are often subsequently found to have been influenced by humans (e.g. see Molina-Montenegro et al., 2012; Voight, Lee, Reft, & Bates, 2012). According to Vogel (2003, pp. 150-151, emphasis in original):

What we call nature generally turns out to be already humanized in one way or another, and so already in part “artificial.” Humans, clever and active as they are, have been around a long time and have tried to live in lots of different landscapes, and few areas on Earth have been so inhospitable that no human has ever walked through it or grazed animals on it or even tried over-optimistically to grow crops in it. [Eric] Katz uses as an epigraph William James’s remark that “the trail of the human serpent is thus over everything,” apparently worrying that it might come to be true; the point, however, is that for better or worse it is true, already.

Added to this is the realisation that the vast majority of ‘pristine’ areas can be seen this way only because of ignorance on the part of their classifiers (Kendle & Rose, 2000). Recent studies show that human-dominated ecosystems now occupy more of the world’s surface than do ‘wild’ ones and, in many countries, the search for terrain uninfluenced by humans is a fruitless task with the habitats of treasured native species no less ‘artificial’ than those of introduced species (E. C. Ellis & Ramankutty, 2008; Smout, 2009). All of this is, of course, compounded by the ramifications of human-induced climate change which influences every inch of the globe (C. R. Warren, 2011).

Despite such widespread critique, the binary division between nature and culture remains a central feature of western environmental discourses, continuing to propagate the notion that there are fundamental, irreconcilable differences between human and nonhuman worlds (Chew, 2011; Knight, 2000). Management of natural and cultural heritage, for instance, are still typically managed separately (Bade, 2010; Head & Muir, 2006; Trigger, 2011). Moreover, while cultural heritage is guided by a framework informed by science, human values and history; scientific knowledge virtually monopolises understandings of natural heritage. Although frequently presented as ‘objective’ and ‘dispassionate,’ disciplines such as conservation biology and restoration ecology have clear social and cultural underpinnings that are far from disinterested (see Chapter 3). Ecologists’ position of privilege within
discussions of nature means that understandings of the interrelationship between nature and culture often seem to be informed by unquestioned cultural dogmas. Reverence for particular historic states and an insistence on their restoration, for example, ‘can approach the religious,’ with restoration ideals such as those epitomised in the Leopold et al. (1963) report developing an ‘almost scriptural aura’ (Marris, 2011, pp. 14, 24). Challenges to these ideals, such as those posed by introduced species, are met with ‘crusade-like’ resistance (A. Macmillan, 2010, n.p.).

For Daniel Bromley, ‘contemporary ecology is nothing but intelligent design for agnostics’ (in Sagoff, 2013, p. 253). Humans remain dogmatically separated from the rest of life. Despite widespread acceptance among scientists that humans are mammals that evolved on the planet earth like any other, they are routinely erased from biological nomenclature. For example, although humans may be afforded cultural titles such as ‘managers’ or ‘guardians’ of the environment, they are not capable of being biologically ‘native’ or ‘invasive’ within it (Head & Muir, 2006; M. Townsend, 2005). This inconsistency is readily conceded but rarely challenged (Vogel, 2003). For example, in a recent textbook on restoration ecology, Morrison (2009, p. 8) decided to use the term ‘nonhumanized’ rather than ‘natural’, ‘because humans are, indeed, a natural part of the environment’ reminding the reader that, ‘humans evolved on this planet.’ However, two pages later, in reference to ecological ‘disturbance’ events he unblushingly distinguished between ‘natural’ and ‘human caused’ disturbances13 (Ibid., p. 10). Whilst recognising its inadequacy, Morrison remained nevertheless wedded to the notion that humans must be seen as separate from nature. Again, according to Townsend (2005, p. 2), ‘this view stems from the myth of Eden and of ‘man’ before the fall; that having left an age of innocent and primitive harmony with nature we are condemned to roam the world apart, despoiling all we touch.’ If a migratory bird or a storm event transports a species across space it is considered acceptable or even desirable, but if a human animal does the same it is considered ‘unnatural’ or even ‘corrupt’ (see Chapter 9) (Schlaepfer et al., 2011; M. Townsend, 2005). Schlaepfer et al. (2011) asked whether it can be possible for the germination of a seed in a novel environment to be judged to have objectively positive or negative ecological consequences

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13 In the following chapter he returned to his disclaimer, again instructing that nonhuman influences are ‘usually termed natural changes, although this is strictly a misnomer given that humans evolved on this planet’ (Ibid., p. 102).
simply according to how it was facilitated. The answer is that it cannot. It is the culturally embedded understanding that humans are separate from nature, alone, that dictates that that event is disadvantageous and should be stopped (Trudgill, 2001).

To Latour (1993), the division between nature and culture is an exercise in purification; an activity fated to constant corruption and hybridity. As van Dooren (2008, p. 7, emphasis in original) later concurred:

One of the founding gestures of humanity is the way in which the 'object world' (nature as it exists in and of itself) is separated off (purified) from mere human perceptions, requiring ‘experts,’ such as scientists, to mediate (translate) between ‘reality’ and humanity.

Naturally this division only reinforces the exclusive legitimacy of the truth discourses of science (see Chapter 3). Nevertheless, Latour (1993) argued that ironically these modernity-defining acts of purification actually increase the proliferation of the hybrid entities that transgress conceptual boundaries. Authors such as Whatmore (2002), Castree (2005) and Haraway (2008) have encouraged the study of hybridity as a means of deconstructing the sanctity of nature-culture dualisms. For example, Latour’s concept of 'socionatural hybrids’ and Haraway’s concept of socio-technological ‘cyborgs’ have both served as a means of contesting inflexible, dualistic boundaries (Figgins, 2010). Head and Muir (2004, p. 510) wrote that the move to hybridised conceptions of nature helps to resist the impulse toward classifying ‘every hybrid as a mixture of two pure forms.’ Instead, difference is seen as ‘relational’ (Ibid.). That is, ‘differences…are not pre-existing entities but take particular forms in varying contexts’ (Ibid.). Relational thinking holds that understandings of phenomena are facilitated by appreciating the various links between them. As these linkages are often highly complex, dualistic models tend to be too simplistic to fully appreciate them (Figgins, 2010).

Regardless of these contributions, social constructionists and other social scientists working within the broad tradition of critical theory consistently argue that restoration continues to ossify nature-culture boundaries. As I argued in Chapter Two, this can precipitate numerous negative outcomes, not least of which are social disengagement from environmental issues (see Miller, 2006), and the fostering of support for conceptual frameworks that seem increasingly irrelevant to an overwhelmingly human-mediated world (E. C. Ellis & Ramankutty, 2008). Restorationists, for example, remain fixated on
differentiating human-induced changes from those caused by any of the millions of other life forms on the planet (e.g. see M. L. Morrison, 2009). Although important to elucidating historical biogeography (Preston, 2009), the focus on teasing out ‘human’ from ‘natural’ influences remains an unhelpful preoccupation (C. R. Warren, 2009), with research continuing to be directed at supposed ‘pristine’ wildlife areas that are superficially, and in the case of indigenous peoples, often brutally, excluded from human influence (Coombes et al., 2011). As Rosenzweig (2005, p. 198) wrote, ‘reserves and restored habitat are in one compartment, the holy one. Other places are in a second compartment, the ruined one.’ This view remains particularly pronounced in regions with relatively recent European human histories such as North America and Australasia. In these regions, preservationist ideals were once popular due to a perceived shorter period of human habitation following their ‘discovery’ by Europeans\footnote{In Chapters Five and Seven I argue that preservationist discourses in New Zealand remain popular.}, making restoration goals seemingly more attainable. Unperturbed by the subsequent demise of the ‘noble savage’ or terra nullius view of ecologically innocuous indigenous peoples (Coombes et al., 2011), the focus of restoration has often simply shifted further back from pre-European to pre-human. Tim Flannery accurately portrayed the most common restorationist narrative of human ‘interventions’ in nature. His popular books such as The Future Eaters (1994) and The Eternal Frontier (2003) presented the migration of humans to new lands as an environmental catastrophe with waves of human immigrants working in tandem to do ill by nature. While restoration promotes an image of the omnipotent super-human who can both give, take away, and manipulate nature at whim, it concurrently fosters a discourse of tragedy, guilt, shame and self-loathing (Mauritz, 2005). Humans are the figurative bad guys; nature the good guy. Human-influenced ecosystems are, similarly, somehow ‘profane’ or ‘contaminated’ (Lugo, 2009; Rosenzweig, 2003b). Restoration can thus be interpreted primarily as a work of redemption for past sins. It promotes the notion that the only positive engagement with nature is that which makes it more like something that existed before humans arrived on the scene. In fact, preservationists such as Katz (1991) and Elliot (1994) continue to be vindicated by restoration activities being referred to in the literature as ‘artificial’ (e.g. see Campion-Vincent, 2005; Chapuis et al., 2011), implying that human involvement in nature is always a sham, imitation or forgery. The use of the word ‘artificial’ is doubly troubling for those advocating more social
forms of ecology as it not only enforces nature-culture boundaries, but also serves to underhandedly denigrate the achievements of humans. Restoration continues to be viewed, therefore, as an activity that is achievable and necessary to undo past ‘damage’ but, at the same time, somehow regrettable because human ‘interference’ in nature is never ultimately right. In the next section I argue that restoration has become further shackled by an inability to achieve its goals and a reluctance to accept that those goals are unattainable.

4.3 The irreversibility of ecological change

What human-exclusive conceptions of restoration often fail to acknowledge is that ecosystems have fundamentally changed. It is not just a case of adding the right number of historic species, taking out the contemporary species, and going back to how things were. Conditions have fundamentally changed. Townsend (2005) recognised that native species are not perfectly adapted to their current ranges, rather they were the best adapted, or first to arrive, at some point in ecological history (also see Gould, 1998). They are not peculiarly well suited for those ranges irrespective of environmental changes (Lugo, 2012). Instead, they may now be poorly adapted for many places that they were once widespread. From an evolutionary perspective, the species that are ecologically suited for contemporary wild space are those that thrive there, many of which may be introduced species (Hettinger, 2001b). Moreover, the assumption that ecosystems will return to their former ‘climax’ state and historic species composition once these introduced species have been removed is rarely born out (Suding, 2011). Too often, considerations of site suitability for the re-introduction of natives is based on historic distributions that pay little regard for climate change or other broad-scale environmental changes (see Michaels & Tyre, 2012; C. R. Warren, 2011). For Morrison (2009, p. 115, emphasis mine), this is unfortunate because ‘the historic presence of a species does not indicate that it could reoccupy the site even if all necessary habitat conditions were restored’ meaning that the feasibility of re-introductions needs to be gauged in terms of both ‘historical possibilities and current realities.’

Restoration to pre-human ecosystems is vastly problematic (M. L. Morrison, 2009; Norton, 2009). The measures needed to reverse ecological history are often hugely expensive and time consuming (Carroll, 2011; Lindenmayer & Hunter, 2010; J. H. Myers & Bazely, 2003). Costs of eradication programs for
introduced species, for instance, are prohibitive, sometimes ending in financial disaster (see J. H. Myers et al., 2000). Even determining what the baseline for restoration is can be far from straightforward. Typically, fossil or sub-fossil records will be used to approximate the baseline ecological composition of a site, however these records are frequently misread or unreasonably extrapolated. Presence of a species in the fossil record, for example, does not indicate the presence of an entire habitat or community, nor does absence from the fossil record indicate that it was not present, though both are frequently extrapolated from small data sets derived from isolated fossil deposits (Bjorkman & Vellend, 2010; M. L. Morrison, 2009). In the absence of fossil records, present-day surrogates are often employed as models. However, these are rarely representative of pre-human ecosystems and, in most instances, have been profoundly altered themselves, even if less noticeably (Bjorkman & Vellend, 2010; Hobbs, 2004; Hobbs et al., 2006).

A substantial literature now documents the unintended ‘cascading effects’ of species removal (see Brodier et al., 2011; Ruscoe et al., 2011; Rutledge, White, Row, & Patterson, 2011). The removal of introduced cats (*Felis catus*) from Macquarie Island, for instance, lead to a sharp increase in the introduced rabbit (*Oryctolagus cuniculus*) population which was formerly suppressed by cat predation. This, in turn, precipitated a significant decline in the number of native herbs on the island which were thenceforth consumed by a burgeoning rabbit population (Bergstrom et al., 2009). Similarly, the removal of introduced ungulates from part of Hawaii resulted in a decrease in native vegetation cover. Weller et al. (2011) found that the removal of ungulates disproportionately benefited certain introduced plant species over natives. These studies show that the removal of species is fraught with unintended consequences that can prove contrary to the overall aims of management. As Lugo (2012, p. 8) argued, ‘species-by-species eradications…are ineffective because they ignore the overall system’s self-adjustment to current conditions.’ Although many pest management strategies now attempt to account for this by targeting multiple species concurrently, the success of these strategies is typically judged on recorded outcomes in relation to a small numbers of favoured target species, effectively ignoring the wholesale effects that may be wrought on others.
Attempts to remove certain introduced species also often place restorationists in conflict with others (see Reaser et al., 2007; Rotherham, 2010b; Simberloff, 2011). Such conflicts are not limited to long-running disputes with animal rights advocates (e.g. see D. Perry & Perry, 2008). The perception that local people have of introduced species, for instance, can often be very different from that of conservationists. For example, on Pitcairn Island local people regard introduced Lantana camara as a soil improver, a species conservationists regard as a major weed (McNeely, 2011). In California, introduced Eucalyptus trees, another weed species for conservationists, are also often loved by locals who oppose attempts to remove them (Simberloff, 2011). As with the development of conservation itself (see Chapter 3), many conflicts centre on disputes between conservationists – often advanced by European elites – and lower socioeconomic indigenous peoples. Binggelli (2011), for example, noted how poor black Africans are generally less concerned with the evolutionary provenance of the species around them and more in how certain species can help them to survive.

Trigger (2008), similarly, related how Aboriginal Australians and ‘Euro-Australians’ differ in their views towards introduced buffalo (Bubalus bubalis) in the Northern Territory. While the latter consider them to be pests, Aboriginals tend to regard buffalo as ‘wild creatures’ or ‘bush tucker’ (Ibid., p. 634). European conservationists live mostly outside the areas they wish to ‘restore’ in the Northern Territory. In contrast, many Aboriginals live within these ‘wildlife’ areas and have known the species, native and introduced, their whole lives. Furthermore, attempts to remove introduced date palms (Phoenix dactylifera) from a local wetland were regretted by many Aboriginals who saw them as a part of the area’s beauty, who value them as a tourist attraction, and who fondly remember playing under the shade of the trees as children (Trigger, 2008). These forms of resistance are not based merely on an ignorance of species provenance, as is sometimes suggested, but rather in a genuine support for the contemporary biota.

4.3.1 Evolution and hybridisation

The overall problem with restoration, in short, is the fixation on past states and the nostalgic notion that balance and harmony were to be found in ecosystems before humans, and human introductions, inconsiderately upset them. Instead, life is more accurately defined by instability and rapid, often unpredictable changes. Compounding this is the presumption that, should sufficient ecological knowledge
be compiled, these systems can be put back together again. What the ecological science of the last 40-50 years has shown, in contrast, is that life is characterised by almost inconceivable layers of complexity and that ‘ecosystems’ – which are merely arbitrary conceptual divisions – consistently elude re-configuration by stubbornly forming new ecological associations, behaviours, physiologies and courses of evolution (O’Neill, 2001). Therefore, while restoration continues to foster a ‘molar’ mode of composition stressing relatively fixed, rigid living assemblages, moves to reconciliation embrace a more ‘molecular’ mode of composition highlighting ‘fluctuating boundaries and uncertain identities’ (Lundborg & Vaughan-Williams, 2011, p. 377). The emphasis moves from recreating past states to appreciating the transformation of existing landscapes and the continuous beginnings of something new. The emergence of new forms and configurations is seen, not as threat, but as fruitful adaptation to changed circumstances (Dillon, 2007b).

While restoration has tended to view introduced species as ‘guilty until proven innocent,’ reconciliatory moves have tended to stress the realisation that many introduced species are not as bad as once feared. Indeed, as I next argue, wild introduced species provide many tangible benefits that frustrate justifications for their removal.

Restorationists often argue that, ‘...we have reached a moment in time where we say enough is enough and people want to keep species [and ecosystems] as they are, as opposed to letting them progress to something else’ (Chris Tydeman in Milton, 2000, p. 237). However, as Milton (2000, p. 237) observed, ‘this looks more like an admission that the conservation of biodiversity is, in effect, an attempt to halt the process of evolution’ (also see Lugo, 2012). Few will dispute that both the nature and scale of human societies has changed dramatically over the last 300 years. Population levels, alone, have increased exponentially over this period (Demeny, 1990). The notion that humanity could change and expand with its concurrent pull on resources on such unprecedented levels but that a human-exclusive nature itself could, concurrently, remain static, or even relatively static, reflects a potential naïveté in restoration thinking. The notion that the rate of change in nature can be agreeably manipulated where necessary by humans, moreover, hints at a kind of arrogance (see Kaplan, 2009). For Theodoropolous (2003) an increased rate of ecological change might actually be a beneficial long term response to the increased extent of anthropogenic influence. As he put it, ‘a cardiac rate of 150 per minute is indeed a healthy rate – in response to great exertion’ (Ibid., p. 156). Rapid flux in ecological systems might constitute a similarly
necessary response to widespread environmental modifications (see Hobbs et al., 2009; C. D. Thomas, 2011b). Lugo agreed: ‘This is nature’s response to what we have done to it’ (in Marris, 2011, p. 122).

A move toward reconciliation in ecology is a move toward accepting and embracing the primacy of change and disequilibrium in biological systems (see Section 4.2). The notion of relatively static, slow-changing ecosystems prior to widespread human influence, traditionally embraced by restorationists, now seems increasingly implausible. Indeed, evidence for constant, often rapid environmental change throughout ecological history continues to mount (Lugo, 2009). Enduring cycles of advance and retreat of ice sheets and glaciers point to a continual turnover of species in time and space (M. L. Morrison, 2009). Research into climate change has advanced knowledge, not only of present human influences on climate, but also of the dynamism of climate over time. For example, it is now thought that sea levels at the last glacial maximum (approximately 20,000 years ago) were 120m lower than the current level, while global mean temperatures were 4°C to 7°C lower (Rahmstorf, 2007). The ranges of many species during this time dramatically shifted. This is significant because it means that most of the lowland ecosystems people now cherish and define as ‘ancient’ have formed only in relatively recent times and certainly within the timeframe of human habitation for most landmasses. Because ecosystems do not migrate as ‘intact units’ their consistency, including many supposedly ‘ancient mutualisms,’ has changed likewise (J. W. Williams & Jackson, 2007). In areas of particularly long-term human presence (e.g. Africa, Eurasia, Australia) humans have had a significant hand in the development of modern ecosystems. Hence the now well-established human influence, and now dominance, over ecosystems around the world is a process that has a long precedent (see E. C. Ellis & Ramankutty, 2008).

A shortcoming of many ecological studies is that they make the assumption that evolution does not affect short-term ecological processes because evolution is thought to be slow relative to most ecological interactions (Turcotte, Reznick, & Hare, 2011). However, this long-standing premise has been challenged by dozens of studies in recent years that have documented rapid rates of evolutionary change occurring on time scales as short as a few generations (see Moles et al., 2012; Turcotte et al., 2011; Vellend et al., 2007). Rapid evolution has been observed in multiple taxa, ‘from microbes to vertebrates,’ including adaptive responses to anthropogenic stressors such as ‘antibiotic, pesticide and herbicide resistance, as
well as changes in body size and life history’ (Lankau, 2011, p. 336; Sax et al., 2007). For example, one study showed that 70% of 23 introduced plant species in Australia exhibited significant morphological change in the century since their introduction (Buswell, Moles, & Hartley, 2011). Many species doubled or halved in crucial traits such as plant height and leaf area.

For Chew (2011, p. 138), such findings suggest that cultural understandings of biodiversity that fixate on the conservation of ‘intact’ ecosystems and ‘pure’ species may ultimately ‘conflict with the facts of evolution.’ Indeed, some argue that invasions of new species create almost ideal conditions for evolutionary diversification (Moles et al., 2012; Sagoff, 2009b; Vellend et al., 2007). Introductions can contribute to the formation of novel evolutionary lineages among both native and introduced species. In the long term, such new lineages may evolve into novel endemic species (see Schlaepfer et al., 2011).

As Carroll (2011, p. 193, emphasis mine) argued:

   Biotic communities form and exist not just in ecosystems but also in evosystems…ongoing evolution is providing ‘solutions’ as environmental circumstances change. Invaded communities may prove to be particularly dynamic in this way, as novel juxtapositions of taxa create new evolutionary dynamics. New species and benefits, including ecosystem services, may arise from novel species assemblages.

Therefore, although introduced species may reduce global species diversity in the short term, they may also enhance it in the long term (Parzer & Moczek, 2008). Schlaepfer et al. (2011) and Lockwood and Latchininsky (2008) both argued that a conservation strategy that focuses on controlling and eradicating introduced species may actually undermine the long term success of ecosystems. Introduced species are some of the best source material for forthcoming speciation events and the precursors of future endemic species. Established and invasive (i.e. successful) introduced species may also prove to be the most likely organisms to continue to succeed in a rapidly changing world. Again, the struggle to prevent the diminution of local character in the short term may be detrimental to diversity in the long term. Conservation may preserve one kind of diversity at the expense of another potentially more important kind (also see Rosenzweig, 2001b).
Hybridisation between native and introduced species also represents a contentious issue for many restorationists. Although hybridisation\textsuperscript{15} has long been recognised to be common in nature (see Montanari, van Herwerden, Pratchett, Hobbs, & Fugedi, 2011), hybridisation between native and introduced species rose to prominence in the 1990s (Bauer & Woog, 2011). Since then, concerns have regularly been expressed in the wider conservation literature on the ‘problem’ of hybridisation and what, if anything, can be done to stop it (e.g. see Allendorf, Leary, Spruell, & Wenburg, 2001; Fowler, Eadie, & Engilis, 2009; Rhymer, Williams, & Braun, 1994). These concerns have been raised because of fears that ‘pure’ native populations may be ‘compromised’ or ‘polluted’ by the influx of genes from introduced species (Simberloff, 1996). Since the work of Charles Darwin (2009 [1859], p. 194), it has widely been acknowledged that ‘there is no fundamental distinction between species and varieties.’ Rather, taxonomic classifications are social constructions, reliant on particular cultural definitions (Lien, 2005; Muller, 2010). However, whilst conceding this, many restorationists remain wary of changes precipitated by ‘mixing’ between native and introduced species, fearing that it may precipitate reductions in biodiversity, reduce future fecundity, or promote invasiveness (Haynes et al., 2011; Largiader, 2007; Simberloff, 1996). This is manifest in environmental policies which exclude hybridisations between native and introduced species from considerations of worth. For example, the United States Endangered Species Act (1973) concluded that wild hybrids should receive no protection\textsuperscript{16} (Allendorf et al., 2001).

This problematizing of hybridisation has been countered by those who argue that, like rapid evolution, hybridisation may represent a beneficial adaptation to changing environmental circumstances and even a potential boon to long-term evolutionary potential (see Frascaria-Lacoste et al., 2011; Lopez-Pujol et al., 2012; Stronen & Paquet, 2013). Indeed, some of the most successful introduced species (i.e. ‘invasive’)

\textsuperscript{15} Rhymer & Simberloff (1996, p. 84) provided a standard definition of hybridisation, describing it as the ‘interbreeding of individuals from what are believed to be genetically distinct populations.’ Nevertheless, this way of differentiating hybridisation awaited the development of modern genetics in the mid-20th century, before which hybrids were discerned mainly by morphological characteristics (Smout, 2011).

\textsuperscript{16} This ‘hybrid policy’ was removed in 1990 with a new proposal for dealing with hybrids drafted in 1996 (Allendorf et al., 2001). Nevertheless, the proposal was never passed into law meaning that the status of hybrid species in the United States remains ambiguous (Ellstrand et al., 2010).

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have been found to be hybrids between native and introduced species that have gone on to outcompete both their parent species (Carroll, 2011; Davis, 2009; Erfmeier et al., 2011). In some cases these hybridisations have led to the formation of new species. For example, repeated speciation events have occurred following hybridisation between native salsify (*Tragopogon* spp.) plants and various introduced plant species in North America (see Schlaepfer et al., 2011). Similarly, in the United Kingdom native *Spartina maritima* has hybridized with the introduced *S. alterniflora* leading to the evolution of a new reproductively isolated species, *S. anglica*. This new species occupies bare tidal mudflats which were not ecologically compatible with either parent species (Vellend et al., 2007). Again, such rapid adaptations may become increasingly important in a world facing the prospect of widespread environmental modifications due to climate change (see Rahel & Olden, 2008; Rotherham & Lambert, 2011; M. Townsend, 2005). As is widely documented, both native and introduced species are modifying their ranges in response to the changing climate and many introduced species, and hybrids, may be more suitably adapted to some areas than many native species in the long term (Davis, 2009; Lugo, 2012; C. D. Thomas, 2011a).

Smout (2003) provided an example of duck hybridisation in Spain between the introduced American ruddy duck (*Oxyura jamaicensis*) and the native Spanish white-headed duck (*O. leucocephala*). According to him, the introduced ruddy duck’s ‘offence’ is simply ‘to make love not war’ (*Ibid.*, p. 177). Attempts to eradicate the ruddy duck in Spain commenced with a three-year trial period in which 2,558 birds were killed at a cost of £900,000. Somewhat irritatingly for the local authorities, the ruddy duck population actually increased over the same period. In response, Smout wondered whether a duck that is evidently so well suited to the Spanish environment could be such a bad thing. Hybridisation between the ruddy duck and the white-headed duck may lead to the local ‘extinction’ of the latter. However, it will also lead to the evolution of a novel hybrid population – a population which may be better adapted to life in modern Spain. He asked, moreover:

...where is the loss from the perspective of the birds themselves? If...the infusion of new genes does not help adaptation, the hybrid will die out and the original form of the white-headed duck will survive. It is hard to see the problem (*Ibid.*, p. 181).
Smout (2011, p. 63) also highlighted anxieties over the ‘amorous proclivities’ of introduced sika deer (*Cervus nippon*) and native red deer (*C. elaphus*) in Scotland (also see C. R. Warren, 2011). As hybrid progeny are indistinguishable from their ‘pure’ parents it is feared that the eradication of hybrids might be impossible meaning that the ‘original’ forms of each species may be lost. However, for Smout, ‘it is not entirely clear what is lost, especially if you cannot tell the difference by looking at them’ (*Ibid.*, p. 64). Like the Spanish white-headed duck, native deer may have actually acquired genes that support their adaptation to changed habitat characteristics. He asked, therefore, ‘from the deer’s point of view, what is the matter…?’ (*Ibid.*). Marris (2011, p. 107) posed similar questions of the ‘extinctions’ caused by hybridisations, asking whether we ‘fear genuine extinction…or just the extinction of a familiar category?’ She wondered whether conservationists were acting out of ‘prudent caution’ or ‘merely fear and dislike of any change?’ (*Ibid.*). For Smout (2011, p. 64) the language of genetic pollution used to characterise hybridisations between native and introduced species also appeared ‘dangerously racist’ (see Chapter 3).

Given that humans are now routinely considered to be a part of nature (but see Section 4.4), he argued that it is difficult to see how the logic used to separate morphologically dissimilar but genetically compatible ducks and deer could not then be used to delineate between ‘pure’ human ‘races.’

This section has shown that, in spite of the stark ongoing distinction between native and exotic, introduced species can provide many ecological benefits. Although the restoration literature has tended to emphasise the negatives of introductions, studies pointing to the positive aspects of introductions are becoming increasingly common. Given that introduced species are generally as capable of performing ecosystem services as natives, it is becoming important to acknowledge the important ecological roles many of these species are now fulfilling. It is also becoming clear that many introduced species are held in high regard by local peoples, but that fondness for these species sometimes conflicts with the ideology of conservationists who find it difficult to accept the effects of certain species they deem to be weeds or pests. While conservationists form ‘biosocial collectivities’ with valued native species, many local people form similar collectivities tied to valued introduced species. These nascent collectivities may point to the potential for further connections to certain introduced species to be made in future and work as sites of resistance to the murderous inclinations of biopower that would otherwise have these species expunged.
4.3.2 Novel ecosystems

New conceptions of novel ecologies resist destructive readings of biosecurity. Instead, they are consistent with Esposito's (2008 [2004]) notion of 'community' as an antidote to 'immunity.' Like many strict readings of restoration, immunity tends to reduce circulation and exposure to change and difference. Community, in contrast, provides an alternative that deconstructs boundaries and opens life up to new exchanges and relationships. Rather than being resisted and opposed, ‘otherness’ is embraced. As Greenhough (2012) observed, this affirmative manifestation of biopolitics accepts that these differences may precipitate considerable changes in the short term, not all of which may necessarily be desirable. However, these adaptations may also ensure that wildlife is able to adjust to the considerable changes that have been wrought upon it over the last few centuries. The notion of novel ecosystems suggests that there are positive new potentialities for life on this planet but that these may not resemble those that have come before.

The recent construction of ‘novel’ ecosystems is a sign of significant changes in perspective now growing within the ecological literature on introduced species. The concept of novel ecosystems was introduced by Hobbs et al. (2006) to define ecosystems that no longer resemble pre-human ones. For instance, they may be dominated by introduced species or native species displaced by climate change, or they might be largely composed of natives that existed historically in the area, but function in a radically different way to their precursors (Lindenmayer et al., 2010, p. 5). Revealingly, Hobbs et al. (2009, pp. 599, 601) acknowledged that,

...all ecosystems can be considered ‘novel’ when placed in the appropriate temporal context... and the exact point at which an ecosystem is considered novel cannot necessarily be universally applied.

Novel ecosystems are thus defined as complex constructions that resist simplistic black-and-white classifications. What is significant about the concept therefore is the extent to which it looks beyond the traditional conservation dichotomy that sees habitat or non-habitat, ‘good’ ecosystems or ‘bad’

17 Also described as ‘emerging’ or ‘no-analog’ systems (see Hobbs et al., 2009).
ecosystems, and ‘pure’ ecosystems or wasteland (Lindenmayer, Fischer, et al., 2008). Marris (2009) described it as a ‘non-judgemental term’ to explicitly distinguish it from typical ecological nomenclature that tends to freely predispose the value of such entities (see Cachelin, Norvell, & Darling, 2010; Colautti & Maclsaac, 2004; Larson, 2005).

The concept directly challenges the dominant discourse that positions introduced species outside of the realm of acceptable or desirable ecosystems. It disputes the idea that ecosystems are not capable of adjusting or adapting to the environmental conditions created by humans (Lugo, 2009). Instead, it suggests that attitudes toward the environment that aim at reversing change need to be seriously reconsidered. As Hobbs et al. (2009, p. 604) wrote:

…cultural norms of nature, conservation and restoration will evolve alongside changing ecosystems, and it is likely that our present beliefs require significant adjustment. Retaining the somewhat static view of ecosystems as particular assemblages in particular places will become increasingly unrealistic and is likely to shackle conservation and restoration efforts to ever more unrealistic expectations and objectives.

Indeed, it is difficult to ignore the fact that many ecosystems are now dominated by introduced species (Lindenmayer, Fischer, et al., 2008; Lugo, 2012). Eradicating or even controlling the majority of these species is probably not feasible as we are ‘many centuries into the translocation and modification of taxa with indelible ecological and evolutionary results’ (Carroll, 2011, p. 192). Moreover, while humans make isolated attempts to reverse ecological history, generally they serve to facilitate the evolution of novel ecosystems by constantly changing habitat in a manner favourable to novel assemblages (Lugo, 2012).

Reconciliatory discourses accept that novel conditions promote novel species assemblages. They recognise value not only in those assemblages but also in the process of change that facilitates them. They do not swear ‘allegiance to preserving ecosystems as they were before humans arrived, as many conservationists of an older generation did’ (Marris, 2009, p. 453). Restorationists continue to position reconciliation as an admission of failure and hopelessness; of throwing hands in the air and giving up on the ‘battle’ to save native biodiversity (e.g. see J. L. Lockwood et al., 2011; Simberloff, 2011). However, ecologist Joe Mascaro epitomised emerging reconciliatory discourses when he retorted: “I want to say ‘I
never took up arms my man.' This isn’t about conceding defeat; it is about a new approach” (in Marris, 2009, p. 453). As Hobbs et al. (2006, p. 5) wrote, rather than lamenting the losses caused by species introductions and thus the constant attempt to reverse them, ‘we should perhaps accept [introduced species] for what they are and what benefits they provide.’

Hobbs et al.’s (2006) suggestions were accepted for publication, in a scientific journal, only with extreme misgivings from reviewers, reinforcing the monopoly scientific ‘experts’ have on the construction of introduced species. One reviewer considered ecosystems dominated by introduced species to be ‘ecological disasters’ whose ecosystem functions are ‘in tatters’ (in Ibid., p. 5). They summarised that it is ‘hard to make lemonade out of these lemons’ (Ibid.). In response, Hobbs et al. merely accepted the lemon analogy. They argued only that we are heading ‘to a situation where there are more lemons than lemonade,’ therefore ‘we need to recognize this and determine what to do with the lemons’ (Ibid.). This position reflects the hegemony of the ‘bad’ introduced species frame. The term ‘lemon’ is an informal way of describing something that is defective, imperfect or unsatisfactory. Therefore, while Hobbs et al. advocated for a re-understanding of introduced species they remained otherwise trapped within the dominant view of introduced species. In other words, that they are ‘bad’ and do not belong. Their vision of reconciliation is, in their words, ‘simply pragmatic,’ and born out of begrudging necessity (Ibid.). Nonetheless, I think that Hobbs et al. did a disservice to their own argument when they conceded that introduced species are ‘lemons.’ As I have argued, there are many reasons to challenge the notion that introduced species are ecologically defective and that environmental efforts should be directed toward their removal.

Novel ecosystems challenge the belief that past ecosystems can be restored and maintained on fractions (often 5-10%) of their former extents in small reserves and parks. This perception, it is argued, is based on years of adherence to the Island Theory of Biogeography (after Macarthur & Wilson, 1963) with its emphasis on the protection of small, representative reserves ‘in a sea of ruined habitat’ (Rosenzweig, 2005, p. 205). Rosenzweig assessed whether it is reasonable to assume that species can be protected on fractions of their former range, concluding that though ‘I do wish that this were true…it is not’ (Ibid., p. 198). Rather, empirical research shows that diversity will sustain itself in linear proportion to the area of
habitat available. ‘Nature promises no bargains at all’ and reserves that encompass, for example, 5% of an ecosystem’s pre-human range will preserve roughly 5% of the pre-human diversity of that range (Ibid.). According to Rosenzweig, what is more important, in other words, is the area of available habitat for wildlife generally, not the specific ecological community residing therein (also see Cowling, Pressey, Rouget, & Lombard, 2003; Rosenzweig, 2003a; 2005).

Rather than focusing on ‘micromanaging’ wildlife and directing all resources to imagined ‘pristine’ states, reconciliation focuses on retaining large tracts of habitat, regardless of the evolutionary provenances of that habitat’s constituent members (Hobbs et al., 2006). Opposed to focusing on historical benchmarks, it instead focuses on enhancement of basic ecosystem services, processes and resilience (Fryirs & Brierley, 2009; Suding, 2011). It is ‘proactive and optimistic’ creating ‘more and more nature as it goes rather than just building walls around the nature we have left’ (Marris, 2011, pp. 2-3). Positive environmental engagement can be implemented not only in far-off reserves, which tend to favour social and economic elites, but also in small-scale urban enhancement projects such as stream ‘daylighting’ and the removal of impervious surfaces (Rosenzweig, 2003b). Rather than identifying ‘degraded’ sites full of ‘undesirable’ species, bulldozing them and replacing them with air-brushed vignettes of the past, current biotic configurations can be re-conceptualised to highlight their own unique ecological histories and values (Robbins, 2004). Rather than seeing some species as the ‘problem’ and others as the ‘solution,’ and then setting up simplistic, militant polarities between them (see Chapter 3), the concept of novel ecosystems acknowledges that the way forward requires understandings that are complex and non-linear, and the results often unpredictable (Hobbs, 2004).

According to many ecology textbooks, ‘millennia of evolution are required to set up complex interactions between plants, animals, microorganisms, nutrients, water, and other components of ecosystems’ (Marris, 2011, p. 111). The notion that relatively new combinations of species could approximate a ‘real’ ecosystem, rather than collapse into a wasteland has been ‘markedly hard to swallow’ (Ibid.). Indeed, calls for the acceptance of such novel biotic configurations represent what Robbins and Moore (2013, p. 4) called an ‘existential crisis’ for practitioners of the ‘Edenic sciences.’ Previously dismissing advocates of novel ecosystems as ‘contrarians,’ Simberloff (2011, p. 131), for example, went so far as to then
compare them to climate change ‘deniers.’ In doing so, he implied that any motions for the acceptance of new ecologies deny what are taken to be obvious facts. As I have demonstrated, this is not the case. Rather, moves toward reconciliation seem increasingly more compatible with global realities than those of ‘traditional’ restoration or conservation positions.

Advocates for novel ecosystems and other reconciliatory positions suggest that one of the greatest threats to environmentalism is the conceptual estrangement of humans from nature (see Miller, 2005; Miller, 2006). For Larson (2007b, pp. 994-995), it is this ‘dangerous quasi-religious myth that gives us “permission” to evade responsibility for the lives we actually lead.’ In other words, the notion that nature is removed from humanity may give the impression that nature is always somewhere else. Because the environments that people live in have already been ‘fouled’ and ‘corrupted’ by human contact, they are presented as comparatively worthless targets for conservation-related expenditure. Instead, funds are channelled off to distant, ‘pristine’ parks and islands that people will rarely, if ever, visit. This may lead people to disvalue the majority of the landscape while placing unrealistic expectations on comparatively tiny conservation areas (see C. Palmer, 2003). Kendle and Rose (2000, p. 22) summarised this position, contending that, ‘as human influence, both good and bad, becomes more pervasive, we can either prepare to ‘lose’ naturalness in the coming decades, or we have to rethink some of our defining concepts.’

The concept of novel ecosystems accepts that humans are a part of nature and that they have had a considerable effect, for better and worse, on the global environment. However, it is not a corrupted nature. It is, as Eric Rolls (1981) reflected, ‘feral, mongrel, hybrid nature, nature stirred up, nature enlivened by human presence…it is dynamic, historical nature’ (in Robin & Griffiths, 2004, p. 445). Above all, it is volatile and wild. Restoration clings to past natures enclosed within endless management schemes, walls and fences. On a visit to Australia, for instance, Marris (2011, p. 10) was horrified by the modern predator-proof ‘sanctuary’ with its contents bounded within ‘what looks like a prison fence – serious, sturdy, tall and electrified.’ It is ventured that this version of restoration is too oppressive and regulatory. As Theodoropolous (2003, p. 176) suggested:
Viable, self-sustaining wild populations should be the goal. Too-carefully-managed ex-situ populations will not allow us to overcome our propensity for control-addiction. We must learn to let go, and allow other beings to express their volition, to thrive and prosper outside of our control.

Restoration has remained yoked to the concept of ‘wilderness’ with its emphasis on human-exclusivity. Ironically, any semblance of this is increasingly achieved only through enormous and ongoing ‘interventions.’ Advocates for novel ecologies argue that the emphasis should instead be placed on the conservation of ‘wildness’ (Eggleston, Rixecker, & Hickling, 2003). It is about accepting and even embracing the fact that humans have had a hand in the evolution of nature. The value of wild environments is not in expunging human influence or returning to past states, but in appreciating adaptive changes that are not under direct human control. Wildness accepts that extinction, like death, is a corollary of life and of evolution. The evolution of new forms of life requires the extinction of existing forms, whether communities, ecosystems, species or genes. Wildness is ‘unweeded and untidy,’ even ‘un-useful’ (Marris, 2011, p. 131). According to Sagoff (2013, p. 250), it has no design or essential properties, instead ‘appealing more to the imagination than the understanding.’ Rather than excluding human influence, wildness accepts that humans are a part of nature and will continue to have a momentous influence. What it does not accept is that humans are the masters or guardians of nature with the prescience to understand and reliably distinguish between the value of all lives either now or in the future (see Chapter 3).

4.4 Conclusion

In this chapter, I have argued that discourses of restoration may benefit from shifting toward a more nuanced approach toward introduced species that accepts the complex machinations of environmental change. Many traditional approaches to restoration offer only minor revisions to biblical interpretations of nature. These continue to position humans, and human introductions, outside the realms of nature. As such, restoration is presented as necessary to undo past ‘damage’ but, at the same time, somehow regrettable because human ‘interference’ in nature is never ultimately right. This reinforces ongoing estrangements from nature that may be unproductive in an overwhelmingly human-modified environment.
Although the dualism of nature-culture ensured a ready compatibility with earlier beliefs, these may now require further modifications to more accurately incorporate modern understandings of flux and indeterminacy. It has become apparent that some discourses of restoration still attempt to recreate states that can no longer exist and that will likely fail to thrive under fundamentally changed conditions. While these restored states may provide some measure of psychological redress for historic losses they may also undermine the adaptive capacity of ecosystems that are now developing new paths.

I have shown that local people are beginning to embrace new collectivities with now-valued introduced species. This has often put them at variance with ecologists who often express firm ideological beliefs about the species that should and should not exist in the wild. Research over the last few decades has tended to support the view that the biodiversity that is most regularly conserved is not that which is most vital to ecological systems. Rather, as I showed in Chapter Three, restoration is more often aimed at supporting those species that are ‘socially-networked’ to the most powerful interest groups. This understanding undermines the legitimacy of scientific discourses as the sole representatives of biological value. Finally, new understandings around the rapidity of evolution and hybridisation challenge the notion that people can continue to manage wildlife for the maintenance of historical states or processes. Instead, new potentialities must be considered that include the possibility for embracing common or widespread species that do not have a long evolutionary history in their contemporary ranges. In the next chapter I extend arguments that I have proffered in this chapter and the last to the New Zealand context. Therein, I show how wildlife management in New Zealand epitomises some of the now-dated restoration positions that require revisiting.
Chapter Five: Introduced Species in New Zealand

5.1 Introduction

In Chapter Four, I argued that many popular constructions of introduced species remain tied to the fostering of pre-human ecosystems that are no longer attainable. This is partly because pre-human states of nature are seen as desirable, but also because, as I discussed in Chapter Three, introduced species are seen as undesirable. In this chapter I interpret and critically analyse the wider literature on introduced species as they have been defined in New Zealand. Here, like elsewhere around the world, interpretations of nature often relegate introduced species to the status of ‘bare life.’ However, in many respects New Zealand can be seen as the international epitome of disparaging rhetoric directed at introduced species. More so than elsewhere, introduced species are the ecological issue in New Zealand (R.B. Allen & Lee, 2006). The overarching conservation discourse is one of noble native species – the embodiment of nature – and the introduced weeds and pests that threaten them (Hackwell & Bertram, 1999).

In Section 5.2, I begin by presenting a short history of acclimatisation in New Zealand. I highlight some of the key inconsistencies in the non-Māori interpretation of wildlife through the mid-19th century to the mid-20th century. I show that non-Māori New Zealanders have routinely viewed themselves as ‘responsible’ for the ‘correction’ of wildlife and that this drive to improve upon nature has been furthered with a quasi-religious zeal. Secondly, I show that the dichotomy between native and introduced has been reinforced by highlighting the usefulness of the one and the lack thereof in the other. Such discourses of utility have been particularly pronounced in relation to considerations of national identity and economic value. Thirdly, I show the ways that science has been consistently used to further the legitimacy of these cultural and economic interpretations of wildlife. I emphasize the ways these themes have endured over this period in spite of the near complete reversal of sentiment from introduced species to native species.
In Section 5.2.1, I extend this analysis into the late 20th century and early 21st century. Therein, I emphasise the lack of change in overarching discourses. In particular, New Zealand continues to be presented as the ‘land of birds’ and a reflection of harmonious pre-human life. I argue that the quasi-religious zeal for acclimatisation has been replaced only by an equally zealous penchant for restoration. As others have argued, this continues to be manifest in crude and unfair characterisations of introduced species that burden them with a malicious agency in the death of certain threatened native species. Nevertheless, in Section 5.2.2, I show that conceptions of environmentalism that are grounded in restoring prior states are not the sole voices. Indeed, alternative voices have become louder in the past few decades. These emphasize the underlying flux and indeterminacy of New Zealand’s environments and the very real extent to which this dynamism characterises the ecological history of the archipelago. I also show that the use of anthropomorphism to negatively characterise the supposed agency of introduced species is becoming increasingly contested, despite its persistence. The framing of introduced species as ‘immigrants,’ in particular, raises disturbing parallels with human-directed forms of xenophobia. Comparisons to human immigrants may, in a sense, ‘backfire’ by recognising that, just as human immigrants are productively accommodated into New Zealand’s society and its evolving national identity, so too may a broader swathe of its non-human ‘immigrants.’

In Section 5.3, I introduce and justify the selection of my case studies which focus on the construction of introduced ‘game’ species in three areas of New Zealand’s North Island. Introduced game species were selected because they stand out as exceptions to the common understanding of wild introduced species. Although presenting similar ecological ‘threats’ to many of the most despised ‘invasive’ species, game species are often excluded from criticism by discursive frames that are similar to those used to protect native species. They are insulated by biosocial collectivities – in which they are paired with hunters and anglers – that make them not only important, but integral to the nation. Like native species, they are ‘ours’ and thus not to be taken away. It is this characteristic which makes them particularly useful for understanding how other introduced species might be discursively reconciled into the landscape. In Sections 5.3.1, 5.3.2 and 5.3.3 I introduce each case study. As context, I provide a short history of acclimatisation for each species, emphasising how this has been manifest in each local area and describing its attendant social and ecological ramifications. I also provide background on each case study.
area, showing why each was particularly applicable to my study. Importantly, I show what each case contributed to my research objectives and how that contribution supported or challenged understandings gleaned from the other cases. I conclude the chapter in Section 5.4, arguing that any widespread reconciliation of introduced species in New Zealand will require a fundamental shift in the discourses through which they are brought into being. I suggest that the framework that I have elaborated both in this and previous chapters offers a vehicle for signalling such shifts.

5.2 The acclimatisation of biota in New Zealand

The first acclimatisation efforts in New Zealand were undertaken by Polynesian colonists in the 13th and 14th centuries (Walrond, 2012). They introduced the kiore (Rattus exulans), and kuri (Canis lupus), along with several edible plant species such as kumara (Ipomoea batatas) and taro (Colocasia esculenta). Although much remains unknown about the Polynesian phase of settlement in New Zealand, introductions appeared to be largely motivated by the desire to foster known food sources in an otherwise unfamiliar environment. The first European contributions began much later in the late 18th century. Like Polynesians, their contributions were, at least initially, motivated by the desire to increase the abundance of known food sources. According to Sullivan (1990, p. 312), ‘[e]very school child knows that Captain James Cook began it all in 1773’ liberating vegetables, stock and game at several anchorages around the country, including pigs some 80 kilometres from Te Urewera (Coombes, 2003) (see Section 5.3.3). Following Cook, early European seafarers regularly liberated animals and plants during their visits to the country, both purposefully and otherwise. However, it was not until the mid-19th century that systematic and large-scale efforts at acclimatisation commenced.

The first Acclimatisation Society in New Zealand was formed in 1861 in Auckland, only a year after the British Society (see Chapter 3). This was followed by dozens of additional provincial societies over subsequent years (McLeod, 2004). While the European societies were fixated on importing the new and the strange, the New Zealand societies were motivated by the importation of the old and the familiar (A.

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18 Captain James Cook was one of the first Europeans to visit New Zealand, mapping most of the coastline in 1769. He was vastly preceded by Dutch explorer Abel Tasman and his crew who reached the country in 1642.

19 ‘Te’ is Māori for ‘the’.
Bathgate, 1897). European settlers to New Zealand were motivated to create a ‘Britain of the South,’ complete with a full suite of the species found at Home (Aramakutu, 1997; Galbreath, 1993; K. Hunter, 2009). Colonists defined themselves by ‘their’ biota, not the biota they had arrived to find (Brennan, 2004). Conversion of ‘foreign’ biota (i.e. natives) to British biota was, therefore, seen as important to the national identity (Simmonds, 1918). Native forests and wetlands were to give way to farmland and hedgerows:

The similarity of farm stock and of trees and birds in New Zealand to those of the English countryside enables the New-Zelander to enter more sympathetically into the moods of the great masters of English literature (Ibid., p. 134).

The reproduction of Britain was not limited to the biota. Native Māori, for example, were converted to Christianity, just as native forests were ‘converted’ into productive farmland (D. Young, 2004, p. 67). The goal of New Zealand acclimatisers was not to encourage a novel biota specific to the local environment, culture and history, but rather to reproduce ‘the best remembered and most cherished features of the country from which they came’ (Thomson, 1922, p. 22). As now, therefore, the environment in the colonial period was seen in terms of its potential rather than its existing biota (Brennan, 2004). Like restoration (see Chapter 4), acclimatisation was focused on making the environment ‘healthier,’ and ‘stronger,’ and people considered themselves to be competent custodians of those ‘necessary’ changes.

Thomson (1922, p. 2) suggested that acclimatisation in New Zealand had been ‘carried out in the most haphazard and irresponsible manner [with] districts, societies and individuals acting quite independent of, and often in direct opposition to, one another.’ He characterised the history of acclimatisation in New Zealand as a series of ‘bungles and blunders’ undertaken ‘with zeal unfettered by scientific knowledge’ (Ibid., pp. 3, 22). Most subsequent histories of New Zealand acclimatisation have been no more complimentary (e.g. Aramakutu, 1997; Walrond, 2012). According to Davies (1996) acclimatisation was undertaken with little thought or analysis, and indeed it is clear that there was little effective coordination of introductions. Failed initial introductions were often followed by multiple subsequent liberations, without regard for overall rationale (Walrond, 2012). A common perception was that if the conditions suited the introduced species then they would thrive and if not they would simply perish (see McDowall, 1980). The
lives of the animals themselves were largely immaterial. A ‘scattergun’ approach was thus taken in which literally dozens of species would be introduced, often in ones and twos, under the assumption that the best suited in each area would ultimately ‘win out,’ but most perished. Much like contemporary ecological restoration initiatives, concern was for populations, with individuals routinely sacrificed for the common purpose.

Although questions may remain over the interpretation of science, suggestions that early acclimatisation efforts in New Zealand had disregarded science are probably inaccurate. As Sullivan (1990, p. 311) wrote, while:

…most historians today decry the lack of knowledge and the woeful ignorance of the early Acclimatisation Societies…they contained many men with scientific or background education in the related disciplines and who were conversant with the most up to date findings about them.

In fact, there is little evidence that early acclimatisers acted in opposition or disregard of scientists. Rather, many Acclimatisation Societies included prominent scientists among their foremost members (Star, 1997). Despite this, few scientists in New Zealand had considered the consequences of acclimatisation per se in the early to mid-19th century. In part, this was because there were very few scientists in New Zealand to consider the matter. Moreover, those that were present, and disposed to studying the biota, were predominately natural philosophers, schooled in the romantic descriptive tradition of Gilbert White (1977 [1789]). They were hardly ‘wildlife managers’ and with the bulk of arrivals after 1840 they had barely had time to begin describing the local biota, anyway, let alone commenting on or analysing the ramifications of introductions.

The view of those scientists that had considered acclimatisation, however, was generally supportive. They were guided, in this respect, by the ‘displacement’ theory that had been introduced to them by

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20 Although I could not find an estimate for the number of scientists in New Zealand in the early to mid-19th century it is instructive to note that there were only around 150 employed in the country as late as 1924 (Callaghan, 1976).

21 Indeed, wildlife management as a discipline did not develop until around the 1930s (Westerskov, 1957).
Charles Lyell (1830). This theory taught that, under colonisation from ‘new and more vigorous’ European forms, native species were impermanent features in New Zealand (Gillies, 1877, p. 306). The ‘displacement’ of native species with British and Continental species was inevitable: ‘Just as the Māori would be replaced by ‘Pakeha’\(^{22}\), so too would native birds be replaced by stronger northern hemisphere avifauna’ (Aramakutu, 1997, p. 70). According to Charles Darwin’s (2009 [1859]) theory of evolution, only the ‘fittest’ would survive. As native species declined in the face of European expansion in New Zealand it was ‘obvious’ that they were inferior to European species and that their extinction was ‘inevitable’ (Galbreath, 1993). ‘Ancient races’ would ‘pass away’ as naturally as a geriatric on their death bed (Gillies, 1877, p. 306). Assistance for native species was thus constructed as ‘hopeless,’ a conception accepted by prominent New Zealand scientists of the day such as James Hector, Julius von Haast and Frederick Hutton, in addition to ‘almost every other scientist in the colony’ (Star, 1997, p. 114). The accepted scientific theory of the day thus only provided justification for the work of colonists. As scientists in New Zealand mostly saw it, their role was to document the ‘natural’ process of displacement, not to hinder it. The remaining natives could not be saved and should instead be catalogued in museums for posterity (see Martin, 1885). Indeed, this was scientists’ ‘sacred duty’ (Moncrieff, 1949, p. 4). The appropriate focus, however, was on the future of the biota and this was clearly to be a European-dominated one.

Much like contemporary restoration, acclimatisation was carried out with an ‘almost religious fervour’ (Walrond, 2012, n.p.). Although the introduction of new species was sanctioned by government, and undertaken by official societies, individuals were often motivated enough to engage in the activity in a private capacity. Indeed, the work of private individuals often proceeded, or worked in parallel, with that of organised societies. Acclimatisers believed in their work and felt that they were making the country a better place. They saw themselves as ‘benefactors’ offering ‘assistance’ to the country by introducing useful biota (Walrond, 2012, n.p.). They were warmly encouraged by the majority of the public. In fact,

...practically all the population of New Zealand were enthusiastic about the liberation of game [and other introduced] animals at the time and newspapers printed glowing reports of what their own district was achieving (P. J. Harker, 1973, p. 2).

\(^{22}\) A Māori term for a New Zealander of European descent.
This widespread support justified the ‘tremendous energy’ early European settlers put into destroying the native environment and replacing it with what was considered a more advantageous biota (Star, 1997, p. 38). Notions of potential damage from these activities were generally not in the lexicon of acclimatisers and they typically foresaw no detrimental impacts. The only restraint on their efforts was in avoiding the introduction of ‘innocuous’ biota, defined largely as the species that were considered weeds and pests in Britain. The notion that species considered favourable in Britain could become pestiferous in New Zealand was not typically entertained.

Although ‘the settlers lack of identification with the [native] flora and fauna is almost certainly a reason why they were so blase about destroying’ it (D. Young, 2004, p. 63), its greater ‘sin’ was an inferiority in use to introduced species (Brennan, 2004). Colonists had an anthropocentric view of nature. Indeed, the notion that species existed purely for the benefit of ‘mankind’ was central to the religious philosophy of early European colonists, namely that of Christianity. The book of Genesis imported ‘man’ to ‘conquer the earth, and have dominion over all things,’ and as Star (1997, p. 53) remarked, ‘New Zealand colonists certainly read their Bibles.’ Created by God, plants and animals had particular roles to play in the life of humans, who were naturally superior to them and therefore their masters. According to scripture, these species had been placed on the earth for the use of people, ‘if no use could be found for them it was easy to consider their presence obstructive’ (Ibid., pp. 10-11). The New Zealand Exhibition, held in Dunedin in 1865, reflected a culture that valued products that could be obtained from the British biota, or that could be used in similar ways. However, as Star noted:

These categories did not match well with what was available from New Zealand. This confirmed, for European settlers, that if they were to survive they had to remove much of the indigenous flora as soon as possible, since it provided little sustenance or money. There were no means on which they could sow their crops, or, more likely, sow European grasses as pasture for their European cattle and sheep, unless it was removed (Ibid., pp. 39-40).

The removal of natives was therefore an economic necessity. To European colonists, native vegetation ‘rose around them like a prison wall, and they only breathed freely and saw broadly when those walls

were beaten down’ (Rollett, 1923, p. 9). Native species were routinely presented as ‘enemies’ that were deliberately attempting to prevent settlement by colonists (de Gryse, 1958). They were also negatively associated with the ‘savage’ and ‘barbarous’ Māori lifestyle of which Europeans had no desire to emulate (Aramakutu, 1997, p. 117).

Native species were seen as ‘useless encumbrances’ (de Gryse, 1958, p. 13). ‘Use’ at the time was generally correlated with ‘introduced’ for the simple reason that they were the only species the colonists knew how to exploit. The native biota, by comparison, was considered ‘inutile’ and conspicuously ‘lacking’ (Aramakutu, 1997; Walrond, 2012). In particular, there were very few mammals amongst the native fauna, one of the colonists key determinants of faunal richness (Star, 1997). While many New Zealanders now consider a lack of mammals to be characteristic of their national identity (see Section 5.2.2), early colonists saw the lack of mammals as a problem to be solved through introductions. The native biota was, according to Captain Cook, ‘destitute of all sorts of beasts, either wild or tame’ (in Aramakutu, 1997, p. 69). Perhaps most crucially, there was very little that was considered worthy of being shot or otherwise gamefully slaughtered. Although Māori had ‘found much to hunt…European settlers noticed more what was missing than what was available’ (Brennan, 2004, p. 102). Native species were seen as poor substitutes for the deer, ducks, pheasants, trout and so on, to which European colonists had become accustomed (Wodzicki, 1970). The country’s ‘depauperate’ local biota was therefore in need of ‘correction’ by acclimatisers, who judged themselves ‘responsible’ for this redress (Brennan, 2004, p. 144, see Chapter 7). Although these seemed like powerful arguments at the time, within a few decades attitudes towards introductions changed entirely. What did not change, however, were the roles people constructed for themselves and the ways people used species as props for executing those roles.

### 5.2.1 Introduced species fall from grace

It did not take long for the work of acclimatisers to run into opposition. Māori were immediately troubled by introductions that impeded their ability to harvest valued native species. The introduction of trout to the Rotorua Lakes, for example, devastated native fish populations which were the basis of an important local fishery (see Section 5.3.1). By the early 1870s introduced rabbit numbers had reached plague proportions in the eastern South Island, forcing the Government to pass the Rabbit Nuisance Act (1876) which
required farmers to control rabbits on their land. It was an early sign of the reversion to come. ‘Ironically, just as early protection of animals statutes enacted stringent provisions to ensure the successful acclimatisation of particular species’ this Act ‘placed a similar emphasis upon the eradication of an imported pest’ (Aramakutu, 1997, p. 90). In 1882 the Government also passed the Small Bird Nuisance Act in response to damage to crops from introduced sparrows (*Passer domesticus*) and finches (e.g. greenfinches (*Carduelis chloris*)), and an outbreak of codlin moth (*Cydia pomonella*) promoted a similar piece of legislation in 1884. Although none of these legislative measures were particularly effective, they were symptomatic of some of the unintended consequences of acclimatisation (Nightingale, 2012). As Thomson (1922, pp. 22-23) wrote, introduced species:

…did not always do what was expected of them; they frequently failed to achieve the purpose for which they were introduced, and took to destroying things which it was desirable should be preserved.

By the late 19th century, therefore, introduced species were increasingly found to be resisting the categories and functions to which they had been assigned. The once uncritical acceptance of acclimatisation was thus being replaced with a new caution (Star, 1997).

From around the 1870s scientists began to entertain a revised view of the concept of 'displacement' in New Zealand. It was becoming increasingly evident, for instance, that there was no universal biological imperative guiding the replacement of natives with exotics. Many native species were, in fact, surviving and in some cases flourishing. As a result, by 1890 ‘extinction was now seen not as the result of immutable scientific law but as the result of more mutable human practice’ (Star, 1997, p. 244). Just as introduced species had prospered under a raft of protective measures, it was discovered that native species could survive too, should similar measures be directed in their favour. This theoretical revision coincided with a growing awareness of the worth of native species. Indeed, by the late 19th century appreciation of the potential use of some native biota was becoming evident. It was not *just* introduced game animals that lured international tourists to New Zealand, for instance, but also the unique native-dominated scenery they encountered while pursuing them. The creation of parks and reserves in New Zealand around this time was initially dominated, not by nature conservation *per se*, but by the
identification of forests and mountainscapes as tourist resources for development (Coombes, 2003; Star, 1997). The rejection of displacement was thus not only scientifically justifiable but also increasingly useful.

Not only were some native species proving economically valuable, many were also becoming culturally valued. While this was already the case with Māori, the development of a native appreciation in European colonists also developed from around the 1880s (D. Young, 2004). This was partly a consequence of changing demographics. Importantly, the growth of the settler population during this period was exponential. In 1839 there were only around 2,000 Europeans living in New Zealand, but by 1872 there were over 250,000, and by 1900 there were approximately one million (McLeod, 2004). In the early 1870s foreign-born colonials still outnumbered those born in New Zealand, but by 1886 colonial-born New Zealanders outnumbered those born outside of the colony (Aramakutu, 1997). This emerging generation was less tied to the Mother Country and more aware and familiar with the native biota. This awareness was manifest in various changes. From the 1880s, for instance, native plants began to be promoted and used in European gardens in New Zealand, and the face of Queen Victoria was removed from postage stamps and replaced with images of local scenic attractions24 (D. Young, 2004). Many colonials began to proudly assert their new identity as ‘New Zealanders,’ such as by forming ‘Natives’ Associations’ around the country (Aramakutu, 1997, p. 81).

By the 1890s a reversal in attitudes to the indigenous in New Zealand was increasingly evident (Aramatuku, 1997; Galbreath, 1993). The preservation of native scenery began to constitute the beginnings of a new national identity (D. Young, 2004). As Aramatuku (1997, p. 83) wrote:

An integral component, (perhaps the central component), of the colonial search for a new identity was the colonial appropriation of the indigenous. In a search for a more indigenous national sentiment, the uniqueness of being a New Zealander was expressed through the peculiarity of the country’s indigenous landscape – the flora, fauna, and people.

24 Although this was partly a result of the growing advertisement of New Zealand as a tourist destination rather than a celebration of the native as a source of national identity.
Pakeha New Zealanders were no longer foreigners in a strange land. Rather, they had successfully ‘colonised it and now owned it’ (*Ibid.*). The new and strange biota was now familiar and valued. Acclimatisation, once heralded as progressive, was more often now seen as a source of regret (‘Ahu-Whenua’, 1940; Anon, 1940c). In 1890, the first Arbor Day in New Zealand, for example, was interpreted by many Pakeha as a ‘time for contrition and atonement’ for the wholesale removal of native nature over the previous fifty years (A. Bathgate, 1897; D. Young, 2004, p. 96). The fervour for acclimatisation and European species was replaced by a new quasi-religious fervour for the indigenous, with conservation becoming almost ‘a subset of religion, if not a religion in its own right’ (Young, 2004, p. 96). ‘Good’ and ‘evil,’ under this new system of beliefs, had simply changed poles from native to introduced. It became ‘obvious,’ therefore, that just as native species had needed to suffer under acclimatisation, introduced species would now need to suffer under preservation (e.g. see T. Kirk, 1895). There was no pause to consider whether this calculating instrumentality itself should be questioned.

By the early 20th century European colonists vastly outnumbered Māori and the latter had ceased to be a threat to the ongoing colonisation of New Zealand (Aramakutu, 1997). The role of native species as impediments to ‘progress’ was also no longer recognised (McLeod, 2004). Both indigenous humans and non-humans had thus become largely subjugated to the imperatives of the colonists. Native birds, for example, became ‘our birds’ and this was reinforced in parliament, public submissions, and popular literature (Aramakutu, 1997). As Hurst (1923, p. 5) wrote, ‘These things are ours. These resources were provided by nature for our use and benefit; therefore let us get as much out of them as we can’.25 Coincident with this subjugation, however, was a general softening in the interpretation of the indigenous. Romantic notions of a halcyon pre-human wilderness increasingly blended with ongoing beliefs about an enduring balanced and stable nature (see Chapter 3). Kirk (1895, p. 1) for example, believed that, ‘in the absence of civilisation, the indigenous fauna and flora of any country is liable to little or no change’ (also see ‘Lucretius’, 1941). The ‘barbarity’ of the Māori was also no longer emphasised. Instead, the alternate construction of the ‘noble savage’ was highlighted, with Māori perfectly in tune and coterminous with their

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25 Hurst was describing the attitudes of his contemporaries, not his personal views.
environment. Consequently, the period before the arrival of Europeans was now seen to have been 'in much the same condition...as it had been for many centuries'\(^{26}\) (T. Kirk, 1895, p. 1).

Thenceforth, the instinct was increasingly to preserve this 'noble' state for posterity. Pre-European New Zealand was 'real' New Zealand;\(^ {27}\) in need of clear distinction from the excesses of modernity (see Chapter 3) (J. G. Myers, 1924, p. 4). Forested areas such as ‘pristine’ Te Urewera, for example, encapsulated this worthy state. As an *Auckland Star* article attested:

> It was real New Zealand bush, and there were real New Zealand birds. There was no extraneous bird life, and no exotic growth, practically everything was native, even the packer was a Maori (Anon, 1928, p. 18).

Native birds were considered particularly important to that identity (Anon, 1923; Hurst, 1923). Thus in 1910 an amendment to the Animals Protection Act extended absolute protection to almost all native bird species. The only exceptions\(^ {28}\) were species hunted for sport (e.g. grey duck (*Anas superciliosa*)), or those that were considered detrimental to sport (e.g. shags (*Phalacrocorax* spp.) or agriculture (e.g. kea (*Nestor notabilis*)) (Aramakutu, 1997; D. Young, 2004). Protection for native species was further extended with the passing of the Animals Protection and Game Act (1921) and later by the Wildlife Act (1956). Aside from a small number of game species, introduced species that were once considered too scarce, were now considered too numerous (e.g. see Anon, 1940c; P. Marshall, 1926; Philpott, 1918). As in the mid-19\(^ {\text{th}}\) century, the consistency of the contemporary biota was 'wrong,' it was the ‘responsibility' of

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\(^{26}\) The view that pre-colonial Māori lived in balance with their environment in New Zealand persisted throughout the early to mid-20\(^ {\text{th}}\) century (e.g. see Editor, 1965; Frost, 1945; J.G. Myers, 1923). Indeed, Speedy (1996, p. 74) felt that despite the now well-recognised environmental impacts of Māori, many still believe that 'a new balance incorporating the Polynesian and his small menagerie may almost have been reached' before the arrival of Europeans.

\(^{27}\) Ironically, just as Māori were effectively seeking to restore this supposed 'harmony' by gaining customary access to certain native species (e.g. kereru (*Hemiphaga novaeseelandiae*)), non-Māori were seeking absolute protection for them (see Aramakutu, 1997; Coombes, 2003).

\(^{28}\) Native kereru were also not absolutely protected in 1910, though this status was granted the following year (see Coombes, 2003).
humans to make it ‘right,’ and the consequences were to be wrought upon the lives that could not be incorporated into the national identity or economy (see Chapter 7).

Although colonists remained committed to their God-given dominion over nature, this dominance was increasingly tempered with a respect for the inadequacy of previous attempts to improve upon creation. Instead, it was often seen necessary to divorce nature from the ‘contamination of civilization’ (Hurst, 1923, p. 5). In an article entitled ‘The Eleventh Commandment,’ Lowdermilk (1940, p. 4) wrote that the human relationship to nature was that of ‘exploiter, despoiler and destroyer’ (also see Collingwood, 1977; Sanderson, 1937). In a narrative reminiscent of the biblical flood, Kirk (1940, p. 6) similarly described the human engagement with nature: ‘Forests were fired and cut, birds in their millions were destroyed, the land was laid bare, and floods swept away the precious top-soil and buried it in the ocean.’ Hence nature was increasingly not to be related with, but rather to be preserved from, noxious human influence.

Throughout the 20th century, therefore, non-Māori New Zealanders tended to advocate a preservationist ideal that taught that nature was best not ‘intervened’ (e.g. ‘Tanekaha’, 1941; Speedy, 1996) or ‘interfered’ with (e.g. Nicholson, 1938; H. Wilson, 1995). As one Forest & Bird article advised, the ‘best advice that [could] be given’ was to ‘leave the forest alone’ (Anon, 1957b, p. 11).

This preservationist ideal – interpreted as a focus on the protection of nature from use – has often been cited as an enduring feature of environmental discourse in New Zealand (see Eggleston et al., 2003; A. A. T. Ellis, 1977; Galbreath, 1993). It is contrasted with a conservationist ideal – interpreted as a focus on the wise use of nature – which is often said to typify the approach of game managers and Māori (see Moller, 1999; Patterson, 1994; S. D. Wright, Nugent, & Parata, 1995). Ironically, the Department of Conservation remains synonymous with preservation, as does the Royal Forest and Bird Protection Society (Hughey & Hickling, 2006). What is less often recognised, however, is the overarching similarity between European notions of preservation and conservation. This similarity was encapsulated in an essay by Longhurst29 (1974, p. 136):

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29 Longhurst’s article won the Form five New Zealand Science Review’s essay competition. Form five was a secondary school year level in New Zealand encompassing ages 15-16 years.
Preservation is the attempt to retain certain aspects of the environment especially desirable to man [sic], whereas conservation is the controlled use of resources in ways that allow the continued cycling of materials, so as to maintain essential processes, without which man could not survive.

In both cases, wildlife is controlled in order to benefit ‘man.’ In other words, both preservation and conservation serve fundamentally instrumental ends. Preservation is not directed towards protecting nature per se, but rather only at protecting particular kinds or states of nature. As I highlight in Section 5.2.2, for instance, native birds are preserved, but native invertebrates are largely unconsidered. The preservation of certain species also does not mean that they are protected from use, only that certain types of use are prevented. Thus native birds, under a preservationist ethic, remain open to use as aesthetic novelties by recreational trampers, but not for hunters (S. D. Wright et al., 1995). Moreover, whether through preservation or conservation, active management has typically been prescribed. As ‘W.A.S.’ (1964, p. 6) wrote in a letter to the editor of New Zealand Outdoor:

…the person who is genuinely interested in our wildlife will do his best at all times to conserve what he is interested in. He will also attempt to control and destroy…that which is detrimental to his interests.

In this sense, preservation differs from conservation only to the extent that conservation allows for the ‘sustainable’ death of certain valued species as well as ‘detrimental’ species, whilst preservation typically accepts only the latter.

From the mid-20th century, the animal rights movement and its precursors began to question both the bold instrumentality of human approaches to non-human life and the validity or accuracy of constructing certain species as ‘enemies’ (see Harrison, 1964; Singer, 1975). In New Zealand this regard for animal welfare commenced from at least the 1930s, when articles began to emerge criticising the practise of caging birds (e.g. Anon, 1934e). Hunters, in particular, were becoming a primary target of activism against the exploitation and denigration of animals. As one 1947 article asked, ‘What is this urge that makes it necessary for modern man [sic], with no danger to himself, to kill helpless creatures which have
no means of retaliation’ (‘Rohu’, 1947, p. 9). Another article took aim at the then widespread practise of baiting and then shooting ducks on the water, directly comparing ducks with people:

If during peacetime, an unfriendly nation invited all New Zealand citizens to partake of free meals at a large number of restaurants, and then, one fine day shot their guests as they ate the free meals, what would they say and think about the occurrence? (Tavener, 1940, p. 5).

Indeed, the tendency to give animals human attributes was central to the rise in sentiment for animals generally in New Zealand. Hunters also increasingly judged one another on the ‘humanness’ of the methods they employed. An example of this can be found in the description of a hunting excursion in Te Urewera in the 1950s by James (1982). Having assisted in the acclimatisation of trout in the area, he was startled to discover that some hunters had been capturing the fish ‘with a sheath knife lashed to a long pole!’ a method James evidently considered abhorrent (Ibid., p. 27). He referred to the fish as having been ‘slain,’ and described the perpetrators as ‘murderers’ (Ibid.). Again, although often contradictory, these animals were afforded statuses similar to humans. Another article in Forest & Bird showed a rare empathy from this organisation with introduced deer. A children’s story presented a conversation between a deer stag and a native weka bird (*Gallirallus australis*):

"Ours is a sad story,” said the stag. "Many years ago we lived in a country where we could eat the leaves of trees without hurting them and sharpen our antlers against the tree trunks without doing harm. The men caught us and brought us here and let us loose in the bush. Your trees are not like the trees we knew before; when we eat their leaves and tear their bark with our antlers they die, and yet we must eat them else we will die. Now the men who brought us here say they do not want us because we are killing the bush; they come after us with guns! If they do not want us why did they bring us here?” (‘E.H.C.’, 1954, p. 15).

This passage is notable for its engagement with existing human discourses, intended or otherwise, both in its regard for the deer as a ‘victim’ and its parallels with the history of human slavery; with its familiar

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30 James apparently did not consider killing unacceptable, only certain methods. Or perhaps certain people – the fish were probably killed for consumption by local Māori.
story of forceful abduction, exploitation, emancipation, and subsequent legacy of discrimination and hatred (see Chapter 3). Nevertheless, while debates concerning hunting intensified as the 20th century progressed; the necessary death of introduced species became increasingly uncontested. Understandings from conservation biology dictated that populations should be given preference to individuals, insisting that the moral ramifications of control and eradication should be restricted largely to the method of killing, not the killing itself (Eggleston et al., 2003). Nascent notions of ‘victimisation,’ such as in the example above, became restricted solely to threatened native species populations. In 1968, an editorial in *Forest & Bird*, for example, implored readers to have ‘real morality’ and to show ‘a love for all God’s creatures and an appreciation of the wonder and beauty of His creations’ (Editor, 1968, p. 2). Although appearing at once universalistic, this entreaty was intended solely for native species.

In summary, this brief history of acclimatisation in New Zealand has highlighted some important consistencies in the non-Māori interpretation of wildlife through the mid-19th to mid-20th century. Almost the only inconsistency has been the reversal in regard for native and introduced species from the late 19th century, when consideration for these species changed polarities. Firstly, this section has emphasised that the existing wild biota of New Zealand has continually been presented as unacceptable and in need of ‘improvement’ by humans, who judge themselves ‘responsible’ for this correction. The current biota is ‘wrong’ and needs to be forcefully put ‘right’ was the recurrent environmental mantra. This has been furthered by a quasi-religious fervour for ‘betterment’ that has, in fact, incorporated religious doctrine. Acclimatisers, for instance, were constructed to be furthering their duty to impose humanity’s ‘dominion over all things’ just as supporters of native nature were later versed on their duty to ‘love all God’s creatures.’ In either case, betterment was supported by morality, effectively relegating dissenters from such paradigms to the status of unbelievers, or even heretics.

Secondly, the dichotomy between native and introduced has been reinforced by acknowledging the usefulness of the one and the lack thereof in the other. Acclimatisers saw introduced species as important

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31 The Royal Forest and Bird Protection Society’s more recent motto, ‘Give nature a voice,’ is similarly misleading (Anon, 2013a, n.p.). ‘Nature’ therein is defined as native species exclusively, giving little scope for the ‘voice’ of introduced species.
drivers of a new national identity and as the basis for a colonial economy. These views were later supplanted by those emphasising the importance of the native to a revised national identity and to a tourist economy that now appreciated the literal worth of the same. I have argued that supposed moves from preservationism to conservationism in New Zealand have only entrenched the view that nature was created for the use of people thus insisting that inutile species are fundamentally and unproblematically dispensable. Lastly, prevailing scientific theory in the mid-19th century showed acclimatisers that introduced species were best for New Zealand, whilst suggesting that natives would inevitably be supplanted. From the late 19th century, however, science was typically used to defend the persistence of native species, subsequently supporting those who had grown to detest acclimatisation. In both cases, science was used as a tool for furthering the legitimacy of certain cultural and economic interpretations of wildlife (see Chapter 9). In the next section I show that many of these consistencies have persisted into the late 20th and early 21st centuries in New Zealand.

5.2.2 The contemporary construction of introduced species in New Zealand

In New Zealand the deprecation 'invasive' (see Appendix 1) tends to be restricted to introduced species and is typically defined to encompass any and all introduced species that are expanding their range (e.g. Brockerhoff et al., 2010; Crowl, Townsend, & McIntosh, 1992). However, despite such blanket condemnations, the focus of control and eradication efforts generally centres on the persecution of a small subset of introduced species and on protecting a small subset of native biodiversity. The ecological effects of the vast majority of introduced species in New Zealand remain unstudied, and they are often assumed to be 'benign' due to certain life history traits (e.g. low fecundity) (Craw, 1994; Meurk, 2010). Ecological management in New Zealand remains preoccupied with saving native birds and eliminating the introduced mammals (e.g. the 'nasty trio,' see below) that are one of the threats to them32 (K. Hunter, 2009). Indeed, the rallying call to 'restore our dawn chorus' is both an emotive hook and a direct reflection of the element of biodiversity that is considered to be especially valuable in New Zealand (Anon, 2013c, 2014c). The Department of Conservation’s list of threatened species recovery plans, for instance, reads

32 The significance of other threats to native birds have ‘rarely been tested by experiment’ (Innes, Kelly, Overton, & Gillies, 2010, p. 104).
like a list of New Zealand native bird species. Recovery plans for plants, let alone invertebrates are, by comparison, conspicuously underdeveloped. Since at least the 1970s environmental health has been judged primarily on the basis of the health of its native bird communities (e.g. see Hackwell, 1999). Galbreath (1993, p. 158), in fact, wrote that, 'the important wildlife habitats were...almost by definition, those that supported the highest numbers of native birds, and especially the rarer ones.' Therefore, while the protection and enhancement of biodiversity per se is a popular catch cry, most biodiversity remains understudied and undervalued, specific charismatic fauna such as birds are comparatively over studied and, it could be argued, relatively overvalued.

While protection and restoration targeted at charismatic mega fauna is characteristic of conservation efforts around the world (see Trimble & Van Aarde, 2010), there are additional factors that continue to enhance its relevance in the New Zealand context. Importantly, New Zealand is now often defined by the uniqueness of its biota, particularly the absence of terrestrial mammals and the dominance of birds (see Froude, Rennie, & Bornman, 2010; Ginn, 2008; Lee, Wood, & Rogers, 2010). In fact, New Zealand continues to be defined as the 'land of birds,' a place historically devoid of terrestrial mammals (e.g. see Seaton, Minot, & Holland, 2010; van Heezik, Smyth, & Mathieu, 2008; Worthy & Holdaway, 2002). The preservation of native birds and removal of mammals in New Zealand is therefore one of the most powerful ways of restoring the superficial essence of lost or declining pre-human nature (see below). New Zealanders not only take native birds as mascots and symbols but also refer to themselves as such (i.e. ‘Kiwis,’ e.g. see Vallance & Morris, 2009, p. 50). As Hubbard (2011, p. A14) wrote, ‘in the heart of every New Zealander is a forest filled with birds.’ They are thus not simply birds, but rather ‘our’ birds (e.g. see Dyer & Williams, 2011; Vallance & Morris, 2009). Consequently, threats to native birds are seen as threats to nationhood (Ginn, 2008; DoC & MfE, 2000). Under such a conception, introduced mammals are...

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33 The majority of New Zealand’s native biodiversity (60%) is yet to even be described (Buckeridge & Gordon, 2000). 95% of native species are invertebrates. This taxa is often regarded as the ‘forgotten fauna’ not because invertebrates are misunderstood but because ‘there is still a lot of work to be done to raise awareness of their existence’ (DoC, 2006a; McGuinness, 2001, p. 9, emphasis mine).

34 A manifestation of the popular but highly contested ‘umbrella species’ concept (see Andelman & Fagan, 2000).

35 ‘Kiwi’ is a colloquial demonym for a New Zealander.
especially innocuous as they threaten the national identity on two fronts: both imperilling the image of a biota dominated by birds and eroding that of a biota without mammals.

Rather than softening the treatment of introduced species in New Zealand, the types of rhetoric that have developed in the wake of the animal rights movement have only increased in vehemence. The polarity between ‘native’ and ‘introduced’ in conservation discourse has become, if anything, more accentuated and arguably perverse (Figgins & Holland, 2012). As Craig (2004b, p. 10) protested, many articles now read ‘like a bad Western – Goodies vs. Baddies’ (e.g. see C. Smith, 2009). Lark (2008, p. 9) went even further, describing the enduring fissure between native and non-native as ‘zoological apartheid.’ Indeed, from the 1990s introduced species have been routinely constructed as cognisant enemies of humans and ‘their’ native biota (Isern, 2002). It is occasionally even implied that they ‘invaded’ of their own accord, rather than being forcibly moved by people. Vaillance & Morris (2009, p. 4), for instance, wrote that ‘alien invaders…somehow or other made the journey’ to New Zealand. This framing ultimately serves to ethically justify actions against them and sets up a terrible ultimatum: either kill introduced species or something you value will die. This task is presented as ‘unpleasant but necessary’ and the means naturalised through military metaphors that suggest that the resultant suffering is merely normal and to be expected (see A. Potts, 2009, also see Chapter 7). This framing side-steps questions around whether different understandings of the relationship between native and introduced might be considered.

Contemporary descriptions of introduced species in New Zealand are highly emotive, drawing on discourses of xenophobia and displacement. Introduced plants such as evergreen buckthorn (*Rhamnus*...
\textit{alaternus}, for example, are described as ‘a very insidious, evil weed,’ while wandering Jew (\textit{Tradescantia fluminensis}) is ‘cunning,’ and moth plant (\textit{Araujia sericifera}) is ‘just about pure evil’ (Cumming, 2009, n.p.). Ell (1999, pp. 24-25) warned that ‘immigrant birds’ such as introduced lorikeets (e.g. \textit{Trichoglossus haematodus}) were rapidly spreading, threatening to ‘take over our countryside.’ Accounts of hyper-fecundity and survivorship suggest that introduced species will take over and dominate all environments. Introduced wallabies (Macropodidae), for example, are ‘continually in the business of producing young – a biological forerunner of Ford’s assembly line’ (B. Graeme & Graeme, 1991, p. 43). McCullough (1998, pp. 20-21) similarly detailed the threat from ‘deadly guppies’ such as mosquito fish (\textit{Gambusia affinis}):

\begin{quote}
They are remarkably hardy, surviving in waters with little oxygen, in high salinities, and high temperatures. Mosquito fish can even survive in waters up to 42°C for short periods…Females can reach sexual maturity in only six to eight weeks…Estimates of their breeding potential demonstrate an incredible ability for this species to multiply, and dominate their new habitats with sheer numbers…Individual populations have been recorded as expanding from 7000 to 120,000 in only five months.
\end{quote}

So fearsome was the threat that one blogger compared introduced species to ‘cancer,’ suggesting that ‘New Zealand’s ecosystems are critically sick’ (‘AJ’ in Toki, 2012b, n.p.) (see Chapter 3). Again, these accounts feed on various fearsome discourses, conflating introduced species with other ‘threats’ and deliberately attempting to instil panic and loathing.

The worst invective, however, is reserved for the ‘nasty trio’ of introduced mammals: stoats (\textit{Mustela erminea}), rats (\textit{Rattus spp.}) and possums (\textit{Trichosurus vulpecula}) (W. Green, 2011). These species are

Massaro, Starling-Windhof, Briskie, & Martin, 2008). For Speedy (1996, p. 74), they are ‘tragically ill-adapted to modern New Zealand ecosystems.’ It could be argued, therefore, that the overarching fatalism of displacement theory, if not displacement itself, continues to characterise conservation discourses.
said to cause massive ‘destruction’ and ‘carnage,’ by, amongst other things, ‘eating 26.6 million bird
chicks and eggs each season’ a ‘slaughter’ which ‘goes on night after night while we sleep’ (Anon, 2013c,
n.p.; Hansford, 2010; McLaughlin, 2012). Two articles in New Zealand Outdoor by Benseman (1999,
2000) aptly summarised the level of hostility directed at these species. Stoats, for example, are ‘bastards’
best ‘stoned…to unconsciousness and finished off with a hammer’ (Benseman, 2000, p. 30). Possums
are also defined as ‘destructive little bastards’ (Ibid.). The prescription for their treatment is equally brutal.
As Benseman (1999, p. 29) wrote, ‘if there’s one thing these possums understand, it’s violence.’ Running
over possums attempting to cross the road is consequently ‘a service to the nation’ (Ibid.). He concluded
that these species ‘have no place whatsoever in New Zealand’s back country and have to be relegated to
target practice and the victims of casual violence on our roads’ (Benseman, 2000, p. 30). In short, no
mercy or quarter is to be shown, relegating these species definitively to the status of ‘bare life.’

Treatment of the ‘nasty trio’ is epitomised by debate over the use of the poison ‘1080’ which causes the
death of poisoned mammals, typically over a period of hours or days. Most poisoned animals experience
prolonged nausea, pain and seizures before ultimately dyeing of heart failure. In 2011, advocates for the
poison bristled at suggestions that it might be inhumane, threatening, in retort, that the pests need to be
killed or the consequences would be dire. As the Parliamentary Commissioner for the Environment
insisted, if they are not poisoned then native forests are ‘at risk of collapse’ (J. Wright, 2011,
commissioner’s overview). She argued that native birds are ‘under attack’ from introduced mammals which
are ‘literally chewing the life out of our unique forests’ (Ibid.). Again, this was presented as a deliberate
‘attack’ on New Zealand by cognisant ‘enemies.’ She wrote that species such as ‘possums, rats and
stoats have invaded our country [and] will not leave of their own accord’ (Ibid.). What is worse, they ‘are
bent on destroying our native forests’ (Ibid.). As she pleaded, ‘we cannot allow our forests to die’ (Ibid.).

Popular media thence took up such ‘scientific’ appraisals. Considering Wright’s review, Hubbard (2011, p.
A14), for example, surmised in a newspaper opinion piece that:

…the birds and the forest are dying. To save them, we will have to scatter enormous
quantities of poison. This may not sound like a green solution, but it is. Otherwise, the forests
will fall silent... The only effective means of controlling pests, Wright found, is by using
1080... The question is: what if we don't do it? Extinction is forever.

He declared that it is immoral for introduced species to displace natives (as do others, e.g. Meurk, 2010). However, he sidestepped the morality of inflicting suffering on introduced species by claiming, in effect, that they deserve it. He wrote that:

...banning or reducing 1080 would not stop terrible suffering among animals. Stoats, rats and possums kill chicks and small birds in horrible ways. And the less we use 1080, the more will die (Hubbard, 2011, p. A14).

Hubbard chastised introduced species for predating not simply birds but ‘chicks and small birds,’ in other words the most innocent and vulnerable, thus implying that by doing so they deliberately seek to inflict cruelty. This rhetoric deliberately conceals what is actually a universal characteristic of predation. All predatory animals (native or introduced), for example, could be said to kill in ‘horrible ways’ (e.g. eating prey alive or eating the vulnerable) but the reader is left thinking that such behaviour is restricted to introduced species and, again, inflicted with the intent to cause harm as opposed to merely satiate hunger. The selection of rhetoric used to define the behaviour and agency of introduced species is thus consistently directed toward provoking disgust and intimidation. Frames that deliberately misrepresent introduced species, including those used by respected authorities such as the Parliamentary Commissioner for the Environment, continue to be routinely employed. Although much research is being done to determine how to most humanely kill certain introduced species (see Morris, 2009; Sankoff, 2005, 37)

Meanwhile, as introduced species are set up as vicious malcontents to be removed, native species are painted as virtuous, almost saintly embodiments of righteousness; forever to be protected and nurtured (Isern, 2002). This can verge on the ridiculous. For example, a recent article on kereru seed dispersal was entitled ‘Selfless Seed Raiser’ (A. Graeme, 2012, p. 58). It ‘salutes a bird that gorges itself on fruit in the interests of keeping our forests healthy.’ The author went on to elaborate admiringly how, ‘seed germination is enhanced, both by the journey through the bird’s stomach and by falling into a puddle of nourishing poo.’ The article treated the bird as if it was quite conscious of the effects of its eating and excrement on the ‘health’ of the forest and selflessly gorged itself for that reason.

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the question of whether those species should be killed remains very much underdeveloped (see Chapter 7), and moves toward such conversations are supressed by rhetorics of crisis that insist that the need to kill introduced species must be beyond debate.

What this section has shown, therefore, is that the ways that non-Māori New Zealanders interpreted wildlife in New Zealand in the late-19th to mid-20th centuries have changed little since. Both for the purposes of national identity and revenue generation, New Zealand continues to be presented as a ‘land of birds’ and a reflection of lost pre-human nature. This understanding has dictated the necessity, above all, to remove mammals and encourage native birds. As I argued in Chapter Three, as elsewhere, notions of balance and stability continue to be popular. However, in New Zealand they take on additional meaning. As one of the last significant landmasses to be colonised by humanity, New Zealand is considered either as a reflection of harmonious, pre-human life or as a place that should reflect such a state. The quasi-religious fervour for acclimatisation has been replaced only by a new quasi-religious fervour for restoration. Therein, native and introduced have merely changed roles. The stark divisions between these constructions remain probably as marked as they have ever been. The ongoing perpetuation of extreme rhetorical strategies aimed at the denigration of introduced species is one of many signs that the national approach to introduced species requires revision and, I would argue, softening. There is evidence that at least a minority of New Zealanders are wary of the stark division between native and introduced and are increasingly conscious of the limitations of certain restoration discourses. In the next section, therefore, I briefly suggest some of the ways in which a more reconciliatory approach to introduced species in New Zealand may be justified.

5.2.3 Reconciling introduced species in New Zealand

Despite generally negative views of wild introduced species in New Zealand, interpretations of their ‘place’ are not homogeneous (see Chapter 7). There is no one belief about New Zealand nature and views are instead complex and idiosyncratic (King, 2005). While the dominant discourse on introduced species tends to be a disparaging, incriminatory one, there continue to be alternative voices to challenge this stance. Indeed, discourses of reconciliation from within the restoration and general ecological literatures in New Zealand have grown, notably in the last 10-15 years (see Lee et al., 2010; Norton,
1998; Norton & Miller, 2000). These dissensions have roots stretching back to the development of modern science in New Zealand in the late 19th century. For example, in the later writings of Leonard Cockayne (Isern, 2007). Such writers argue for a softening of the general approach toward introduced species and an acceptance of at least some species. These moves to reconciliation have been motivated by understandings of the immense difficulty in removing introduced species (e.g. Mirfin, 2012, see Chapter 4). This was evidenced, for instance, in the change in language from ‘pest control’ to ‘pest management’ in the early 1990s (see J. S. Holloway, 1993). The unintended consequences of removing certain species are also better recognised. For example, Innes et al. (2010) noted how the removal of pestiferous possums actually increased pestiferous rat numbers, underlining the need for more nuanced interpretations of pest management. Collectively, these understandings speak to the growing uncertainties that characterise attempts to extinguish introduced lives.

Conceptions of the environment that incorporate non-equilibrial and human-inclusive understandings are also gaining ground in New Zealand (Moller, 1999). These stress the need for wildlife management to shift away from restoration to prior, largely pre-human, states and toward the acknowledgement of new valuable processes that accept the primacy of change (W. Green, 2011; S. Walker et al., 2008; Worthy & Swabey, 2002). In fact, some in New Zealand acknowledged this as early as the mid-20th century. Renowned geologist Charles Fleming, for instance, argued that the biota of islands such as New Zealand were characterised by constant change (Fleming, 1952). In 1957 an anonymous contributor to Forest & Bird also argued for the primacy of change:

> It would appear certain that, for many millennia, there has been no long-continued period of forest stability but rather that there has been, since the close of the Pleistocene ice ages and up to recent times, a frequent coming and going of species, a continued development and redevelopment of different types of forest and fresh admixture of species in almost endless permutation and combination (Anon, 1957a, p. 4).

Consequently, the notion of life characterised by quiet stability may now be fading (Eggleston et al., 2003). The idea that New Zealand’s biota is Gondwanan, in any real sense, has mostly been discredited by research over the last decade (see McDowall, 2008c; J. M. Waters & Craw, 2006; Worthy et al., 2006).
It is now understood that most of New Zealand’s pre-human biota had dispersed to New Zealand, largely from Australia, in the last few million years (Tennyson, 2010). Since Gondwana, most of the landmass has gone through prolonged periods of submergence (e.g. the ‘Oligocene drowning’) and the biota ‘has experienced substantial, almost schizophrenic, rates and amounts of ecological change’ from ‘freeze-thaw pendulum swings’ to ‘mountain building and erosion, frequent massive earthquakes, and some of the largest volcanic eruptions documented’ (J. J. Sullivan, Kelly, & Ladley, 2010, p. 1). As for the famed ‘land of birds,’ recent paleontological research indicates that ‘the biota…may have been only in the absence of land mammals for the last few million years, not the 82 million commonly presumed’ (Worthy et al., 2006, p. 19422). Both ecological and geological research in New Zealand over the last decade has furthered the proposition that life in New Zealand has been characterised, as elsewhere, by flux and indeterminacy.

Environmental changes precipitated by the arrival of humans, moreover, are not unprecedented. Nor are accelerated rates of change in general which were common during pre-human times in New Zealand. Humans drastically altered the makeup of life in New Zealand from Māori onward and these changes continue despite efforts to arrest them (E. Pawson & Brooking, 2002; Robin & Griffiths, 2004). Notions of stability foster a rhetoric of ‘loss’ that sees any change in the biota as necessarily negative (e.g. see Kelly et al., 2010; Kingsford et al., 2009; S. Walker et al., 2008). However, such frames ignore the prominent role of dispersal and reconfiguration in New Zealand’s ecological history (P. J. Bellingham et al., 2010; J. M. Waters & Craw, 2006). Efforts to suppress and extinguish ecological change continue to be frustrated by movements of species, and changes in species interactions, both precipitated by humans and otherwise (Ginn, 2008; Kingsford et al., 2009; Sax & Gaines, 2008). Attempts to promote the restoration of ‘fossilised’ ecosystems as ‘living museums’ or ‘ecological theme parks’ are thus becoming almost routinely criticised (Eggleston et al., 2003, p. 365; Maclaren, 2011, p. 2). Rather than promoting the preservation of certain species or past states, therefore, conservation in New Zealand may be moving toward the preservation of desirable processes (Eggleston et al., 2003). This might include a move to the conservation of ‘wildness’ rather than that of ‘wilderness’ (see Chapter 4). This suggests that, rather than protecting ‘untramelled’ pre-human wildlife, conservationists could instead protect the ‘natural autonomy’ of non-human wildlife from human domination (Ibid., p. 366).
Reconciliation might also require a reassessment of the use of anthropomorphism and agency to all species in New Zealand. It may require an acknowledgement that native species do not wish well of humans or the things they value, just as introduced species are not deliberately conspiring against us. Such emotive frames are counterproductive as they serve only to enhance differences, erroneously pitting species against one another and dictating ‘sides’ for humans to support. Militant frames legitimise suffering, making pain normal and natural. As one commentator symptomatically suggested, ‘you don’t suddenly stop fighting a war because someone doesn’t like guns’ (in A. Potts, 2009, p. 4). Presenting a stark ultimatum dictating that people either kill introduced species or suffer the loss of valued native species or native ecosystems imposes harsh ‘realities.’ However, such realities are not natural or inevitable but instead quite debatable (see Gunn, 2007; Morris & Beatson, 2011). As Potts (2009, p. 17) wrote, ‘introduced species are as much the victims of human colonization and exploitation as the native animals of Aotearoa [New Zealand].’ All were moved involuntarily to a part of the world they had not previously encountered, generally for some form of commercial exploitation. Further persecution could quite justifiably be seen as a form of scapegoating to assuage collective guilt at the outcome of introductions. Potts questioned, therefore, what might happen if people were to re-think the ethical foundation of opposition to introduced species and to embrace understanding that are more compassionate toward their history and fate in New Zealand.

Finally, reconciliation may require a reassessment of introduced species’ relationship to national identity. The promotion of a ‘jingoistic rhetoric’ to define the relationship between native species and newer arrivals ‘feeds upon but lacks the discretion’ of classic texts such as Alfred Crosby’s *Ecological Imperialism* (Isern, 2007, p. 184). Ginn (2008, p. 5), for example, concluded that, ‘New Zealand’s eco-nationalist project can be understood as an attempt to map an orderly regime on to what is a much more viscous, turbulent domain of mobile non-humans.’ Attempts to ‘fix nature in space’ using technologies such as GIS, electronic tagging, poison, fences, traps and so on attempt to make ecological systems into linear histories of the nation state. Importantly, another prominent aspect of New Zealand national identity is the degree to which people from diverse ethnic and cultural backgrounds are able to live together in the country. Assertions that certain ethnic groups or peoples should be excluded from the country or treated as ‘foreigners’ or ‘enemies’ to a proscribed national history are likely to be met with hails of abuse in New Zealand.
Zealand. This is not to suggest that multiculturalism and cultural hybridity are states or processes that are free from abuses of power and social injustices both for ‘natives’ and ‘immigrants.’ However, the incorporation of introduced species into the discourse of nationalism in New Zealand, without doubt, is far out of kilter with that of its human population (see Maddox, 2005). Reconciliation, therefore, may require a more consistent discourse for the roles of both human and non-human animals in the national identity. Taken together, these discourses suggest the need for a more tolerant view towards introduced species that, at the least, acknowledges the inherent dynamism of New Zealand’s environment and resists the urge to both set up and catastrophise unproductive polarities.

5.3 Case studies: The exception of game species

Introduced species contradict many of the prevailing ideas about ‘appropriate’ nature in New Zealand and how it should look. From a biopolitical perspective they are ‘exceptions’ in the sense that they are abnormal and in need of removal for the good of the native population (see Chapter 2). However, as I demonstrated in the previous section, while disparaging appraisals remain widespread, attitudes toward introduced species are far from uniform. Indeed, while many introduced species are trapped, shot and poisoned to ‘save biodiversity’ others are enthusiastically supported, nurtured and protected to ensure their ongoing ‘sustainability,’ paradoxically, often by the same people. Introduced ‘game’ species epitomise this inconsistency. Game species often fit the ecological criteria for biopolitical exceptions in the sense that they can negatively influence the lives of valued natives. However, they are also exceptions in a methodological sense, because despite these negative effects, they are often valued themselves regardless (see Chapter 6). Importantly, game species thus demonstrate the extent to which human valuations of species are typically an unreliable gauge of the importance of those species to ecosystems.

In this section I introduce my case studies. As methodological exceptions, I highlight how they can be used to explore how alternative beliefs about introduced species might be accommodated.

Introduced to New Zealand for recreational hunting purposes, mostly from the mid-19th century, many game species are now firmly established in the country with widespread and growing populations (R.B. Allen & Lee, 2006). Game species often have demonstrably negative effects on native biodiversity similar to or worse than many other ‘invasive’ introduced species (see Sections 5.3.1 to 5.3.3). However, this has
often gone unappreciated or been deliberately downplayed (McIntosh et al., 2010). Unlike most invasive species, which are typically slated for destruction where at all practicable, introduced game are often not considered for control or eradication (Blackburn et al., 2010; Kingsford et al., 2009). Instead, removal of game species from the wild remains regulated by strict conditions, with ‘poachers’ liable for fines, or even imprisonment (e.g. see NZPA, 2011). While controlling the perceived negative environmental effects of many introduced species is generally presented as difficult but achievable, curtailing the effects of introduced game species is presented as impossible, or simply as a low priority (e.g. see Olykan, 2009; Vallance & Morris, 2009). Any attempts to permanently remove game species from the wild are met with stiff resistance from many members of the public and are almost invariably controversial (Towns, 2011). As I will discuss below, this inconsistency dates from the 19th century when, like other introduced species, game were often seen as preferable to natives.

Hunting of ‘appropriate’ game animals was a symbolic and highly ritualised expression of identity for the English upper and middle classes in the 19th century (Brennan, 2004). Those who ventured to New Zealand sought to enact similar expressions there. The ability to hunt and fish in the country was an expression of dominance and mastery. As elsewhere, only the locally initiated were able to successfully locate and capture their quarry. The act of hunting in New Zealand was thus ‘not only a display of conquest of foreign land and foreign people, it was also a means of expressing a sense of belonging and of worthiness to possess the land’ (Ibid., p. 114). In hunting introduced species, colonists were ‘experiencing nature first hand’ and, in doing so, becoming ‘more native, more in tune’ themselves (Ibid., pp. 51, 131). The mastery of native species, ironically, offered no such cultural benefits. Although they could be dominated too, the expression of this activity was considered unworthy. Many native species would not provide the appropriate response. For example, rather than gamefully attempting to evade the stalker and thus facilitating a chase, many species actually approached hunters or fled only ineffectually. Hunted with firearms, many native birds, for instance, provided little challenge and could easily be shot by children. As trophies, they were thus seen more as novelties than as objects of veneration. European colonists ultimately wanted to hunt what they were used to, the way they were used to doing it.
Acclimatisation of game species was generally not pursued for the benefit of the ‘common man.’ Rather, most introductions were intended for the ‘upper crust’ (Nugent & Fraser, 1993). The privileged few sought to re-enact the established hunting traditions they had left behind. Deer introductions, for instance, were associated with ‘nobility, royalty and aristocracy, both literally and figuratively’ (K. Hunter, 2009, p. 38). The red deer imported to New Zealand were sourced from the elite game parks of England and Scotland, including the Royal Herd at Windsor Great Park (Ibid., p. 39). Deer were a source of income from similarly well-to-do tourists from Home, as well as an enticement for such people to emigrate (Star, 1997). The Acclimatisation Societies were directed by the upper classes and the acclimatisation movement was ‘initiated and controlled by New Zealand’s wealthy and politically important elite’ (McLeod, 2004, p. 109). Societies often acted as private clubs for the privileged. Hunting fees for deer, for example, were generally set at £2 to £6 per year, well beyond the means of the average working man. Moreover, shooting on Sunday, the working man’s only day off, was initially prohibited (Figgins & Holland, 2012). From its establishment, therefore, acclimatisation was intended to benefit the elite. Both Māori and Europeans of lower socioeconomic means were effectively excluded from many of its benefits (Aramakutu, 1997).

As Brennan (2004, p. 122) commented, ‘[t]he clearest indication of the social standing of those involved in acclimatisation in New Zealand was their ability to get legislation passed.’ In 1861 The Protection of Certain Animals Act was enacted by the colonial parliament. As the title suggests, only ‘certain’ animals were deemed worthy of protection. Specifically, the Act was ‘to encourage the importation of those animals and birds, not native to New Zealand, which would contribute to the pleasure and profit of the inhabitants’ (Davies, 1996, p. 39). However, it was quickly realised that if introduced species were to thrive they would need to also be protected from ‘poachers’38, who had taken to killing these species for food or sport (Aramakutu, 1997). Control of these species, it was decided, would also need to be vested in an appropriate authority. As a result, in 1867 the first of a series of Animals Protection Acts were passed. At least initially, these Acts provided no protection to native species (Ibid.). Protection was

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38 Typically working class Europeans and Māori who were, in fact, not legally restricted from taking introduced species from the wild at this time.
instead extended largely to introduced species, particularly game. Rather than providing any sort of
general protection for animals, therefore, they signalled, in effect, the formation of New Zealand’s game
laws (Coombes, 2003). Introduced species were thenceforth to be managed exclusively by
Acclimatisation Societies who had effective ownership of them. Most introduced game species were
subsequently able to be hunted only by license holders with the proceeds going to the local
Acclimatisation Society, much of which was used to fund either more introductions or the encouragement
of existing ones.

These game species soon became an important source of income. Indeed, as Bathgate (1897, p. 267)
remarked, game species were the Acclimatisation Societies ‘main source of revenue’ without which ‘they
would hardly be able to exist.’ Just as native species became valuable as exhibition pieces for wealthy
tourists, introduced game species supported their own important industries. In fact, the two worked in
tandem. As Star (1997, p. 201) observed, this ‘required the conservation of the New Zealand landscape,
but stocked, preferably, with exotic fauna for rich tourists to hunt.’ National Parks were established to fuel
this demand. They offered visitors the opportunity to view primeval ‘nature’ whilst also pursuing familiar
‘traditional’ hunting activities, such as deer stalking (see Coombes, 2003). With its thermal attractions,
Rotorua was similarly designated as a tourist resort by the government in 1881, and served with a rail link
from Auckland to facilitate tourist traffic (D. Young, 2004). International travel company Thomas Cook &
Son included a visit to Rotorua in their worldwide tours during the 1880s, and by 1890 the area was
already firmly established as an angling destination (Ateljevic & Doorne, 2002; Brennan, 2004). There,
introduced game species, such as trout, were immediately ‘reconciled’ as ‘a vital factor in the scenic New
Zealand package’ (Park, 2000, p. 26). They were a ‘draw card’ for the ‘wealthy…elite, who could afford
the time and passage to one of the most remote corners of the world’ (e.g. see Anon, 1891; Anon, 1907b;

In addition to income from the sale of hunting and fishing licenses, Acclimatisation Societies profited from
the distribution and export of game species. For example, as early as the late 19th century trout ova were
already being distributed from Rotorua to elsewhere around New Zealand (e.g. see Anon, 1898b). Between 1899 and 1912, for instance, the Auckland Acclimatisation Society exported over a million trout
ova to Australia (Stanley, 1988). Again, these were not charitable undertakings. Rather, in 1900 more money was made in Rotorua from exporting ova overseas, and to other provinces, than from fishing licenses (W. B. Elliot, 1983). This industry thrived in the early 20th century39 (e.g. see Anon, 1915d; Phillipps, 1923). Although it has subsequently declined in significance, ova continued to be exported from Rotorua throughout the 20th century. For example, in 1978 20,000 ova were sent to Sri Lanka40, while in 1982 10,000 ova were sent to England41. Profits from game species were thus both multifaceted and long lasting.

While many introduced species were being cast as ‘villains’ and ‘enemies’ from the late 19th century (see Section 5.2), introduced game species were instead included with natives as valued components of the biota. This inconsistency was driven mostly by economic considerations. In 1901 the Department of Tourist and Health Resorts was established to further promote New Zealand’s image as a hunting and fishing Mecca (Galbreath, 1993). The annual reports for the Department (1902-1933) show that it was preoccupied with making New Zealand attractive to wealthy hunters and anglers from overseas, and proactive in enforcing restrictions on domestic harvest and imposing penalties on ‘poachers’ (see McKinnon & Coughlan, 1960). The Department’s General Manager, Thomas Donne, was an enthusiastic advocate for introduced game, authoring several books on sport in New Zealand including The Game Animals of New Zealand (1924). Anticipating the impending backlash against introduced deer (see Section 5.3.3), he asked:

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39 Phillipps, W.J. 1918, Report on a scientific investigation into questions relative to the trout fisheries of the thermal district, Auckland Province, New Zealand, p. 7, AFKC A1700 198/g 7/10/0(1), Department of Internal Affairs, Fish & Fishing 1960-1986, Auckland, National Archives.


How many travellers visit New Zealand to view shrubs and plants as against those who are attracted there by sport? In any case there are more trees, shrubs and plants than a man could look at in a hundred years (in K. Hunter, 2009, p. 210).

Donne was supported, in this advocacy, by numerous accounts of hunting and angling adventures in New Zealand, including popular works such as G.D. Hamilton’s *Trout-fishing and Sport in Maoriland* (1904) and Zane Grey’s *Tales of the Angler’s Eldorado, New Zealand* (1926). These efforts were successful in drawing large numbers of hunting and angling tourists to New Zealand, mostly from Europe and North America, throughout the early 20th century42 (K. Hunter, 2009; Stanley, 1988). Newspaper articles praised the income generated from these tourists (e.g. Anon, 1912c, 1929a) and advertisements therein spoke to the considerable trade generated (e.g. Anon, 1911). Thomson (1922, p. 212) was particularly effusive, writing that the introduction of brown trout to New Zealand was:

…the most successful piece of acclimatisation work undertaken in this colony. It has exceeded all expectations. It has not only stocked the streams and rivers with the finest of sporting and edible fishes…but it has brought numerous sportsmen to the country, and made it known far and wide as a paradise for anglers.

Regarding deer, he was no less enthusiastic:

The vast number of red deer found in New Zealand enables the various leading societies to offer shooting privileges to sportsmen, who come from all parts to enjoy this form of sport.

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42 The Auckland Acclimatisation Society’s annual report for 1906 stated that, ‘…there are few localities in any country where better trout fishing can be obtained [than in Rotorua]…proof of this statement is seen in the increasing number of anglers which every year visit the district from Europe or America’ (Anon, 1906. Auckland Acclimatisation Society Annual Report, p. 9. Auckland, Auckland Museum Library).
The attraction of red deer shooting is now to be reckoned as one of the assets of the country from a tourist’s point of view\(^{43}\) (Ibid., p. 46).

Although Thomson was highly critical of the acclimatisation movement in general and the changes to the environment it had wrought, he suggested that the introduction of game was an exception. This framing has persisted. Davies (1996, p. 40), for example, wrote that while acclimatisation had been ‘unfortunate’ and New Zealand had ‘suffered greatly,’ the introduction of game offered a probable exception. For instance, he wondered,

…what New Zealand would have been like without the Acclimatisation Societies. The alpine rivers…would still be places of natural beauty, but without the swirl of a rising trout the waters would hold less appeal. The forests would be just as magnificent, but without the added lure of rutting stags…the mountains would lose some of their attraction…The lakes and ponds would be quieter too, without the flurry of wings and the mallard’s call\(^{44}\).

This understanding is enshrined in countless acts and guidelines that dictate exceptions for introduced game, such as the Wildlife Act (1953) and the Conservation Act (1987) (also see Sankoff, 2011). In 1990 the Acclimatisation Societies were disbanded, with local Fish and Game Councils installed in their place (see Anon, 2003b; Brennan, 2004). However, this change only further emphasised the disjunction between introduced species generally, and introduced game specifically. Whilst acclimatisation was thenceforth formally cast aside as a regrettable accident of history, ‘fish and game’ remained an exception to that understanding, requiring, not regret, but ongoing management and protection.

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\(^{43}\) Again, however, the financial benefits of this elite tourism were largely restricted to the wealthy patrons of the Acclimatisation Societies, or other local elites. As Galbreath (1993, p. 123) noted, ‘although by no means restricted to the wealthy or landed classes, trout fishing in New Zealand still retained much of the gentlemanly flavour of its English origins.’ The Conservators of Wildlife at Rotorua, for example, ‘were often called upon to arrange a day’s trout fishing for guests of the government or other VIPs’ (Ibid.).

\(^{44}\) More recently, Walrond (2012, n.p.) was similarly ambivalent, offering that, ‘while [acclimatisation] societies made mistakes, they also established world-class deer and waterfowl hunting, and brown and rainbow trout fishing.’
Aside from the considerable revenue that continues to be made from the hunting of introduced game, these species continue be distinguished from other exotics by their association with New Zealand’s national identity. Indeed, hunting has become an important and celebrated aspect of New Zealand society (see Crawford, 1996; Fothergill, 2005; K. W. Fraser, 2000, also see Chapter 7). In her book *Hunting: A New Zealand History*, Hunter (2009, p. 27) went so far as to say that ‘if there is a ‘national culture’ in New Zealand, then hunting and hunters’ almost exclusively of introduced game, ‘are at its core.’ It is often presented as an enduring inter-generational pastime that transcends fashion (e.g. see Buckthought, 2008; Caughley, 1983; T. Orman, 1979). As South (1994, p. 81) wrote:

…hunting…is a timeless pursuit, one very often passed from generation to generation by grandfathers to fathers, and by fathers to sons who hope their offspring will grow to share in joyful experiences that have kindled lasting memories…

Just as native species are endangered by various human-induced threats to their existence, the sport of hunting is often similarly presented as threatened (see Anon, 2008; Editor, 1999b; Jensen, 1979). For example, the destruction of deer in the mid-20th century (see Section 5.3.3) was feared as a threat to the existence of hunting in New Zealand (e.g. see ‘A.S.D.E.’, 1974; ‘Give us a fair go’, 1967). Moreover, as has been observed in many other countries, ‘much of the inspiration and hard work for conservation came out of the hunting ethos’ (D. Young, 2004, p. 141). Indeed, it was the decline of game in countries such as the United Kingdom and the United States that originally spurred moves to conservation (Hummel & Goedeke, 2005). To this day, many of those who work in conservation in New Zealand remain avid hunters and anglers (see Chapter 8). This intimate association between game hunting and conservation has helped to insulate species in New Zealand that might otherwise be exclusively considered pests.

Elsewhere around the world hunting has suffered a fall from popularity with the rise of a general discourse on animal rights (Kheel, 1996; Singer, 2003). However, New Zealand hunters have been comparatively insulated from this movement. Firstly, this is because New Zealand hunters pursue introduced rather than native quarry and therefore are seemingly not directly contradicting biodiversity conservation. Rather, for many they are actually enhancing it (McLeod, 2004). Secondly, from the early 20th century the cost of participating in hunting declined, and regulations were relaxed or even removed. This meant that hunting
progressively became an ‘everyman’ sport in New Zealand, as celebrated through the pages of popular national magazines such as *New Zealand Outdoor, New Zealand Wild Life and Fish and Game New Zealand*. Although some forms of hunting and angling still entail significant costs, the enjoyment of hunting in New Zealand has at least extended from the wealthy to the middle classes. In this way, it has avoided the enduring negative association with the landed gentry that persists in many other countries (e.g. the United Kingdom, Hunter 2009; also see Franklin 1996, for similar comparisons with Australia). This has meant that hunting in New Zealand can be presented as a pursuit for all New Zealanders and, as such, something that should be forever protected from animal rights activists, conservationists, and others (see Chapter 7).

Many introduced game species, therefore, stand out as exceptions to the common understanding of introduced species. Importantly, they present similar ecological effects to other species deemed ‘invasive’ but, while those species are controlled, eradicated, or at the least, disliked, introduced game species are generally held in high regard. In many senses, they are already ‘reconciled’ into conceptions of acceptable wild biodiversity in New Zealand. They are aligned to hunters and anglers through biosocial collectivities which position threats to their existence as threats to certain cherished human identities. In this way they are insulated from the criticisms levelled at other introduced species by discursive frames similar to those used to protect native species. Game species, like native species, are ‘ours.’ Discursive analysis of game animals and their apparent legitimacy in the landscape might thus provide important understandings for illuminating how other introduced species could be accepted into the landscape.

Rather than explore the discursive construction of all introduced game species, however, I have focused my research on three game animals, and their construction in three specific areas of New Zealand’s North Island. These are trout in the Rotorua Lakes, mallard ducks in Northland, and deer in Te Urewera National Park. These cases were selected because they either encapsulate or offer particularly salient representations of many of the wider discourses present throughout the country on game species. Spatially narrowing the focus of investigation also facilitated a more in-depth analysis of these as they were manifested on a local level. Below I outline why each of these cases is particularly useful for exploring the social conditions for compromise on introduced species. As context, I outline the history of
acclimatisation for each species, both nationally and in the specific area of focus. I demonstrate the ecological effects of each and why, in spite of these, they are often presented as valued members of the contemporary biota.

5.3.1 Trout in the Rotorua Lakes

My first case study focuses on the construction of trout in the Rotorua Lakes of the central North Island. The most common introduced trout there are the brown (*Salmo trutta*) and rainbow (*Oncorhynchus mykiss*) species. There are eleven large lakes and several smaller ones in the area. The largest is Lake Rotorua which has a surface area of almost 80km$^2$. The lakes lie within the Taupo volcanic zone, one of the world’s most volcanically active (Houghton, 2007). Major eruptions characterise the area, including many geologically recent events such as the Hatepe Eruption in 180 AD, and eruptions of Mount Tarawera in 1315 and 1886. All of the lakes are volcanic in origin, being the remnants of magma chambers that have collapsed to form calderas and subsequently flooded (Rowe, 1984). Lake Rotorua, for example, formed in this way around 240,000 years ago. The region and its biota are thus characterised not only by change and indeterminacy, but by recurrent violent upheavals. The geographic focus of this case study, therefore, aptly illustrates the dynamic nature of ecosystems in New Zealand, reinforcing the need to assess the effects of introductions in the light of often deeply turbulent ecological histories (see Chapter 4).

Despite its turbulent nature, the Rotorua area was also one of the first to be settled by Polynesians, with the local Māori iwi$^{45}$ becoming known as Te Arawa (Stafford, 1967). Among the many functions of the lakes for Te Arawa was the provision of an important fishery based on several native species. Local geothermal features were also valued for bathing and cooking, an attribute that was later also appreciated by Europeans (*Ibid.*). Indeed, in this sense, both Māori and Europeans were drawn to the area by its underlying turbulence. In this section, I argue that an investigation of the discursive construction of trout in the Rotorua Lakes provides a useful platform for exploring reconciliation. I show that trout were introduced into the lakes to rectify what European’s perceived as the lack of an ‘appropriate’ fish fauna.

Like the introduction of many other species in New Zealand, colonists fixated on what they perceived was

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$^{45}$ A Māori community or people.
missing, rather than on what was present (see Section 5.2). Through a short history of trout acclimatisation in the Rotorua Lakes, I show how trout have come to be seen as important aspects of the local and, in fact, national identity and on how the removal of trout, both for the purposes of recreation, and for the purposes of enhancing the potential for recreation, have been converted into profitable commodities (see Chapter 7). I also show that in spite of their enormous effects on native ecosystems, trout have largely been accepted into people’s conceptions of acceptable biodiversity. By exploring the discursive means through which this understanding is maintained, I argue that this case provides a useful mechanism for exploring the broader workings of reconciliation.

European colonists to New Zealand were almost immediately struck by what they perceived to be the lack of an acceptable freshwater fish fauna in the country. An ‘acceptable’ freshwater fish was interpreted as one that could be caught and joyfully ‘played’ with rod and reel in the traditional European way (K. Hunter, 2009). This tradition was embodied in Izaak Walton’s *The Compleat Angler* (1676), a 17th century book on freshwater angling that had come to be regarded as the ‘Bible’ for those seeking to perpetuate this aspect of European culture in the Antipodes (Brennan, 2004). Unfortunately, the few species of any interest, such as native eels (*Anguilla* spp.), galaxiids (Galaxiidae) and grayling (*Prototroctes oxyrhynchus*), were generally considered inferior sporting propositions to the Salmonidae of the Northern Hemisphere. In efforts to rectify this perceived imbalance, some 15 species of Salmonid were introduced to New Zealand from the 1860s through to the early 1900s (M. Unwin, 1999).

Rutherford (1901, p. 242, emphasis in original) explained that, ‘the beautiful system of rivers and lakes in New Zealand were recognised by the early settlers as admirably adapted for the well-being of Salmonidae.’ In spite of this apparent suitability, however, most species did not thrive in New Zealand. In fact, less than half survived. Of the remainder, only four species are distributed in more than a few catchments and only two species – rainbow and brown trout – could be considered widespread (see McDowall, 1990, pp. 152-221). In some catchments even those species survive only through continual re-stocking. The introduction of salmonids to New Zealand was therefore mostly a failure. Only a few species survived and, as I will explain, those that did became established only through considerable environmental assistance. This challenges the belief that introductions thrived in New Zealand due to an
overarching suitability to their new environment. Rather, it suggests that many species survived only because of their ongoing promotion and protection by people (see also Section 5.3.2).

The first efforts to transport salmonids to the Antipodes were unsuccessful. After many failed attempts in the mid-19th century, European brown trout eggs were successfully shipped to Tasmania in 1864 (K. R. Allen, 1956). This success greatly simplified the problem of conveying them to New Zealand and three shipments of brown trout ova were subsequently made between 1868 and 1870 (Arthur, 1881; Thomson, 1922). Most of the brown trout in New Zealand descend from these few original importations. In 1883 the Auckland Acclimatisation Society unwittingly\(^46\) imported 5,000 American rainbow trout eggs and hatched them in the Domain\(^47\) ponds (Stanley, 1988). Most rainbow trout are similarly descended from this shipment (Druett, 1986; McDowall, 1990). Efforts to breed and ‘seed’ both species throughout New Zealand were immense. By 1916 an estimated 50 million brown trout had been released in New Zealand (McDowall, 1990). By 1922 in excess of 10 million rainbow trout had also been released (Thomson, 1922). As early as the 1900s brown and rainbow trout were considered to be widespread throughout New Zealand waterways. For Hamilton (1904, p. 136), the difficulty at that point was ‘not to find lakes and rivers containing trout, but to find those that have not trout in them.’

Within about 20 years of their respective introductions to New Zealand, both brown and rainbow trout were introduced into the Rotorua Lakes. Pat Burstall, Conservator of Wildlife at Rotorua (1965-1981), wrote that brown trout were introduced to Lake Rotorua in 1889 when the Rotorua Town Council purchased 200 fingerlings from the Tauranga Acclimatisation Society for £5\(^48\). By 1896 they were considered well established (Wildlife Branch - Department of Internal Affairs, 1962). Nonetheless, initial reports on their sporting pedigree were less than enthusiastic:

\(^46\) They were initially thought to be brook char (Salvelinus fontinalis) (Druett, 1986).

\(^47\) Auckland’s oldest park.

Contemporary accounts mentioned that whilst they grew well, they were very difficult to catch, and only provided sport at night at stream mouths during inclement weather; the greatest use of them was by [Māori] using spears around the lake shores and in the spawning streams. They did not provide the type of angling expected...

People had to be educated how to use the trout (see Chapter 9). Recognising a market for the brown trout that was not being fulfilled by anglers, the Auckland Acclimatisation Society set up several licenses to net in Rotorua, and one to sell fish in Auckland. Netting was permitted in Lakes Rotorua and Rotoiti, in which a ‘flourishing business began’ (W. A. Sullivan, 1990, p. 70). The Auckland dealers had to pay a special license of £3 to sell trout, plus a poundage of a penny on every pound of weight for all trout conveyed out of the Rotorua County. However it was clearly profitable. By early 1898 New Zealand Rail had already received 3,100lbs (1,400kg) of trout bound for sale in Auckland. Commercial netting was discontinued in 1902 only after concerns were expressed that that it was depleting stocks unsustainably (Ibid.). In Chapter Seven, I show that this ability to economically capitalise on ‘surplus’ and ‘unnecessary’ lives remains characteristic of wildlife management in New Zealand.

As the brown trout had not lived up to expectations, another fish was sought. The rainbow trout was thus duly introduced in 1898 or 1899, this time by the Auckland Acclimatisation Society (D. K. Rowe, 1984). It was, indeed, more successful. It colonised the lakes just as readily as the brown trout and, more importantly, within five years it dominated the numbers of trout in the angler’s ‘bag’ (Wildlife Branch - Department of Internal Affairs, 1962). Thousands of rainbow trout were thenceforth liberated from the Waimakariri Hatchery and by 1903 they too were considered well established having also been introduced to all the Rotorua lakes, except Rotomahana (Stanley, 1988). Trout growth rates in the lakes were spectacular both in terms of population size and individual weights. Druett (1986, p. 43) described the experiences of the members of the Rotorua Rod and Gun Club in the early years following trout introductions:

In the first year 6952 trout were taken, in the second 15043; in the third, 22140 trout – weighing more than 42.5 tonnes in all...In one season more than 56 tonnes of trout were

\[49\] Ibid.
taken with rod and line from the Rotorua district…Some caught so many that they gave them
to farmers for pig-food.

A 1903 article in the Bay of Plenty Times entitled ‘Life’s Happiest Period’ marvelled at the ‘surprising
success’ of the trout (Anon, 1903, p. 2). Already the area had caught the attention of international
travellers such as Captain Lascelles, an English visitor who had, the previous year, caught a fish
weighing an enormous 21lbs (9.5kg). Spurred on by their success, and the resultant increase in license
sales, the Auckland Acclimatisation Society was depositing as many trout into the lakes as they could. At
peak production they were producing over 700,000 juvenile trout per year for feeding into the system50 (B.
Wilson, 1999).

Little consideration was given to the effect of trout on fish or other biota already existing in the lakes (see
Section 5.2). At least four fish species were present in the lakes at the time of trout introduction. Phillipps
(1924) highlighted the presence of a native galaxiid (Galaxias breevipinnis) found in Lakes Rotorua,
Rotoiti, and Okataina and a native bully (Gobiomorphus cotidianus), found in Lakes Rotorua, Rotoiti,
Tikitapu, Rotokakahi, and Tarawera. Native eels were present only in Lake Tarawera51 (Anon, 1940b).
Goldfish (Carassius auratus) had also been introduced to some of the lakes in the early 1880s
(McDowall, 1990). The effects of trout on eels are unclear but populations of goldfish, galaxiids and
bullies precipitously declined. Populations of the freshwater crayfish, or koura (Paranephrops planifrons)
also appeared to be heavily reduced by the introduction of trout (Archey, 1914; B. Hamilton & Moller,
1999).

50 They were subsequently aggrieved, however, to be stripped of jurisdiction of the area in 1907 when the
Department of Tourist and Health Resorts took over the lakes areas, formerly part of the Auckland Acclimatisation
District, and re-named it the Rotorua Acclimatisation District (Stanley, 1988). The lakes area was considered too
important, and lucrative, as a tourist resource to be left to the Auckland Acclimatisation Society.

51 Although galaxiids, bullies and eels are considered native in the Rotorua Lakes there is some evidence that they
may have been introduced before the arrival of Europeans by Te Arawa (e.g. see Phillipps, W.J. 1918. Report on a
scientific investigation into questions relative to the trout fisheries of the thermal district, Auckland Province, New
Zealand, p. 5, AFKC A1700 198/g 7/10/0/1(1), Fish and fishing 1960-1986, Auckland, National Archives; Stafford,
1967).
As early as 1895 Māori began to complain at the reduction of valued fish species, particularly among the native galaxiids (e.g. Anon, 1895), but also introduced goldfish which had come to be known as ‘morihana’ after Sub-inspector Morrison who introduced them to nearby Lake Taupo (McDowall, 1990; Interview, Rob Pitkethley, Regional Manager, Fish & Game (Eastern), January 15th 2013). The decline of these fisheries has always been circumstantially attributed to the introduction of trout, although it has never been scientifically assessed (McDowall, 1999; Blair, Hicks & Ling, 2012; Interview, Dave Rowe, Freshwater Ecologist, January 18th 2013). In Chapter Eight, I argue that the lack of research on such questions demonstrates the way in which scientific research is used, or in this case not used, to further particular positions on introduced species.

Meanwhile, any native animal that deigned to eat introduced trout was considered a threat to the new fishery and targeted for control. Eels, for example, were one of the first to be highlighted as threats (e.g. ‘Lee Angler’, 1888). Rhetorical strategies employed against introduced species from the late 20th century were rehearsed against natives (see Chapter 7). Native gulls (Larus sp.), for instance, were said to ‘play havoc’ with trout, fostering images of chaos and unpredictability that played on the fears of the colonists (Anon, 1896, p. 2). They were also savage and callous and thus deserving targets of retaliation. Observing a gull drop two trout, a witness pointed to the fact that ‘each had its eyes picked out’ (Ibid.) Supposed ‘enemies’ of trout were thus able to be persecuted with little opposition52. In particular, the shooting of ‘unornamental, pestilent’ shags had driven the birds to ‘vanishing point’ and supposed improvements in fishing were quickly attributed to their decline (Anon, 1913c; 1913d, p. 3). A typical newspaper article of the time entitled ‘Kill the Shags’ instructed that, ‘…all the shaggeries and nesting resorts should be destroyed, and shags shot…whenever seen’ (Anon, 1914b).

Weekend shooting parties patrolled the lakes carrying on the ‘good work which, of course, brings them no little financial reward’ (Anon, 1915b, p. 8). Indeed, ‘marksmen’ were said to have ‘made a profitable living’ by ‘making war upon the gourmand birds’ (Anon, 1924, p. 8). Thus, within a short period of time the destruction of shags had become an important industry of its own. Despite these attempts to remove

Edgar Stead was a notable exception, employing the now familiar argument that predators surely took only small numbers and that, being native, they simply ‘belonged’ regardless (e.g. E. Stead, 1905, p. 10).
impediments to trout productivity, the Rotorua Lakes fishery was already considered to be in decline by the early 20th century (D. K. Rowe, 1984). Importantly, the weights of fish caught were fast diminishing. In 1910 T. M. Wilford, a Member of Parliament, took a visit to Rotorua. He speculated that the diminution of trout in the lakes was the result of overstocking and the absence of sufficient predation, pointing specifically to the lack of trout predators in the lakes. On account of this, he suggested that the trout had outgrown their food supply. As a remedy he proposed periodic netting to keep the trout population ‘in check,’ suggesting an amendment to the Fisheries Conservation Act (1884) to allow it (Anon, 1910a). Rather than permitting this valuable resource to go to waste, a report was soon tabled on ways to dispose of the ‘surplus’ fish ‘in some profitable way’ (Anon, 1910b, p. 4). Thus, once again, unnecessary lives were soon capitalised upon.

The Department of Internal Affairs directed the subsequent netting of the lakes53. Changes in local regulations were required in order to make it ‘appropriate’ to net a species that was generally deemed to be suitably caught only by rod and reel. Changes were also required to make sale of their flesh appropriate where previously it had also been considered abhorrent:

The following new regulations in connection with the Rotorua Acclimatisation District have been gazetted: Notwithstanding anything continued in any regulation made under the Fisheries Act, 1908, it shall be lawful for any person to buy and sell trout and smoked trout taken and branded by or under the direction of the Department of Internal Affairs (Anon, 1913b, p. 3).

Barriers were set up in two of the largest rivers and netting traps and drag-nets were used to catch as many trout as practicable (Thomson, 1922). Between 1913 and 1916 a total of 58,455 ‘ill-conditioned’ fish were thus extracted and destroyed by netting. Over the same period a total of 89,775 ‘good’ fish were taken out and sold for £4,595 (Ibid., p. 229). Much like twenty years prior (see above), the goal of enhancing the trout fishery by removing surplus had quickly become an industry of its own for those wealthy enough to capitalise upon it. A Te Puke Times article reported that, in 1913, ‘the smoked trout

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53 The Department of Internal Affairs became the controlling authority for the Rotorua Lakes area in 1930 (Galbreath, 1993).
industry at Rotorua is in a flourishing condition, and a large consignment has just been sent to Wellington’ (Anon, 1913e, p. 2, emphasis mine). Removal of ‘weakling’ fish through netting was soon credited with a turnaround in fish sizes (Anon, 1914d). For example, by 1915 T.M. Wilford felt that fishing was ‘certainly better than it was two years ago’ (Anon, 1915c, p. 3). In fact, by 1918 the condition of trout was considered to have recovered so much that netting was discontinued and the netting industry concluded (Galbreath, 1993).

By the 1920s it was understood that trout not only predated native fish, but that they practically exterminated them from many waterways (e.g. see Hiroa, 1921; Poppelwell, 1929) (but see above). Several further species were therefore introduced in attempts to provide a new source of food for the trout. Around 280,000 shrimp (*Xiphocaris curvirostris*), for example, were introduced to the Rotorua Lakes from the Waikato River between 1909 and 1912. However, these were unsuccessful in establishing. Phillipps found none remaining during a survey in 1918\(^{54}\). Much more successful was the introduction of smelt (*Retropinna retropinna*). Although early introductions from the 1900s failed to survive (D. K. Rowe, 1984), further liberations from the 1910s through to the early 1930s succeeded, and by the mid-1930s they were well established (Anon, 1936d). They have since been widely credited with ensuring the persistence of the trout fishery (e.g. see McDowall, 1990; Mitchell, 1995a; D. K. Rowe, 1984). The introduction of additional food sources, however, has never been seen as sufficient as a remedy for preventing the decline of trout in the Rotorua Lakes. Instead, the lakes have been continually re-stocked with juvenile trout. For example, during just one week in 1941 a total of 840,000 trout fry were released into the lakes (Anon, 1941b). In the early 1960s, nearly 100,000 fingerlings were released each year (Anon, 1963c), and this continued throughout the decade (Fish, 1968). Indeed, this continues to the present with tens of thousands of fingerlings released into the lakes each year (Carnachan, 2009). Trout survival in the lakes – at least in the forms preferred by anglers – is thus predicated on enormous and ongoing environmental assistance.

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\(^{54}\) Phillipps, W.J. 1918. Report on a scientific investigation into questions relative to the trout fisheries of the thermal district, Auckland Province, New Zealand, p. 6, AFKC A1700 198/g 7/10/0(1), Fish and fishing 1960-1986, Auckland, National Archives.
Somewhat prophetically, a 1936 article in *Forest & Bird* warned of excessive ‘trout worship’ in New Zealand, noting that if it were not for their ‘sacrosanct’ status they would be considered ‘really as much a pest as stoats or weasels’ (Anon, 1936c, p. 8). In fact, trout are now considered to have massively detrimental effects on many native freshwater species (McDowall, 2008b; McIntosh et al., 2010; D. K. Rowe, Konui, & Christie, 2002). They are one of the most cosmopolitan fish species in the world and are regarded both as highly ‘invasive’ and as drivers of ‘biotic homogenisation’ (Enserink, 1999; Fausch, Taniguchi, Nakano, Grossman, & Townsend, 2001; Lowe et al., 2000). Despite these ecological effects and the direct parallels that can be drawn between them and other ‘invasive’ pests, they are widely regarded as valued species in New Zealand. Trout are, therefore, the archetypal ‘exceptions.’

As another 1930s article in *Forest & Bird* explained, ‘the evils of acclimatisation are ineradicable; any results – except perhaps the introduction of trout – not wholly bad were precarious and ephemeral (Anon, 1937e, p. 16, emphasis mine). More recently, Druett (1986, p. 41) similarly emphasised the supposed exceptional nature of trout, noting that they were:

…remarkable in that, unlike other game animals, the introductions of the various species led to no bitterness or acrimony. Everyone saw a benefit and everyone worked towards the common goal of freshwater streams and lakes stocked with anglers’ prizes.

Indeed, it might be argued that trout compete with native birds for the status of most-loved fauna of New Zealand. For example, although New Zealand postage stamps have mainly featured native birds, since 1960 trout have been increasingly represented. They are even accepted in National Parks; what McDowall (2008b, p. 32) considered to be ‘at best an anomaly’ as such places are usually reserved for native species exclusively (also see Speedy, 2000a). For many New Zealanders trout are a ‘natural’ feature of New Zealand. In fact, McDowall (1990, p. 158) wrote that, it is ‘often a surprise to many New Zealanders that the species is actually introduced and not a native species.’ How this degree of acceptance has been discursively brought into being therefore deserves further attention.

Other introduced species that are known to predate native species are routinely killed and people that perform this task are considered praiseworthy or even heroic. However, those that kill trout in anything less than a sustainable fashion – even on the conservation estate – are considered to be ‘poachers’
Military metaphors are used to frame both engagements. While killing introduced ‘pests’ is constructed as a worthy ‘fight’ the prevention of trout ‘poaching’ is also considered a ‘battle.’ As Grant (1984, p. 17) suggested, stopping people from wilfully killing trout ‘is a battle that every concerned New Zealander should be willing to fight. Indeed, it is a national responsibility.’ The ‘victims’ of predation are also given opposite treatments. While native birds are protected by conservationists, who kill birds’ introduced predators, native fish are offered little to no protection from predation by introduced freshwater predators (Joy & McEwan, 2009; McDowall, 1984). At worst they are praised largely as food or ‘beneficial’ predators for trout (Mitchell, 1995b).

From the outset, several explanations can be identified to account for these apparent discrepancies. Firstly, unlike most other invasive species, trout – or rather trout fishing – is considered an important aspect of New Zealand’s ‘national life’ (Fish & Game New Zealand, 2010b, p. 67). This cultural importance may work to conceal the ecological significance of trout, particularly when the native species that they impact upon (e.g. native freshwater fish) are often not as highly valued. Secondly, as I discuss further in Chapter Nine, trout – like native birds – are important revenue generators. As Ramsvelt (2008, p. 12) wrote, ‘not many tourists would visit to see a few inangas [sic]’ 55. Townsend (1996, p. 19) offered a similar perspective in an article in Conservation Biology: ‘It is highly questionable whether the eradication of trout from New Zealand is desirable in view of…the economic benefits from the trout fishery that accrue to the nation.’ In other words, the ecological effects of wild trout needed to be counterbalanced against – among other things – the income generated from their persistence.

Thirdly, trout are not constructed as invasive pests in New Zealand, but rather as ‘sports fish.’ Despite the fact that they would fit the typical criteria of invasive species, trout are consistently presented only as valuable resources. Indeed, the understanding that trout are ‘sports fish,’ not ‘pests,’ is enshrined in numerous important pieces of legislation, including the Freshwater Fisheries Regulations (1983), the Conservation Act (1987), and the Resource Management Act (1991). The Conservation Act specifies that trout are to be sustainably managed and that taking of trout without a license is to be punished by a fine of up to $5,000. More recently, the General Policy on National Parks (2005) affirms the need to ‘reduce

55 A species (Galaxias maculatus) of native fish.
by all means introduced species,’ in National Parks, however, it also states that ‘this objective does not apply to the extermination of salmonids.’ A Department of Conservation report on managing invasive freshwater fish even went so far as to exclude trout from the definition of ‘invasive:’

An invasive fish is any species that can significantly adversely affect the long-term survival of native species, the integrity or sustainability and function of natural communities or genetic variation within indigenous species; and it may also include any exotic species that threatens the integrity of populations of highly valued introduced species [i.e. trout], or ecosystem services (Chadderton, 2003, p. 78, emphasis in original).

This interpretation of ‘invasive’ means that other introduced fish can be ‘logically’ killed to protect introduced trout, while the notion that trout themselves can do harm is not able to be entertained. For example, Lake Parkinson was poisoned in 2003 to kill introduced rudd (Scardinius erythrophthalmus) and then restocked with introduced trout (D. Rowe, 2003). Under Chadderton’s definition (see above), an ‘invasive’ introduced species was thus removed and replaced by a ‘highly valued introduced species.’ Lastly, trout are legislatively defined as a ‘user pays’ commodity meaning that their construction is dictated by the vested interests of anglers. As Chamberlain (1994, p. 98) wrote, after 84 years of being government-run trout fisheries were ‘Roger Douglass’ in 1989, meaning that their management would henceforth be vested in the Fish and Game Councils, which were given sole authority. This has meant that, whatever the views of other government departments or interest groups, trout are defined by anglers. It is, therefore, perhaps not surprising that they have subsequently chosen to resist any comparisons between trout and ‘pestiferous’ or ‘invasive’ species.

The mostly positive construction of trout in the Rotorua Lakes, as elsewhere in New Zealand, thus relies on interpretations of them that are denied from most other introduced species. Although trout have effects

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56 Sir Roger Douglas is a New Zealand politician best known for his prominent role in the radical economic restructuring of the 1980s when the then Labour Government's economic policies became known as ‘Rogernomics.’ The term Rogernomics, a portmanteau of ‘Roger’ and ‘economics,’ was coined as an analogy with ‘Reaganomics’ to describe the economic policies followed by Douglas after his appointment in 1984 as Minister of Finance. Rogernomics was characterised by market-led restructuring and deregulation.
that are ecologically equivalent to some of the country’s worst invasive species, they are mostly looked
upon favourably. This is largely a consequence of long-standing advocacy from anglers who have a
vested interest in their persistence. However, this only partly explains their acceptance. As I will explain in
Section 5.3.3, the support of gamekeepers does not necessarily ensure that an introduced species will
avoid controversy. Rather, trout are accepted due to a combination of factors, not the least of which is a
lack of widespread appreciation for the species they have displaced. This case will look, in particular, at
the industries built up around the sale of trout as recreational commodities, and at the removal of
impediments to that profitability which, ironically, can become profitable industries in and of themselves
(see Chapter 7).

5.3.2 Mallard ducks in Northland

My second case study investigates the discursive construction of mallard ducks (*Anas platyrhynchos*),
 focusing on the Northland region of New Zealand. Discourse on introduced ducks draws on many of the
themes I have enumerated in the previous case study. Like trout, for example, mallards are the most
important game bird in Northland and are a valued food source and recreational past time for some, and
a ‘draw card’ for tourists to others\(^\text{57}\). However, unlike trout, the impacts of mallards on local ecosystems
are very poorly studied and knowledge on the impacts of mallards on native ecosystems in Northland is
scarce, despite the birds being abundant and conspicuous in the area (see Chapter 9). As I will detail
below, the most recognisable ecological impact of mallard ducks is their tendency to mate and
successfully hybridise with native grey ducks (*Anas superciliosa*), thus threatening the latter’s genetic
‘purity.’ As I will also explain, as Northland was never a focus of mallard introductions and has largely
received mallards through migration from other parts of New Zealand, the region has a higher proportion
of grey ducks to mallards than most other parts of the country (Green, Wallis, & Williams, 2000). Hybridisation between native grey ducks and introduced mallards is thus not as far progressed as in
many other regions. However, here, as elsewhere in New Zealand, the number of ‘pure’ grey ducks is fast
declining and the number of hybrids fast increasing to the extent that it is feared that ‘pure’ grey ducks

\(^{\text{57}}\) Despite the fact that mallards are the most common and widespread duck species in the world and therefore hardly
a novelty (Heather & Robertson, 1996).
may be rapidly fading into extinction (Reaser et al., 2007). As I discuss below, the process of hybridisation between native and introduced ducks in New Zealand, and the extent to which it is seen, if not as ‘acceptable,’ then at least ‘inevitable,’ highlights discursive strands that hint at the potential for reconciliation in other species.

The ‘natural’ range of mallard ducks encompasses the temperate northern hemisphere including Europe, Asia and North America (B. D. Heather & Robertson, 1996). However, in the last few hundred years, especially, mallards have been introduced to numerous countries in the southern hemisphere and are now the most common and widespread duck species in the world. ‘Known by 150 names in 45 tongues’ mallards have a long connection to human societies, representing both an important source of food and a valued cultural pastime as a ‘sporting’ bird (Anon, 1991a, p. 8). In addition to their value as a wild bird, mallards are also important as domestic birds, with almost all domestic varieties of ducks, such as Aylesburys and Indian Runners, descending from wild mallards (Coster, 1975). Capturing mallards and ‘artificially’ breeding them for certain favoured characteristics has a long history, dating back to at least the early 17th century in England and well before in Asia (Westerskov, 1957). In both their native and introduced ranges, mallards, and the many ‘varietals’ descended from them, breed with other local species of ducks (Simberloff, 1996). In their introduced ranges they also frequently go on to colonise surrounding areas unassisted. In New Zealand, for example, mallards have dispersed, unaided, to many surrounding islands such as the Chatham, Antipodes, and Campbell Islands (Dyer & Williams, 2010; B. D. Heather & Robertson, 1996; Miskelly, Sagar, Tennyson, & Scofield, 2001). They are also known to travel occasionally from New Zealand to Australia (Dyer & Williams, 2010; M. Williams, Gummer, Powlesland, Robertson, & Taylor, 2006). Mallards are thus both ‘promiscuous’ and highly mobile, frequently shunning attempts to define both their physical form and range.

As I have argued, the spread or ‘invasion’ of certain introduced species is frequently cast as a tragedy for the ‘innocent’ native species that they displace (see Section 5.2.1). Less often remarked is the often-brutal failure rate of also ‘innocent’ introduced species forcibly taken from their ‘natural’ ranges and liberated in harsh and challenging new environments. In New Zealand, for instance, at least 25 different species of waterfowl were transported from overseas in the 19th and early 20th centuries. The mallard
duck was one of only four that went on to survive (Anon, 1991a). Although this has sometimes been painted as a consequence of their suitability to New Zealand conditions; that they were ‘superior’ to native congener such as the grey duck and would simply ‘displace’ them (see Section 5.2), a now more common explanation is that the mallard succeeded in surviving more through the sheer persistence of its human exponents (M. Williams, Dyer, & Guay, 2010).

In addition to thousands of birds imported from Europe and North America, at least 30,000 mallards were reared and released by Acclimatisation Societies and private individuals between about 1870 and 1970 (Dyer & Williams, 2011). This statistic only hints at the level of assistance given to mallards though. In addition to huge numbers of liberations, mallards were protected from shooting until 1931 (e.g. see Anon, 1910c). ‘Poaching’ of wild mallards was considered ‘evil’ and penalised by a fine of £10 for each bird taken (Anon, 1910c; 1914a, p. 11). While ‘swamps’ were drained en masse in the late 19th and early 20th centuries, mallard habitat was frequently augmented by the creation of thousands of farm ponds (see Anon, 1991a; Galbreath, 1993; F. N. Hayes, 1995). Predators of mallards, such as native harriers (Circus approximans) and eels, were also systematically killed from the late 19th century (see Messenger, 1923; Reischek, 1885). For example, by as early as 1868 the Auckland Acclimatisation Society spent over £32 in just one year on bounties for the destruction of 659 harriers58. The Society also spent almost all of their revenue devoted to birds on acclimatising mallards and upland game birds (W. A. Sullivan, 1990). This underlines the fact that many of the most successful introduced species in New Zealand became so only because they were initially desired so intensely by their acclimatisers. The fact that some of these species have since fallen into disrepute as ‘invasives’ only highlights the degree to which attitudes to wildlife can change.

Although the first introduction of domestic ducks of European mallard origin is frequently recorded as those that arrived in New Zealand via Australia in 1867 (e.g. Muller, 2010), Thomson (1922) noted that domestic ducks, probably of mallard origin, were first introduced to New Zealand by missionaries either at the time of Samuel Marsden’s first visit in 1814 to the Bay of Islands, Northland, or shortly thereafter. Either way, initial importations generally survived poorly in the wild and were largely restricted to domestic

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habitations (K. Hunter, 2009). In the North Island, the Auckland Acclimatisation Society undertook minor efforts, importing two mallards in 1870 and four in 1886, which were kept in the Domain for breeding purposes (Thomson, 1922). The latter introduction was at the request of Captain John Whitney\textsuperscript{59}, father of Cecil Whitney, who was to become a prominent advocate for mallards in the early 20\textsuperscript{th} century (see below). More concerted efforts were made from the 1890s (K. Hunter, 2009). The Wellington Acclimatisation Society, in particular, imported from 60 to 150 mallards every year between 1895 and 1912 (Anon, 1927a).

Up until the 1930s, numerous efforts were made to introduce, breed and acclimatise European mallards. In the Auckland Province, Cecil Whitney personally reared and distributed mallards, releasing 300 in the late 1900s and distributing ‘among friends a very large quantity of eggs’ (Anon, 1927a, p. 235). Nevertheless, most Acclimatisation Societies had given up trying to breed mallards by the 1930s, instead focusing their avian acclimatisation efforts on upland game birds such as pheasants (\textit{Phasianus colchicus}) (Dyer & Williams, 2011). It was not until the importation of North American mallards from 1937 that the ducks began to successfully establish and spread (K. Hunter, 2009). Although new, ‘more suited’ genes were initially credited with this success, increased breeding and liberation efforts from this period onward was a more likely explanation (Coster, 1975; M. Williams et al., 2010). By the 1950s virtually every Acclimatisation Society in New Zealand was releasing mallards and they spread widely, becoming the most important sporting bird in the country (Draper, 1999; Dyer & Williams, 2011; W. A. Sullivan, 1990). By the 1980s mallards had ‘spread to just about every corner of the country’ (Anon, 1982, p. 9). The Ornithological Society of New Zealand’s \textit{Atlas of Bird Distribution} (Robertson, Hyvonen, Fraser, & Pickard, 2007) recorded an increase in mallard distribution in the North Island from approximately 65\% of the island in 1979 to over 85\% in 2004 (M. Williams, 2007). Indeed, by that stage they were present in virtually every habitat they were capable of colonising in New Zealand.

Mallard introductions to Northland generally lagged behind the rest of New Zealand. Aside from domestic ducks, mallard introductions to Northland did not occur until the early 20\textsuperscript{th} century. The Hobson

Acclimatisation Society imported birds from Wellington in 1908, and in 1912, with the assistance of Cecil Whitney, they were again liberating ducks on a sanctuary opposite the town of Te Kopuru (Anon, 1908, 1912b). Meanwhile, in 1911 the Whangarei Acclimatisation Society reportedly reared 40 ‘very fine’ mallards, the bulk of which were sent for liberation on the Wairua River with smaller numbers distributed to Kaitaia and Otaika (Holman, 1911, p. 3). In 1914 they sent ‘a number’ of mallards to the Bay of Islands Acclimatisation Society for liberation, whilst also liberating some on the foreshore of Whangarei Harbour (Anon, 1914c, p. 6). In the same year the Auckland Acclimatisation Society imported 600 mallards from England, some of which were sent to Northland cities such as Dargaville (Dyer & Williams, 2010). The following year the Hobson Acclimatisation Society was reported to have had success with breeding and distributing mallards (Anon, 1915e), and, not to be outdone, the Mangonui and Whangaroa Acclimatisation Society released 30 locally-bred mallards at Lake Rotokawa (Anon, 1915a). In 1916 a further 20 mallards were liberated by the Hobson Acclimatisation Society (Anon, 1916). In some areas private efforts were also made at acclimatisation. A 1922 advertisement in the *Northern Advocate* offers: ‘English mallard ducks; 10/ a pair’ (Murfitt, 1922, p. 1), no doubt a chance to set up one’s farm pond with a novel shooting opportunity. Attempts to remove ‘predators’ of mallards and other game birds – commenced in the late 19th century (see above) – were also continued. For example, in 1914 over £42 was paid in bounties for the heads of 900 native harriers and seven wild cats in Whangarei (Anon, 1914a).

Successes at acclimatisation of mallards in Northland, however, though widespread, were limited by all accounts. Some birds simply perished in the unfamiliar circumstances; others fell prey to ‘poachers.’ Cecil Whitney was again at work donating eggs to the Hobson Acclimatisation Society in 1938, and in 1941 all four Northland Acclimatisation Societies reported the receipt of eggs, including 500 in Whangarei (Dyer & Williams, 2010). In total, Dyer and Williams estimated that about 500 mallards were successfully bred and released by Northland Acclimatisation Societies in the 1940s. Again, these birds met with limited success in the wild. By the 1960s mallards were still poorly distributed in Northland, with many of them restricted

60 Northland was divided into four Acclimatisation Societies: Whangarei, Hobson, Mangonui-Whangaroa, and the Bay of Islands.
to city parks. Throughout the 1960s Northland Acclimatisation Societies were still requesting mallards for liberation from other North Island Acclimatisation Societies. Believing that the mallard was already well established in Northland and that further increases in the population were inevitable, the Department of Internal Affairs did not oppose these liberations, but neither did they encourage them. Private requests in the 1970s were similarly dismissed as unnecessary, but not prohibited. Nonetheless, it seems that mallards in many areas of Northland were not at all well established in the 1960s or even the 1970s and that liberations and migrations from Auckland and further south, during this time turned what was a patchy distribution of mallards into the dominance that these birds enjoy in Northland today. A 2000 study utilising ducks 'bagged' by hunters in Northland estimated that 66% of ducks were mallard or mallard-like, more than twice the proportion of the 1960s. In 2013 Northland Fish & Game Field Officer, Nathan Burkepile (Interview, February 27th 2013), estimated the proportion to be higher still at 70% mallard.

Concurrent with the increase in the mallard duck population in New Zealand has been a fall in the numbers of many native duck species (M. Williams, 2003, 2007). Most notable for this thesis has been the changing fortunes of the native grey duck. This species has declined due to a range of factors. However, the most important have probably been habitat loss in concert with overharvesting (e.g. see Anon, 1950a; Close, 1995). As I will also discuss, hybridisation with mallard ducks has been a cause of additional 'loss.' In the 19th century the grey duck was the most common species of waterfowl in New Zealand.

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64 Counting only grey ducks and mallards.
Zealand and the primary target for European duck shooters (see Handly, 1895; T. Kirk, 1895). By the mid-20th century grey ducks were estimated to still make up 95% of the dabbling duck population in New Zealand (Muller, 2010). In fact, as late as 1962 the grey duck was thought to provide the bulk of the duck shooter’s ‘bag’ in Northland (Newcombe, 1962). The National Waterfowl Diary (1969-1985) showed, however, that grey ducks were in rapid decline in the late 20th century (Poynter, 1986). In 1973 grey ducks made up 36% of the shooters bag and by 1985 they made up just 20% (Coster, 1974; Muller, 2010). By the early 21st century their conservation status had declined to ‘nationally critical’ (Miskelly et al., 2008). In addition to this obvious decline in numbers, the extent to which hybridisation was affecting the ‘pure’ grey duck population was increasingly noted and emphasised.

As I will discuss in Chapter Eight, hybridisation and its ramifications are central to understanding the environmental effect of mallards in New Zealand. Concerns about hybridisation between mallards and grey ducks were already well established by the 20th century. For example, around 1910 the Wellington Acclimatisation Society stopped importing mallards because of the belief that they were hybridising with grey ducks and that this was not advantageous: ‘The first cross of mallard and grey duck made a fine bird, but the hybrids chased the young grey ducklings’ (Anon, 1927a, p. 10). For similar reasons, efforts in Canterbury were directed at eradicating mallards earlier liberated on the Avon River (Dyer & Williams, 2011). Both efforts were ultimately fruitless. Mallard populations continued to grow, seemingly at the expense of grey ducks. What is less clear, nonetheless, is whether mallards actually ‘replaced’ grey ducks or whether they were part of a wider process of hybridisation. Official statistics tend to paint the mallard growth as if it were entirely at the expense of the grey duck. The number of hybrid birds is removed from the equation being lumped with the mallards or the greys, depending on to which they look most similar. Most estimates offer just two proportions, that of grey ducks and that of mallards (e.g. Coster, 1974; Ford, 1983; but see J. Green, Wallis, & Williams, 2000). Hybridity, therefore, is effectively

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65 Though not necessarily everywhere. Pycroft (1898, p. 145), for example, described the grey duck as ‘not very common’ in a list of birds of the Bay of Islands.

66 A type of shallow-water duck that feeds primarily along the surface of the water or by tipping headfirst into the water to graze on aquatic plants and vegetation.
erased. As I will later discuss, this erasure ignores the sense to which mallard hybridisation both removed ‘pure’ grey ducks and mallards, but also created a new hybrid entity.

How to understand this new entity is the source of much debate and contestation. Elsewhere, the hybridisation of introduced mallards with native species has been identified as a significant conservation problem. For example, on Lord Howe Island and in the Hawaiian Islands mallards are identified as a ‘keystone threat’ and recommended for eradication (Tracey, Lukins, & Haselden, 2008; Uyehara et al., 2008). Nevertheless, in Northland, as in the rest of New Zealand, there are little to no calls for such action. Mallards are protected from ‘overharvesting’ by daily ‘bag limits.’ In stark contrast to conservation efforts for other critically endangered native bird species (consider kakapo (Strigops habroptila) or takahe (Porphyrio hochstetteri)) which tend to celebrate ‘uphill battles’ (D. Young, 2004), the prevailing discourse on mallard-grey duck hybridisation is one of resignation and inevitability (Anon, 2010).

The genetic ‘purity’ of native species is commonly held in the highest regard67, but notably abandoned in the case of grey ducks. While scientists are typically firmly proactive in suggesting recursive measures to thwart the loss of native species, the case of mallard hybridisation is seen as an ‘awkward’ problem with solutions mostly deemed too hard (Muller, 2010). Again, this is surprising given the lengths to which conservation scientists have gone to support other native species. This case study will investigate how the impending ‘extinction’ of the grey duck in Northland through hybridisation with introduced mallards is discursively produced or even obfuscated. Often mentioned is the emergence of a ‘hybrid swarm’ that is a genetic mixture of native grey duck and introduced mallard and whether such a new species might be valuable in itself. Despite the potential for this situation to prove alarming to the public there remains little concern expressed. I will investigate whether discourse has moved toward compromise and reconciliation of introduced mallards and, if so, highlight the grounds on which this compromise seems to be laid.

67 Native pied stilts are even shot to prevent them from breeding with native black stilts (see Reed, Murray, & Butler, 1993). Thus native-native hybridisation, let alone native-introduced hybridisation, is considered undesirable.
5.3.3 Deer in Te Urewera National Park

My third case study focuses on the construction of deer introduced to Te Urewera National Park in the central North Island. Although several deer species were introduced to the area, the population is now dominated by red deer (*Cervus elaphus*), with a localised herd of rusa deer (*Rusa timorensis*) near Galatea in the west of the park. Te Urewera National Park comprises a 212,653 hectare subset of the approximately 400,000 hectare Te Urewera forest (R.B. Allen, Payton, & Knowlton, 1984). As a consequence of its proximity to the Taupo volcanic zone its ecological history is characterised by flux and stochasticity (see Section 5.3.1). According to a 1970 report, a mantle of ash can be found under the soil surface, varying in thickness between 'a few inches to some ten feet'. Therein, 'as many as eight ash formations may be found each representing the outer fringe of a separate sequence of ash falls from vents in the Rotorua-Taupo zone' which must have repeatedly devastated the area’s ecology (*Ibid.*). In addition, human activities in the area have influenced the forests for centuries. Local Tuhoe, for example, burnt extensive areas of the forests for cultivation and for the clearance of tracks (Allen et al., 1984; Payton & Allen, 1984). This makes Te Urewera a vivid manifestation of both the dynamism of New Zealand ecosystems and of the long-standing human influences that have contributed to that ongoing state of flux. Despite these interactions, however, Te Urewera was often considered ‘virginal’ or ‘ancient’ forest by European colonists and was largely protected on that basis (Coombes, 2003). This view of Te Urewera remains popular (e.g. see DoC, 2008, 2009).

Te Urewera National Park was established in 1954. Like other National Parks in New Zealand it was primarily aimed at preserving ‘wilderness’ unsullied by human ‘interference’ (see below). In 1996 the extension of wilderness was taken a step further with the creation of Te Urewera Mainland Island in which not only humans, but also human introductions were formally excluded. This is carried out through

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68 A few sambar deer (*Rusa unicolor*) may also be present in the north-western area of the park, but numbers are thought to be extremely low (DoC, 2003).


70 Ngai Tuhoe are a Māori iwi traditionally based in Te Urewera.

71 An approximately 50,000 hectare central subset of the park.
the use of vast networks of traps and poisons that are intended, in particular, to suppress introduced mammal populations. As the Department of Conservation (2012b, n.p., emphasis mine) recently advertised, the ‘Island’ offers visitors ‘a unique opportunity to view and experience a true and real New Zealand,’ one superficially restored to pre-human times and expunged of all apparent human influence. In this context, introduced deer are seen as ‘unfriendly invaders’ and agents of perceived undesirable changes in, for example, pre-human native plant species composition (DoC, 2008, p. 1).

This case furthers other research that has questioned the validity of conservation approaches that seek to remove overt human influences in Te Urewera (S. Hill & Coombes, 2004), and extends work that questions the interpretation of human introductions in the area (Coombes, 2003). Attitudes and conflicts over deer in Te Urewera offer a microcosm of the debates that continue to rage on the place of introduced species throughout New Zealand (see Chapter 7). The frames used to justify inclusion of deer in people’s conceptions of acceptable wild biodiversity offer, like my other cases, potentially productive discursive frames for investigating the broader reconciliation of introduced species. In contrast to introduced trout and mallards, which have thrived in New Zealand relatively uncontested, deer have always been controversial and views towards them continue to vacillate between ‘pest’ and ‘resource.’ Opposition to deer from conservationists, in concert with support from hunters and others, has provided a rich tableau of competing discourses that are ripe for deconstruction.

In many other countries, expanding populations of introduced and native deer species are considered pests (Lowe et al., 2000; D. C. MacMillan & Phillip, 2010; Relva, Nunez, & Simberloff, 2009). However, deer in New Zealand are a good example of the ‘mixed…contradictory and often passionate views’ the public entertains toward introduced mammals (Parkes & Murphy, 2003, p. 337). As King (2005, p. 458) wrote, ‘more than any other species, [deer] exemplify the multiple shifts in official attitudes to game animals in New Zealand.’ As I will explain below, this is illustrated in the way deer have gone from being considered tourist assets, to pests, to commercial opportunities, to hunting resources, and back to pests over the last 150 years (Ibid.). In fact, even their current official status as ‘pests’ remains contentious, with most New Zealanders enjoying the sight of introduced deer in the wild (W. Fraser, 2001; J. Rogers, 2003).
Below I provide a short history of the acclimatisation of deer in New Zealand, focusing on their introduction to Te Urewera and subsequent success. I suggest some of the reasons deer were introduced, focusing on the ways that they have been used to generate revenue. I show that although deer introductions were initially intended for the benefit of the wealthy, the hunting of deer has become popularised to the extent that it is no longer viewed as an elite sport in New Zealand. As such, it has become a part of the overarching national identity (see Section 5.3). Unlike trout and mallards, concerted efforts have been undertaken to control and even to eradicate them, though these have largely failed. Taken together, I argue that the widespread acceptance of deer in New Zealand, even after decades of persecution, may provide useful clues as to the types of discourse required to reconcile other introduced species in New Zealand.

As discussed in Section 5.3, the release of game animals in New Zealand served multiple purposes. Nonetheless, the acclimatisation of deer is mostly associated with three. Firstly, deer were to be a source of ‘sport’ for colonists, which was a way of expressing ownership and mastery over the land. Shooting deer was a familiar way of interacting with ‘nature’ for British colonists, effectively naturalising their place therein. Deer were thus an early vehicle for ‘identity construction’ (Figgins & Holland, 2012). Secondly, deer were a source of income from well-to-do tourists from Home and an enticement for such people to immigrate (Coombes, 2003). Prior to the introduction of deer, New Zealand had few terrestrial mammals for sport. Those that had been established earlier, such as pigs, were not viewed as worthwhile game animals. Native forests of the time were commonly viewed as vast ‘wastelands’ that might at least be made useful through the introduction of gameful quarry. Hunting of ‘big game’ was already popular among tourists in Africa and India, for instance, and New Zealanders sought to compete for their custom through the provision of ‘something to shoot’ (K. Hunter, 2009, p. 51). Lastly, deer hunting was seen as ennobling and character building. Deer hunters were said to make better citizens and better fighters (Ibid.). They were, in effect, pre-trained in marksmanship and survival in rugged terrain. This would indeed prove useful in later wars both with other countries and, ironically, ‘against’ the local deer themselves (see below). The activity gave youth a worthwhile and invigorating outlet for their enthusiasm, an argument that is still used routinely (K. W. Fraser, 2000).
The first deer species imported and released in New Zealand were red deer. Two hinds and a stag were released in Nelson by the local Acclimatisation Society in February 1851 (Caughley, 1983). From then until 1926 over a thousand deer were released in numerous locations throughout the country, including over 800 red deer, 50 fallow (*Dama dama*), 19 sambar, eight rusa, and six sika deer (*Cervus nippon*) (K. W. Fraser, 2000; Lee et al., 2010). Management of deer was initially facilitated by the Protection of Certain Animals Act (1861). To encourage the growth and spread of deer populations, strict hunting bans were imposed (Figgins & Holland, 2012). An 1864 amendment to the Act specified that shooting of any deer or other game animal out of the designated season would incur a fine of £20. Introductions were initially conducted privately until the Acclimatisation Societies were given official recognition in 1867. Thenceforth, Acclimatisation Societies conducted all further liberations in concert with individuals and certain government departments. All hunting of deer was controlled by paid licenses granted by local Societies (*Ibid.*). Because of restrictions on hunting and the apparent suitability of the habitat to deer, introductions were generally a ‘wildfire success’ (K. Hunter, 2009, p. 51). Deer quickly began to affect the vegetation in native forests and also proved a nuisance to agriculture as deer herds began grazing on farmland (Nugent & Choquenot, 2004). In many areas, deer almost completely ate the forest understorey and suppressed the regeneration of palatable species (Nugent & Fraser, 1993). Walsh (1892, p. 438) felt that deer were turning the ‘forest primeval’ into a ‘second-class English park.’ However, effects on native forests were generally not well appreciated in the late 19th century and voices such as Walsh’s were in the minority.

Te Urewera received deer much later than many other areas. It was not until 1897 that deer were introduced to the forests72 (Payton et al., 1984), mainly as a ‘draw card’ for wealthy tourists (Coombes, 2003). After a trip through Te Urewera in 1894, Premier Richard Seddon became convinced that the area was ‘biologically empty’ and generally unfit for agriculture (*Ibid.*, p. 93). It was assumed, therefore, that the only way that the area could attract economic value was through the liberation of game animals. An article in the *Poverty Bay Herald*, for example, noted that Te Urewera was potentially a ‘grand…colonial

72 Wallis and James (1972), Whiting (1980) and Whiting et al. (1980) suggested that deer liberations in Te Urewera occurred from 1885. I have deferred to the later estimates of subsequent studies (e.g. Coombes, 2003; Payton, Allen, & Knowlton, 1984).
deer park’ and a ‘paradise for…tourists’ (Anon, 1897, p. 3). The right to release exotic animals was thus soon secured under the conditions of the Urewera District Native Reserve Act (1896). Tuhoe were assured that the deer would also serve as an additional source of food\(^73\). However, the introduction of deer mainly ‘served elitist and revenue raising purposes’ (Coombes, 2003, p. 95).

Deer were liberated into Te Urewera throughout the 1900s and 1910s (*Ibid.*). These included seven releases by the Department of Tourist and Health Resorts (S. Hill, 2003). As early as 1901 deer were reported to be breeding and generally thriving in Te Urewera (e.g. see Anon, 1901), and the area continued to be trumpeted as a great sporting ground for deer (Anon, 1904b, 1909b). In 1911 deer were allowed to be shot for the first time in Te Urewera, but the season was very short (April 18-28\(^{th}\)) and a license fee of £2 was imposed on hunters. This was likely beyond most of the local Tuhoe people and was also beyond most New Zealand Europeans (Coombes, 2003). This was evidenced by the fact that in 1915 only sixteen licenses were issued to hunt in Te Urewera (*Ibid.*). Like elsewhere in New Zealand, this restriction meant that deer herds suffered very few impediments to their growth and spread, allowing them to expand dramatically (Figgins & Holland, 2012).

Although not as pronounced as the 1920s, calls to control deer populations around the country soon intensified (Bockett, 1998a). By the early 1910s the New Zealand Forest Service were characterising deer as ‘destructive animals’ (in Caughley, 1983, p. 7). Although they conceded that deer were valued by a small group of hunters, they otherwise produced ‘no revenue to speak of’ and were seen as a serious nuisance to both planted and native forests (*Ibid.*). By the late 1910s deer numbers were already estimated at around 300,000 nationally and growing (Figgins & Holland, 2012). Damage to forests and farmlands meant that protection of deer was removed in some acclimatisation districts from 1917 onward (*Ibid.*). Although Te Urewera forests in the 1920s were still often reported to be ‘practically virgin’ (e.g. Anon, 1921, p. 6; Boyd-Wilson, 1927), by at least the mid-1920s deer were present throughout much of the forested area and were spreading rapidly (Coombes, 2003; I. L. James & Wallis, 1969). Rather than controlling this influx, additional measures were taken to ensure it was not impeded. For example, Crown

\(^{73}\) As I note below, the promise of deer as a supplementary source of food was subsequently rescinded.
attempts to prevent ‘poaching’ – mostly Tuhoe attempting to access their promised additional food sources – were increased in the 1910s and 1920s (Coombes, 2003).

This increase in protection was in contrast to many other places in New Zealand where protection of deer was being relaxed in the 1920s (K. W. Fraser, 2000; Nugent & Fraser, 1993). Indeed, large herds of deer were becoming common in the 1920s, and their effects were increasingly well recognised (e.g. see P. Marshall, 1926; J.G. Myers, 1973 [1924]; Thomson, 1922). In 1922 a report submitted to parliament by A.N. Perham estimated damage to agricultural and forestry interests at £180,000 per annum, while valuing revenue from deer stalking at only £7,000 (Thomson, 1923). This showed that deer were more of an economic threat than an opportunity. The Animals Protection and Game Act (1922) subsequently marked the start of official attempts to control deer, progressively removing protection from them from large parts of the country (Figgins & Holland, 2012; Nugent & Choquenot, 2004). In 1926 the importation of further deer to New Zealand was ceased74 (Lee et al., 2010), and between 1923 and 1929 Acclimatisation Societies across the country culled over 74,000 deer, with the government meeting the cost in some regions (Figgins & Holland, 2012).

In spite of protests from deerstalkers75, by 1930 all legislative protection had been removed from deer and state funded campaigns were initiated (Nugent & Fraser, 1993, p. 362). In the same year, a ‘Deer Menace Conference’ was organised by the Department of Internal Affairs to ‘obtain practical suggestions as to the best method of carrying out deer destruction’ (Figgins & Holland, 2012, p. 41). The primary outcome was the establishment of the Deer Control Section of the Department of Internal Affairs, which organised teams of shooters (Forsyth et al., 2011). The aims of these teams were to reduce the direct competition of wild deer with agricultural livestock, prevent excessive deer-induced soil erosion (see Chapter 8), and protect native flora from herbivory (Nugent & Fraser, 1993). Conveniently, many deer were able to be ‘converted from waste to wealth’ with over 40,000 deer skins sold for over £12,000 by 1935, providing a living for hunters and revenue for the Department of Internal Affairs (‘One of Them’, 74 Although introductions ceased in the late 1920s, there remains a constant input of deer from farmed animals that escape into the wild (G. P. Hall & Gill, 2005; Lee et al., 2010).

75 The New Zealand Deerstalkers’ Association formed in 1937 as a direct response to efforts to eradicate their quarry.
However, despite the shooting of tens of thousands of deer per annum over the next few decades (e.g. Anon, 1945a), deer colonised new ranges and remained populous throughout vast swathes of the country (Bockett, 1998a). This led some to suggest that any extermination of deer would be impossible in New Zealand (see Galtbreath, 1993; F. E. Hutchinson, 1930).

Despite their belated introduction, deer in Te Urewera were also reported to be thriving by the 1930s and fast eating out the undergrowth (e.g. see Anon, 1930a, 1936e, 1938d). As elsewhere, this soon attracted official attention, with the Department of Internal Affairs commencing operations against deer by the late 1930s\(^{76}\) (Coombes, 2003; Wallis & James, 1972). However, their efforts were never sufficient to effect comprehensive control (Coombes, 2003). Many areas remained seldom hunted (e.g. see Anon, 1936e), and the outbreak of the Second World War in 1939 meant that control operations were temporarily discontinued (Whiting et al., 1980). When shooters recommenced operations in the mid-1940s the threat of deer herbivory in Te Urewera remained and there was plenty of evidence of their presence (see ‘Will Wandafar’, 1945; Anon, 1949). Bathgate (1950, p. 3) argued that the Te Urewera ‘forest floor had been ravaged to an almost unbelievable extent by deer’ and other introduced mammals (also see McKelvey, 1959).

The designation of much of Te Urewera as a National Park in 1954 only re-emphasised the undesirable status of deer in the area as the National Parks Act (1952) had made it clear that national parks were intended for native species exclusively (e.g. see Oliver, 1954a; Oliver, 1954b). As a response, the Department of Internal Affairs increased their shooting effort in Te Urewera over the 1950s. At its peak they employed 14 deer shooters working seven months of the year (Coombes, 2003). Nevertheless, although they killed approximately 7,000 deer per annum it was never sufficient to reduce deer numbers (Coombes, 2003; Whiting et al., 1980). In 1954 Te Urewera deer population was estimated at 30,000 deer and it was increasing at a rate of about 8,000 animals annually in spite of shooting pressure (Annabell, 1965).

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\(^{76}\) Whiting et al. (1980) suggested that a two and a half month control operation was carried out by the Department of Internal Affairs as early as 1932, but this is not confirmed elsewhere.
Attempts to control or even exterminate deer by the Department of Internal Affairs since the 1930s continued to be lauded by conservation groups – notably the Royal Forest and Bird Protection Society – until well into the 1950s (see Editor, 1951, 1956c; H. E. Hart, 1957). In one article the editor of *Forest & Bird* compared deer to a ‘malignant growth’ in New Zealand forests, ‘the only cure for which is complete removal’ (Editor, 1956b, p. 3) (see Section 5.2.2). However, in 1956 the Noxious Animals Act was passed dictating that, while deer would continue to be legislatively considered as ‘pests,’ control of deer would be transferred from the Department of Internal Affairs to the New Zealand Forest Service (Whiting, 1980). At this point deer control priorities changed from reducing densities *per se* to the protection of water and soil values (K. W. Fraser, 2000). The Forest Service made it clear that extermination, though ideal, would not be accomplished. Indeed, in an article in *Forest & Bird* they noted emphatically that,

...the accomplishment of [extermination] is scarcely within the realms of practicality and it would be foolish to think, no matter how desirable, that this would ever be achieved (New Zealand Forest Service, 1956, p. 11).

As the costs of deer control continued to grow, alternative solutions to the problem were investigated. For example, trials began on the use of the poison ‘1080,’ initially to control rabbits, but with the view to more cost-effective control of introduced mammals generally77 (Wodzicki & Taylor, 1957).

Before 1080 was seriously employed, however, a different solution presented itself. This was manifest in the emergence of an enlarged commercial market for deer skins and meat in the late 1950s (Bockett, 1998a; J. Holloway, 1991). The economic value of deer was high and many New Zealanders turned to making a living out of their slaughter and sale (Hunt, 1987; Nugent & Choquenot, 2004; Nugent & Fraser, 1993). Ironically, just as many hunters were reiterating the impracticality of extermination (e.g. Henderson, 1963; T. Orman, 1964), the development of a commercial industry made such an objective almost conceivable. For example, faecal pellet surveys conducted between 1960 and 1980 indicated that deer numbers nationwide decreased by 75%, and this probably *underestimated* the scale of decline (Nugent & Fraser, 1993). As a consequence, government control efforts were reduced significantly or

77 Although the use of ‘1080’ to control certain introduced mammals has ultimately proven enduring in New Zealand, it has remained highly controversial (see W. Green & Rohan, 2012; Ihaka, 2011; NZPA, 2010).
even abandoned in some areas (M. M. Davidson & Fraser, 1991; K. W. Fraser, 2000). Although extermination was still widely presented as desirable (e.g. J. Walsh, 1979), but also impossible (e.g. J. T. Holloway, 1974; Wodzicki, 1970), hunters became increasingly concerned that it might actually be achieved (e.g. 'A.S.D.E.', 1974; Lowes, 1974).

Commercial deer hunting peaked both in Te Urewera and around the country in the mid-1970s, after which a fall in the price of venison and a sharp reduction in the easily ‘harvestable’ herds of deer brought about a decline in the annual commercial harvest (see Bockett, 1998b; Hunt, 1987; Nugent & Choquenot, 2004). Nevertheless, in many forest areas deer remained at low levels the likes of which had not been experienced for decades. Hunters continued to protest what they saw as the eradication of their culture. The shooting and removal of deer using helicopters was seen as particularly pernicious to ground-based recreational hunters with strong opposition to their use in Te Urewera (Anon, 1978b, 1979). Partly as a result of such fears, the Wild Animal Control Act (1977) was passed, removing the title of ‘noxious’ from deer and instilling the more benign title of ‘wild animal.’ The Act recognised that deer were both culturally and economically valuable, whilst also maintaining their status as ‘pests’ in most areas. In addition, it provided for the establishment of Recreational Hunting Areas in which deerstalkers could enjoy hunting unmolested by helicopters and other perceived intrusions78.

Scientific studies in the 1980s called into question the link between soil erosion and the effects of deer herbivory and trampling (see Chapter 8), and also the extent to which native vegetation was tolerant to browsing (e.g. Veblen & Stewart, 1982). These, in concert with the reduced deer numbers, lead to further reductions in state funded deer culling (Nugent & Fraser, 1993). Moreover, the prominence of commercial hunting continued to decline. Although the capture of live deer for farms had extended the life of commercial operations to some extent, this too was on the wane by the mid-1980s (Ibid.). The number of commercial helicopter operators, for instance, had fallen from over 100 in 1980 to fewer than 50 in the

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78 Ten Recreational Hunting Areas were established in the early 1980s largely to protect deer from commercial operators, although two have since been disestablished (Nugent, Fraser, Asher, & Tustin, 2001; Nugent & Mawhinney, 1987).
early 1990s (Nugent, Fraser, Asher, et al., 2001). Consequently, the perceived importance of recreational hunting to the control of deer populations increased once again (K. W. Fraser, 2000; Nugent, 1992).

With the passing of the Conservation Act (1987), responsibility for deer was transferred from the New Zealand Forest Service to the Department of Conservation (Forsyth et al., 2011). Although the Department of Conservation was legislated to be responsible for fostering ‘resources’ such as deer for recreation, this had to be consistent with the preservation of natural values (K. W. Fraser, 2000; Nugent & Choquenot, 2004). In effect, this meant that the new Department would forever be wary and generally unsympathetic towards deer, immediately making it the target of derision amongst deerstalkers (see Anon, 1991b; Bamford, 1985/86). Any modification of New Zealand’s native forests was considered ‘philosophically unacceptable’ to the Department of Conservation (Nugent, 1990, p. 83). Subsequent attempts to resolve tension between the Department and hunters in the late 1990s, by recourse to a public discussion document (DoC, 1998), generally only further reduced the Department in the eyes of hunters, particularly when its resultant policy statement (DoC, 2001) was mostly hostile towards deer (see Henderson, 2001a, 2001b, 2001c). However, the Department were supported by conservationists such as the Royal Forest and Bird Protection Society who continued to perpetuate the notion that forests would ultimately ‘collapse’ under the effects of deer and other introduced mammals and thus needed to be controlled (see Chapple, 1997; K. Smith, 1998).

This cataclysmic conclusion was contradicted by evidence that deer numbers had declined in some areas by as much as 95% over the prior two to three decades (J. Holloway, 1991; G. Rogers, 1995; Speedy, 2000a). According to Axbey (1998), deer in forested areas such as Te Urewera had declined to levels to which they were having little ongoing detrimental impact on native species. Rather, the damage they did was ‘less than by the insects and tourists’ (Ibid., p. 31). Many changes to native biota were increasingly acknowledged as irreversible (J. Holloway, 1991; Nugent, Fraser, Asher, et al., 2001) and the status of deer as permanent (Bockett, 1998b; Nugent & Fraser, 1993; K. Smith, 1997). Moreover, many of the environmental changes induced by deer were not as dire as previously predicted. For example, palatable native plant species were often found to be reduced in extent by herbivory, but never driven to extinction.

79 Tongue firmly in cheek.
(Hughey & Hickling, 2006; Lee et al., 2010; Nugent, Fraser, Asher, et al., 2001). Although national declines in deer had certainly occurred, Axbey (1998) probably overstated the level of decline in heavily forested areas such as Te Urewera. There, both commercial and recreational hunting was far less effective at controlling deer and their numbers remained higher than in other areas (DoC, 1998; Nugent, Fraser, Asher, et al., 2001). What is notable about this, however, is that even in the areas that retained relatively high populations of deer, the forest canopy was still retained. This is because many of the most common canopy tree species, such as beeches (*Nothofagus* spp.) and podocarps (Podocarpaceae), are not a favoured foodstuff for deer, meaning that little control is required to protect them (Nugent & Fraser, 1993). As Bockett (1998a, p. 87, emphasis mine) wrote of Te Urewera:

> ...despite ungulates removing a large proportion of the shrub tier, loss of forest cover (*at present*) within this vegetation type is not likely to be a consequence of ungulate impact since the canopy species, tawa, appears to be regenerating in the presence of browsing (also see Smale, 2008).

Although the long-term effects of deer on forests remains unknown (Forsyth, Coomes, & Nugent, 2003), predictions of forest collapse continue to be unsupported by evidence and are now seen as unlikely (Nugent, Fraser, & Sweetapple, 2001). The ecological effects of deer are similarly regarded as mostly irreversible (Coomes, Allen, Forsyth, & Lee, 2003; DoC, 2001; Norton, 2009). Once a forest has been colonised by deer it takes only a small population to prevent the regeneration of many palatable native species. Therefore, reducing deer *per se* may not make much difference to overall biodiversity (K. P. Brown & Urlich, 2005; K. W. Fraser, 2000; Nugent & Choquenot, 2004). In addition, despite close to a century of ‘warfare’ (see Chapter 7) deer have not been eradicated from any significant areas in either of the two main islands of New Zealand. Although they have been reduced significantly in number in places, hopes of a ‘final solution’ have been abandoned by all but the most ardent preservationists (Hughey & Hickling, 2006, p. 648; Speedy, 2000a). This is reflected in the decline of control measures by state agencies\(^80\) (K. W. Fraser, 2000). Despite the known ecological effects of deer, and their significant scale,

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\(^80\) Partly because regulation of deer numbers is now considered to be adequately covered by commercial and recreational hunters (Nugent & Choquenot, 2004).
there is a real sense to which these introduced animals are accepted in New Zealand regardless. How this has discursively been brought into being deserves further investigation.

5.4 Conclusion

In this chapter, I have argued that despite the change in non-Māori sympathies from introduced to native species in New Zealand from the late 19th century, the overarching justifications for these sympathies have remained unchanged. Ongoing has been the sense that the wildlife of New Zealand is somehow inadequate or deficient and in need of improvement by humans who judge themselves ‘responsible’ for this correction. Morality has been called upon first to foster introduced species and then to kill them. Also enduring has been the usefulness of the species protected. Introduced species, for example, provided known sporting animals and other biota that were evocative of Home. As these became less cherished, native species engendered similar nationalistic sentiments and provided new, previously unrecognised, avenues for income generation. These beliefs were only reinforced by scientists whose theories also changed in line with evolving social theories. Since the early 20th century, attitudes towards introduced species have changed little. Indeed, if anything, conservationists have merely become more militantly opposed to their presence. Popular social discourses even present many introduced species as cognisant ‘enemies’ disposed to deliberately contradicting the species currently favoured by people. Nevertheless, these views are increasingly challenged by emerging perspectives that emphasise the dynamism of New Zealand ecosystems. Whilst not suggesting that environmental changes wrought by humans are ‘normal’ or to be just blithely accepted, alternative discourses challenge the notion that human-induced changes in New Zealand are altogether unprecedented. They also query whether human ‘responsibility’ should be used as a justification for the protection of native species exclusively, or whether such responsibilities might also need to be extended to human-introduced species.

I have argued that introduced game species provide an important exception to commonly-held beliefs about introduced species. Whilst their ecological effects are as pronounced as many ‘invasive’ species, they remain commonly included within conceptions of acceptable wild biodiversity in New Zealand. Paired with hunters and anglers, game species are hitched to enduring biosocial collectivities which demand their acceptance in the landscape. Each of my cases provide important vehicles for exploring and
critiquing some of the typical ways in which introduced species are excluded from the realms of worthwhile biodiversity. Trout, for example, are accepted not only because they are useful, but also because the species that they contradict (i.e. native fish) have historically been afforded a low status and priority in non-Māori culture. Such understandings query apparently selfless justifications for conservation based on concepts such as intrinsic value, suggesting that conservation may often be more instrumentally motivated than sometimes presumed. My case study on mallard ducks explores the important issues surrounding hybridisation. In particular, it questions why hybridisation between mallards and critically endangered native birds can be granted such a low status and priority in New Zealand. Finally, my deer case study explores the relationship between hunting collectivities and conservationist collectivities that continue to place deer outside of an ‘appropriate’ nature in New Zealand. After ongoing debate between these groups, and decades of environmental ‘war,’ I explore in later chapters why deer nevertheless remain abundant in New Zealand. Before furthering these analyses, however, Chapter Six explains the research methods I used and the underlying methodology that guided them.
Chapter Six: Investigating the Discursive Construction of Introduced Species

6.1 Introduction

In this chapter I outline, critically reflect upon, and justify the selection of my wider methodological stance and the use of specific methods. I argue throughout the chapter that a discursive constructionist approach to discourse analysis (see Nikander, 2008; Potter & Hepburn, 2008), with its emphasis on capturing the ‘turn by turn discursive resources that are deployed to manage meaning,’ is an appropriate methodological stance to facilitate the analysis of discourses on introduced species (J. Clifton, 2012, p. 151). The chapter begins with a general description of my research approach, explaining why qualitative methods were necessary in this research. I argue that multiple perspectives and methods help to ‘triangulate’ the study of introduced species and ensure precision and fairness of interpretations. My focus on the analysis of ‘exceptions’ is consistent with the focus of biopolitical studies which tend to focus on the abnormal and the discourses through which abnormality is constructed and perpetuated. Secondly, I explain why discourse analysis was used as an interpretive tool, pointing out the commonalities of discursive approaches and the benefits of a discursive approach to the study of ‘environmental’ topics.

Thirdly, I outline the ethical dimensions of the research and highlight the ways in which I have endeavoured to ensure fairness and accuracy of presentation. I reflect on my personal attachment to the research and the ways in which it has necessarily departed from objectivity. Fourthly, I justify the use of interviews, observations and documentary research as methods within a discourse analytical framework, noting each method’s benefits and limitations. I show why it was necessary to use a range of methods and clarify how these were undertaken. Lastly, I outline some of the specific methods I used to analyse ‘texts.’ In particular, I distinguish the method of coding I employed and how that process was completed. I conclude that a focus on the construction and perpetuation of discourse provides a powerful medium through which to challenge dominant understandings of introduced species and to identify fruitful avenues for future dialogue.
6.2 Approach

Below I outline and justify the broad methodological approach I have employed in this research. I discuss why I used a qualitative rather than a quantitative approach, arguing that this is more appropriate for facilitating a ‘fresh look’ at the interpretation of introduced species. I then discuss how I used ‘triangulation’ to address my research questions using as many different techniques and perspectives as possible. Although I used discursive constructionism as my principal constructionist approach, I also employed elements of deconstruction because of its utility in discerning additional meanings. Finally, I outline my use of case studies. I show why case studies were generally useful for my research but also why the specific cases I selected were appropriate.

6.2.1 Qualitative research

I took a qualitative approach to research in this thesis. In essence, qualitative research is that which seeks to draw meaning from some aspect of the world. Qualitative researchers are less interested in finding out, for example, how something works or what the objective reality of some phenomenon is. Rather, they are more interested in determining what that reality means to people (David & Sutton, 2004). It is not generally a better or worse approach than quantitative research but simply a means of providing certain kinds of knowledge that may be more applicable in certain contexts.

Qualitative research methodologies are not uniform and consider information collection and interpretation from a range of theoretical standpoints (Richards & Morse, 2007). Richards and Morse (2007, p. 41) identified one of the overriding reasons for working qualitatively: ‘the research question requires it.’ They explained several reasons why a research question might be best approached using qualitative methods. However, the most notable for my research was, ‘another way of looking is needed’ (Ibid.). They described when such a rationale for using qualitative methods might become obvious, writing that,

You might suspect that the literature may be poorly focused, or that there is something wrong, invalid, or inaccurate about the presentation and interpretation of the topic. Perhaps the received knowledge does not fit with the evidence, or results of the studies reported in the literature have been presented within the context of a theory that is invalid or
inappropriate. It is time to take a fresh look at the phenomenon and re-examine the theory from within, taking into consideration the perceptions of those being studied (Ibid.).

As I detailed in Chapters Three and Four, the literature on introduced species has been overly preoccupied with quantitative assessments of introduced species that tend to take as a given that introduced species are ‘bad.’ This perception is increasingly not founded in the evidence on the effects of introduced species and continues to rely on what I believe to be an invalid theory of the environment; specifically on ‘equilibrial’ and human-exclusive interpretations of nature (see Chapter 5). I believe, therefore, that a ‘fresh look’ is needed at how people in New Zealand interpret introduced species and that this is best facilitated by a qualitative approach.

Quantitative research on introduced species is voluminous and continues to grow (R.B. Allen & Lee, 2006). However, while the majority of quantitative work on introduced species has been targeted at determining ecological effects post-introduction, studies over the last 10-20 years have shifted some of the attention toward human attitudes and beliefs regarding introduced species (Lindenmayer & Hunter, 2010; K. Marshall, White, & Anke, 2007). These studies have provided important insights into how people perceive introduced species in different contexts. However, ‘while identifying demographic predictors and creating typologies to gauge the public’s orientation toward wildlife is serviceable, such efforts do little to explain why people have these value-orientations in the first place’ (Goedeke & Herda-Rapp, 2005, pp. 10-11; also see I. R. Hunter, 2001). Moreover, they do not tend to show which aspects of such understandings are flexible and which may be deeply embedded in local cultures (Goedeke & Herda-Rapp, 2005). Thus they do not point the way toward new understandings. Social constructionists are critical of the way that quantitative researchers approach meanings, contending that they are a co-creation of researcher, participants and audience, and understood at different levels; not directly reducible qualities that can be easily summarised and quantified (Turnbull, 2002). Quantitative analyses too readily generalise and simplify meaning, and nuanced, complex understandings are misinterpreted or concealed (e.g. see Head & Muir, 2006).

Qualitative analyses, in contrast, unpack the meanings behind social phenomena to reveal their assumptions, biases and contradictions (Hytten & Burns, 2007). In doing so, particular social phenomena
can be contextualised and more accurately situated among diverse competing issues. As Lynn (2010, p. 85) stated, ‘to plumb the depths and power of a discourse requires qualitative, not quantitative methods’ (also see Turnbull, 2002). This is because qualitative techniques are particularly useful in making sense of ‘complex situations, multi-context data, and changing and shifting phenomena...simplifying and managing data without destroying complexity and context’ (Richards & Morse, 2007, pp. 29-30). Moreover, it is ‘the insistence of social constructionism upon the importance of the social meaning of accounts and discourse [that] often leads logically to the use of qualitative methods’ (Burr, 2003, p. 24). Indeed, one of the overriding benefits of qualitative research is that it facilitates understanding of social processes in context, acknowledging the intersubjective nature of the human experience, both for those studied and the researchers themselves (Esterberg, 2002).

6.2.2 Triangulation, discursive constructionism, and deconstruction

Fontana and Frey (2000, p. 668) wrote that since ‘humans are complex and their lives ever changing; the more methods we use to study them, the better our chances to gain some understanding of how they construct their lives and the stories they tell about them.’ Both Lynn (2010, p. 87) and Nikander (2008, p. 425) came to similar conclusions, endorsing the ‘use of multiple perspectives and methods’ and the combination of ‘a wide range of different materials,’ respectively. Indeed, such suggestions are commonplace in discourse-based social research (e.g. see P. Baker & Ellege, 2011; Jun, 2006; Wodak et al., 2009). With such advice in mind, I have endeavoured to approach the study of introduced species using a number of different techniques. This approach is generally referred to as ‘triangulation’ (Lynn, 2010; Neuendorf, 2002). To clarify, however, I use this sense of triangulation in several ways. Firstly, my research is multidisciplinary and so accesses introduced species from numerous scholarly lenses. In the literature review, in particular, I have called on perspectives from numerous disciplines, including anthropology, sociology, geography, ecology, invasion biology, conservation biology, and critical arts. Secondly, I use triangulation in the sense that I employ different methods of collection; specifically, interviews, observations, and documentary research. Thirdly, I use triangulation in the sense that texts are analysed using multiple theories from social constructionism applied through the analytical methodology of discourse analysis. The overriding advantage of triangulation is the ability to see an issue
from as many different perspectives as possible thus gaining a more complete picture. In addition, triangulation improves the precision and fairness of interpretations (Turnbull, 2002). It allows the researcher to respond flexibly to unforeseen problems and aspects of the research, such as where individual methods prove more productive in some senses than others, or where their value comes to be recognised more as a complement to other methods than when interpreted in isolation (see P. Baker & Ellege, 2011; Bax, 2011).

The principal constructionist approach I take in this thesis is that of discursive constructionism, particularly as it was defined by researchers such as Buttny (2004) and Potter and Hepburn (2008). Discursive constructionism foregrounds the epistemic position both of the researcher and what is researched:

It studies a world of descriptions, claims, reports, allegations and assertions as parts of human practices, and it works to keep these as the central topic of research rather than trying to move beyond them to the objects or events that seem to be the topic of such discourse (Ibid., p. 275).

It studies the influence of rhetoric and draws on work from the sociology of scientific knowledge to highlight the contingent, normative and constructive work that goes into producing day-to-day descriptions of things. In doing so, it necessarily shirks treating any person or group’s version of events as true or given. Instead, a symmetrical stance toward knowledge is taken wherein the focus is on what passes for knowledge as opposed to its validity from the perspective of any particular group.

Discursive constructionism works with discourse in two senses (Potter & Hepburn, 2008, p. 277). It, firstly, understands discourse as constructed in the sense that it is assembled from a range of different communicative resources, including words, grammatical structures, idioms, and interpretive repertoires. Secondly, discourse is understood as constructive in the sense that these structures and repertoires build and stabilise versions of the world. Taken together, discursive constructionism highlights both the micro elements of how discourses are put together (e.g. metaphors, narratives) and the macro elements (e.g. nativism, patriotism) determining how these constituents work collectively to position phenomena in certain ways. For discursive constructionists, therefore, discourse is not merely an element of the social world to be studied but, rather, the central element of social inquiry.
'Discourse,' nevertheless, requires further clarification. As a term, discourse has become a commonly used expression in both the humanities and the social sciences, but this has led to what Wodak (2009, p. 7) described as a ‘considerable semantic fuzziness and terminological flexibility.’ In this thesis, I follow Phillips and Hardy’s (2002, p. 3) definition of discourse as ‘an interrelated set of texts, and the practices of their production, dissemination, and reception, that bring ideas, concepts and beliefs into being.’ Such a definition does not assume a pre-existing ‘reality,’ nor limit perceptions to preconceived terms of discourse. Rather, it ‘constitutes a specific way of being engaged with the world and related to it’ (Feindt & Oels, 2005, p. 166). Pfohl (2008, p. 652) elaborated on this, noting that discourses simultaneously depend on and are partially autonomous of the human actors who ritually enact them. They productively mobilise a wide range of fears, beliefs, desires, and imaginings. He eloquently portrayed the nature of discourse and our relationship to it:

…the phantasmic desires and fears we experience are never ours alone. They are hooked up to a network of sliding cultural and linguistic signifiers. Within this network we are pushed and pulled by forceful constructed loops of meaning but also by what the network excludes or keeps from consciousness. As such, when we communicate with one another, we never speak entirely person-to-person or in the here and now. Whenever we speak to each other we are also addressing the Other of our culture’s dominant linguistic system. This is a socially constructed Other – an abstract Other standing between us and toward whom we direct even our most intimate thoughts (Ibid.).

This is a powerful manifestation because it portrays the way that communications are always directed toward a larger social entity. As Pfohl wrote, when people interact with one another they do so with the image of a larger argumentative body both behind and in front of them. They represent the views of a discourse they connect with and address this discourse at the views of one they oppose or seek to delegitimise. Whether they are aware of it or not, they are always addressing a collective, abstract ‘other.’ Interpretations of any discourse, moreover, are never perfect or definitive. As Lynn (2010, p. 80) observed, there is ‘always more to be learned, and multiple meanings are the norm.’ Discourses are constantly changing. They may be misrepresented, concealed or poorly understood. They may hybridise
or take on elements from other discourses. They may be aligned with seemingly unrelated but positively construed discourses, or they may be distanced from negatively construed ones. They are, in any case, not ‘single, unitary or bounded perspectives, but fairly fluid frames’ (Feindt & Oels, 2005, p. 379). They merely enable us to hold together different thoughts and actions that are meaningful at a particular time and in a certain context. Overall, a discursive constructionist approach allows us to interpret the social and moral consequences of these communicative structures. We are able to theorise through different fields of resonance, thereby better understanding how a particular idea comes into being, operates, and is able to be perpetuated (Lynn, 2010). Discursive constructionism also captures the resources that are deployed to control meanings (J. Clifton, 2012). It is thus a useful way of analysing how meaning is constructed in talk and, where necessary, in identifying ways to challenge prevailing conceptions (also see J. Wilson & Stapleton, 2012).

Although my approach is principally informed by discursive constructionism, I also draw on deconstructionist theory, a perspective that similarly falls under the broader constructionist ‘umbrella.’ Introduced by French philosopher Jacques Derrida, deconstructionism emphasises the constructive power of language and the identification of tensions within texts regarding the interpretation of key terms (Burr, 2003; David & Sutton, 2004). I do not take deconstructionism in the strict sense propounded by Derrida, but in the tradition of recent geographic texts that adapt deconstructionist techniques for the purposes of critically examining texts (e.g. see Ateljevic & Doorne, 2002). Here the deconstructive method is to read text in fine detail to identify areas where the text contradicts itself or ‘overflows’ (David & Sutton, 2004). For example, often the same term or phrase will be used in multiple different ways (e.g. ‘Invasive,’ see Chapter 3) and, where this occurs, it can reflect bias towards underlying ideological positions. Deconstruction focuses on the fine-scale (e.g. words, phrases) just as discursive constructionism tends to focus on the wider-scale (i.e. discourses). In doing so, the former is more aware of potential contradictions and asymmetries in texts. I believe that the two complement one another in the sense that, although my work focuses on the broader discourse-scale, many aspects of discourse can only be accessed by close reading and targeted sampling of the finer details or nuances in text. Without incorporating deconstructionism, these subtleties may be missed. In this thesis I seek not only to indicate the grounds on which reconciliatory discourses on introduced species might be accepted but to also call
into question the grounds for accepting dominant discourses that currently do otherwise. This latter critical activity is better facilitated by incorporating finer-grained deconstructive techniques (Hosking, 2011; Hytten & Burns, 2007).

6.2.3 Case studies

I investigated three case studies in this research (see Chapter 5 for details). A case study research strategy is seen as one of the most ‘powerful (and subversive) approaches to understand social processes’ (Ben-Yehuda, 2010, p. 1). Case studies provide both a good platform for the discussion of issues in context and a good vehicle for obtaining rigorous empirical information. Case-based study is also a common strategy within constructionist research as it tends to be sensitive to culturally relevant discourses and how they are manifested on a local level (G. L. Burns, 2008). I used multiple case studies as a means of accessing the nuances and alternative reflections on introduced species that might not otherwise be obtained from a single case study. Although my research focused on these cases, this did not mean that I was confined to them. During interviews, for example, conversations on case species regularly broadened to conversations on introduced species and the interpretation of nature generally. Where appropriate, these have also been integrated into my research and this is reflected in my empirical chapters (see Chapters 7-9).

In selecting cases I used a purposive sampling logic. I selected cases that were information-rich and through which I could learn most about the central topic of my research (Williamson, 2006). I also selected my case studies because they were well suited to investigating reconciliatory discourses on introduced species. As introduced game species are sometimes considered an acceptable component of wild biodiversity in New Zealand I felt that, through them, I could gain an understanding of what these discourses might be and how they might be applied in other contexts. Investigating cases that contradict common understandings is known as a negative or deviant case study methodological rationale (Lijphart, 1971; Ryan & Bernard, 2000; Schrank, 2006). The selection of unusual or abnormal cases as a focus of investigation is consistent with many other biopolitical studies and offers a unique perspective not found in studies that investigate the typical or the norm.
As I discussed in Chapter Five, introduced game species can often be seen as ‘exceptions’ to the common understanding of introduced wildlife. Nevertheless, game species are only one example of many introduced species in New Zealand that are frequently seen in different lights, some favourable. For example, even introduced species that are routinely castigated, such as possums, have supporters arguing for their acceptance in New Zealand (e.g. in A. Potts, 2009). Indeed, there are very few introduced species that are not supported by some segment of society, however small. In any case, assessing ‘negative’ or ‘deviant’ cases of introduced species is often more illuminating than investigating cases selected at random that emphasise representativeness (Flyvbjerg, 2006). This is because cases that do not fit the accepted mould or perspective toward others of their ‘kind’ often highlight tacit assumptions and biases that are either not readily acknowledged, or easily concealed or obfuscated in the wider population (see Emigh, 1997; Flyvbjerg, 2006; Patton, 1990). As Miles and Huberman (1994, p. 269) wrote,

…any given finding usually has exceptions. The temptation is to smooth them over, ignore them, or explain them away. But the outlier is your friend. A good look at the exceptions, or the ends of a distribution, can test and strengthen the basic findings.

McPherson and Thorne (2006, p. 3) elaborated on this position, adding that when given due consideration, ‘observations that appear to us as exceptions might prompt new avenues of thinking, push our analyses toward more complex and sophisticated conceptualizations of the phenomena in question, or even prompt us to uncover assumptions that might revise our core understandings.’ In this instance, introduced game species are an exception to the common understanding of introduced and invasive species. They represent contradictions to our ‘tentative thematic and theoretical interpretations’ of introduced species; ‘manifestations of important human diversities discrepant from the dominant discourses’ (McPherson & Thorne, 2006, p. 3). For many people, introduced game species are already considered to be reconciled into conceptions of acceptable wild biodiversity in New Zealand. As such, they provide a powerful methodological tool for accessing broader reconciliatory discourses.

Following such an approach could be interpreted as a form of research bias. That is, by selecting only species that are widely considered acceptable the research is predisposed to concluding that
reconciliation is ‘the answer.’ It might be questioned, for instance, why I would not also select species widely loathed in New Zealand, such as weasels or stoats. The primary reason is that discourse on such ‘invasive’ species has become so entrenched and divisive that it is almost impossible for people to consider alternatives. Reconciliatory discourses on many ‘pest’ species are scarce and, in fact, for most people would seem faintly ridiculous. Indeed, as I argue in Chapter Seven, attitudes towards introduced species often mirror those of previous generations towards other marginalised groups in that consideration of their welfare can seem a far-fetched proposition and ‘soft’ to the point of absurdity. The other reason is that understandings of game species such as deer have vacillated considerably over time, from widespread opposition to widespread acceptance (see McDowall, 1990). Studying these movements facilitates a better understanding of the processes of change than studying those that have been consistently maligned. In any case, in Chapter Five I made it clear that, from an ecological perspective, many introduced game species are not different at all from ‘pest’ species. Their effects on native biodiversity are as pronounced or more so. This reinforces that the acceptance of game species is a social decision not an ecological one. I acknowledge consistently that introduced game species are an ‘exception’ to common social understandings of wild introduced species, but reinforce that they are in no way exceptional on an ecological basis. The apparent contradiction that can lead to them being seen as both ‘bad’ ecologically and ‘good’ socially is integral to why they are useful case studies.

6.3 Discourse analysis

The interpretation of all material in this thesis was grounded in a constructionist view of discourse analysis. Baker (2011, p. 200) wrote that ‘studies that have discourse as a central concept have become extremely popular…over the past 20 years,’ and that this is largely due to the widespread realisation of the importance of language in the social sciences, commonly dubbed the ‘linguistic turn.’ Baker noted that this ‘turn’ has largely been toward discourse analytical approaches to research. Discourse analysis is a relatively recent approach to data analysis having first been used within the discipline of linguistics in the 1950s (after Z. Harris, 1951). However, since then it has been used in a variety of other disciplines and interpreted in an even larger variety of ways (see Gee, 2011; Nikander, 2008; Roy-Chowdhury, 2010). There are, all the same, several methodological facets that are both central to all discourse analyses and
consistent with a discursive constructionist perspective. I will highlight these before suggesting some of the reasons that discourse analysis is not only consistent with my research perspective but also particularly useful to facilitating the contribution of this thesis.

6.3.1 Commonalities in discursive approaches

What different approaches to discourse analysis share, above others, is a commitment to a social constructionist epistemology (Roy-Chowdhury, 2010). Language herein is more than simply a mirror of the world with discourse central to the construction of the ideas and social processes that constitute our day-to-day reality. Discourse, in other words, both reflects and constructs social reality (Shields & Harvey, 2010). Secondly, discourse analysis is primarily concerned with how language is used to further particular versions of reality and how those versions are ‘achieved in and through texts and talk’ (Feindt & Oels, 2005; Gee, 2011; Nikander, 2008, p. 415). It studies how accounts of phenomena are presented and how these are achieved, for example, through the use of linguistic techniques such as overwording, personification, and the selection of emphasis. In contrast to content analysis, discourse analysis is more interested in depth than breadth, less concerned with surface characteristics (e.g. the incidence of particular words or phrases), and more interested in broad themes and meanings (David & Sutton, 2004).

Thirdly, discourse analyses are generally anti-positivist and anti-essentialist, working to identify how intersubjectivities have privileged or marginalised particular understandings (Pettenger, 2007). As I discussed in Chapter Two, articulation is collective in character, not an individual endeavour (R. Holt &

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81 Although not always explicitly, generally a distinction is made between ‘social constructionist’ and ‘critical’ approaches to discourse analysis (Hardy, 2004). The former is more concerned with processes while the latter is more concerned with relations of power (N. Phillips & Hardy, 2002). Nevertheless, it is a gradient of understanding rather than an either/or selection and both can be seen as constructionist ‘in so far as they [each] consider how talk and texts are assembled and how assemblages work to accomplish actions’ (Potter & Hepburn, 2008, p. 280).

82 The process of coding themes and key ideas that is regularly used in discourse analysis is often described, nevertheless, as a form of content analysis, so it is fair to say that content analysis is often a part of discourse analysis rather than exclusive of it (David & Sutton, 2004).
Mueller, 2011). As a result, dominant discourses are not always simply the result of the outright success of dominant positions (Fischer & Marshall, 2010). Rather, dominant discourses may be the result of social compromises. Instead of accepting beliefs and categorisations, discourse analysts are encouraged to challenge these common understandings (N. Phillips & Hardy, 2002). Nikander (2008, p. 416) wrote that,

The process of becoming a skilled discourse analyst includes making the familiar strange and taking a step back from the taken-for-granted nature of language. This requires developing a constructionist analytic eye and ear – an appreciation of the detailed artfulness of text, talk, and interaction.

Discourse analysts are asked to challenge conventional ways of thinking or acting. Social norms and schemata serve to naturalise conditions, shrouding them in ‘common sense’ and making them appear divorced from ideology (Teubert, 2010). Particularly when discourse analyses are performed on facets of one’s own culture, such as in this thesis, skill is required to make things ‘new’ and ‘strange’ that are usually seen as ‘normal’ and ‘natural’ (Gee, 2011). For example, in New Zealand ‘appropriate’ wildlife management is often interpreted very differently in aquatic or terrestrial contexts. In Chapter Five I explained, for instance, how little concern is generally expressed for the ecological effects of introduced trout on native aquatic ecosystems and how much, by comparison, is made of similar ecological effects precipitated by many introduced mammals in the terrestrial context. The inconsistencies between these two contexts in regards to biodiversity conservation are often unappreciated, sometimes even deliberately ignored or downplayed. Considerable discursive work is required to break through local perceptions that these differences are somehow ‘natural’ and to be expected.

### 6.3.2 Benefits of a discursive approach to investigating the reconciliation of introduced species

There are several advantages to using discourse analysis to access and interpret texts in this thesis. Firstly, discursive studies on environmental topics are becoming well-established. Discourse analysis is increasingly influential as a way of interpreting environmental texts, images and ideas (Hannigan, 2006). The study of environmental politics, for example, has been transformed by discourse analysis (see Feindt & Oels, 2005). Owing, in part, to a raft of discourse analyses over recent years, ‘the environment’ is no longer seen only as something outside of society, but often as a discursive co-production. Environmental
'problems' are not taken as givens, and ‘nature’ is seen as socially and historically situated (see Chapter 3). Rather than taking the various discourses on the environment as being necessarily grounded in objective ‘fact’ and truth, the door is opened to alternative conceptions that recognise the assumptions, biases and predispositions inherent in ideas about the environment. This knowledge is easily transferred to understandings of introduced species, as in the example of the preceding paragraph. If trout are every bit as ‘damaging’ to the environment as many invasive mammals then new explanations are required to reconcile why the latter are intensively ‘controlled’ wherever possible while the former are not. Discursive approaches are thus useful in testing the knowledges that sustain what introduced species are and how they should be seen. Discourse analysis helps to question what it means to be an introduced species in a fast-changing world and provides a way of challenging understandings and providing alternative conceptions.

Secondly, discourse analysis provides an effective means of understanding how environmental phenomena are ‘framed’ or ‘positioned’ to further particular agendas (see Eskridge & Alderman, 2010). Gee (2011, p. 201) suggested that discourse analysts should ask, in any communication,

...how the person is using language as well as ways of acting, interacting, believing, valuing, dressing, and using various objects, tools, and technologies in certain sorts of environments to enact a specific socially recognizable identity and engage in one or more socially recognizable activities.

This is because understanding how and why phenomena are presented goes a long way toward understanding how they can be challenged. In this thesis, I draw on insights from framing theory (most notably after Goffman, 1974) and positioning theory (after Davies & Harre, 1990) in an effort to better comprehend how the presentation of introduced species is a reflection of how people wish to understand them. In discourse analysis, framing is thought of as ‘a means of conceptualizing the way that background knowledge is used to make sense of and produce discourse’ (P. Baker & Ellege, 2011, p. 48). Positioning, similarly, is ‘the discursive process whereby selves are located in conversation as observably and subjectively coherent participants in jointly produced and accepted ‘storylines’” (Lin & Kubota, 2011, p. 288).
Together, these bodies of theory speak to the rhetorical organisation of discourse into persuasive wider narratives that dictate how something should be constructed. Introduced species, for instance, are forced to conform to stereotypical identities that focus on the worst cohort of ‘others’ and generalise their negative characteristics to the whole group of ‘others.’ Meanwhile, the stereotype of native species selects from the best cohort of natives and generalises them to the whole group (Lin & Kubota, 2011; Wodak et al., 2009). Such positionings reflect both ‘interdiscursive’ (Fairclough, 1995; Foucault, 1972) and ‘intertextual’ (after Julia Kriteva 1966, see P. Baker & Ellege, 2011, p. 64) influences that borrow and blend with other well-known social discourses and influential texts (also see Nikander, 2008). The tendency for discourses on introduced species, for example, to be positioned within discourses on national identity (see P. Baker & Ellege, 2011, pp. 73-74; Wodak et al., 2009) is a manifestation of the power of interdiscursive offerings. Rather than accepting these prevailing frames, however, positioning theory in particular claims that people can ‘resist, negotiate, modify or refuse positions’ (Benwell & Stokoe, 2006, p. 43). This encourages frames to be actively challenged and, if necessary, replaced. It is this aspect of discourse analysis that is particularly pertinent to the reconciliation of introduced species which is fundamentally about challenging dominant positionings.

Thirdly, discourse analysis is a good vehicle for understanding the process of social construction (Feindt & Oels, 2005). It is not solely concerned with how actors make use of a pre-existing reality but with how that reality is brought into being, often over lengthy periods of time (Hardy, 2004). A discursive perspective is concerned with how phenomena are ‘talked into being’ (Nikander, 2008, p. 415), and this is a process that typically occurs gradually, evolving over the course of years. ‘Legitimation,’ the process through which something becomes accepted by a society, does not typically occur at the end of a power struggle, it is the fruition of long-standing discursive currents (Fairclough, 2003). This study utilises archival research, for example, specifically as a way of accessing these historical dimensions to social construction (see Section 6.5.3). Understanding how this process has evolved enables a deeper understanding of the levels of nuance in prevailing discourse and avoids unfairly characterising it based on a shallow reading of the discourse. This is important to reconciliation because if current discursive frames are not appropriately contextualised and understood in historical perspective then the discourses suggested to surpass them may be ill conceived and apt to fail.
Lastly, discourse analysis shows how discourses privilege some groups, furnishing the methodological means to resist and challenge this, at times, unquestioned dominance (Hytten & Burns, 2007; Nikander, 2008; Pettenger, 2007). Prejudiced and repressive discourses are utilised by social groups to legitimise dominant practises and attitudes toward marginalised groups (Gee, 2011). As Foucault (2008 [1979]) argued, ‘resistance’ occurs when those practises and attitudes are rejected. Discourse analysis facilitates this resistance by illuminating ‘ideologically permeated and often obscured structures of power, political control, and dominance, as well as strategies of discriminatory inclusion and exclusion in language use’ (Wodak et al., 2009, p. 8). The tension between opposing discourses results in a ‘struggle’ for hegemony. This struggle is successful ‘when previously marginalised discourses successfully penetrate and change the dominant discourses, resulting in social change’ (P. Baker & Ellege, 2011, p. 141). In a discursive study on the struggle of a foreign CEO to attain legitimacy as a business leader in Australia, Shields and Harvey (2010, pp. 298-299) showed that the biggest impediment to his acceptance as ‘one of us’ lay in finding ‘a discourse-driven identity frame that resonated positively with his Australian audience.’ They found that a discourse analysis-driven methodology was the most powerful way of unearthing and presenting such discourses. This thesis, similarly, seeks to unearth and explore potential reconciliatory discourses using discourse analysis as the primary technique. In doing so, it seeks to enhance understandings of presently marginalised introduced species.

### 6.4 Ethical considerations

In this section I discuss the ethical dimensions that need to be considered in undertaking such research and my responses to these. I show the various steps I have taken to avoid harm to those involved with this research, particularly interviewees. In Chapters Two and Three, I explored how undisclosed biases and predispositions often characterise approaches to wildlife management. Rather than distancing myself from these and making a pretence of objectivity I reflect on my own biases and motives.

#### 6.4.1 Guiding principles

Good methods build on ethically sound principles and starting points (Nikander, 2008). Here, ‘ethics’ can be defined as the ‘set of standards in a research community, regarding the conduct of its members, particularly in relation to human subjects’ (P. Baker & Ellege, 2011, p. 42). Ethics ensure that the subjects
of research are treated fairly and respectfully. They tend to be context-specific, with particular ethical considerations more in need of emphasis in some settings than others. For this reason they are often referred to more as ‘guidelines’ than ‘rules.’ For the purposes of this thesis, I sought ethical approval from the University of Auckland Human Participants Ethics Committee which was granted in September 2011. That application assessed the typical ethical considerations inherent to qualitative research and considerations that were particularly relevant to this thesis. These included informed consent, anonymity and confidentiality, voluntary participation, and protection from harm. Most of the ethical issues I encountered in this thesis relate to interviewing. I understand, nevertheless, that ethical considerations also apply to the other forms of investigation used. I address these where they are applicable.

6.4.2 Informed consent, anonymity and confidentiality

Informed consent is the process whereby participants give their approval to be interviewed. Importantly, this process must ensure that the purposes of the research have been transparently communicated to the interviewee in such a way that they are clear what the research means and for what it will be used (P. Baker & Ellege, 2011). In other words, participants should in no way be deceived as to what the research is. In this research, all potential interviewees were presented with a participant information sheet fully explaining the nature of the research (see Appendix 3). Moreover, each interviewee completed and signed a consent form giving them the opportunity to (de)select options with regards to how the information would be presented (see Appendix 3). In addition to these formalised approaches to portraying the ethical considerations of the research, I also verbally informed interviewees of the objectives of the research prior to the commencement of each interview. Participants were reminded that they were under no obligation to answer all questions and could terminate the interview at any time.

83 Informed consent can also be necessary when undertaking observations. However, because my observations were non-participatory and do not identify any of the people observed there are no significant ethical issues. Though I did not deliberately seek to be covert, the increased naturalness of people’s behaviours in this context was advantageous.

84 If the interviewee was an employee, the CEO or organisational head of that organisation was first presented with a separate participant information sheet and a consent sheet asking for permission for their staff member to participate, and on what terms (see Appendix 3).
Participant information sheets were sent to interviewees by post prior to interviews, an additional copy of which was also given to them at the time of interviewing. Farvid (2011, p. 166) noted that a potential issue in interview-based research concerns what ‘informed consent’ and ‘no deception’ really mean. She argued that some level of ambiguity is often necessary to ensure naturalistic accounts of participants’ views. Discursive constructionist assessments of interview transcripts, for example, are frequently critical and may portray the interviewee’s views in a negative light. In this research, views expressed by interviewees were generally presented as manifestations of a particular discourse or discursive frame as opposed to the specific views of any one person. This ensured that, though critical, assessments of discourse were directed at wider spheres of influence and not targeted at diminishing or denigrating particular participants.

Ensuring both anonymity and confidentiality for interviewees was another important ethical consideration in this research. ‘Confidentiality’ guarantees that anything the interviewee does not want to be made public remains so. ‘Anonymity,’ conversely, is the practise of ensuring that the interviewee’s identity is anonymised (e.g. via a pseudonym), where appropriate, to ensure that their comments cannot be traced back to them (P. Baker & Ellege, 2011). Confidentiality of interviews was safeguarded by following the guidelines of the University of Auckland Human Participants Ethics Committee\(^\text{85}\). The procedure of ensuring anonymity is explained in the participant information sheet (see Appendix 3) and was further explained to each participant prior to interviewing. In short, each interviewee was given the option of whether to remain anonymous or not. In the consent form (see Appendix 3) they were given the choice of

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\(^{85}\) Consent forms were stored in a locked filing cabinet separated from other data in my locked university office. Digital audio recordings and transcripts were stored on my university computer which is password protected. To avoid misidentification audio recordings of each interview were numbered and labelled with the date of the interview and the name of the interviewee (after Noor, 2008). Following submission of this thesis, consent forms, interview transcripts and audio recordings were all transferred to my supervisor Brad Coombes university office. They will remain securely stored for six further years, after which time transcripts and recordings will be deleted and consent forms shredded.
having their name or their job title anonymised, or both. Despite this, no participant chose to remain anonymous; therefore the names and job titles used in the thesis are all authentic (see Table 2).

6.4.3 Voluntary participation and protection from harm

Participation in this research was entirely voluntary and all interviewees were given the right to withdraw information at any time. There was no financial compensation to participants. This was identified in the participant information sheet and reiterated at the time of the interview. Nevertheless, voluntary participation does not prevent potential harm to participants and extreme care must be taken (Preissle, 2008). I felt, in fact, that protection from harm was one of the most important ethical considerations of this research. There are at least two reasons for this.

Firstly, public debate on the place of introduced species and actions taken to control them have, at times, been characterised by intense, sometimes physical conflict. The use of the poison ‘1080’ for control of introduced mammals, for instance, has generated many heated exchanges in New Zealand (e.g. see Ihaka, 2011). My research seeks to avoid promoting or deepening these conflicts. Secondly, attitudes toward introduced species can be connected to people’s work or deeply-felt cultural obligations. Many employees and contractors working in pest control for the Department of Conservation or regional councils, for instance, derive their income almost solely from killing introduced species (see Chapter 9). They, and many others, may also define their place in society or their role in life as protectors or guardians of nature and see it as their duty to ‘protect’ it from introduced species (see Chapter 7). On both accounts, people have invested more than ‘mere opinions’ in the control and eradication of introduced species. Oftentimes, both livelihoods and reasons for being can be threatened by suggestions in favour of introduced species. Therefore, although proposing that an introduced duck might have a legitimate place in the environment could seem an insignificant and almost trivial matter, many introduced species are connected to groups of people both in positive and negative lights and those associations can be deeply important for those involved. Enhancing the status of introduced species can unfortunately mean diminishing the status of groups not in favour of them. Though perhaps partly unavoidable, I attempted to reduce or soften these impacts where at all possible.
I emphasised to interviewees that, as a PhD student, my research would mainly be used in furthering academic discussion. It is not intended to directly inform policy makers and participants should not feel that this research *per se* will facilitate change in the management of any particular species or aspect of the environment. My purpose as a social constructionist is, in any case, to facilitate understanding on this topic, not to proscribe solutions, foment current conflicts, or incite new ones. I understood that some people may be sensitive to the material discussed and differ in their opinions from others in their organisation or social groups. Individuals were never expected to be the sole representatives of any group or viewpoint and, as I have commented above, their views were typically presented as manifestations of wider discourses. I endeavoured, moreover, to accurately represent participants’ views and avoid misrepresenting them, frequently letting them express their views more directly through the use of representative quotations. These were never presented outside of the context in which they were communicated. Finally, I avoided doing a disservice to others’ views by constantly reflecting on my own biases and predispositions toward their positions and the extent to which that influenced my interpretations. During interviews, I endeavoured to clarify areas that may be misunderstood and ensure I had the complete picture wherever possible.

### 6.4.4 Reflexivity

I compared material from interviews, observations and documentary research to verify, not only the coherency and consistency of the opinions expressed by others, but also the fairness and precision of my own interpretations of these through a process of reflexivity (Turnbull, 2002). Reflexivity refers to the process of reflecting on the research process as it is carried out. It is an integral part of discourse analysis as it facilitates a self-awareness regarding the researcher’s interpretation and influence on ‘data’ (P. Baker & Ellege, 2011; Bax, 2011). Analysts are asked to question their own beliefs, assumptions and theoretical positions in an effort to determine in what way these have influenced their findings (Kikooma, 2010; Koro-Ljungberg, 2008). For example, the analyst may ask how their upbringing, their particular cultural background, or their intellectual circle may have biased their research. The text created by the analyst is thus deconstructed to expose taken-for-granted positions and facilitate different ways of seeing (Dowling, 2008).
Discourse analysts are critical of the concept of objectivity in science. Objectivity refers to the impartial, rational analysis of natural phenomena in such a way that researchers do not personally influence results. One researcher could, in other words, be substituted for another in any particular study with both expected to achieve similar results (P. Baker & Ellege, 2011). This, say discourse analysts, is not an accurate reflection of the process of science. Objectivity, instead, is held to be difficult if not impossible to achieve. Firstly, researchers do not impartially select their objects of study and they cannot escape their own personal prejudices and identity (Weinberg, 2008, 2009). Secondly, they cannot remove their research from the very specific social and culture context in which it is practised (Cohen, Duberley, & Mallon, 2004). On account of these realisations, discourse analysts stress the need to reflect on the subjectivities inherent to all research, including their own.

Interpretation and analysis in this research were influenced by my background and predispositions going into the study. I have been thinking about the topic of this research since my undergraduate studies in ecology and economics at Victoria University of Wellington (1998-2002) and during a subsequent Masters degree in ecology (2004-2006) at the same institution. During that time I came to be increasingly annoyed at attitudes expressed toward introduced species in the literature and amongst my colleagues. A particularly memorable experience was attending the 2005 New Zealand Ecological Society Conference in Nelson. I presented a poster on an aspect of my Masters research which was on the behavioural ecology of New Zealand robins (Petroica australis). I noticed that interest in my work, or any of the theoretical work in ecology, was far outweighed at the event by interest and presentations on the negative effects of introduced species and practical techniques for monitoring, controlling and eradicating them. At the time my overwhelming impression was that I had attended a pest control conference rather than a conference on ecology per se. Consideration of theoretical aspects of ecology, indeed, seemed to be secondary to the work of implementing practical control measures. Moreover, dialogue, to my mind, was almost exclusively centred on perceived ‘pests’ and how to get rid of them. Far from being objective and measured, many of the presentations were highly impassioned, sometimes vicious, and littered with derogatory names and crude jokes directed at the subjects of their studies, particularly introduced possums, rodents and mustelids. To my thinking at the time, much of the anti-introduced species talk seemed hypocritical and myopic and my faith in the objectivity, or even the level-headedness, of many of
my peers was severely shaken. I felt their positions to be extreme, but was left with the impression that it was my approach (i.e. a more conciliatory one) that was extreme and theirs merely prudent, conservative, and precautionary.

In 2007 I began working as an ecologist for an environmental consulting company. As in academia, I was struck by the attitudes of ecologists working in the industry who almost exclusively held strong negative views of introduced species in the context of wildlife. What stood out to me, however, was the extent to which such positions were often not rigorously analysed. I would often engage in debates with colleagues who would either concede the tenuous, sometimes uncritically-derived nature of their beliefs, or who would express considerable consternation that I should not believe similarly as the ‘correct’ way of seeing was so terribly obvious to them. Most noticeable was that debates over introduced species were often not ecological debates per se, not debates over ecological facts, but of what aspects of the environment ‘should’ be valued. My debates with other scientists, in other words, were not debates on points of science so much as debates on how to interpret value.

Therefore, after 10-12 years of debating this material I did not go into this thesis as an impartial observer. Instead, I undertook it with explicit emancipatory motives. I acknowledge, therefore, that my primary objective in this research was not to discover the ‘truth’ about introduced species but to discover ways to reconcile introduced species into New Zealanders’ idea of acceptable wild biodiversity and I have purposefully pursued methods of research to that end. I understand and accept that this approach has necessarily created biases of interpretation. Although I am quick to accept and make plain the many negative impacts of introduced species on many native species, I have, in other respects, been more likely to look for and emphasise the good in introduced species than otherwise. This could be taken in another light, however, as something of a counterbalance to prevailing conceptions. As I will argue in the following chapters, my personal bias toward softening approaches to introduced species has not lead to a conclusion that reconciliation of introduced species is an inevitability in New Zealand.
6.5 Research methods

Empirical information for this thesis was obtained using three methods: interviews, observations and the collection of documentary sources. These are outlined below, including an explanation for how each method was implemented and how each contributed to the research aims.

6.5.1 Interviews

The use of qualitative interviews in this research was important because it facilitated an in-depth analysis of people’s attitudes towards introduced species. Participants were invited to draw upon the underlying discourses that determined their perceptions and to look beyond the typical framings of these species. Rather than passively listening to responses, I was able to actively engage in discussion with participants to more fully understand and explore their positions. These characteristics allowed interviews to productively and reflexively engage with participants and to thus facilitate the delineation of fresh and novel interpretations, both for the interviewee and the researcher.

Qualitative interviews are one of the principal methods in qualitative research. The typical format and assumptions underlying them differ notably from the quantitative tradition. Among many distinctions, quantitative interviews typically follow a highly structured interview process in which standardised questions are asked to all participants. An underlying assumption is that ‘phenomena such as knowledge, exist independently of the interview and there are ‘truths’ which reflect real events and experiences’ (McCaffery, 2003, p. 18). The role of the interviewer is to obtain the most ‘authentic’ account of the event or experience from the interviewee. Answers are interpreted ‘dispassionately’ and ‘objectively’ with common responses often reduced to identifiable themes which are then analysed quantitatively (Bryman, 2012). The qualitative interview, in contrast, assumes that ‘phenomena are created and negotiated in the world and through the interview’ (McCaffery, 2003, p. 19, emphasis mine). For qualitative interviewers,

Meaning is not “just the facts,” but rather the understandings one has that are specific to the individual (what was said) yet transcendent of the specific (what is the relation between what was said, how it was said, what the listener was attempting to ask or hear, what the speaker was attempting to convey or say) (Dilley, 2004, p. 128).
The goal of the interview is to obtain in-depth understandings rather than concise answers to specific questions (Gee, 2011). There is no one 'true' account, rather, many interpretations exist that are constructed to serve different functions. The researcher is an active participant in the interview who is integral to the development of discourse and the interpretation of meaning. Qualitative interviews are commonly unstructured or semi-structured and, whilst the delineation of themes and patterns remains, these are developed interpretively, with less importance placed on numerical frequency and more on the depth and meaning highlighted in particular responses. Qualitative interviews aim to understand the complex behaviour of people without imposing any a priori categories on them that may only serve to limit the field of inquiry. More than just a procedure, therefore, qualitative interviewing is an approach to learning and understanding (Dilley, 2004).

From a social constructionist perspective, interviews are seen as one of the most useful tools of ‘data’ acquisition (Burr, 2003). Again, they are not seen as one-way exchanges of information but instead as interactional events in which interviewer and interviewee engage in the co-construction of knowledge (Roulston, 2010). As Koro-Ljungberg (2008, p. 431) wrote, ‘the major implication of a constructionist approach to interview data has been to treat interview narratives as situated, constructed reports, not actual representations of facts or ‘true’ experiences.’ Rather than the researcher simply enquiring what participants know about a particular topic, they engage in dialogue with them and are thus active participants in the production of knowledge (Ibid.). Furthermore, constructionists acknowledge the contextual and historically situated nature of participants’ contributions (Cutting, 2011). Accepting that participants are limited by the discourses they have adopted, or have been subjected to, interviewers are encouraged to move away from predetermined ideas or hypothesis-driven research models when interpreting interviews (Koro-Ljungberg, 2008, p. 443). It is instead thought that openness and sensitivity to the positionality of participants can lead to fruitful and unanticipated areas of inquiry and scholarship (Dunn, 2005).

Given the above, I did not take interviewees responses to questions as an index on external reality. Rather, I took their responses as manifestations of underlying discourses. The language people use indicates what discourses they have available to them and what frames they seek to connect with or
rhetorically position themselves. This is not to say that a discourse approach is the only way of understanding responses. A discourse approach is merely one way of determining what is ‘sayable’ about introduced species in the context of a particular persons’ cultural milieu and in the setting of an interview (Farvid, 2011). Each respondent taps into the available discourses that they have been influenced by and found compelling or useful (refer to Section 6.2.2). To use an example, many modern environmental discourses centre on the concept of ‘biodiversity.’ If someone is to consider, for instance, the environmental effects of a new open-cast mine, they might explain it in relation to how it would negatively influence local biodiversity. They could thus be seen to tap into a wider discourse on biodiversity. However, if the same interview was to have taken place in the early 1980s, prior to the coinage of the term ‘biodiversity’ (Hannigan, 2006), they would have to explain the effects of the mine in relation to other concepts. For example, they might instead have tapped into a discourse on ‘sustainability.’ Therefore, although people have the ability to mould and reformulate existing discourses, they are still restricted, to a significant extent, by the cultural understandings and framings of the day (Koro-Ljungberg, 2008). Interviews in this thesis, then, do not claim to access what people ‘really’ think about the environment. They access intersubjective understandings of the environment as they are born out in prevailing discourses (Cohen et al., 2004, also refer to Section 6.3.1).

Interviews in this thesis were all individual, in-depth, and adhering to the semi-structured form, which is the most widely used interviewing format for qualitative research (DiCicco-Bloom & Crabtree, 2006). Semi-structured interviews provide flexibility in terms of the order in which topics are considered and allow the interviewee to elaborate more broadly on the topics raised (Dunn, 2005). There is ‘flexibility to approach different respondents differently while still covering the same areas of data collection’ (Noor, 2008, p. 1604). Unlike structured interviews, semi-structured interviews allow for more of a conversational nature to discussions and a less formal, more open relationship between interviewer and interviewee (Richards & Morse, 2007; Wodak et al., 2009). This means that interviewees may feel more comfortable providing unguarded or candid responses. Interviewees are also empowered to influence the flow of the dialogue to a greater extent than in structured interviews and thus better placed to tell their story (David & Sutton, 2004). Some open-ended questions may be developed in advance, but, unplanned questions and probes are also used (Richards & Morse, 2007). These facilitate responses that the interviewer did not
anticipate and allow interviewees to answer in their own words, which is important from a discourse perspective (Kalof, Dan, & Dietz, 2008). In this thesis, some interviews were more structured than others. When undertaking interviews with employees during office hours, for example, interviews tended to stick more closely to pre-conceived questions and be restricted in their treatment by necessary time constraints. Interviews with respondents in their home, in contrast, were often more open-ended, less-structured and more relaxed and informal. As always, interviews had to be analysed in light of the context in which they were collected.

Interviews were conducted between January 15th and May 22nd 2013, each ranging in duration between 45 minutes and 1.5 hours. In addition to audio recordings, I took written notes during each interview. Ideas and connections would occur to me during interviews and these were written down for future analysis. Typically these were expanded directly after the interview (see Gee, 2011). I communicated the purpose of the exchange and general themes to be raised before each interview. This allowed interviewees time to consider likely questions and mentally prepare answers. In addition, each interviewee was presented with a participant information sheet both prior to the interview and on the day of the interview describing the purpose of the interview and background to the research. Interviewees were also all required to complete a consent form before the commencement of their interview. Interviews always began with ‘warm-up’ questions to make the interviewee feel at ease and establish trust and rapport (David & Sutton, 2004). I then typically used general questions that required little thought to commence the discussion. Core questions often did not commence until around five minutes into the interview (as in Fischer & Marshall, 2010).

Before commencing interviews I had estimated conducting 25-40 interviews. However, I did not commit to a defined number and instead continued interviewing people until little new discursive material was being added by interviewing further people. By the end of interviewing I was able to anticipate what respondents would say and there was much repetition. At this point I realised that further interviews would not be useful. In total, I interviewed 31 people, 30 of which were used in the analysis. Interviewees were selected to sample views from the various environmental organisations, clubs and societies that are responsible for interpreting case study species and presenting them to the public in Northland, the
Rotorua Lakes and Te Urewera. These included local representatives from the Royal Forest and Bird Protection Society, regional councils, the Department of Conservation, Fish and Game New Zealand, and others (see Table 2).

**Table 2:** Interview participants.

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Date</th>
<th>Name</th>
<th>Title/Descriptor, Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mallards (Northland)</td>
<td>16/01/13</td>
<td>Warwick Massey</td>
<td>Member, Royal Forest and Bird Protection Society (Mid North)</td>
</tr>
<tr>
<td></td>
<td>22/01/13</td>
<td>Murray Williams</td>
<td>Waterfowl biologist</td>
</tr>
<tr>
<td></td>
<td>1/02/13</td>
<td>Janet Snell</td>
<td>Member, Ornithological Society of New Zealand (Whangarei)</td>
</tr>
<tr>
<td></td>
<td>25/02/13</td>
<td>Tony Beauchamp</td>
<td>Technical Advisor Threats, Department of Conservation (Northland Conservancy)</td>
</tr>
<tr>
<td></td>
<td>27/02/13</td>
<td>Rudi Hoetjes</td>
<td>Regional Manager, Fish &amp; Game (Northland)</td>
</tr>
<tr>
<td></td>
<td>27/02/13</td>
<td>Nathan Burkepile</td>
<td>Field Officer, Fish &amp; Game (Northland)</td>
</tr>
<tr>
<td></td>
<td>19/03/13</td>
<td>Carl Cooper</td>
<td>Dargaville Biosecurity Officer, Northland Regional Council</td>
</tr>
<tr>
<td></td>
<td>19/03/13</td>
<td>Dominique Scott</td>
<td>Member, Kerikeri Gameshooters Club</td>
</tr>
<tr>
<td></td>
<td>22/03/13</td>
<td>Chris Bindon</td>
<td>Member, Ducks Unlimited New Zealand</td>
</tr>
<tr>
<td></td>
<td>17/04/13</td>
<td>Ian Hogarth</td>
<td>Ex-Department of Conservation, (Northland)</td>
</tr>
<tr>
<td>Case Study</td>
<td>Date</td>
<td>Name</td>
<td>Title/Descriptor, Organisation</td>
</tr>
<tr>
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<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>15/01/13</td>
<td>Rob Pitkethley</td>
<td>Regional Manager, Fish &amp; Game (Eastern)</td>
</tr>
<tr>
<td></td>
<td>18/01/13</td>
<td>Dave Rowe</td>
<td>Freshwater ecologist</td>
</tr>
<tr>
<td></td>
<td>05/02/13</td>
<td>Neal Hawes</td>
<td>Member, Rotorua Anglers Association/ Councillor, Fish &amp; Game (Eastern)</td>
</tr>
<tr>
<td>Trout (Rotorua Lakes)</td>
<td>14/02/13</td>
<td>John Hamill</td>
<td>Fishing Guide, Cruise and Fish Rotorua</td>
</tr>
<tr>
<td></td>
<td>14/02/13</td>
<td>David Hamilton</td>
<td>Chair in Lakes Management and Restoration, Bay of Plenty Regional Council</td>
</tr>
<tr>
<td></td>
<td>11/03/13</td>
<td>Shane Grayling</td>
<td>Senior Biosecurity Officer, Bay of Plenty Regional Council</td>
</tr>
<tr>
<td></td>
<td>11/03/13</td>
<td>Hera Smith</td>
<td>Executive Officer, Te Arawa Lakes Trust</td>
</tr>
<tr>
<td></td>
<td>14/03/13</td>
<td>Brendon Christensen</td>
<td>Technical Advisor – Threats, Department of Conservation (East Coast Bay of Plenty Conservancy)</td>
</tr>
<tr>
<td></td>
<td>26/03/13</td>
<td>Phil Gates</td>
<td>Treasurer (Ex-president), Trout Unlimited New Zealand</td>
</tr>
<tr>
<td></td>
<td>22/04/13</td>
<td>Judy Gardner</td>
<td>Member, Royal Forest and Bird Protection Society (Rotorua)</td>
</tr>
</tbody>
</table>
I did not assume that the views of interviewees represented the ‘official’ view of their respective organisations. Indeed, I was often surprised by the divergence between the official views and those of interviewees. I did not specifically target the views of iwi (i.e. Māori ‘tribe’) as an environmental ‘group’ as this is beyond the scope of this thesis, though I did interview a representative from the Te Arawa Lakes Trust (Rotorua) and two local Tuhoe guides in Te Urewera. With regards to Tuhoe, in particular, I was wary of previous work by Coombes (2003, pp. 7-8). He found that overlap with jurisdictions or territories ‘presented a difficulty in identifying suitable interviewees’ writing that ‘there was concern from some claimants that I had been communicating with ‘the wrong people.’ It was evident [therefore] that there was no fair and practical means of sampling from the plurality of voices.

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<table>
<thead>
<tr>
<th>Case Study</th>
<th>Date</th>
<th>Name</th>
<th>Title/Descriptor, Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deer (Te Urewera)</td>
<td>4/02/13</td>
<td>Clyde Graf</td>
<td>Urewhera hunter/Anti-1080 activist</td>
</tr>
<tr>
<td></td>
<td>20/02/13</td>
<td>Maureen Coleman</td>
<td>Urewhera hunter, New Zealand Deerstalkers’ Association</td>
</tr>
<tr>
<td></td>
<td>22/02/13</td>
<td>Grant Vincent</td>
<td>Chairman, Royal Forest and Bird Protection Society (Gisborne)</td>
</tr>
<tr>
<td></td>
<td>22/02/13</td>
<td>Joe Doherty</td>
<td>Te Urewera Guide, Te Urewera Treks</td>
</tr>
<tr>
<td></td>
<td>1/03/13</td>
<td>Pete Shaw</td>
<td>Ex-Department of Conservation, (Northern Te Urewera)</td>
</tr>
<tr>
<td></td>
<td>8/04/13</td>
<td>Richard White</td>
<td>Te Urewera Guide, Ahurei Adventures</td>
</tr>
<tr>
<td></td>
<td>10/04/13</td>
<td>Andrew Glaser</td>
<td>Programme Manager Biodiversity – Northern Te Urewera, Department of Conservation (Te Urewera Whirinaki Area Office)</td>
</tr>
<tr>
<td></td>
<td>15/04/13</td>
<td>John Sutton</td>
<td>Area Manager, Department of Conservation (Te Urewera Whirinaki Area Office)</td>
</tr>
<tr>
<td></td>
<td>3/05/13</td>
<td>Graham Nugent</td>
<td>Deer ecologist</td>
</tr>
<tr>
<td></td>
<td>22/05/13</td>
<td>Shona Myers</td>
<td>Secretary (Ex-president), New Zealand Ecological Society</td>
</tr>
</tbody>
</table>
my interviewees. Participants from the same organisation often expressed contrary views, both of official policy and of their response to it. The views and personal histories of Interviewees were also often complex and did not always fit neatly into those that might be expected of them in the context of their organisational affiliations. In addition to these local representatives, I also interviewed national experts on each of the case study species who were also generally able to provide perspectives on local debates. As discussed in Chapter Two, I did not privilege the views of such experts and indeed am wary of the notion of expert knowledge in general (Koppl, 2010). I did not, however, dismiss the views of people who have often investigated issues related to these species for much longer than I and who do, at the least, provide useful contextual perspectives. That being said, the main focus of interviews remained on local representatives and ‘lay’ views.

All interviews were recorded using a Sanson Zoom H2 digital voice recorder (similar to Noor, 2008). This secured an accurate account of interview conversations and avoided unnecessarily losing information. Digital recordings of interviews were subsequently transcribed into written text format using NCH Express Scribe and an Infinity USB foot pedal. To ensure the reliability and confidentiality of interviews, I personally transcribed all interview recordings, typically within a week of the actual interview. The process of transcription offered a valuable opportunity to re-engage with the dialogue while it was still reasonably fresh in my mind. While full transcripts are not presented, quotations from transcripts appear throughout the thesis. In each chapter, quotations of each interviewee, where they are not referred to as such in the text, are immediately followed by the word ‘Interview’ to distinguish them from other sources. This is then followed by bracketed descriptors of the interviewee’s name, title (e.g. job description), the group with which they identify (e.g. Royal Forest and Bird Protection Society) or a descriptor if they are speaking unaffiliated (e.g. ‘deer expert’), and the month, day and year of the interview. A typical quotation thus appears as:

I don’t know. I mean I just don’t think they belong around here if you know what I mean
(Interview, John Smith, Biosecurity Officer, Taranaki Regional Council, December 12th 2013).

who claim authority…’ (Ibid., also see Hill, 2003). For these reasons, I do not claim that my interviews with iwi were ‘representative.’
I took a ‘broad’ approach to transcription (see Gee, 2011). Rather than noting down every linguistic element, such as pauses, sniffs, and coughs, I was more concerned with the overall argumentative or discursive strategy the interviewee was taking. This broad approach to transcription was suitable for this research because of the thesis’ broad focus of enquiry on the enactment of wider social discourses. Many micro-linguistic features were less relevant in this context and were only noted in transcripts where they were particularly instructive.

6.5.2 Observations

Observations were an important compliment to interviews and documentary sources (see below) and facilitated insights not gained from other methods. I conducted these ‘field’ observations in all case study areas. Observational fieldwork unearthed many additional textual sources which were often photographed for later analysis. Most notably these included exhibitory such as viewing tanks, cages, signage, public information talks, hunting and fishing equipment, and souvenirs (see Figures 1 and 2, for examples). I participated in and witnessed both hunting and fishing, and wildlife viewing opportunities specific to my case study species. The observational component of these encounters lay in noting people’s reactions to these species in naturalistic settings and their reaction to familiar presentations of them, such as through the medium of interpretive signage.
Figure 1: A taxidermied display of introduced ‘predators,’ Whangarei Museum, Northland.
Figure 2: Signage at a stream highlights the presence of ‘wild trout,’ Rainbow Springs Kiwi Wildlife Park, Rotorua.

This observational work was important because it allowed me to observe what people actually do as opposed to relying on what they say (Noor, 2008). It thus increased the reliability and validity of information collected from other sources. The apparent disjunction between the presentation of discourse and the physical manifestation of discourse can result from people deliberately deceiving the researcher, in addition to being unaware or unperceptive to potential discrepancies between thought and action (Kalof et al., 2008). Observations helped to illuminate these, not with the intention of establishing the truth – which is not the purpose of a constructionist appraisal – but with the view to determining the meaning of this discrepancy. Finally, observations provided the situational context for my research that would have been missing had I only obtained insights from remote interviews and de-contextualised textual sources (Gee, 2011). By being ‘in the field’ and witnessing what others witnessed I was able to get a better grasp on their perspectives and the physical drivers that facilitated them.
6.5.3 Documentary Research

Documentary searches sampled both primary and secondary documents. To clarify, primary documents are ‘original’ documents while secondary documents are those that analyse or interpret primary documents. The expectation in PhD-level research is typically to draw, in the main, from primary documents (Jacobs, Kemeny, & Manzi, 2003). However, the distinction between primary and secondary documents is often somewhat blurred in a constructionist analysis (see Kragh, 1987). This is because the discursive frames accessed in many secondary documents can also be interpreted as sources of primary material. Scientific discourse on introduced species, in particular, is most readily accessed by reference to scientific reports and journal articles that include literature reviews. The language and claims enumerated by scientific researchers in these ‘secondary’ documents often betray interests, assumptions and biases that are open to debate and deconstruction themselves (e.g. see Calhoun, Rojek, & Turner, 2005; Midgley, 2007) and should not be overlooked simply because they do not adhere to a rigorous primary-secondary dichotomy. Nevertheless, while I did draw on secondary documents, I used them mainly as a way of accessing and critiquing scientific discourse and did not take their ‘facts’ as established truths. In other words, I did not rely on secondary documents to tell the story for me but rather took them as primary access points through which to study the process of social construction.

Availability of documents can sometimes be an issue for researchers employing discourse analysis. For constructionists, challenges associated with availability are somewhat different from those of other scholars attempting ‘to resurrect some true state from the social world’ (Linders, 2008, p. 468). The main focus is on ensuring that the documents referred to reflect the full range of discourses on the topic studied or, at least, make clear where imbalances in discursive presentations exist. Constructionists accept that documents are always skewed in certain ways and that there is no such thing as a true or unbiased picture of anything. The challenge lies in ‘how to identify and incorporate the various untruths, half-truths, biases, omissions, inclusions, and mistakes that characterise…the documents that we work with…’ (Ibid., p. 476). I followed Linders’ advice to gather texts from multiple sources and to always question who presented the material, for what purpose, and under what constraints.
I focused on four document types: government policy communications, reports and memos; newspaper, newsletter, and magazine articles; educational and interpretive literature; and scientific journal articles. The analysis of government policy documents reflects the evolution of public sentiment towards introduced species and serves as a useful gauge of historical interpretations of their ‘place’ in the environment (see Hummel & Goedeke, 2005). They typically provide rationales that incorporate the prevailing perspective of the time. Research on government documents was targeted exclusively at my case study species and focused on records from the departments tasked with managing these, which are (or were in many cases) primarily the Department of Internal Affairs (Wildlife Branch), the New Zealand Wildlife Service, the Department of Tourist and Health Resorts, and the Department of Conservation.

Newspaper, newsletter, and magazine articles are useful access points for the typical rhetorical techniques that are used to convince special interest groups and the wider public of certain frames. I focused searches, again, on my case study species, but also sampled articles on introduced species in general. I drew mainly from local newsletters and magazines distributed to hunting and fishing enthusiasts (e.g. Fish & Game New Zealand) and from the same distributed to conservation organisations (e.g. Forest & Bird) and recreationalists (e.g. the FMC Bulletin) (see Table 3). Local newspaper articles focused on historical frames of presentation to the wider public wherein they are, ‘prime locations for identifying images of dominant and competing meanings’ (Linders, 2008, p. 483). These were focused exclusively on case study species.

Analysis of educational and interpretive literature centred on the examination of interpretive signage and websites relating to both my case study species and introduced species in general. Such ‘multimodal’ texts were useful sources of situated or context-specific meanings and were often composed of a variety of intertextual and interdiscursive ‘elements’ (see Gee, 2011, pp. 187-189). They thus offered good representations of typical themes. Lastly, scientific journals served as the primary access point for scientific discourse on case study species. I mainly referred to domestic literature from journals such as the New Zealand Journal of Ecology, Notornis, and the New Zealand Journal of Zoology (see Table 3). However, I also accessed international journals when New Zealand case-specific material was presented.
in them. Key discursive themes were progressively drawn from each of the texts through a process of coding (Neuendorf, 2002; Williamson, 2006; refer to Section 6.6 below).

**Table 3:** Principal sources for New Zealand magazine and newsletter articles and scientific journal articles (date range searched in brackets, generally the entire back catalogue).

<table>
<thead>
<tr>
<th>Magazines and Newsletters</th>
<th>Science Journals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest and Bird (1933-2012)</td>
<td>New Zealand Journal of Marine and Freshwater Research (1967-2012)</td>
</tr>
<tr>
<td>New Zealand Fishing and Shooting Gazette (1927-1956)</td>
<td>New Zealand Journal of Science and Technology (1918-1957)</td>
</tr>
<tr>
<td>New Zealand Life and Forest (1921-1929)</td>
<td>New Zealand Science Review (1942-2012)</td>
</tr>
</tbody>
</table>

In sampling documentary sources, I first employed the ‘anything you can lay your hands on’ strategy (Linders, 2008, p. 475). In other words, I worked to find as many sources within the document types specified. I then employed ‘targeted sampling,’ as opposed to ‘proportionate sampling,’ to narrow down the focus of enquiry. The generation of a targeted sample is more analytically demanding than working with a proportionate sample as it necessitates the need to select documents that bring the process of construction into clear relief (*Ibid.*, p. 476). I accomplished this by setting clear conceptual boundaries
around the material to be sampled. After thorough reading of documents I selected those that most clearly encapsulated the prevailing discursive themes in that literature. I was aware, nevertheless, of the extent to which analysis of documents tends to favour the interpretations of dominant social groups that disseminate their views through such avenues. Marginalised discourses may either be weakly represented or not present at all. Therefore, where alternative discourses were gleaned – even if they were not particularly prevalent – I felt it was methodologically justifiable to highlight these and subject them to more analysis than might be justified from a quantitative perspective (Ibid., pp. 477-478). However, I noted in the text where marginal discourses were afforded proportionately more analytical weight than was evident in the texts studied (see Section 6.6).

Most documents for case study work were sourced and analysed between October 2012 and June 2013. Newspaper articles were sourced from digitised archived collections stored at the National Library of New Zealand. More contemporary articles (approx. 2004 onward) were often able to be sampled using Google as a search engine. Additional newspaper articles were found during archive searches (see below). Newsletter and magazine articles were sampled through archive repositories such as Index New Zealand and by searching hard copies stored at the University of Auckland Library, the Auckland Central City Library and the National Library (Wellington). Scientific journals were mostly accessed using SCOPUS. Where not digitised, hard copies were accessed through the University of Auckland Library and the National Library (Wellington). Government communications were sampled during visits to Archives New Zealand in Auckland and Wellington. Some government reports were also available online through, for example, the Department of Conservation’s website. Interpretive signage was photographed for analysis during field visits to case study areas (see Section 6.5.2). In terms of limitations, I followed Linder’s (2008, p. 476) advice which is widely accepted as a general ‘rule of thumb’ in constructionist research: ‘we have enough data when we learn nothing new by adding additional items.’ This approach is referred to as sampling to ‘saturation’ (DiCicco-Bloom & Crabtree, 2006).

6.6 Analysis of ‘texts’

I followed many other discourse analysts in taking a broad view of texts that includes not only written but also visual and audio-visual materials (e.g. Bax, 2011; Gee, 2011; Jun, 2006). I adopted David and
Sutton’s (2004, p. 117) definition of text as ‘any form of meaning-laden objects that the researcher can collect for the purposes of analysis.’ ‘Text’ in this thesis therefore included information from a wide variety of sources, including interview transcripts, the wording of interpretive signage, reports, and scientific papers. I assumed that the meaning of the text is not transparent and that documents do not ‘speak for themselves’ (Linders, 2008). I took it, rather, that as texts are reread in different contexts they are given new meanings that are sometimes even contradictory. Therefore, there is no ‘true’ meaning outside the specific historical context in which it is read. Meaning is determined, and is the responsibility, of the reader. I also acknowledge that texts are communicated to serve purposes; never as neutral, unadorned reflections of reality (Vitalis, 2006). Whether they are communicated from first-hand experience or secondary sources; solicited or unsolicited; edited or unedited; anonymous or signed; or within ‘official’ channels or otherwise; texts are always furthering a particular agenda or interpretive constellation, and are presented with particular audiences in mind (Best, 2001; Linders, 2008). My task, therefore, was to critique and deconstruct texts to access their underlying discourses rather than take them at face value (Kikooma, 2010).

A central component of analysis in this thesis was the process of coding which I undertook using N-Vivo, a dedicated qualitative analysis software package (see Fischer & Marshall, 2010; Kikooma, 2010). Defined broadly as the process of assigning a code to something for the purposes of classification or identification, coding was the principle means of information ‘reduction’ and delineation of themes (David & Sutton, 2004; Ryan & Bernard, 2000). Coding in discourse analysis is,

...more than simply a mechanical procedure that precedes analysis proper. It is guided by constructionist sensitivities and assumptions about language, interaction, and society and by theoretical underpinnings and research questions (Nikander, 2008, p. 55).

Qualitative coding is also distinct from quantitative in the sense that it is not about simply counting instances of a particular word, phrase or response. Counting, in fact, is a peripheral activity in qualitative coding (Kikooma, 2010). The interpretation of coding in discourse analysis can similarly be distinguished from the interpretation of coding in content analysis. Content analysis is more similar to quantitative coding in that the incidence of words of phrases is treated as a primary focus of analysis (see Section
6.3.1). Discourse analysis, in contrast, is not content with the interpretation of such surface characteristics, being more interested in in-depth exploration. Discourse analysts are more apt to emphasise the singular, and the analysis of one phrase or text may be given more weighting than its numerical incidence (i.e. generalizability) might suggest (David & Sutton, 2004).

Texts were deconstructed to identify their underlining discursive themes via a process of coding ‘thematic units’ (Ryan & Bernard, 2000, p. 780). In doing so, I followed the lead of other constructionist researchers working on environmental issues (e.g. see Jerolmack, 2008; Scarce, 1997). I followed a process of coding informed by Williamson (2006) and others (see Huberman & Miles, 2002). Williamson detailed five steps in the process of textual coding. Firstly, information is transcribed into digital form. Secondly, transcripts are read and reread to immerse the researcher in their content. I undertook this exercise in phases, typically first reading for variation in the text and striking segments, then reading for themes and patterns (also see Nikander, 2008). Thirdly, passages of text that reflect similar ideas are labelled and categorised. I carried out this process using N-Vivo. Fourthly, categories are conceptually organised. This process was also undertaken using N-Vivo. Finally, emerging themes are developed and defined in preparation for ‘writing up’ (see Ryan & Bernard, 2000, p. 780).

6.7 Conclusion

When considering the place of introduced species in New Zealand, qualitative research is often required but has frequently been lacking or overshadowed by quantitative contributions in the literature. In this thesis I argue that a discursive constructionist approach to discourse analysis is a useful qualitative means of accessing reconciliatory discourse on introduced species. My empirical work provided the necessary depth and context by ‘triangulating’ information collected from specific local case areas through semi-structured interviews, observations and documentary research. I followed Flyvbjerg (2006) and others in suggesting that the use of ‘negative’ case studies is one of the best ways of uncovering tacit assumptions and revising core understandings. I therefore focused on introduced ‘game’ species that do not fit the common understanding of introduced species in New Zealand. This approach is consistent with many other biopolitical studies that tend to focus on the analysis of the abnormal and the unusual. I have
explored the ethical ramifications of following clear, emancipatory objectives while outlining the steps I have taken to ensure that fairness and respect are maintained.

As I have argued throughout this chapter, a focus on the construction and perpetuation of discourse provides a powerful medium through which to challenge dominant understandings of introduced species and to identify fruitful avenues for future dialogue. Although I acknowledge that people are limited by the discursive resources of their time and context, I do not assume that discourses are reified or unchangeable. Rather, I suggest that dominant constructions are able to be resisted, modified and reworked. I make it clear that I do not take an ‘objective’ approach to this research and, indeed, take notions of objectivity to be illusory. I do not describe the ‘reality’ of introduced species in New Zealand through discourse. Instead, in interpreting discourse, I create new understandings of introduced species that call upon my own personal background and research as well as those that I have researched. This very specific research contribution is valuable because, among other reasons, it does not take the standing assumptions about introduced species as a given. As such, my research is able to uncover the underlying meanings behind the construction of introduced species, why they might thus resist change, and how new understandings might need to offer new intersubjectivities or other complex ways of seeing if they are to offer serviceable alternatives to current perceptions.
Chapter Seven: The Importance of the Death Function to New Zealand’s National Identity and Economy

7.1 Introduction

In Chapter Five, I emphasised some of the consistencies in the way that nature has been interpreted and managed in New Zealand, particularly since the arrival of Europeans. I noted that, although attitudes to introduced and native species reversed in the late 19th century, the notion that certain species are crucial to the national identity and economy of New Zealand has persisted. Species that do not contribute to the above are constructed as impediments which New Zealanders are tasked with the ‘responsibility’ of removing. In the tradition of biopolitical scholarship, I focus this chapter on demonstrating some of the consequences of this enduring rhetoric of responsibility, both showing and contesting the ways in which the current sense of duty to native populations obscures the ‘necessary’ death of countless introduced individuals. In Section 7.2, I ground the construction of a human responsibility to nature in New Zealand in the ongoing distinction between nature and culture. Therein, I argue that the human disengagement from nature remains as stark as ever. Relying on a narrow interpretation of restoration that lionises the importance of pre-human biotic assemblages, conservation discourses in New Zealand promote human belonging primarily on the basis of an ability to actively return environments to prior states.

In Sections 7.2.1 and 7.2.2, I suggest that New Zealanders reconcile their own place or role in the country through two functions: firstly, as biological ‘archivists’ and, secondly, as ‘moral predators.’ An ‘archival’ role for humanity again relies on an interpretation of restoration that emphasises the importance of the pre-human state. Discourses of orderliness suggest that every species has a place in the world to which it ‘belongs’ or ‘fits’ and that that place is defined primarily by its pre-human range. Humans have upset nature’s balance by introducing species outside of these prescribed areas. The role of the archivist, therefore, is to ensure that each species is returned to its ‘place.’ Importantly, this frame deliberately suppresses the potential for any responsibility to be considered for the lives of introduced
individuals. The lives of introduced species are further devalued by the concurrent role of humans as ‘moral predators,’ tasked with suppressing and eliminating the lives that do not belong. The importance of moral predation is reinforced by the notion that *not* killing is somehow amoral or defeatist. Because killing introduced species to save native species has been such a central feature of conservation in New Zealand since the late 19th century, killing is now recognised as being almost synonymous with conservation, and even with New Zealand cultural life in general. In Section 7.2.3, I show how the widespread use of war metaphors works to further validate the role of moral predation. Although cognisant of the skewed and generally inaccurate nature of war metaphors when applied to understanding the agency of introduced species, they are applied nevertheless as a ‘means to an end.’ The necessity of death, integral to biopolitical governance, is thus shrouded in a rhetoric of ongoing ‘crisis’ that demands the immediate removal of the ‘guilty’ and the ‘inferior’ and the obfuscation of other interpretations of those species tasked with bearing the brunt of this biosecurity mantra.

Finally, in Section 7.3, I show that under increasingly neoliberal conceptions of conservation, emphases shift from morality to cost-benefit calculations, and from nurturing life in its totality to maximising only those lives that support economic growth (Fletcher, 2010). While native and valued introduced game species support important industries that are widely acknowledged, the industries fostering the destruction of introduced ‘pests’ are rarely recognised as such. Furthermore, the economic importance of these industries naturally frustrates arguments for reconciliation as their disassembly would constitute significant financial losses for those involved. I show how war metaphors and other forms of conservation rhetoric work not only to legitimise the work of killing, but also to translate these deaths into business opportunities (Timms, 2011). Again, the removal of pests is constructed as a ‘responsibility’ to which all ‘right-thinking’ people should subscribe. This construction obscures the fact that those tasked with volunteering to take up this responsibility often do so to their economic benefit. These benefits, moreover, make it difficult to consider alternatives to killing as they would threaten many now well-established industries. When considered alongside the importance of killing to the New Zealand national identity, highlighting the economic importance of death only underlines the potential difficulties in furthering the reconciliation of many introduced species.
7.2 Are humans a part of nature?

As I discussed in Chapter Four, the dualistic distinction between nature and culture has long been the focus of scholarly debate (Gu, 2009). The overarching consensus from these discussions is that rigid delineations between nature and humanity are inadequate (Coombes et al., 2011). Constructions of ‘nature-culture’ are thus fated to constant hybridity and contestation (Haraway, 2008). Nevertheless, in spite of such broad agreement, the distinction between nature and culture remains central to western environmental discourses, partially because it promotes some longstanding and desired beliefs about nature (Chew, 2011). For example, many have commented on the extent to which this division agreeably perpetuates longstanding religious beliefs that position humans as ‘shepherds’ or ‘guardians’ of nature who nevertheless stand forever outside of natural processes (Marris, 2011; Sagoff, 2013). Also highlighted is the way in which this division promotes the necessity of ‘experts’ schooled in differentiating natural and human-influenced processes and determining the values of each (van Dooren, 2008). In addition, discussions within the biopolitical literature challenge the capitalist logic that nature must be constructed as a set of external commodities for the use of humans (Hudson, 2011). The frame of biopower helps to dispute ‘the preservationist logic that nature is an inherently valuable external realm that must be protected by humans from humans’ (Biermann & Mansfield, 2014, p. 260). As Biermann and Mansfield noted, the lens of biopolitics invites a series of new questions for the ways in which distinctions between humans and non-humans are made meaningful.

As elsewhere, the human relationship with nature in New Zealand remains complex and fraught with contradiction. With the reputed decline in preservationist thinking and concurrent rise in conservationist discourses based on the concept of ‘wise use’ (but see Chapter 5), there is an expectation of an increasing intimacy with nature (McLeod, 2004). A place for humans to exist within nature is progressively conceptualised. This is highlighted in the academic literature with the rise in interest for new disciplines such as human ecology and environmental history (Perley, 2003). New Zealand ecologists such as Park (2000, p. 34) advocated for a ‘visceral’ re-engagement with nature that includes ‘residency in it.’ This was reflected in comments made by many interviewees in this research (e.g. Dominique Scott, Member, Kerikeri Gameshooters Club, March 19th 2013; Joe Doherty, Te Urewera Guide, Te Urewera Treks,
February 27th 2013; John Sutton, Area Manager, Department of Conservation (Te Urewera Whirinaki Area Office), April 15th 2013). As Phil Gates (Interview, Treasurer (Ex-president), Trout Unlimited New Zealand, March 26th 2013) argued, ‘I see it as all one – that we are part of nature.’ However, such inclusive views are far from universal and discourses on nature in New Zealand remain convoluted and frequently conflicted. As Nathan Burkepile (Interview, Field Officer, Fish & Game (Northland), February 27th 2013) aptly concluded: ‘We never really solved our place in the world and in nature.’ In this section I argue that, far from seeing themselves as a part of the natural world, most New Zealanders continue to feel disconnected from nature.

During interviews, those who continued to consider humans to be outside of nature remained in the majority. As Joe Doherty (Te Urewera Guide, Te Urewera Treks, February 27th 2013) reflected: ‘We tend to stand apart [from nature] and observe nature and in a lot of instances we do so by excluding ourselves from the picture.’ Moreover, even those who considered humans to be within nature provided answers that indicated reservations, ambiguity and indecision. Although John Sutton (Interview, Area Manager, Department of Conservation (Te Urewera Whirinaki Area Office), April 15th 2013) and Nathan Burkepile (Interview, Field Officer, Fish & Game (Northland), February 27th 2013), for instance, professed to view humans as part of nature they both also used a language of exclusion, describing humans as ‘intervening’ in nature. For Burkepile, ‘man-made’ wetlands were ‘artificial’ (Ibid.). Indeed, the view that humans are not a part of nature in New Zealand remains widespread. A recent article in Forest & Bird on offshore islands in New Zealand was entitled simply: ‘No Place for Humans’ (Skinner, 2011, p. 51). Nature continues to be seen as outside of humanity and to therefore be met with ‘as far as possible on her own terms’ (Potton, 2002, p. 13).

For many, New Zealand remains rooted in a puritanical and preservationist ideal, dictating that both humans and human introductions should be divorced from nature and that the ideal environment is one that ensures just that (Eggleston et al., 2003; S. M. Pawson, Ecroyd, Seaton, Shaw, & Brockerhoff, 2010; D. Young, 2004). New Zealand’s National Parks legislation, for example, continues to present nature as an entity unambiguously divorced from people. As the General Policy for National Parks (2005) states: ‘National Parks provide opportunities to learn about nature and about people’s association with nature’
The key ‘lesson’ is that ‘human interference, modification and control’ of nature ‘should be minimal’ with ‘enjoyment of them…on nature’s terms’ (Ibid., p. 9). Humans, by definition, are excluded from nature. The ‘natural state’ is one ‘unmodified by human activity’ (Ibid., p. 66). In case the human exclusion from nature is not made clear enough in the policy, humans are even excepted from the animal kingdom. The definition of ‘animal’ in the policy supports the biblical interpretation, including ‘any mammal, bird, reptile, amphibian, fish (including shellfish), or related organism, insect, crustacean, or organism of any kind; but does not include a human being’ (Ibid., p. 60, emphasis mine).

New Zealand continues to be described as a repository of ancient pre-human nature that should be preserved as far as possible as such or, where necessary, restored to such a state (see Gibbs, 2006; Vallance & Morris, 2009). That introduced species now reside in such places and have done so sometimes for hundreds of years is seen as an inconvenient accident of history to be ‘rectified’ almost regardless of the cost (e.g. see Toki, 2012a). However, this reading ignores the histories of introduced species themselves, their relationships with local people, and their continuing ecological interactions that shape and characterise much of the present biological landscape (see Chapter 4). It also ignores the interdependence of colonising people and the biota they invariably bring with them (Crosby, 1986). For example, although New Zealand was one of the last landmasses to be settled in the world and has been settled for a shorter duration than most, it was settled during a time when humans had the greatest effect on their environments in history. Thus the scale of environmental change is almost necessarily disproportionate to the duration of settlement, but this is only rarely acknowledged. Instead, there is the continuing sense that humans should not be in natural New Zealand, that everything they do only taints and ruins the environment, and that this is a place for non-human nature almost exclusively.

The overarching consequence of this disengagement with nature is the need to find ways of re-engaging or, at the least, supporting from outside the goodness within. Environmental discourses in New Zealand have cast humans as negative agents that typically perpetuate harm to nature. They therefore provide few ways for humans to interact positively with nature, short of disengaging. In response, I suggest that humans have reconciled their own role in nature via two enduring tropes. Firstly, humans have constructed a role in New Zealand as ecological ‘archivists’ who ensure that each of the pieces of pre-
human nature are returned to their rightful places (Yusoff, 2010). This involves nurturing and re-introducing native species to the natural ranges to which they belong. Equally important, however, is the need to suppress and eliminate the lives that do not belong. This represents humans’ role in New Zealand as ‘moral predators’ (McLeod, 2004). Together, these roles ensure that humans have a place, if not within nature, then at least as enduring ‘managers’ or ‘guardians’ of nature. As I will demonstrate, the importance of these roles, in relation to this thesis, lies in the ways in which they legitimise and perpetuate the ongoing construction of introduced species as ‘bare life.’

7.2.1 Humans as ‘archivists’

‘A place for everything and everything in its place’ is a popular aphorism that, according to the Oxford Book of Quotations (Smyth, 1941), dates from the 17th century. It portrays the notion that everything should have a place to be stored and to which it should be neatly returned when not in use. The saying was particularly common during the Victorian era and was a matter of fact for most colonial New Zealanders. An article in the Auckland Star, for example, taught readers that ‘we have all our own places in creation and are only safe when we are keeping them. It is so with men, it is so with animals’ (Anon, 1893a, p. 3). In the same year, an illustration in an issue of the Ashburton Guardian (Anon, 1893b) entitled ‘A Place for Everything and Everything in its Place’ showed a workbench with an assemblage of tools neatly assembled in their various allotted compartments (see Figure 3). The Victorian ideal was one of neatness, cleanliness and order, and this applied as reliably to people, as it did to animals and other potentially useful things. Most contentiously, women had their place. This was, according to an article entitled ‘How to Educate a Wife’ (Anon, 1904a, p. 4), in the home, where they might enjoy ‘the art of wholesome, appetising cookery.’ The subordinate place of certain ‘races’ was also widely recognised: ‘The Yellow Peril is a yellow animal that lives in China, and if one is bitten by it certain death follows’ (Anon, 1904c, p. 5).
Figure 3: Illustration entitled ‘A Place for Everything and Everything in its Place,’ Ashburton Guardian, June, 1893.

Over the course of the 20th century and since, suggestions as to the supposed ‘natural’ place of many things has been challenged. As a consequence, the supposed rationality of keeping women and ‘races’ in their place, for instance, has been comprehensively discredited (see Newman, 2012). However, while such rigid notions of place may now appear inadequate to contemporary readers, I argue in this section that notions of neatness and God-given order have persisted in New Zealand well beyond the Victorian era, most notably in attitudes towards introduced species.

According to many biopolitical theorists, restoration, like many other aspects of biological science, has extended notions of orderliness to life in its totality (Shukin, 2009). Rather than connecting with nature, New Zealand conservationists, in particular, have instead taken on a role as the ‘archivists’ of nature (see Yusoff, 2010). Their duty therein is not only to sort the good from the bad, but also to ensure that the good is preserved for posterity. Unlike early New Zealand scientists who sought to retain specimens of declining species as museum pieces, contemporary scientists seek to preserve living vignettes ‘representative’ of previous ecosystems (Robbins, 2004). Through technologies of regulation and control, such as biodiversity censuses, ‘nonhuman nature is packaged neatly into discrete species – a designation that paves the way not only for conservation but also for commodification and capitalization’
(Biermann & Mansfield, 2014, p. 260; Youatt, 2008). As I will explain, discourses of orderliness, when paired with selective notions of ‘responsibility,’ challenge people to protect native nature, just as they insist that exotic nature be expelled from considerations of worth.

The modern science of ecology emerged in the late 19th century in the writings of Ernst Haeckel (Egerton, 2013). It fitted neatly into the Victorian’s orderly world. Just as the home is kept in order, so too is the natural world. An article in *New Zealand Outdoor* (Anon, 1962, p. 11) noted approvingly that the word ‘ecology’ comes from the Greek for ‘home.’ It is only fitting, then, that the science of ecology ‘is the study of how the household of nature is kept in order’ (*Ibid.*). Like the home, everything has a place where it belongs. Things that do not belong, such as pests, are correctly removed. As I noted in Chapter Four, many restorationist discourses in New Zealand have continued to perpetuate this belief. Each species is seen to have a place in the world to which it naturally ‘fits’ and wildlife management should be based around this simplistic interpretation of the world (e.g. see Meister & Wilson-Salt, 1993; Graeme, 2012).

During interviews I was struck with the near universal acceptance of this discourse of orderliness. Passing reflections such as, ‘Everything has its place, I guess’ (Dominique Scott, Member, Kerikeri Game Shooters Club, March 19th 2013) and ‘All species have their place in the wider world’ (Shona Myers, Secretary (Ex-president), New Zealand Ecological Society, May 22nd 2013) were common to most interviews. The apparent challenge for conservationists was summed up by Andrew Glaser (Programme Manager Biodiversity – Northern Te Urewera, Department of Conservation (Te Urewera Whirinaki Area Office), April 10th 2013). He commented that ‘everything has [its] natural place, I think, in the natural world’ and it is only ‘whether they fit into that environment [that] is the question.’ This sense of ‘fit’ was mirrored, matter-of-factly, in the response of Shane Grayling (Senior Biosecurity Officer, Bay of Plenty Regional Council, March 11th 2013) who felt that different species had natural roles and places, making the role of humans to judge ‘ones that fit and ones that don’t.’

One rather unflattering interpretation of many restorationist interpretations of nature is that they resemble a great biotic jigsaw puzzle into which each of the pieces/species fits when correctly aligned. Introduced possums, for example, do not fit into the puzzle in New Zealand but will rightly slot into Australia, where they are native. As Kean (1953, p. 4) noted, the possum is ‘a good Australian but a poor New Zealander.’
Although this may represent something of a caricature of restorationist discourses, an illustration in *Forest & Bird* depicts just such a puzzle with each of the pieces being a native species from the forest (see Figure 4) (A. Graeme, 2007). As Chris Bindon (Interview, Member, Ducks Unlimited New Zealand, March 22nd 2013) suggested, ‘We can put bits of the jigsaw back in’ to make a whole once again. At least partly as a consequence of this discourse, the role of conservationists in New Zealand tends to be presented as one of supporting the pieces that ‘naturally’ fit and excluding those that do not. Conservation in New Zealand is defined thus as the process of ‘defending, advocating and working for the special elements of nature that belong to these islands’ (Young, 2004, p. 10, emphasis mine). ‘Everything in its place’ is a powerful rhetorical tool in this way because, while being enormously exclusionary *at present*, it promises that everything does indeed have a place. The discourse suggests that nothing need be excluded once everything is returned to its proper abode. It thus offers an Edenic vision of the future in which everything is returned to its place and can reside there in peace, without the ‘assistance’ of humanity.
The pest problems in our forests are real and urgent, but they’re not always that easy to see. Degradation sets in tone and the loss of native species is almost imperceptible. The forests are being stripped down and simplified.

The birds notice. They notice the lack of flowers and fruit, so do the unnamed and un-nurtured invertebrates which depend on others. The habitats that have been made open and dry to the berries that no longer hide the forest floor or are eaten by deer. The native plant species that are now rare or have become locally extinct.

Yet we grow accustomed to the loss of complexity. Early European explorers complained of fighting their way through dense jungle and of battling through green walls of vines and creepers. Now many forests are more like parks with open vistas, carpets of unpalatable crowns ferns and groves of silver tree ferns – too poisonous for deer to eat.

Next time you walk in your forest, look again. Look at the seedlings and the saplings. Look at the epiphytes and the tumbling ferns. What do you remember? What is missing? What is different now?

Figure 4: Illustration showing species of native plant as pieces in a native forest puzzle, *Forest & Bird*, August, 2007.
The notion that everything has a place invites people to see themselves not as guardians of nature *per se*, but as guardians of the ‘right’ kind of nature, specifically native nature. This is positioned in the frame of an ‘obligation’ or ‘responsibility,’ as typified in comments by Chris Bindon (Interview, Member, Ducks Unlimited New Zealand, March 22\textsuperscript{nd} 2013):

\ldots it's our forebears’ actions that have brought them [i.e. natives] to the point where they're no longer there. So we virtually have a duty and an obligation […] Don't we have some obligation to garden or to look after those plants that were here for countless hundreds of millions of years?

What is notable, however, is that this frame is entirely *population* focused. It does not suggest, for example, that the 70 million possums in New Zealand should be returned to Australia, where they will be granted immunity. It suggests that the possum *species* will be immune in Australia. Any unfortunate *individuals* that happen to live in New Zealand will ideally be decimated. Therefore, while the frame appears reasonable in allowing each species a place, it affords no such obligation to individuals that do not, by coincidence of history, fall within that ‘legitimate’ border. Individual lives are thus subsumed into a population discourse that insists that they are dispensable and, in fact, that their deaths may be ‘necessary’ for the common good (Foucault, 2003 [1976]).

As one commentator suggested, all ‘\ldots intelligent, thoughtful men now believe that other species [i.e. non-human species] *in their own lands* have a right to exist and to a place to live in’ (Editor, 1969a, p. 3, emphasis mine). However, any species not found in their native ranges are conspicuously left absent from such ‘responsibility.’ In New Zealand, this delegitimises a substantial component of the wild introduced biota which are seen to have their natural place elsewhere, in the countries, ironically, from which they were forcefully taken. Rather than expressing compassion for species that have been taken from their supposed rightful place, discourses of restoration in New Zealand position these species as impediments to native species. Natives are seen to have a rightful monopoly on sympathy because introduced species ‘belong’ elsewhere, regardless of the human agency that has brought them to this predicament. Indeed, consideration for many introduced species, where it is proffered, generally offers merely the hope of a humane death. As Loague (1993, p. 255) suggested in the *New Zealand Journal of*
Zoology, ‘Yes, the animal pests must be controlled, but every effort must be made to find the method that is most humane and appropriate for the species and the situation.’ Death *per se* is thus removed from the ethical calculation.

Shona Myers (Interview, Secretary (Ex-president), New Zealand Ecological Society, May 22\textsuperscript{nd} 2013) argued that ‘in the New Zealand context, the responsibility we have is for the genetic diversity of the indigenous ecosystems, and species that are part of that.’ Again, however, the framing of an ‘obligation’ or ‘responsibility’ is very specific. It is an obligation not to *native individuals*, nor *introduced individuals*, nor *introduced species*, but only to *native species*. It is a responsibility to ‘our ecosystem’ (Interview, Member, Judy Gardner, Royal Forest and Bird Protection Society (Rotorua), April 22\textsuperscript{nd} 2013), with ‘our’ being interpreted as an idealised pre-human native ecosystem (see Chapter 5). Nathan Burkepile (Interview, Field Officer, Fish & Game (Northland), February 27\textsuperscript{th} 2013) similarly returned to the Victorian metaphor of an orderly household, commenting that it is ‘our home and we should take care of it,’ but, again, this ‘home’ is interpreted as a native New Zealand environment wherein introduced species mostly assume the role of vermin. As Shona Myers (Secretary (Ex-president), New Zealand Ecological Society, May 22\textsuperscript{nd} 2013) retorted when asked who has the ‘responsibility’ for caring for introduced species: ‘Why should we in New Zealand?’ Chris Bindon (Member, Ducks Unlimited New Zealand, March 22\textsuperscript{nd} 2013) was similarly defensive: ‘Why would [the Royal Forest and Bird Protection Society] even go down there when there’s so much more that they need to do for those that do belong here versus those that come from somewhere else?’

To reiterate, ‘everything in its place’ appears a ‘fair’ and ‘reasonable’ frame because *no population* is excluded from a place in the world. The consequence of this positioning lies in its tacit denigration of any individual that does not have a long evolutionary history in its current abode. People are invited to feel well of themselves for taking up a ‘responsibility’ for defending native species. Having caused the decline of many native species, people can rectify this perceived injustice by defending the remainder. Introduced species are forced to accept the negative consequences of this positioning because they are not where they ‘should’ be. Although people might just as easily accept a ‘responsibility’ to introduced species for having transported them, against their will, to places in which they ostensibly do not belong, instead any
such responsibility is cast as falling solely with native species (Potts, 2009). The overarching consequence of these responsibilised discourses of orderliness in relation to nature in New Zealand is the removal and denigration of introduced species, despite the fact that they are just as ‘guiltless’ as their native counterparts.

7.2.2 Humans as ‘moral predators’

In addition to an archival role, restorationist discourses define a place for humans in New Zealand as ‘moral predators’ (McLeod, 2004). The moral predator discourse constructs a place for humans in nature as that of compassionate killers, removing surplus lives to allow valued lives to prosper. It suggests that humans are necessary to prevent suffering and that this is enacted through the killing of introduced species. Just as native predators are seen as necessary to maintain healthy populations of native species (see Chapter 5), moral predators are needed to maintain healthy populations of useful introduced species, as well as a healthy relationship between native species and introduced (M. Bellingham, 1990; Maclaren, 2011). Many introduced species, for example, are seen to lack a predator, a role that should be taken up by humans (Speedy, 2003). This ‘predation pressure’ is seen as necessary to keep prey populations in balance with their habitat (Napp, 2005). Without human ‘predation’ on species such as possums and stoats, for instance, the environment may change disadvantageously (Interview, Maureen Coleman, Urewera hunter, New Zealand Deerstalkers’ Association, February 20th 2013). At best, the moral predator can be seen as superior even to native predators because it has the capacity to be both ‘selective’ and ‘humane’ (Ibid.). While nature is ‘red in tooth and claw,’ killing indiscriminately, humans have the capacity to intelligently choose who it is that must die and to remove those impediments as painlessly as practicable (Interview, Warwick Massey, Member, Royal Forest and Bird Protection Society (Mid North), January 16th 2013).

Killing for the moral predator is framed as ‘unpleasant but necessary.’ Those who do not kill can be seen as having shirked their ‘responsibility’ to nature. Indeed, during interviews, alternatives to killing were presented as amoral or defeatist. The appropriate ethical position on introduced species was taken to be one that accepted that their deaths are necessary. Any suggestion that introduced species should not be killed, in contrast, was taken as a morally inappropriate position. In fact, any suggestion that introduced
species might not need to be killed was often aggressively countered in interviews. Dominique Scott (Interview, Member, Kerikeri Gameshooters Club, March 19^th^ 2013), for example, asked, ‘So the answer is don’t care? Do whatever?!’ She positioned the acceptance of introduced species as amoral and careless. Judy Gardner (Interview, Member, Royal Forest and Bird Protection Society (Rotorua), April 22^nd^ 2013) offered a similar response: ‘I don’t have a gut feeling that we should just sit back and relax and let everything go…’ Ian Hogarth, alternatively, portrayed an acceptance of introduced species as defeatist:

> I think it’s in the Kiwi nature isn’t it? That we’re going to fight for our original species and we’re going to fight a long fight. And it’s going to cost a lot of money. And I think that’s probably in the Kiwi psyche to do that. We don’t want to give up (Interview, Ian Hogarth, Ex-Department of Conservation (Northland), April 17^th^ 2013).

Acceptance of introduced species was thus a position for losers who had ‘given up’ on ‘their’ native species. Again, this rhetoric positions native species in an unwitting alliance with ‘Kiwis,’ an opposite construction to that of colonial New Zealanders (see Chapter 5). It also assumes that ‘responsibility’ lies exclusively with native species. The lives of any introduced species not currently deemed useful are treated as surplus to requirements and any counter suggestions are quashed. The appropriate ethical frame is to consider only the lives of native species, meaning that introduced species can be unproblematically erased.

Rather than constructing the act of killing as problematic, concerns are shifted to what would happen if killing were not enacted. For Shane Grayling (Interview, Senior Biosecurity Officer, Bay of Plenty Regional Council, March 11^th^ 2013), ‘…it’s not pretty, but the alternative could be much worse’. As discussed in Chapter Four, a typical argument is that if introduced pests do not die then they will take over and form monocultures: ‘…there’s a tonne of [introduced] plants out there that if we let go they’ll change landscapes and there’ll be nothing. I mean we’re talking monospecies…’ (Ibid.). Although the notion that ecosystems dominated by introduced species are less diverse than native-dominated ecosystems has been widely disproven (Sax et al., 2007), it remains a common belief. Grant Vincent
(Interview, Chairman, Royal Forest and Bird Protection Society (Gisborne), February 22\textsuperscript{nd} 2013), for example, observed that,

...if I hadn’t got in there and been hired by this guy in 20, 30 years that bush would be totally different. It would be full of privet. It would be full of false acacia. It would be full of loquat trees. It would be full of hawthorn trees. It would be full of old man’s beard. So there’s a whole thing of, yes, we need to kill all these things.

Similarly, if introduced contorta pines (\textit{Pinus contorta}) are not killed then the forest will become ‘that thick you couldn’t even walk through it’ (John Sutton, Interview, Area Manager, Department of Conservation (Te Urewera Whirinaki Area Office), April 15\textsuperscript{th} 2013). If crack willows (\textit{Salix fragilis}) are not removed they will ‘take over completely’ (Rodway, 2010, p. 85). Just as introduced pests must be killed to save native species, introduced game must also be killed, sometimes for their own good. Carl Cooper (Interview, Dargaville Biosecurity Officer, Northland Regional Council, March 15\textsuperscript{th} 2013), for instance, suggested that mallard ducks needed to be shot during the game season because if they are not then they will starve over winter. The same position is typically held for deer and trout (e.g. see Moller & Hamilton, 1999; Speedy, 1997). If they are not ‘harvested’ then they will reduce in size at best, and starve at worst; hence the important role of the moral predator in selectively culling the ‘flock.’

According to Stevenson (2012), this murderous logic is one of the outstanding features of biopolitical governance. While emphasising the protection of the innocent, biosecurity actively eliminates the ‘guilty’ and ‘inferior’ in support of certain conceptions of valuable life (Anderson, 2011). Cupples (2012) reflected that biosecurity is not about expelling death itself, but about deciding which life is promoted and which is left to die. The task, therefore, is not to identify the means through which death is presented as necessary, but to identify why \textit{this} death in particular is considered necessary (Evans, 2010). Below, I argue that the death of certain introduced species in New Zealand has become central to the national identity. Indeed, the process of killing many species has become integral to how New Zealanders frame their role in the environment.

In many respects, the control of weeds and pests in New Zealand has become a feature of everyday life. Owing to the protracted nature of many campaigns, particularly against mammals (see Chapter 5), many
New Zealanders have grown up knowing pest control as the ‘reality’ of conservation. Those who do not ‘realise’ that killing is necessary therefore, are often presented as ‘simple minded’ (Brown, 2003, p. 7). In fact, according to Brown, alternatives to killing represent only the ‘hard-core, peace and love vegan who thinks everything can progress swimmingly in ‘conservation’ without the need to kill lots and lots of animals’ (*Ibid.*). For Andrew Glaser (Interview, Programme Manager Biodiversity – Northern Te Urewera, Department of Conservation (Te Urewera Whirinaki Area Office), April 10th 2013), conservation in New Zealand is thus fundamentally ‘about killing things.’ A ‘hard line’ or ‘cutthroat’ approach is not merely optional but rather central to conservation in these islands (Interviews, Pete Shaw, ex-Department of Conservation (Northern Te Urewera), March 1st 2013; Shane Grayling, Senior Biosecurity Officer, Bay of Plenty Regional Council, February 11th 2013).

For many New Zealanders, killing introduced species is now an important part of their culture and a way of expressing their national identity. Many interviewees spoke of their early memories of killing introduced species, whether game or pests, and pest management has been an important source of work for generations (see Section 7.3). For example, most of the early New Zealand Wildlife Service* employees began their careers as deer cullers (Galbreath, 1993), and a background in hunting or pest control is common to most Department of Conservation staff today. Killing introduced species is a way of directly interacting with ecosystems in New Zealand in order to make them ‘healthier.’ It is a way of physically shaping the environment and expressing a Kiwi ‘can-do-attitude’ (W. Green, 2011, p. 36). Just as colonial Europeans physically changed the New Zealand environment by clearing native forests and wetlands and introducing novel species, the prescribed solution to modern environmental dilemmas is also a ‘hands-on’ one (Interview, Maureen Coleman, Urewera hunter, New Zealand Deerstalkers’ Association, February 20th 2013). As Maureen Coleman expressed it:

…generally physically is the only way we can give something...So, physically doing something, now whether it means sort of, you know, putting a fence up to stop something getting in or whether it means, as you say, trapping the possums and that, I think that people are very ‘hands on.’ I think that’s probably maybe also a bit of a Kiwi thing, you know, Kiwi as

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87 Superseded by the Department of Conservation in 1987.
in New Zealanders type of thing. We’re generally pretty proactive and that sort of thing, rather than sort of stand back and just squeal when it all turns to custard. I guess we’ve probably done that too at times and then realised if we’d got off our bums beforehand we might have made a difference [...] Yeah, taking that little bit of ownership and responsibility for things and often, out there, physically is the only way you can do it.

Both hunting and conservation organisations subscribe to this pragmatic approach to the environment. The Royal Forest and Bird Protection Society and Fish and Game New Zealand, for example, are seen as similar:

...our members and license holders are the products of a culture and heritage built around the outdoors, that promotes the values of hard work, pragmatism, goodwill and collaboration. We expect to “get things done”…and are prepared to do what it takes (Cullinane, 2009, p. 28).

For many New Zealand males, in particular, killing introduced species is an important way of expressing their masculinity. This version of masculinity is epitomised in Barry Crump’s A Good Keen Man (1960), a celebrated book in New Zealand, which favoured characterisations of men as self-sufficient, rugged individualists. The book depicted deer cullers in the 1950s as a group of loveable, if eccentric, pragmatists who unsentimentally killed deer as a matter of course. The opposite of a ‘good keen man’ is variously illustrated in a later Crump work entitled Bastards I Have Met (1971). Male participants in my research were often at pains to suggest that they were well acquainted with killing introduced species and that it was not a task from which they shied away. John Sutton (Interview, Area Manager, Department of Conservation (Te Urewera Whirinaki Area Office), April 15th 2013), for example, made it clear that staff at the Department of Conservation were not afraid to kill introduced pests:

We kill things. We kill lots of things. Plants, animals…to achieve our outcomes we’ve gotta kill things [...] I use that terminology [i.e. killing] deliberately because a lot of people, I think, suffer a wee bit from the publicity our Department’s got over the years. We seem to have an ethos that we’re all contemplative, bearded, sandal-wearing passive people, but in actual fact you scratch the surface, like this office here, 80% of the people here are killers. If you
want something killed by bonging it on the head, trapping it, poisoning it, or shooting it, we’ve got more skill than anyone would believe.

Conservation was portrayed as an activity requiring cold rationality, devoid of any sense of sentimentality. This view was supported by other Department of Conservation staff and former staff. Pete Shaw (Interview, ex-Department of Conservation (Northern Te Urewera), March 1st 2013) offered a typical perspective:

Being waffly and sort of soft about the whole deal isn’t going to get you anywhere [...] The best conservationists in New Zealand are the best murderers essentially. That’s the guts of it. And the more mustelids or possums or rats or whatever it might be that you can kill the more effective you’re going to be at your job [...] Most of the focus in terms of academic training has always been on the rare species when in actual fact the greatest need in New Zealand is for people who are better at killing things.

In case members of the Royal Forest and Bird Protection Society might be seen as ‘sandal-wearing passive people’ by comparison, Grant Vincent (Interview, Chairman, Royal Forest and Bird Protection Society (Gisborne), February 22nd 2012) also made it clear that he was not afraid to kill introduced species, indeed he was quite happy with the task. He spoke passionately of a recent job he had acquired undertaking pest control: ‘…this is paid work I’ve got. Of doing what I love: killing things’ (Ibid.). Indeed, male interviewees typically distanced themselves from any sense that they were emotionally troubled or perturbed by the supposed need to kill. Instead, killing was portrayed as a laudable task conducted by those who were not afraid. Vincent’s distancing of himself from ‘vegetarians,’ for example, can be interpreted as a way of showing that he is not afraid or perturbed by killing, in contrast to an ethical vegetarian who could be constructed as ‘soft.’ A recent blog entry by ‘Muscleguy,’ to use another example, belittled a previous blogger for expressing sympathy towards introduced species: ‘Real grown up morality is not about making easy decisions based on squeamishness it is about taking hard decisions’ (in Toki, 2012b, n.p.). Any compassion for introduced species was thus similarly constructed as ‘soft’: ‘How about we let you off the killing part?’ ‘Muscleguy’ patronisingly asked (Ibid.).
The sense that killing introduced species is indeed ‘unpleasant but necessary,’ however, is undermined by the obvious enjoyment many people obtain from the activity. Introduced game species, for example, are clearly killed for recreation. Hunters have long justified their sport with arguments for the importance of hunting to ‘nature’ (e.g. see Henderson, 2005a; Poole, 1959; Speedy, 1997). However, suggestions that the killing of game species might help nature have arrived after the fact and serve as justification rather than purpose. Moreover, it is notable that the killing of non-game introduced species is also a source of pleasure for many New Zealanders, as Grant Vincent above makes clear. Killing introduced species is often a source of pride and belonging. However, although pleasure may be obtained from carrying out this task, there remains the sense that this is regrettable:

...most Kiwis who control animal pests in New Zealand, most of them want to see them all gone and probably take a bit of pleasure when they know they’ve got rid of it, you know cleared a stoat line and they’ve got eight stoats. ‘Great, I’ve had a great day. We’ve got eight stoats’ […] [but]...they still probably wish those animals weren’t there and wish they didn’t have to keep doing it; wish they didn’t have to put that effort in; wish they were all back in the UK (Interview, Chris Bindon, Member, Ducks Unlimited New Zealand, March 22nd 2013).

The problem with this construction is that the complete removal of introduced species would, in fact, remove the necessity of the moral predator altogether. Because people’s place in New Zealand is in many ways now prefixed on their usefulness to nature, if introduced species were not present the human reason for existence is removed. For Ian Hogarth (Interview, ex-Department of Conservation (Northland), 17th April 2013), ‘We feel that we’re doing the right thing by defending this species or that species or that thing. We feel good as humans doing that.’ If the ‘enemy’ is removed then the sense of belonging that arises from moral predation is also removed. It is important to note, therefore, that neither the reconciliation nor eradication of introduced species is ultimately fostered by human-exclusive notions of restoration because ‘ultimate victory’ would ironically result in the disenfranchisement of the moral predators who find their place in New Zealand through the ongoing and sustainable death of introduced species. In the next section, I show how the role of moral predation is further emphasised, and in a sense
legitimised, through the widespread employment of war metaphors which position many introduced species as enduring ‘enemies.’

7.2.3 A ‘just war’ against introduced species

In Chapter Three, I discussed how war metaphors continue to be used to present introduced species as ‘enemies’ that are ‘attacking’ human interests. These serve to further validate the work of moral predators. They suggest that, humans are not only necessary to the maintenance of ecological health, but are also ‘allies’ in the ‘fight’ against the supposed homogenisation of the earth’s biota. Homogenization of New Zealand’s biota is presented as an ‘emergency’ requiring the suppression of ‘normal’ wildlife management procedures. As I noted in Chapter Two, a rhetoric of ‘crisis’ invokes the need to kill without compunction, inviting participants to simply ‘do what is necessary’ (Evans, 2010, p. 430). Nevertheless, considering the history of the 20th century with its seemingly endless military engagements and atrocities, the consequences of war for human societies are all too apparent (Dufﬁeld, 2008). Therefore, while military metaphors may not be invariably inappropriate, the use of such techniques when directed at forms of life may rightfully be construed as reckless and harmful. Wars tend, for instance, to include the suffering of non-combatants, the use of torture, and the frequent disregard of otherwise accepted ethical standards (Anderson & Adey, 2012). Despite this, restoration in New Zealand continues to be fostered and encouraged using military metaphors that are, if not directly encouraging, then implicitly accepting of such likely iniquities (Larson, 2005; Larson et al., 2005).

Metaphors of conﬂict and war were used commonly throughout the 20th century in New Zealand to describe the relationship between humans and the species they had recently introduced. An early article in Forest & Bird aptly described the predictable recurrence of war metaphors in New Zealand:

Verily the history of acclimatisation in New Zealand appears almost invariably to have been to import some creature as a sort of experiment in the dark at considerable cost and later to declare ineffectual war on it at much greater cost (‘A. Birdman’, 1943, p. 8).

Consequently, the list of introduced species that have been targeted through metaphors of warfare is long. Shout (1954, p. 7), for example, declared the need for a ‘relentless war on the [introduced]
hedgehog’ citing, as justification, that they are ‘the greatest enemies of our ground birds.’ These ‘spiny brutes’ whose ‘evidence as to guilt demands nothing less than the death penalty’ (Ibid.). A year before the publication of Rachael Carson’s iconic *Silent Spring* (1962) an article entitled ‘War Against Sandflies’ in the *New Zealand Science Review* advocated the use of the infamous pesticide DDT as a ‘most satisfactory’ solution (Anon, 1961c, p. 75). The unquestioning encouragement of such chemicals, which negatively affect non-target species, is a good example of the kind of suffering that can be afflicted on ‘non-combatants’ as a result of such war metaphors. They encourage a dogmatic acceptance that control of inutile species ‘must’ be continued regardless of the cost.

Perhaps the most celebrated ‘war’ against introduced species in New Zealand; however, was that undertaken against deer from the 1930s. At that time, the use of war frames on deer was interrelated with the waging of human conflicts in the wake of the First World War and the gradual rise of militarism in the build up to the Second. Most of the people involved with the promotion and implementation of the ‘deer menace’ campaign (see Chapter 5) were current or ex-servicemen to which war frames would have understandably come naturally. Promotion of war rhetoric aimed at deer was particularly evident, for example, within the Royal Forest and Bird Protection Society, led by Captain E.V. Sanderson, while the government campaign itself was directed by the Department of Internal Affairs under Major G.F. Yerex. Issued with military ammunition (Anon, 1938b), men were instructed to ‘wage war vigorously against deer’ as a ‘commonsense duty’ to their country (Anon, 1935b, p. 15).

Deer cullers were ‘proud men’ who were ‘performing a national service’ (‘One of Them’, 1935, p. 9). Indeed, they were as ‘crusaders’ suffering ‘willingly, even eagerly…to save their native land from deadly enemies’ (Ibid.). Stories valorised the work of deer cullers, painting them as noble heroes while consistently imagining their ‘enemies’ as vicious malcontents (e.g. see Anon, 1935d). During the Second World War, men from the army were ordered to ‘fight’ deer both as a contribution to the deer campaign and as a means of gaining experience for human-human battle (Anon, 1942). Department of Internal Affairs reports spoke of ‘sweeping movements,’ ‘pincer attacks,’ and ‘massive drives’ against deer (Caughley, 1989, pp. 29-33). Just as a house is systematically mopped and scrubbed free of dirt the

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88 This is also demonstrated in the continuing use of the poison ‘1080’ in New Zealand to kill introduced mammals.
‘troops’ would ‘clean up’ the deer in each valley in turn (Galbreath, 1993, p. 64). In an article in *New Zealand Outdoor*, Kidson (1979, p. 9) caricatured this early phase of the deer war:

> The holocaust rages for many years. Exterminate, exterminate, exterminate. Man [sic] has discovered noxious beasts. Shoot them, kill them, wipe them out. The scourge, the scourge. The deer are out of control! They are eating the pasture, they are eating the forest. Kill, kill, kill.

Like the Second World War, the tallies of the fallen were enormous, with kills of up to 60,000 deer per year in the 1930s (Forsyth et al., 2011). However, unlike the World War, the deer war soon proved intractable. To the embarrassment of the Department of Internal Affairs, the ‘final victory’ hoped for was elusive. As Caughley (1989, p. 33) wrote: ‘...wars must have an end as well as a beginning, and so the official fiction that the civilian army of shock troops would do the job and then disband was maintained as long as possible.’ By 1939 the Department of Internal Affairs had tacitly given up on this goal, however, henceforth stationing cullers permanently (see below).

In spite of this early realisation, war metaphors in relation to deer persisted throughout the 20th century in New Zealand. The editor of *Forest & Bird*, for example, considered ‘open war all the year round’ against deer to still be in existence in the 1950s (Editor, 1951, p. 3). As the editor of *New Zealand Hunting & Wildlife* commented, despite subsequent moves in deer management from the Department of Internal Affairs to the New Zealand Forest Service (1956) and then to the Department of Conservation (1987), ‘the hope of ultimate victory persisted’ among many conservationists in New Zealand (Editor, 1999b, p. 5).

In the years since, the general use of war metaphors to describe human relations with introduced species in New Zealand has not diminished. Indeed, if anything, a resurgence in their use may have actually occurred since the 1980s. The titles of many popular articles are symptomatic:

> ‘We Can Fight Old Man’s Beard – and Win’ (Butcher, 1983); ‘War on Wallabies’ (B. Graeme & Graeme, 1991); ‘Waikato Magpie Wars’ (Barrington, 1996); ‘Fighting Them in the Beeches’ (Ell, 2000); ‘Gorse Wars’ (Skinner, 2009); and ‘Breaking Through Enemy Lines’ (G. Hill, 2013).
Hill (2013) continued to advocate for the use of war metaphors in relation to introduced species. He compared the war on introduced species to the Second World War, albeit acknowledging that while the World War lasted six years, the war on introduced species has extended over two centuries. He persisted, nevertheless, with drawing parallels between the two. According to Hill, we are on the verge of triumph: ‘We are immediately after the El Alamein victory when the allies realised they could win’ (Ibid., p. 64). Conservationists are ‘national heroes’ offering ‘brave and dedicated pockets of resistance throughout an occupied nation, constantly vigilant and perpetually fighting the invader rats, stoats and possums’ (Ibid.). Despite the vast discrepancy in the duration of warfare, Hill implored people to battle on as ‘resistance fighters or at least join the home guard’ (Ibid). He maintained ‘the dream that a mainland liberation force will, one marvellous day, come over the hill, relieving the resistance forces from constant unending struggle’ (Ibid.).

Hill (2013) instructed that a ‘war’ on these species remains an appropriate frame of reference, even after failing to achieve a resolution after two centuries. Indeed, what is missing from these discourses is any semblance of an end-point to these ‘heroic’ battles. At the least, decades have passed since war on many of these species was first ‘ineffectually’ declared. The ‘emergency’ measures that were enacted then continue into the present, justifying measures (e.g. mass slaughter) that are generally not accepted during ‘peacetime.’ There is the sense that the battle cannot be lost and that the war should continue forever, whatever the costs. Instead of searching for different answers, New Zealanders are instructed to remain ‘vigilant’ (Vallance & Morris, 2009, p. 60) or to simply ‘hold the line’ (Hansford, 2005, p. 19). After decades of war, many conservationists have given up hope in the success of control or eradication efforts, instead pinning their hopes on a ‘silver bullet’ or other technological ‘improvements’ (e.g. see Collins, 2000; Hansford, 2005). Others reflect stoically that conservation in New Zealand will ‘always be like this’ (D. Young, 2004, p. 78). Such resignation points to the emergence of a new norm of ‘perpetual peace-war’ in which threats are aggressively countered, regardless of the often unsatisfactory outcomes and the endurance of the very problems they are seeking to solve (Anderson, 2011, p. 40).

The application of war frames to the construction of introduced species continues to be seen, to use some further examples, as a way of ‘capturing the populist imagination’ (Interview, Tony Beauchamp,
Technical Advisor Threats, Department of Conservation (Northland), February 25th 2013, ‘provoking emotion’ (Interview, Shane Grayling, Senior Biosecurity Officer, Bay of Plenty Regional Council, March 11th 2013), ‘inciting some sort of reaction or action’ (Interview, Joe Doherty, Te Urewera Guide, Te Urewera Treks, February 22nd 2013), or putting a ‘spin’ on potentially dull territory (Interview, Andrew Glaser, Programme Manager Biodiversity – Northern Te Urewera, Department of Conservation (Te Urewera Whirinaki Area Office), April 10th 2013). In essence, war constructions treat the public as a somewhat leaden entity that needs to be rhetorically prodded into action. Rather than challenging longstanding dualisms, war frames in relation to introduced species deliberately exploit them. As Murray Williams (Interview, Waterfowl Biologist, January 22nd 2013) reflected:

> It’s the standard metaphor of life isn’t it? Good versus evil. I mean it’s all around us from *Star Wars* to wherever. You know, goodies and baddies. Cause that’s how you can actually bring the people onto a side. By painting as ‘you are the good.’ That’s why we invoke God when we go to war – goodies versus baddies, you know. God’s on our side. Isn’t it a long history of how humans have always done it?

Various reflections during interviews pointed to some of the reasoning behind the persistence of war frames in relation to introduced species, in spite of their shortcomings. Chris Bindon (Interview, Member, Ducks Unlimited New Zealand, March 22nd 2013), for example, thought war metaphors apt because they are, indeed ‘…damn hard to kill. It is a fight, you know.’ He suggested that ‘through some people’s eyes it is a battle. It is literally that. They are fighting. Constantly pushing and the plant pushes back…’ Blame for this was partly attributed to the introduced species themselves: ‘…if they weren’t so dominant and so determined to survive then, you know, they probably wouldn’t be a problem in the first place’ (*Ibid.*). Their determination to survive, in other words, was seen as a further mark against them. Bindon concluded, therefore, that most New Zealand conservationists would see war as a legitimate metaphor in wildlife management and use it as such. Grant Vincent (Interview, Chairman, Royal Forest and Bird Protection Society (Gisborne), February 22nd 2013) was similarly convinced by the need to persist with the ‘war.’ For Vincent, the battle between humans and introduced species was a natural feature of evolution: ‘…I guess that’s the essence of any ecosystem. It’s always a battle between different species because that’s what
Charles Darwin wrote about in his famous book’ (Ibid.). In other words, just as natural selection favours some over others, native species are ‘naturally’ favoured over introduced species by humans (but see Chapters 3 and 5).

These war frames are often perpetuated through the use of photographs and wildlife dioramas employing taxidermied animals. A typical presentation therein is of an introduced mammal either eating a bird, or arrayed in a threatening posture (see Figure 5). Such presentations allow people to make a more tangible connection between the concept of war and the need for action:

You have a look at photos. Go for a walk to the Department of Conservation and you’ll see a photo of a possum with its mouth open in an unnatural position and it’s really...the truth is, if you could see the wide angle it’s being prodded by a stick while it’s in the trap. And now they take that picture of the possum and then they sell it around: ‘This evil, dirty thing, it’s a horrible creature’ [...] You’ve gotta have the public believing there’s a problem (Interview, Clyde Graf, Urewera hunter/Anti-1080 activist, February 4th 2013).

Chris Bindon (Interview, Member, Ducks Unlimited New Zealand, March 22nd 2013) related how he often fronts Royal Forest and Bird Protection Society stalls\(^{89}\) accompanied by taxidermied animals, including a native morepork and several introduced mustelids. He ‘educates’ the public on how the morepork is ‘in sync’ with the environment and how the mustelids are not; how both are ‘predators,’ but how only the latter cause problems. As is common, his taxidermied mustelids depict threatening behaviours. However he defended this presentation: ‘If I had a cutesy one with a stoat cuddling its babies or something am I putting the right message out there then?’ (Ibid.). To Bindon, the appropriate message was one that downplayed or suppressed any positive appreciation or engagement with introduced species. Instead, ‘shock tactics’ should be used to sever any nascent empathy: ‘And, I guess, to use those war metaphors, it’s because we want to make it look like the villains for people if we’re educating and trying to say to them ‘Hey, this guy is really bad!’ (Ibid.). This was seconded by Shane Grayling (Interview, Shane Grayling,

\(^{89}\) Chris Bindon was interviewed as a member of Ducks Unlimited New Zealand. During the interview it transpired that he was also a member of the Royal Forest and Bird Protection Society.
Senior Biosecurity Officer, Bay of Plenty Regional Council, March 11th 2013): ‘I mean we’re trying to educate the community on what we believe is the right way to control certain species.’

Rather than ‘education,’ however, the use of war metaphors to describe introduced species, particularly in an official capacity, is more akin to propaganda in the sense that it deliberately employs an inaccurate and cruel frame for introduced species. As I argued in Chapter Three, introduced species are unaware of any war, and for which they would more accurately be portrayed as non-combatants in any case. Grayling argued nevertheless that fault ultimately fell with those who accept such frames, rather than those who propagate them: ‘You can call it propaganda, and you’re right, it does provoke emotion to a point, but it’s up to the individual to decide whether they buy into the war or not’ (Ibid.).

Figure 5: Typical posed expressions of introduced mustelids. A taxidermied stoat (left) and ferret (*Mustela putorius*) (right) snarl at the observer, Museum of New Zealand, Wellington.

There was some resistance to the idea that introduced species were deliberately attempting to harm native species, as the war frame implies. Warwick Massey (Interview, Member, Royal Forest and Bird Protection Society (Mid North), January 16th 2013), for example, suggested that ‘…it’s an absurd idea that these species are deliberately harming. They’re not made like that. They don’t think in that sort of mode that we do.’ Andrew Glaser also resisted the notion of any malicious agency in the behaviour of introduced species:

> Whether it’s right to say that they are evil critters, I don’t think so. I think they’re all just God’s little creatures [laughs]. And they have their own place in the world. But in New Zealand they
just don’t fit in that environment (Interview, Andrew Glaser, Programme Manager Biodiversity – Northern Te Urewera, Department of Conservation (Te Urewera Whirinaki Area Office), April 10th 2013).

Glaser’s comment, nevertheless, aptly illustrates the reason for the endurance of war metaphors. Although often cognisant of the skewed and inaccurate nature of war metaphors when applied to introduced species, they are seen as a means of achieving the ultimate objective. Murray Williams (Interview, Waterfowl biologist, January 22nd 2013), having earlier described the use of war metaphors as ‘farcical’ (see quotation above), ultimately sided with this instrumental approach:

…we judge the effect [of introduced species] to be incredibly hurtful because it’s destroying what we want, namely populations of kiwi under our house, you know. And we’ve got country where we don’t want that. We want to get those little bastards, you know.

I pressed Williams on this, noting that he had earlier discounted the use of approaches that inaccurately and simplistically portrayed the supposed militant agency of introduced species. Williams, however, saw this approach as a means to an end: ‘That’s your problem, not mine [laughs].’ This perspective was often repeated by others (e.g. Interview, Shane Grayling, Senior Biosecurity Officer, Bay of Plenty Regional Council, March 11th 2013; Interview, John Sutton, Area Manager, Department of Conservation (Te Urewera Whirinaki Area Office), April 15th 2013).

What this section has shown, therefore, is that most of those employing discourses of war in relation to introduced species are quite conscious of the inaccuracy of such frames but see them as necessary all the same. Like wars themselves, collateral damage is depicted as inevitable and basic principles, such as an adherence to truth, must be sacrificed in the interests of victory. This is unfortunate because ‘wars’ against introduced species in New Zealand have almost all failed and continue to fail at great cost. One consequence of continuing to employ militant frames is the suppression of the kinds of truth that may be necessary to illuminate if we are to re-analyse our relationship to these species. In the next section, I show that this suppression of alternative understandings of introduced species is only further reinforced by the importance of pest control as an industry.
7.3 The sustainable death of introduced species: An important industry

In Chapter Two, I showed how Foucault (1976) made it possible to think about how capitalism has not only subsumed life into economic processes, but actually ‘drawn on life as a means of redefining a whole new political rationality where economic and vital processes are from the beginning deeply intertwined’ (Terranova, 2009, p. 235). Foucault argued that life was increasingly becoming commoditised and that environmental concerns were being subordinated to the logic of capital accumulation (Baldwin, 2012; S. Sullivan, 2012; Yu & Liu, 2009). Hardt and Negri (2000, p. xiii) similarly observed that the creation of wealth in society is progressively tending toward ‘biopolitical production’ wherein natural processes are opened up to commercial interests with ‘nature’ itself constructed as a subset of overarching economic discourses. As they commented: ‘There is nothing…that can be posed outside this field permeated by money; nothing escapes money’ (Ibid., p. 32). Indeed, as many biopolitical scholars have noted, this pervasive ‘biocapitalism’ or ‘bioeconomics’ is now regularly linked with wildlife conservation (Pierce, 2012; Rose, 2001; Youatt, 2008). These authors highlight how, under increasingly neoliberal interpretations of conservation, emphases shift from morality to cost-benefit calculations, and from nurturing and sustaining life to maximising those lives that support economic growth (Fletcher, 2010).

Costanza et al. (1997) emphasised the economic importance of ‘nature,’ estimating the value of global ‘ecosystem services and natural capital’ at $16-54 trillion. Such valuations unambiguously demonstrate the significance of nature conservation to global capitalism. Valuing nature in such terms, however, stresses not only how economically important ‘natural capital’ is, but also underlines the seriousness of any threats to this capital. As Foucault (2008 [1979]) hinted, any individuals or practices that do not support the maintenance of natural capital, and particularly those that threaten it in some way, are necessarily devalued (Anderson, 2011). As I argued in Chapter Three, the most important of these, at least in the context of this thesis, are introduced ‘pests.’ Non-native forms of life that contradict the value of native species constitute a threat to economic systems that must be controlled or eliminated. Nevertheless, as I argued, control of threats does not necessarily translate, at least in any linear fashion, into general economic benefits or costs avoided. For example, as Sagoff (2007) highlighted, attempts to ‘fight’ forest fires in the United States did not translate into forests ‘saved,’ rather forests were later...
deemed to be ‘weakened’ by this action (see Chapter 3). Moreover, what the environmental literature, in general, has rarely acknowledged are the specific economic benefits that accrue to those who volunteer to take up the ‘responsibility’ of ensuring the safety of productive life.

As has often been observed, the control of introduced pests costs hundreds of millions of dollars a year in countries around the world (e.g. see Feng & Zhu, 2010; Pimentel et al., 2000; Reaser et al., 2007). What I wish to demonstrate in the analysis that follows is that such assessments tend to overlook the benefits that accrue directly to those tasked with taking up the ‘fight.’ As Garcia-Llorente et al. (2008, p. 2970) commented, it is important to remember that ‘for every case of invasion some sector of society makes a profit’ (also see Marris, 2005; Schuttler et al., 2011). In fact, the removal of unvalued lives can be as profitable as the propagation and sale of valued lives. As I demonstrated in Chapter Five, the industries built up around valued native species and introduced game species are widely acknowledged in New Zealand. Among my three case studies, for instance, game industries associated with trout and, to a lesser extent, deer are well known. However, less readily acknowledged, are both the historical and contemporary industries established around the removal of pests. Below I show, firstly, that the death of pests in New Zealand constitutes an important, if frequently unacknowledged, industry. Secondly, I demonstrate that the financial benefits accruing from these initiatives are often ephemeral, being dependent either on scientific understandings, which often change, or on market-based incentives, which are notoriously fickle (S. Sullivan, 2012). I argue that the notion that valued species should be reconciled because they can be profitably exploited is undermined by reflecting that unvalued lives can also be ‘reconciled’ through profitable exploitation.

7.3.1 Reconciling valued species for services to the economy

New Zealand has a long history of ‘reconciling’ species that generate revenue. Indeed, as I discussed in Chapter Five, conservation in New Zealand in the 19th century largely involved protecting species that were deemed economically useful. Most forest conservation prior to the 1890s, for example, was directed towards controlling forests as a resource, not as an attempt to protect them as an environment in and of themselves. Generally, the level of protection for any wild species in New Zealand – whether native or introduced – corresponded with their utility as game animals or other ‘products’ (Star, 1997). Species that
were not considered good for sport, building houses, or generating tourism, were commonly not considered for protection (e.g. see Arthur, 1881). As Star (1997, p. 188) observed, colonists wanted to:

\[\text{... conserve the forest, but had no interest in saving the native fauna. They would have been interested in the kiwi if (for instance) they had learnt that its meat tasted like turkey and there was an unexploited potential for kiwi farms. Their interest in saving the native forest was determined by their identification of it as a resource for development which could be used rationally; they had little concern for the bush beyond this.}\]

The species that generated income were also the species deemed worthy of protection, a pattern later replicated throughout the 20th century (Aramakutu, 1997). As a 1942 editorial in *Forest & Bird* bluntly put it, it was ‘a matter of indisputable fact’ that introduced game species received better protection than native species because they ‘produce[d] revenue’ and natives did not (Editor, 1942b, p. 2). Nevertheless, as native nature became increasingly prominent as a source of tourist revenue through the 20th century, its protection became more important. In fact, it rapidly became more lucrative than the game animal industry.

Income generated from native biodiversity grew throughout the 20th century in New Zealand. By 2006, the Department of Conservation estimated the total revenue from indigenous biodiversity in reserves and national parks alone at $920 million per annum (DoC, 2006b). Consequently, people in New Zealand have increasingly come to realise ‘that having [native] biodiversity on their own land is actually of benefit in terms of the price of their land’ (Interview, Shona Myers, Secretary (ex-President), New Zealand Ecological Society, May 22nd 2013). This revenue has been celebrated and encouraged by the Department of Conservation, and other regulatory authorities, by investing further resources into the conservation of desired charismatic species and ecosystems, particularly native birds\(^9\) and forests. As

\(^9\) Each denomination of the New Zealand dollar features a native bird species. It can be argued that this aptly represents both the cultural and economic importance of these species in New Zealand. As Andrew Glaser (Interview, Programme Manager Biodiversity – Northern Te Urewera, Department of Conservation (Te Urewera Whirinaki Area Office), April 10th 2013) commented, ‘I think the person that had the insight to put the birdlife on the money had some very good insight to what they mean.’
Pete Shaw (Interview, ex-Department of Conservation (Northern Te Urewera), March 1st 2013) commented:

The way [the Department of Conservation] works is sort of like a tally system. The more rare species that you’ve got the more funding you might get. If you had no rare species, you weren’t going to get any funding.

These rare species are a ‘draw card’ to overseas visitors, their scarcity enhancing their economic value. Moreover, those rare species that can evoke the story of Gondwanaland or reinforce the ‘land of birds’ narrative are especially valued. Many common species, in contrast, are disregarded as poor or unnecessary sources of investment91 (MacLeod, Blackwell, Moller, Innes, & Powlesland, 2008).

Nevertheless, while economic importance is now routinely attributed to native species, many introduced game species remain lucrative ‘commodities’ in New Zealand. Trout in Rotorua, for example, continue to be regarded as a ‘tremendously valuable asset’ (G. Thomas, 1997, p. 74) and a ‘selling point’ of the area (Interview, Shane Grayling, Senior Biosecurity Officer, Bay of Plenty Regional Council, March 11th 2013). As Ramsvelt (2008, p. 12) wrote in a letter to the editor of Fish & Game New Zealand: ‘Trout, like pine trees, have become, and will continue to be, huge assets for us and great money-earners.’ They are ‘a golden egg here, generating a recreational industry worth multi-millions’ (Halser, 2005, p. 3). The management of the fishery is referred to as a ‘business’ with trout assuming the place of the ‘product’ that is sold to ‘customers’ (i.e. anglers) (G. Thomas, 1995, p. 49). Those customers are offered a range of experiences on the lakes. As Rob Pitkethley (Interview, Regional Manager, Fish & Game (Eastern), January 15th 2013) commented, ‘the way we manage our stocking is to create a diversity of opportunity within the environmental constraints that those lakes give us the potential to do.’ This diversity of opportunity is facilitated, among other ways, by providing different products in different lakes. Tarawera, for example, is the ‘big fish lake’ (Smith, 1996). Lakes Rotorua and Rotoiti are the places to catch brown

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91 For example, New Zealand’s invertebrate fauna, comprising around 95% of the country’s species richness, remains poorly studied or protected (McGuinness, 2001). They are not deliberately harmed, but nor are they deliberately helped. Reconciliation remains directed at those native lives that can be economically exploited.
trout. Lake Rotoma has small numbers of tiger trout92 ‘to provide a challenge for anglers’ (Moran, 2011, n.p.) and Lake Tikitapu has a small population of brook char to ‘provide an interesting addition to the fishing options available’ (Fish & Game New Zealand, n.d., n.p.). Thus not only the trout fishing industry, but the trout themselves, are plugged into capitalist processes of production.

The biological characteristics and evolutionary trajectory of trout in the lakes is determined by anglers. These are enforced using biopolitical technologies of regulation and control. Just as sheep are tagged by farmers, and native birds are leg-banded, trout are tagged or fin clipped by Fish and Game New Zealand officers to monitor their movements (Maxwell, 1998). Like cattle, fish in the lakes are ‘stocked’ to ensure that they are optimally utilised by anglers. The primary objective of stocking in the lakes is to ‘maximise the fulfilment of the public’s desire for recreational fishing’.93 Trout stocking rates are adjusted on the basis of angling pressure (Fish & Game New Zealand, 2010b). Popular angling lakes, for instance, are generally stocked more than unpopular ones. The distribution and evolution of trout is determined in the lakes by what anglers want and this is enacted through selective breeding and habitat ‘enhancement.’ As a sign at Fish & Game New Zealand’s Ngongotaha Hatchery attests: ‘only the best fish, selected for their size and age at maturity, are used for breeding. This ensures that their offspring have the best genetic traits, and therefore the most potential to grow to trophy size.’ Importantly, the ‘best’ traits are the traits preferred by people not the traits that the fish themselves might select in one another.

The desired characteristics of wild trout are determined by anglers. As Rob Pitkethley explained, ‘one purpose of any selective breeding programme, in fish, farm animals, or pedigree dogs, is to reduce the gene pool by eliminating unwanted characteristics’ (in M. Craig, 2004a, p. 21). Each year around 100 of the ‘best’ fish are selected as ‘stud’ animals (M. Craig, 2004a). The offspring of these fish are intensively bred in aquaria and then liberated in the lakes. Only the ‘well formed and the strong’ are suitable (Chamberlain, 1994, p. 97). ‘Healthy’ fish are large fish that mature quickly (Maxwell, 1998; G. Thomas,

92 A sterile hybrid between brown trout and brook char.

1997). They are catchable, but are also good ‘fighters’ (S. Smith, 1996). Fish that do not meet those characteristics are selected against. The trout in the lakes, therefore, are only really ‘wild’ in so far as they are free to roam their ‘pasture’ from one side of a lake to the other. Large, trophy trout may be poorly adapted for survival in the lakes but these are the characteristics of the population that are encouraged by managers. Over time, trout in the lakes should evolve into different forms that are more suited to the unique conditions of the area (see Chapter 8). However, that evolution is supressed by the notion that ‘healthy’ fish must be those that resemble their ancestral progenitors. Big, strong fish are deemed more ‘healthy’ than small fish, even though smaller fish may actually be more suited to the environmental constraints of the lakes. Because large trout are what draw angling tourists from overseas, trout in the Rotorua Lakes are controlled to ensure that they remain large. It is not trout per se that are reconciled in the lakes therefore, only the specific form, location, and behavioural characteristics of trout valued by anglers, and which can be commoditised as such, that are ‘let live’ in the lakes.

7.3.2 The value in destroying ‘bare life’

Whether native or introduced, the species that have been promoted in New Zealand are those that generally correspond with profit maximisation. In concert with certain natives, introduced game constitute the group of species that are considered economically useful because they are valued lives. Their reconciliation is premised on, among other things, their use as revenue generators. What is less often recognised, as I introduced above, is that there is another group of species that have economic value not because they are valued but rather because they contradict valued lives. As I will explain below, pest species constitute those animals that compromise or endanger valued lives and that need to be removed in consequence. However, whilst first appearing to compromise and threaten the economy, over time the destruction of many of these species has generated important economies of their own. The ‘necessary’ death of species, whether native or introduced – when financially incentivised – rapidly becomes an industry in itself. When it becomes profitable to kill, the endurance of killing is necessarily enhanced, whether justified or otherwise.

94 In other words, they resist capture when hooked.
Commenting on why emotive rhetoric directed at introduced ‘predators’ was appropriate when applied to introduced mustelids, but not when directed at introduced predatory trout, John Hamill (Interview, Fishing guide, Cruise and Fish Rotorua, February 14th 2013) reflected that,

…at the end of the day I’m looking at my business side of things and saying, ‘Hey, if it wasn’t for trout you wouldn’t be talking to me now.’ But I guarantee that you wouldn’t find many people that would stand up and say ‘My business is built around possums and I need to do that’ or ‘My business is built around stoats’ or anything else.

Hamill’s comment is typical of discourses on the economic dimensions of pest control. Pest control is constructed as something vital to society, like firefighting or policing, which must be undertaken. As I discussed in Chapter Three, the pest control industry is constructed simply as a necessary preventative measure aimed at avoiding damage. What I highlight, however, is that pest control is an industry like any other. Those involved are at least partly motivated to maximise their profits from the undertaking and to ensure the persistence of revenue. It is important to note that that motivation may also constrain the potential for entertaining new ways of interpreting pest species.

Writing in the New Zealand Journal of Zoology, Meister and Wilson-Salt (1993, p. 300) claimed that ‘pest control is serious business in New Zealand. The costs of control are high…’ Indeed, recent estimates of those costs substantiate their claim. In a landmark study on the estimated costs of introduced species, Bertram (1999, pp. 45-46) approximated annual ‘defensive expenditures’ in New Zealand at $440 million. This cost was seen as necessary to ‘defend’ the country from introduced pest species through border control, monitoring, surveillance and the maintenance of ongoing control and eradication programmes. This included central government expenses related to conservation of $70 million and regional government expenses on the same of around $68 million. Research funding on pest control was estimated at $40 million. These estimates were updated in 2009 in a report by the Ministry of Agriculture and Forestry. Incorporating private expenses, they estimated the total cost of weed and pest control in New Zealand at $836 million per annum (MAF, 2009). In 2006 the Department of Conservation alone spent over $74 million on pest management, almost solely related to biodiversity conservation (Ibid.). Hunters, for instance, earn money from the Department of Conservation for shooting deer on parcels of
conservation land where they are regarded as pests. In Te Urewera two Opotoki-based hunters earn $35,000 each year for killing just 60 deer in the Otamatuna Core Area of Te Urewera Mainland Island (Interview, Andrew Glaser, Programme Manager Biodiversity – Northern Te Urewera, Department of Conservation (Te Urewera Whirinaki Area Office), April 10th 2013).

Indeed, the destruction of introduced species has been a source of income for most people working in wildlife management and research in New Zealand. Graham Nugent (Interview, Deer Ecologist, April 3rd 2013) spoke of subsidising his university education, for instance, by shooting deer, while Pete Shaw spoke of shooting deer as a schoolchild: ‘You could make quite good money out of it’ (Interview, Ex-Department of Conservation (Northern Te Urewera), March 1st 2013). Comments by Maureen Coleman (Interview, Urewera hunter, New Zealand Deerstalkers’ Association, February 20th 2013) were also typical of this national pastime, describing how ‘when we were kids doing possums was our pocket money.’ Writing in a New Zealand blog post, ‘Jimbo’ was ‘all for a massive campaign to wipe out predators and introduced species’ noting immediately after that ‘the amount of jobs such an initiative would create is another bonus’ (in Toki, 2012, n.p.). Targeted species, however, are numerous and often changing. As Carl Cooper (Interview, Dargaville Biosecurity Officer, Northland Regional Council, March 19th 2013) summarised: ‘If it moves, I’ve probably been paid at some stage to control it.’ Thus the species that will generate revenue today are not necessarily those that will be profitably dispatched tomorrow. Although the species selected to die often change, the imperative to kill does not.

In fact, frequent changes in the species targeted by biosecurity measures are well recognised by those working in the industry. As Carl Cooper (Interview, Dargaville Biosecurity Officer, Northland Regional Council, March 19th 2013) reflected: ‘From wild horses to dogs to sheep, goats, you name it. If it’s moved I’ve probably been paid to control it.’ The industry moves from ‘crisis’ to ‘crisis’ extracting profit with the solution of each ‘problem.’ These environmental crises work as ‘accumulation frontiers’ for finance capital through a reconceptualisation of ‘nature’ in monetary terms (Sullivan, 2012, p. 3). As I noted in Chapter Five, for example, the elimination of deer as conservation pests turned into an important export industry in New Zealand in the mid-20th century. Nevertheless, as the price of venison declined, the industry itself waned and it was mostly finished by the 1980s. The elimination of threats to the trout fishing industry was
similarly lucrative but ephemeral (see Chapter 5). For example, in the 1890s, and again in the 1910s, the elimination of ‘surplus’ trout was quickly turned into an industry, with ‘excess’ trout netted and sold for profit. However, in both cases the industry was concluded within a decade. Later, the removal of threats to trout from predatory native shags became ‘a profitable living’ for those ‘marksmen’ willing to make ‘war upon the gourmand birds’ (Anon, 1924, p. 8). Due to ongoing ambiguity as to the ecological effect of these killings, it too was concluded within decades. By the mid-20th century these industries had been replaced by the still ongoing efforts to support the elimination of introduced predatory mammals in New Zealand (also see Chapter 5). Again, while the species may change, the death imperative endures.

Also enduring have been many of the businesses offering products and services aimed at satiating the desire to kill certain biota. As environmental ‘problems’ and appropriate ‘solutions’ to them become increasingly well established, the process of removing valueless lives increasingly translates into business opportunities (Timms, 2011). For instance, during our interview, Grant Vincent (Interview, Chairman, Royal Forest and Bird Protection Society (Gisborne), February 22nd 2013) handed me a brochure on the effects of introduced wasps (Vespula spp.) on native biodiversity:

GV: I’ve got a pamphlet here about wasps from the Auckland Regional Authority and Yates96, co-production.

JS: Why would Yates sponsor this?

GV: Because I think they manufacture a wasp-killing powder, an insecticide. That would be why.

Further connections between the killing of introduced species and the profitable transactions of supporting businesses are readily apparent. Advertisements for traps and poison products frequently adorn the pages of conservation, and hunting and fishing periodicals (e.g. see KBL Rotational Moulders Ltd, 1996; Philproof, 2013; Vigilant, 2002). An article on the importance of killing pests will often be accompanied with an advertisement for a killing product on the following page. New Zealand companies such as ‘Pestgard,’ ‘Pest Management Services,’ ‘Victor Traps,’ ‘Trapinator,’ and ‘Pestrol’ frequently incite

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96 A gardening company offering a range of pest and weed killing products.
customers to purchase their products by advertising the supposed disagreeable qualities of the introduced species their products are designed to kill. Companies such as 'Goodnature' unambiguously suggest what version of nature is appropriate, promoting and facilitating the death of 'bad' nature, in exchange for payment.

As demonstrated in Section 7.2.3, the use of war metaphors in such advertising is prevalent. Pest control company, ‘Kiwcare’ (2007a), for example, titled an advertisement in Forest & Bird ‘Kill the ones you hate [i.e. introduced species]. Not the ones you love.’ Another of their advertisements was entitled ‘Protect the innocent [i.e. native species] in the war against possums’ (Figure 6) (Kiwcare, 2007b). A further company, ‘Pest Go’ (2013) informed customers of the hazardous nature of introduced species through their website. A series of icons depicting introduced species was titled ‘Choose your enemy!’ (Ibid., n.p.). Yet another company, ‘Connovation’ (2013, n.p.), advertised the development of a ‘resettable toxin delivery tunnel’ it named the ‘Spitfire’ – presumably after the World War Two fighter aircraft – designed to kill introduced stoats. These methods of advertising, moreover, are not new. A 1951 advertisement in New Zealand Outdoor for ‘Ammunition House Ltd’ for instance, depicted a plague of rabbits with an accompanying exhortation to ‘Wipe out these pests!’ (Figure 7) (Ammunition House Limited, 1951, p. 10). These companies deliberately capitalise on prevailing conservation rhetoric to promote their products and services.
Figure 6: Advertisement for Kiwicare titled ‘Protect the innocent in the war against possums,’ Forest & Bird, August, 2007.
Figure 7: Advertisement for Ammunition House Ltd titled 'Wipe out these pests!' New Zealand Outdoor, Issue 14, 1951.
Just as introduced game animals support a recreational industry; pest species support a valuable pest control industry. In 2011, the Department of Conservation alone spent over $30 million controlling introduced mammals (DoC, 2012a). This control represented an important source of income for many New Zealanders. Andrew Glaser (Interview, Programme Manager Biodiversity – Northern Te Urewera, Department of Conservation (Te Urewera Whirinaki Area Office), April 10th 2013), for instance, noted that in Te Urewera pest control was an important source of income for many local people. Indeed,

...one of [the Department of Conservation’s] intermediate outcomes [...] is to increase the social and economic benefit to the community and Tuhoe. So, by contracting the Tuhoe people back in to do the work, they’re gaining from that. Like this year we’ll be contributing over $310,000 into that community [mostly for the ground-based control of stoats, rats and possums] (Ibid.).

The death of valueless lives was thus an important local source of income. Such large expenditures on the control of introduced species has prompted speculation, particularly among hunters, that conservation funds are being deliberately funnelled into pest control as a source of income for conservation practitioners. Letters to the editor of New Zealand Hunting & Wildlife from Axbey (2002) and Anderton (2004), for instance, referred to pest control as a ‘gravy train.’ For Jago (2006, p. 11), the use of poisons for the control of introduced possums, in particular, was an effort to ‘keep [the Department of Conservation’s] administration staff in cosy well-paid jobs.’ This was seconded by Bill Benfield: ‘You see the possum’s just a hyped-up demonised thing to keep a $100 million a year pest industry running’ (Benfield in Graf & Graf, 2009; also see Benfield, 2011). Also speaking on the control of introduced possums, Clyde Graf (Interview, Urewera hunter/Anti-1080 activist, February 4th 2013) suggested that government employees sought the death of introduced pests as a source of income:

CG: ...they don’t want to get rid of [possums]. Not the bureaucrats.

JS: Why do you say that?

CG: Because it’s an industry. It’s like the [Animal Health Board]. Their industry is [Tuberculosis]. It’s not about getting rid of [Tuberculosis]. It’s having the fear of
[Tuberculosis] there. The [Animal Health Board] were talking about closing up shop in 2013 a few years back […] now it’s 2035, because it’s such a good industry, such good money. Everyone’s on $150,000. It’s the perfect bullshit story.

In a recent article in New Zealand Hunting & Wildlife, Graf (2012, p. 19) also referred to the pest control industry as an ‘introduced animal phobia religion’ funded ‘by the public purse.’ He suggested that the need to kill introduced species was a ‘belief’ that required – due to its shortcomings – a quasi-religious adherence to sustain:

It’s about the job and it’s appropriate to believe it […] You go to [the Department of Conservation]; you’re not going to get any friends by arguing that what they’re doing is a bad thing. If I was working for [the Department of Conservation] I’d have to be the same. You know, quietly you might not like it, but you’ve just got to buy the line and march on (Interview, Clyde Graf, Urewera hunter/Anti-1080 activist, February 4th 2013).

According to Graf, Departmental staff were encouraged to support pest control if only to ensure the safety of their employment. Such discourses, of course, need to be placed in the context of their exposition. Hunters have a long history of conflict with the Department of Conservation over the treatment of introduced mammals such as deer (see DoC, 1998; Nugent & Fraser, 1993). They are often accused of nurturing a vested interest in introduced mammals, as quarry, to the reputed detriment of native biodiversity (Bain, 2009; K. Smith, 1998). Claims that the Department of Conservation is, in effect, profiteering from pest control should thus be treated with some scepticism. Indeed, claims of profit-driven motives could be taken simply as counter-discourses propagated to deliberately attempt to weaken a powerful opponent.

Whilst recognising the lack of ‘purity’ in source material, therefore, and also acknowledging the presence of some exaggeration, I suggest that the discourses furthered by hunters, and some others, should not be casually dismissed. I do not suggest that authorities such as the Department of Conservation are deliberately seeking to profit from killing pests. However, it is undeniable that the process of killing pests involves financial compensation and economic benefits for those who work in the industry. Those accepting payment for the control and eradication of pests must accept that they too are vested in
particular conceptions of wildlife. By employing economic means to achieve this end, however, it is ironic that conservationists may actually work to ‘reconcile’ the species that they attempt to remove. This is because, without pests to remove, conservationists working in the pest control industry are left without work. In other words, they are vested in the construction of certain species as pests and cannot entertain alternative constructions lest they risk threatening their employment and, potentially, the employment of acquaintances and past collaborators. In this way, both valued and unvalued species are deliberately sustained by a capitalist infrastructure which gains from life and death. In this sense, valued species and pests are simply two facets of an industry designed to exploit division and promote exclusion.

This section has demonstrated that attempts to ‘reconcile’ introduced species by highlighting their financial usefulness are fraught. Not only do the species considered to be economically valuable change, but species that are ‘unvaluable’ are also ironically some of the most economically valuable. Unless ‘reconciliation’ is interpreted to incorporate those forms of life that can be sustainably killed, acceptance based on profitability constitutes a dubious rationale. It by no means constitutes the kind of compassionate reconsideration that an affirmative reading of biopolitics would be based upon. Although perhaps inflating the point, Yu and Liu (2009, p. 29) wrote that:

…a kind of biocapitalism which solely follows the logic of market and power politics to materialize and commercialize life, will remove the autonomy, openness and transcendence of life, destructively disrupt the genetic order of nature, and eventually lead to a new fascism and colonialism…

Commercial reconciliation offers only to exploit prevailing fears and inequalities, proposing to solve ‘problems’ by removing them – for payment. As I have shown, these solutions fail to genuinely engage with what is at issue. Rather, as one problem wanes, another is quickly taken up with little pause for analysis. As I will argue in Chapter Eight, one consequence of this is that adaptive change is forever frustrated or removed. Commercial notions of reconciliation offer only to accept when acceptance coincides with profit. Even as a contributing justification for reconciliation this appears morally dissolute and ought not be the basis for any affirmative interpretation of biopolitics that seeks to widen the concept of ‘community’ to forms of life that are currently excluded.
7.4 Conclusion

In this chapter, I have argued that a focus on the ways that death is constructed as ‘necessary’ is important to understanding the possibilities for the reconciliation of introduced species. Biopolitical strategies seek ‘not necessarily to use death as a means of control but to bring death into the fold, to accept it as part of life and to account for it through the calculus of demography’ (Biermman & Mansfield, 2014, p. 259). This framework is replicated in contemporary understandings of ecological restoration in New Zealand. For many restorationists, the ‘norm’ is defined as a quasi-equilibrial pre-human nature. The ‘good’ and ‘bad’ races are defined by the species that existed before the arrival of humans and those that have been introduced since, respectively. The removal of these introduced species is a way of making life ‘healthier.’ Death is thus accepted as a natural feature of existence and an important mechanism for managing, protecting and promoting valued lives. This imperative is presented as unpleasant but necessary. It is positioned as a temporary means through which to return ecosystems to past states or processes. What Foucault and others, such as Agamben (1998, 2005), have since made clear, nonetheless, is that there is nothing temporary about this process. Rather, the removal of ‘bare life’ is integral to biopolitical governance. The ongoing identification and removal of threats to an imagined stable state is, in the same way, coterminous with restoration. What restoration discourses have often failed to adequately convey, therefore, is the sense to which the discrimination and removal of introduced species will be ongoing and crucial to the workings of restoration. It is not simply a part of restoration, or even just important, but rather central to restoration.

The work of killing is valorized through the use of war metaphors. These metaphors suppress reservations about the need to kill by invoking the notion of a crisis that must be addressed and by imagining introduced species as cognizant enemies. The need to kill is further reinforced by the connections of certain deaths to New Zealander’s national identity and economy. Firstly, owing to decades of ‘campaigns’ against introduced species, the notion of unending warfare against introduced species has become deeply embedded in the national psyche. Consequently, not only do New Zealander’s feel more in-tune with nature by killing non-natives, they also feel that they are expressing their identities as Kiwis. Killing is simply what they do. It is constructed as the overarching feature or
nature of conservation in New Zealand. Secondly, this death function has become embedded as a core industry in New Zealand. The killing of introduced species not only makes life healthier, it makes those who pursue it directly wealthier. Threats to the ongoing slaughter of introduced species are therefore threats to substantial economies and livelihoods. These ways of understanding death coalesce to form important impediments to reconciliation. They suggest that reconciliation might be not so much about reinterpreting introduced species themselves, but about reconceptualising people’s relationship to nature and how they can continue to profitably exploit it in the presence of introductions.
Chapter Eight: Problematizing Notions of Purity

8.1 Introduction

In Chapter Seven, I argued that introduced species have been reduced to ‘bare life’ by restorationist discourses that frame them as an impediment to a desired historical state. When not directly exploitable for recreational or domestic purposes, they are killed *en masse* in the interests of this vision. This activity has been cast as a ‘responsibility’ for all patriotic New Zealanders who are invited to articulate their belonging through the almost ritual slaughter of foreign biota. In this chapter, I build on this argument, demonstrating that the increasing complexity of life in New Zealand is continually denied by frames that perpetuate simplistic understandings. In each section of this chapter, I demonstrate that seemingly straightforward understandings of wildlife in New Zealand could benefit from being revised. I show that wildlife constantly challenge attempts to impose ‘pure’ categories, adapting in ways that cannot be reduced to binaries. Recognising new complexities opens the door to new understandings of introduced species that resist the urge to categorically divide them from native species and to proclaim that the ‘responsibility’ is exclusively to native species. Introduced species are entering into hybrid relationships with native species, which are not simply ‘victims’ of this process, but sometimes willing ‘participants.’ Just as ecosystems are evolving to reflect changed species’ associations, native and introduced species themselves are adapting, on an evolutionary level, to new conditions and opportunities. While complexity is consistently denied, I argue throughout this chapter that an appreciation of it is integral to any reconciliation of introduced species.

In Section 8.2, I explore understandings of hybridity in relation to New Zealand wildlife, focusing on the hybrid relationships between introduced mallards and native grey ducks. I demonstrate how this relationship has been legitimised by duck hunters who have constructed the unfolding of hybridity as ‘inevitable’ and therefore something to be begrudgingly accepted. Highlighted, however, is the contrast between the supposed ‘inevitability’ of ‘pure’ grey duck decline and the active resistance to such ‘losses’
in other native species (see Chapter 5). Hybrid ducks are effectively reconciled by duck hunters, but only because they are a directly exploitable ‘resource’ (see Chapter 7). This reconciliation, in other words, does not challenge whether a ‘loss’ is actually occurring: it simply accepts it and proclaims ‘solutions’ to be impossible. I argue, nevertheless, that some interpretations of hybrid entities resist the notion that hybridisation only represents a loss. Indeed, some interpretations of hybrid progeny question the reality of ‘pure’ species. They also raise additional questions, such as whether hybridisation represents a loss to the individuals involved, whether humans should set themselves up as the mediators of ‘appropriate’ sexual behaviour in wildlife, and whether hybrid progeny might have value in and of itself.

Finally, in Section 8.3, I explore how prevailing interpretations of evolution in New Zealand work to legitimise certain changes whilst denying others. I highlight how scientific understandings of evolution have come to acknowledge the often rapid rate of change in many taxa and the extent to which this may further accelerate in times of widespread environmental modification. Despite these understandings, appraisals of evolution routinely exclude changes facilitated by humans, considering them to be only sources of ‘damage.’ Evolutionary changes, or precursors of such, are denied in favour of static conceptions that frame changes on geological timeframes as exclusively characteristic of ‘genuine evolution.’ Morphological changes to introduced species are interpreted as signs of ‘poor health’ rather than as adaptations to new environments. Thus both native ecosystems and the introduced species that are said to have ‘infiltrated’ them are regarded as fundamentally static quantities. Investigations of introduced salmonids in New Zealand, however, challenge the status quo, suggesting that new evolutionary and ecological forms and relationships may be capable of developing.

8.2 Hybridisation and its discontents

In Chapter Four, I argued that dualistic discourses of ‘nature’ categorically divided from ‘culture’ are a persistent feature of environmental understandings. They suggest that there are fundamental, irreconcilable differences between human and nonhuman worlds. This persistent understanding was demonstrated in Chapter Seven when considering the construction of a human role in New Zealand. To Latour (1993), this dualism is an exercise in purification, and one that is fated to constant corruption and hybridity. He argued that attempts to maintain hard distinctions between nature and culture only increase
the proliferation of entities that transgress these conceptual boundaries. The formation of conceptual boundaries, moreover, is not limited to understandings of nature. Rather, concepts such as ‘race’ and ‘species’ continue to draw borders around supposedly pure entities. Constructionist studies have continually disputed these formations, suggesting that they are flexible, hybridised, open and subject to change (Wodak et al., 2009). Despite this, Macey (2009, p. 201) maintained that ‘the phantasy of a pure body, be it the individual body or the body politic itself’ retains considerable force. As I argued in Chapter Two, ‘biosecurity’ operates on behalf of the population, facilitating ‘good’ flows and preventing ‘bad’ ones. As the scale of flows has increased, however, this activity has become fraught with complexity and contention, aptly demonstrated in the difficulties emerging from understandings of biological hybridisation.

Biological hybridisation defines the process wherein two ‘pure’ species interbreed and produce hybrid offspring (Morgan-Richards et al., 2009). It is often interpreted as an instance of ‘boundary crossing’ (Hytten, 2009). Hybridisation is portrayed as an ‘awkward problem’ for conservationists who struggle to define the place of hybrid offspring in the context of conservation management (Muller, 2010, p. 269). This ‘problem’ continues to grow. Whilst plant hybridisation has long been understood as an important and widespread mechanism in the evolution of species, its role in animals has been more circumspect (Largiader, 2007; Rhymer & Simberloff, 1996). Rates of ‘natural’ hybridisation in animals, however, are now understood to be high in many taxa. Compounding this complexity is the realisation that much hybridisation is now facilitated through human modifications to environments. This means that species that might not have once came into contact now do so regularly. For example, in North America a reduction in wolf (Canis rufus) habitat and population size due to forest clearance and persecution has meant that wolves now more often come into contact and hybridise with closely related coyotes (C. latrans). For most conservationists, the distinction between such species is of ‘primary importance’ because it delineates between ‘natural’ and worthwhile evolutionary change and ‘artificial’ changes deemed to be detrimental (Allendorf et al., 2001, p. 618; Largiader, 2007). In the United States, hybrid red wolf-coyotes are thus often sterilised by wildlife officers to conserve their respective ancestral ‘purities.’

Ellstrand et al. (2010) suggested that perspectives from the life sciences were not sufficient for understanding the consequences of hybridisation, which they believed were inherently value-laden. They
noted that although environments tended to be represented in discrete units, ‘the messy reality of the world is that all these units...are often inconveniently less discrete than policymakers would like’ (Ibid., p. 386). In consequence, they highlighted the need for social scientific research that can help to clarify complex discourses of value. As I will demonstrate below, the hybrid relationships between introduced species and natives in New Zealand facilitate such understandings. Focusing primarily on hybridisation between introduced mallards and native grey ducks, I show that the results of ‘mixing’ are often ambiguous and open to alternative interpretations. Prevailing beliefs are tied to contemporary biosocial collectivities that employ specific discourses to position certain hybridities as permissible whilst denying others. I show that discourses that present human-induced hybridizations as a ‘loss’ can be challenged and that novel biological configurations could also prove valuable. Taken together, these insights point to the need to uncover the motives and power structures behind current conceptions of introduced species and to consider the ways in which alternative conceptions might be supressed.

8.2.1 Understanding mallard/grey duck interbreeding

Reports of hybridisation between grey and mallard ducks have a long history in New Zealand. Gillespie (1985) cited Thomson (1922) as the first documented report of mallard/grey duck hybridisation in New Zealand. Thomson reported that ducks shot in Christchurch in 1917 were thought to be hybrids. However, several papers in the Transactions of the New Zealand Institute in the late 19th century show that scientists in New Zealand were aware of the existence of hybridisation among Anas spp. ducks well before Thomson. For example, on encountering unusual plumage characteristics in a grey duck, Buller (1875) suggested hybridisation, possibly with a domestic duck, as the cause. His suspicions were later supported by others in the scientific community (e.g. see White, 1885; Kingsley, 1892; Smith, 1896). As one of the foremost proponents of displacement theory (see Chapter 5), Walter Buller forwarded the notion that native grey ducks were being naturally usurped by European mallards. Writing in the Supplement to the Birds of New Zealand (1906), he argued that the grey duck was being ‘gradually supplanted by a superior bird in every way, that is to say a cross between the native duck and the

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96 This date has been accepted as the first documented case of hybridisation between grey ducks and mallards in New Zealand by subsequent authors, including Guay and Tracey (2009) and Muller (2010).
imported mallard. He suggested that the ‘cross breeds’ would soon afford good shooting because they were ‘large, fast powerful’ birds. According to Buller this was because they were essentially of the same species. The hybridisation was merely an advantageous recombination that would improve the fitness of the local ducks by reducing the incidence of inbreeding. Mallards were the grey ducks’ ‘own near relatives sufficiently removed to ensure a complete change of blood’. For Buller, therefore, hybridisation was both beneficial and inevitable.

In the 1910s there were further reports of mallards hybridising with grey ducks and other waterfowl in the wild. These possibly coincide with those reported by Thomson (1922). Hybridisation, however, was a controversial topic of debate by that time. Many European colonists clung to displacement theory, conflating introduced species and their supposed natural dominance over natives with themselves. For Southey, the mallard duck was the ‘hardest, wildest, strongest bird of any of its kind…start the two [mallard ducks and grey ducks] on equally natural conditions, and I’ll back the mallard every time.’ The mallard was evidently ‘beating’ the grey duck and, ‘Is this not Nature all over? The best of the species will dominate the weakest’ (Whitney, 1913a, p. 5). In terms of sport, mallards were comparable to grey ducks in that they would ‘always give the guns good shooting’ and have ‘plenty of go’ about them. In terms of prettiness, ‘there can be no doubt the English bird is right on top’ (Southey, 1913, p. 3). They were even said to taste better (Whitney, 1913b). However, although displacement was to be expected, copulation with natives was an insult to which European birds, such as mallards, would never lower themselves. For Hawes, therefore, trout were ‘naturally’ and unavoidably displacing native fish, just as European colonists had ‘naturally’ displaced Māori.

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98 Some still do. Neal Hawes (Interview, Rotorua Anglers Association/Fish and Game New Zealand (Eastern), February 5th 2013), for example, offered a variant of displacement theory in his interpretation of the effects of introduced trout on native freshwater fish: ‘...if you relate it to human populations and colonisation and all the rest of it, then that’s life. That’s life as we know it. Over the millennia there’s been species come and go, and if one species can’t survive the onslaught of another species, well, that’s unfortunate, but life.’
themselves. Suggestions that the mallard duck was engaging in polygamy were, therefore, fanciful and it was considered ‘most improbable that a mallard would take a grey duck for a mate under any circumstances’ (Southey, 1913, p. 3). The notion that a grey duck might take a mallard as a mate, furthermore, was not conceivable.

Nevertheless, around the same time Edgar Stead began a long-running debate with Cecil Whitney over hybridisation between mallards and grey ducks (see Dyer & Williams, 2010; M. Williams et al., 2010). He argued that drake mallards hybridised with hen grey ducks, producing a hybrid characterised by its ‘extraordinary pugnacity’ (E. F. Stead, 1913, p. 8). Unlike Southey (1913), Whitney (1913b, p. 8) suggested that hybridisation between the two species would constitute ‘the greatest praise that could possibly be given to the mallard, for it shows it is the stronger bird.’ He sided with Walter Buller, considering hybridisation a genetic boon to the local duck population:

> There can be no doubt, if let alone, the grey duck will very quickly be absorbed in the mallard… the true mallard (and the wild hybrid also) is a better fighter, a stronger flyer, and a larger bird than the grey; and the grey will be much improved by mixing with the mallard…Eventually (when the grey has become absorbed, which will not be long) better birds will evolve from the two species, with the true mallard plumage and habits (Whitney, 1913a, p. 5; 1913b, p. 8).

Stead, however, was not convinced. Conceding that the mallard drake was a ‘brightly coloured bird’ relative to the grey duck drake, he emphasised that this quality was counterbalanced by the mallard hen which was ‘exceedingly nondescript’ (E. F. Stead, 1913, p. 8). As a further mark against hybrid progeny, specifically, he maintained that they were frequently polygamous and that hybrid drakes spent much of their time ‘fighting and thrashing the purebred drakes of both species and appropriating their mates’ (Ibid.). Noting that the grey ducks tended to disappear from water bodies inhabited by mallards or hybrids, he asked whether it was ‘desirable to replace the grey duck throughout New Zealand with a race of mongrels?’ (Ibid.). For Stead, hybridised animals were worthless entities and, as such, should be removed. Hybridisation between the species constituted a ‘crisis’ that should be swiftly dealt with.
He was supported by some duck hunters who offered a more pragmatic objection to hybrid mallard/grey ducks, noting that hybrids were ‘not so good for table purposes from the point of view of quality’ (Anon, 1917, p. 4). In other words, they did not taste as agreeable. This was important as it suggested that the sport of duck shooting might be compromised rather than enhanced by mallards. Thus, in concert with a sub-committee of the Canterbury Acclimatisation Society, Stead was granted approval in facilitating the destruction of at least 161 Aylesburys, mallards and grey ducks on the Avon River in Christchurch (Anon, 1914e). According to Stead, these birds had already extensively crossbred amongst one another, and he noted that,

…if anything conclusive was wanted in an argument for the destruction of the present birds it was supplied by the appearance of the birds shot, for all the heterogeneous collections of farmyard mongrels…ever seen they were the worst (Ibid., p. 10).

Despite this, he conceded that he could not confidently discern all of the hybrid birds from the ‘purebreds’. Although some ‘genuine’ purebreds may still have existed among them, he considered it a ‘moral impossibility’ to reliably distinguish them (Ibid.). It was the intention of the sub-committee, therefore, ‘to go right ahead and destroy the lot, and then to start with a clean stock next season’ (Ibid.). Again, for Stead, hybrids were valueless entities better off dead. They did not conform to species ‘norms’ for behaviour and appearance and were therefore identified as a danger to the status quo. The fact that Stead could not distinguish between hybrids and purebreds was an additional mark against hybrids as it indicated that species borders might be further transgressed and remain unnoticed.

Throughout the 1920s, reports continued to surface of mallards breeding with native and domestic waterfowl in New Zealand (e.g. Anon, 1922). Hybrid ducks were said to be ‘worthless’ birds (Anon, 1929b, p. 8) that ‘had a habit of killing ducklings’ (Anon, 1927b, p. 17). Furthermore, they were poor sport, being difficult to attract with decoys (Ibid.). Again, this reinforced the contention that hybrids not only

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99 Others were supportive, arguing that mallard/grey duck hybrids were rather ‘excellent’ to eat (Anon, 1910c, p. 235).

100 A domestic duck descended from wild mallards.

101 Neither could Whitney, noting that ‘the distinction between a cross and a purebred when the bird is on the wing would be most difficult’ (Whitney, 1913b, p. 8).
contradicted species boundaries, but also undermined the enjoyment of sport. These claims, however, were denied by Cecil Whitney who now held that the two species did not breed in the wild (Anon, 1927a). He was supported in this assertion by American gamekeepers D.M. Marshall and H.T. Rogers. Marshall argued that not introducing mallards would be a ‘grave mistake’\textsuperscript{102}. Like Walter Buller, he felt that the introduction of mallards was a welcome exercise in outbreeding, ‘as I know that hundreds of young ducks die annually through being inbred’ (\textit{Ibid.}). Nonetheless, he maintained that he had never heard of mallards crossing with grey ducks, other than in captivity. Rogers argued likewise: ‘…they will not cross with any specie [sic] that I know of\textsuperscript{103}. Whether hybridisation was occurring between mallards and grey ducks, therefore, remained contentious. Moreover, if it was occurring, its effects were also a matter of contention. This shows that, from an early stage, understandings of hybridisation were conflicting and not necessarily negative.

Despite Whitney’s ongoing efforts at further liberations, most New Zealand Acclimatisation Societies halted their importations of mallard ducks in the 1930s (Dyer & Williams, 2010). Apparent declines in the number of grey ducks were a widespread concern (see Anon, 1935a; W. A. Sullivan, 1990). These were partly attributed to ‘harvest’ rates, but also to competition and hybridisation with mallards. Already there were concerns that grey ducks were approaching an ‘inevitable finale’ (Anon, 1938c, p. 9). According to ornithologist, Robert Falla, the mallard was an ‘aggressive species…certain to replace the Grey Duck in many parts of the country’\textsuperscript{104}. They were also said to be more likely to colonise ‘river backwaters and small lagoons,’ where they would be less likely to be shot (Anon, 1933, p. 15). Hybridisation between the species was noted by some hunters, who reported that the ‘salient characteristics’ of each species were

\begin{itemize}
\item \textsuperscript{102} D.M. Marshall, Gamekeeper, Long Island, USA, in \textit{The Mallard}, Compiled and published by the Council of the Auckland Acclimatisation Society, 1928, p. 3, IA1 1930 46/69/1-1, Department of Internal Affairs, Wildlife – ducks 1933-1953, Auckland, National Archives.
\item \textsuperscript{103} H.T. Rogers, Conservation Department, State Game Farm, New York, USA, in \textit{The Mallard}, Compiled and published by the Council of the Auckland Acclimatisation Society, 1928, p. 3, IA1 1930 46/69/1-1, Department of Internal Affairs, Wildlife – ducks 1933-1953, Auckland, National Archives.
\item \textsuperscript{104} R.A. Falla, Ornithologist, September 7\textsuperscript{th} 1933, Letter to F.E. McKenzie, p. 1, IA1 1930 46/69/1-1, Department of Internal Affairs, Wildlife – ducks 1933-1953, Auckland, National Archives.
\end{itemize}
becoming less pronounced with the passing of each season, ‘foreshadow[ing] the ultimate disappearance of the grey duck, which…will vanish as a pure bird’ (Anon, 1937d, p. 17). Discourses of ‘loss’ were thus consolidating as the foremost means of understanding hybridisation.

In attempts to forestall ‘the inevitable,’ captive breeding of grey ducks was undertaken in some areas, but with limited success (M. Williams et al., 2010). Firstly, it was already difficult to secure eggs of ‘proven grey duck origin’ and, secondly, grey ducks proved challenging to breed in captivity (W. A. Sullivan, 1990, p. 273). The Auckland Acclimatisation Society, for instance, began captive breeding of grey ducks in 1938, but had given up as early as 1941105 (Ibid.). Other ‘solutions’ were proposed. At a meeting of the executive of the New Zealand Bird Protection Society, a suggestion to import conspecific grey ducks from Australia was advanced (Anon, 1932). This was dismissed by members, however, as it was seen as another potential source of hybridisation, only this time between the New Zealand grey duck and the Australian. Instead, it was suggested that the New Zealand grey duck should be encouraged simply by setting aside sufficient habitat in the form of wildlife refuges.

Edgar Stead disagreed, maintaining that hybridisation remained the paramount ‘threat’ to grey ducks (Anon, 1937a). Although, he again conceded that hunters frequently did not notice the difference between grey ducks and hybrids, he argued that the hybrids were ‘inferior eating’ and ‘no better sport than the grey duck’ (Ibid., p. 8). He continued to advance the argument that hybrids were ‘pugnacious,’ citing an example of grey ducks being chased by hybrids, ‘flying out to sea and refusing to return,’ much to the consternation of local hunters (Ibid.). However, others argued that hybrid ducks were just as ‘good eating’ and sport as grey ducks. According to one report they were readily and favourably attracted to decoys (Anon, 1937f). Another report suggested the opposite, that they were difficult to attract with decoys (Anon, 1933), but, according to another, this was nevertheless desirable as it made the hunt more ‘sporting’ (Anon, 1937d). Again, therefore, the effects of hybridisation were clearly ambiguous. Nonetheless, recognition from some hunters that hybrid birds might not be a threat to their sport was crucial. Indeed, that indicated that existing collectivities between hunters and grey ducks might only be enhanced by the unfolding of grey duck/mallard hybridisation (see Chapter 9).

105 More recent attempts have proven no more fruitful (e.g. see V. Smith, 2007).
For his part, Whitney continued to reject Stead’s claims of hybridisation. He considered hybridisation between the two species to be a ‘bogy’ and a ‘fallacy’ and, as evidence of his confidence, offered a £10 reward to the first person to deliver a hybrid to the Wellington Acclimatisation Society (Anon, 1934g; Whitney, 1937, p. 11). Whitney was assured by at least one of his suppliers that the mallard, in its wild state, was monogamous, breeding only with other ‘pure wild typical stock’\(^{106}\). His supplier noted, nonetheless, that when other ‘blood is introduced in order to obtain birds that will breed more readily and lay more eggs, the true wild type deteriorates and we get a heavier, slow-flying bird, not worth shooting’ (Ibid.). These birds, moreover, are ‘very polygamous, so much so that they are a nuisance to keep on the water containing other varieties’ (Ibid.). In other words, hybridisation would indeed occur if conditions were other than those in their ‘natural’ wild state. The reputed ‘monogamy’\(^{107}\) of wild North American mallards\(^{108}\) was largely a factor of their local behaviour. Being migratory, North American mallards spent most of their time feeding or travelling with their fellow species. They thus largely avoided the ‘temptation’ of crossbreeding. In contrast, New Zealand mallards had become largely non-migratory and indeed ‘semi-tame in many localities’\(^{109}\). This meant that they were frequently consorting with other waterfowl species, effectively facilitating interbreeding.

Suggestions that grey ducks and mallards occupied different habitat in New Zealand, preventing crossbreeding (e.g. Anon, 1933), were optimistic at best. Whitney chose to overlook the subtleties of the situation, however, arguing that mallards in New Zealand were also in a ‘wild’ state. He ignored the fact

\(^{106}\) Letter to C.A. Whitney, from C.L. Sibley [duck supplier], Sunnyfields Farm, Connecticut, May 25\(^{th}\) 1934, IA1 1930 46/69/1-1, Department of Internal Affairs, Wildlife – ducks 1933-1953, Auckland, National Archives.

\(^{107}\) Interpreted largely as a fidelity to the same species rather than the same partner. However, the sense to which mallards were considered ‘monogamous’ offered an additional moral argument in their favour.

\(^{108}\) Itself mostly fictitious (Largiader, 2007; Merendino, Ankney, & Dennis, 1993).

\(^{109}\) Anon, 11\(^{th}\) December, 1935 Memorandum for the under secretary – Mallard duck, p. 2, IA1 1930 46/69/1-1, Department of Internal Affairs, Wildlife – ducks 1933-1953, Auckland, National Archives. Also see, R.T Adams, Game Manager Officer for Secretary of Internal Affairs, Letter to Mr A. Sloane, 14\(^{th}\) January, 1970, AANS W3546 Box 16 WIL 10/28/1, Department of Internal Affairs, Waterfowl breeding – crossbreeding experiment 1969-1973, Wellington, National Archives.
that conditions in the ‘wild’ state of New Zealand were very different from those of ‘wild’ North America (also see Section 8.3.1). What these early ruminations over mallard/grey duck interbreeding clearly show is that the effects of hybridisation are complex and difficult to characterise. Although notions of ‘loss’ were quick to gain a foothold in social discourses, this was by no means the only way of understanding the encounter. Adherents of displacement theory saw the decline of the ‘pure’ grey duck as an inevitable corollary of contact with its ‘superior’ European congener. However, such supposed inevitabilities were later challenged by conservationists who suggested that the purities of native species and ecosystems could be ‘saved’ from such contaminations. Why such arguments were not taken up as a means of saving the grey duck is a question I will address in the next section.

8.2.2 The inevitability of grey duck decline

Ultimately, Edgar Stead was successful in developing the notion that, in New Zealand, ‘wayward’ mallards were precipitating the ‘loss’ of unique grey ducks and the propagation of a pugnacious and worthless hybrid race. Whitney’s contrasting claims, that hybridisation was flatly not occurring, were unsustainable. Stead’s thesis of ‘loss,’ nevertheless, was never fully accepted. Instead, three forms of resistance to this characterisation became evident in the 1930s.

Firstly, as already mentioned, many hunters disputed the conclusion that mallard or hybrid birds were poorer sport than the grey ducks. Indeed, rather than characterising the hybridisation as a ‘loss,’ many wondered ‘if the breeds mixed so thoroughly as to form a complete strain of hybrids…that the resultant bird would not be a gain’ (Anon, 1937f, p. 17). In some areas, hunters already relied on mallards, and probably hybrids, for a considerable portion of their sport (Anon, 1933). A biosocial collectivity pairing hunters with hybrid ducks was thus already well in evidence. Secondly, the notion that grey ducks were unwilling ‘victims’ of hybridisation were undermined by reports that it was grey ducks, not mallards or hybrids, that were instigating hybridisations with some domestic varieties, such as Aylesburys. As one reporter concluded, ‘it is evident that the grey duck is not the racial purist some of its enthusiastic protectors would contend it is’ (Anon, 1937c, p. 5). This understanding somewhat undermined the moral authority of conservationists who had proposed that they were merely ‘defending’ the grey duck. Thirdly, as the Second World War commenced, the destruction of mallards in efforts to ‘save’ the racial purity of
grey ducks, began to take on some controversial undertones. An article in the *Christchurch Star-Sun* entitled ‘Blood Purge in City Area this Morning’ satirically compared the destruction of hybridised ducks with Nazi racial cleansing:

In his efforts to preserve racial purity Herr Hitler deports those whom he regards as of undesirable stock, or sends them to a concentration camp. The North Canterbury Acclimatisation Society, however, demands stricter standards, and ruthlessly “bumps off” undesirables of mixed blood. Lest there be any unnecessary alarm caused by this statement, it should be added that the “bumping off” is applicable to pirate ducks...These ducks, which might be a cross between Indian runner, mallard or other breeds, represented a definite danger to the pure breed of the grey ducks. Therefore the society took every available opportunity of destroying the intruders...The blood purge this morning aimed at the elimination of four pirates (Anon, 1939a, p. 5).

These counter-discourses problematised Stead’s caricature of mallard hybridisation. Combined, they suggested that hybridisation was not necessarily undesirable; that natives might not simply be ‘victims’ of hybridisation, but rather willing ‘participants;’ and finally, that efforts to prevent hybridisation might carry ‘wicked’ and undesirable connotations of their own, and that they, therefore, might not be as unproblematically righteous as Stead had assumed.

Indeed, in the aftermath of the Second World War, proponents of the maintenance of racial purity in human ‘ethnic groups’ were progressively discredited and marginalised. Racism of any kind, though continuing to linger, was increasingly considered intolerable and incompatible with human rights (also see Chapter 7). The same consideration for non-human animals, however, was not seriously entertained. Instead, any actions that might lead to the removal of former purities, whether species, sub-species, genes or otherwise, were presented as intolerable (Biermann & Mansfield, 2014). As Myers (1923, p. 74) stated, ‘the extinction of a species is an everlasting blank – a loss that time itself cannot repair.’ Any hybridisation that could be seen to precipitate such an outcome, therefore, was typically considered morally wrong. Popular sentiment through the 1940s and 1950s continued to reflect this. As ‘Ecologist’ (1942, p. 7) argued in an article in *Forest & Bird*, ‘it is species we should preserve – not mongrels.’
Crosses between mallards and grey ducks therefore remained ‘very undesirable’ (Editor, 1942b, p. 2). In contrast to human populations, wherein ‘mixing’ was increasingly accepted, inter-group relations in wildlife were deemed to be a ‘threat.’ Again, hybridisation was constructed only as a ‘loss,’ it precipitated the extinction of ‘pure’ forms that could not be replaced. The resultant progeny, furthermore, were valueless ‘mongrels.’

As a consequence of these ongoing hybrid fears, by the late 1950s the majority of Acclimatisation Societies had, once again, ceased permitting liberations of mallards (M. Williams et al., 2010). Native species were, by then, seen to be generally the best adapted organisms for the New Zealand environment (see Chapter 5). A ‘distinguished visitor’ from America, Dr O.J. Austin, was believed to ‘express the collective opinion’ of the time when he suggested that grey ducks were better adapted for New Zealand than mallards, and that hybrids would be similarly less well adapted\textsuperscript{110}. A.G. Harper of the Department of Internal Affairs argued that hybridisation was thus a threat to ‘the production of wild ducks’ and that it was therefore ‘important that a check be kept on the numbers of hybrids that appear’ (\textit{Ibid.}). Whether ‘pure’ species, or their hybrid progeny, were better adapted was never tested. It also relied on the assumption that the environment was still similar to the pre-human habitat of grey ducks. With the draining of perhaps 90% of New Zealand’s ‘natural’ wetlands by this stage (Wetland Trust, 2013), this was a tenuous assumption and serves as an example of the general lack of science employed to investigate such questions with regards to introduced wildlife (see Chapter 9).

In any case, by the 1960s the ‘inevitability’ of grey duck decline was entrenched and attempts to ‘save’ the grey duck from hybridisation were largely abandoned. Despite the supposed suitability of the grey duck to the New Zealand environment, it was considered ‘inferior’ in competition with the mallard (Anon, 1963c, p. 11). Indeed, it was characterised by some as the mallard’s ‘simple-minded cousin’ (F. Palmer, 1962, p. 9). According to two contributors to \textit{New Zealand Outdoor}, therefore, ‘the writing [was] on the wall’ (Palmer, 1962, p. 8). It was ‘only a matter of time before the grey duck [would] cease to exist’ (‘Old

\textsuperscript{110} Letter from A.G. Harper, Department of Internal Affairs to M.M. Middleton, Tauranga Acclimatisation Society, October 12\textsuperscript{th} 1951, p. 1, IA1 1930 46/69/1-1, Department of Internal Affairs, Wildlife – ducks 1933-1953, Auckland, National Archives.
Duck Shooter’, 1961, p. 8). People would have to accept that the mallards were ‘here to stay,’ but might console themselves in the knowledge that they were ‘to some extent…helping to reduce the shooting pressure on our native ducks generally’ (F. Palmer, 1962, p. 8). J.S. Clendon, of the Department of Internal Affairs, concurred that the decline of grey ducks was ‘inevitable,’ offering a further consolation, that the mallard and grey duck were closely related: ‘in fact, some overseas taxonomists now regard the grey as a sub species of the mallard’111 (also see below). In other words, they were effectively the same species, meaning that the ‘loss’ of the grey duck was of lesser importance.

A later article in the Auckland Acclimatisation Society Newsletter advised hunters that they might still ‘save’ the grey duck if they were willing to shoot more mallards (C. Carson, 1964; G.R. Williams, 1962). There is little evidence that this advice was heeded and, even if it was, it was similarly unsuccessful. What was recognised, however, was that hunters had not adapted their methods for shooting mallards, instead relying on the same techniques they had used on grey ducks. As Palmer (1962, p. 9) related:

> There are some shooters who maintain that the mallard has spoilt duck shooting. They say he doesn’t decoy easy, and flies just out of gun-range of the decoys before discovering they are fakes and taking off. They also say he is educating the gullible grey duck which, apparently realising the superior intelligence of their wide-awake cousin, will join up with him for greater safety.

Although Palmer exaggerated the case, there was recognition that hunters were using techniques that were less suited for mallard hunting112 (also see Anon, 1980; Balham, 1952; Draper, 1999). An analysis of leg band returns in 1956 by the New Zealand Wildlife Service, for instance, showed that grey ducks were more likely to be shot than mallards (T. Caithness, Williams, & Nichols, 1991; Coster, 1974; G. R. Williams, 1962). Consequently, the Wildlife Service undertook campaigns to educate hunters on how to

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112 Ibid.
shoot mallards (e.g. see Anon, 1981; Cavanagh, 1965, 1977). In this way, the mallard further went from being seen as a 'liability' by some hunters to an important game bird 'asset' (also see Chapter 9).

It is important to note, however, that this education was not undertaken with the objective of ‘saving’ the grey duck. Rather, the grey duck was effectively given up for 'lost.' Indeed, after a Department of Internal Affairs discussion on mallards and their effects on grey ducks, the following points were resolved:

1. In general it was agreed that ultimately the mallard duck will become by and large the far more plentiful of these two species over much of the country and will be the main sporting species.

2. This process is inevitable and there is nothing practical which can be done to prevent it.

3. From the point of view of sportsmen and game bird shooting there is nothing wrong with this as the mallard is a valuable sporting bird and should be so regarded.

4. More is to be done to educate shooters as to how to shoot mallard ducks so that they may take full advantage of the sporting asset these birds provide. This education is to be done on that basis and not from the other point of view that it will help with the conservation of the grey duck.

5. It was agreed in the meantime that policy in the Rotorua Districts is to be modified and that permission be given for mallards to be liberated or eggs supplied for ultimate establishment of these ducks on suitable ponds in areas where it is felt mallard ducks could become established and which despite the elapse of considerable time have not been populated by grey ducks.\(^{113}\)

As indicated, official policy henceforth was that the decline of the grey duck was ‘inevitable’ and unavoidable. The mallard, in any case, was a worthwhile quarry. Once hunters were better informed they would have more success with hunting them. The continued liberation of mallards was not discouraged.

\(^{113}\) Department of Internal Affairs, August 6th 1963, AAAA W5649 6015 Box 2 46/2/48, Department of Internal Affairs, Wildlife Act – Ducks (mallard) 1963-1968, Wellington, National Archives.
Rather, where habitat was not utilised by grey ducks, further liberations of mallards would be acceptable. Like most other assessments of the effects of introduced wildlife up until this time in New Zealand, however, the effects of mallards on any native species had not been assessed scientifically (see Chapter 9). In fact, it was not until the late 1960s that the Wildlife Branch of the Department of Internal Affairs began experiments to assess the nature and extent of hybridisation between mallards and grey ducks (M. Williams & Roderick, 1973). The ‘inevitability’ of grey duck decline was thus not scientifically determined. It was an intersubjective understanding between wildlife conservation officials and hunters, perhaps most of whom were both. Although the grey duck was declining as a ‘pure’ species, this was no threat to hunting. Again, this was important because it meant that the duck’s perceived value was not undermined.

Work over the 1970s and 1980s, in any case, tended to downplay the extent and ramifications of hybridisation between mallards and grey ducks. Caithness (1975) sided with earlier claims about hybridisation (e.g. Anon, 1933) that considered it to be occurring only in areas that were of marginal habitat for grey ducks (also see Coster, 1974). Williams (1981) suggested that the ‘purity’ of mallards was more heavily affected than that of grey ducks, although he also conceded that there was little evidence either way. Another paper provided some evidence to support Austin’s contention (see above), that hybrids would suffer reduced fertility and viability, hinting that mallard/grey duck hybridisation might ultimately be maladaptive (M. Williams & Roderick, 1973). Others simply furthered Whitney’s denials. Indeed, Coster (1974, pp. 37-38) parroted Whitney’s claims from the 1930s:

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114 M.J. Williams, January 5th 1967, Letter to The Secretary, Southland Acclimatisation Society, AAAA W5649 6015 Box 1 46/2/7, Department of Internal Affairs, Wildlife Act – Ducks 1947-1969, Wellington, National Archives.


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Of hundreds of pairs of birds, mainly mallards but about 200 greys which are constantly observed on Pupepuke Lagoon throughout the breeding season, not one crossed pair has ever been reported\textsuperscript{116}.

An article in Ducks Unlimited New Zealand’s magazine, \textit{Flight}, entitled ‘New Zealand Waterfowl: Facts and Figures,’ similarly claimed that ‘pure’ grey duck populations were quite secure. It noted that, ‘hybridisation with Mallards is not a serious problem in the wild and occurs rarely’ (Anon, 1982, p. 8). Despite all this, by the 1990s the consensus was that hybridisation was indeed pervasive between mallards and grey ducks\textsuperscript{117}, and probably increasing (Haddon, 1998; Hitchmough, Williams, & Daugherty, 1990; Rhymer et al., 1994). Contrary to Williams and Roderick (1973), recent research has found no evidence for differences in fitness between ‘pure’ and hybrid birds (Muller, 2010).

Ultimately, framings of the ‘inevitable’ decline of ‘pure’ grey ducks have proven enduring. In 1913 Cecil Whitney had predicted that complete hybridisation between mallards and grey ducks would ‘not be long’ in arriving, insisting that little could be done to stop it (Whitney, 1913a, p. 5). A century later, this prediction remains popular. As ornithologist Phil Battley commented in 2013, ‘the future is very bleak for them [i.e. grey ducks] in New Zealand unfortunately’ (in Quilliam, 2013, n.p.). Rudi Hoetjes (Interview, Regional Manager, Fish & Game (Northland), February 27\textsuperscript{th} 2013) similarly explained that, ‘the grey duck is likely to disappear at some stage in the future and there really isn’t a lot we can do about that.’

\textsuperscript{116} Compare with: ‘In the Auckland Province during the last four years large numbers of mallards have been liberated. These have consorted with the grey duck, and although numbers of both grey and mallards have been shot every shooting season by sportsmen looking for hybrids, not a single hybrid has been shot or seen’ (Whitney, 1937, p. 11).

\textsuperscript{117} According to Murray Williams (Interview, Waterfowl biologist, January 22\textsuperscript{nd} 2013), hybridisation between mallard ducks and other native waterfowl is ‘a widespread feature.’ He cited, as an example, interbreeding between mallards and brown teals: ‘I can go to some islands in the Bay of Islands now [and] I'll guarantee you I could show you a mallard/brown teal hybrid. They were not uncommon when I was working on brown teal in Northland.’ In contrast, Ian Hogarth (Interview, ex-Department of Conservation (Northland), April 17\textsuperscript{th} 2013) had ‘heard one or two occasions of that happening’ but never seen evidence of hybridisation between mallards and brown teals: ‘I've worked on brown teal for 30 years and I have not seen any example of interactions of greys and mallards with brown teal.’
Hybridisations between mallards and grey duck are a ‘loss’ that is not compensated by the persistence of hybrid offspring because, as Chris Bindon (Interview, Member, Ducks Unlimited New Zealand, March 22\textsuperscript{nd} 2013), noted, ‘…you haven’t really got that grey duck any longer. You’ve always got something that’s a perpetual mix.’ Although, in their offspring, ‘you’ve still got the bird arguably […] what point is it really? I mean it’s like prolonging the inevitable isn’t it?’ (Interview, Chris Bindon, Member, Ducks Unlimited New Zealand, March 22\textsuperscript{nd} 2013). The defence of grey duck purity has thus consistently been constructed as a worthless goal. The grey ducks’ unique genetic identity has been infiltrated by foreign mallard genes. Rather than try to save any remaining purity, grey duck conservation has been given up for lost.

Although presented as such, this ‘inevitability’ is not a fact. It is a construction that has been rigorously promoted by duck hunters and wildlife officials, many of whom are both. Indeed, as conservationists in New Zealand have shown over the last 50-60 years, there is nothing ‘inevitable’ about the extinction of any species, whether through hybridisation or any other mechanism (D. Young, 2004). It is a question only of how important that uniqueness is deemed to be and who is prepared to work to preserve it. In the next section, nevertheless, I suggest that the notion of loss itself must also be questioned. Indeed, I argue that hybridisation may instead represent just the kind of ‘molecular’ mode of composition that may be necessary for adaptation to changed biotic circumstances (Lundborg & Vaughan-Williams, 2011). As I argued in Chapter Four, rather than seeing the loss of pure species as a threat, hybridisation may be seen as a fruitful response to the changes that have been wrought on the environment and a necessary biotic bridge into the future (Dillon, 2007b).

8.2.3 Countering discourses of loss

Underlying discourses of ‘loss’ in relation to the grey duck, and attempts to both prove and make up for that ‘inevitability,’ are the notion that there is indeed a ‘pure’ state to be ‘lost,’ and that resultant ‘mixes’ are relatively worthless. As Hamilton and Moller (1999, pp. 80-81) stated, ‘the real problem is that you end up with an impure hybrid species and you have lost your original pure stock.’ Here, the emphasis is on the loss of ‘original pure stock’ with little to no recognition directed at the gain of a novel entity. Hybridisation is thus presented as a quasi-predatory condition that only takes away from species and other valued constructions (e.g. sub-species, varieties). Warwick Massey (Interview, Member, Royal
Forest and Bird Protection Society (Mid North), January 16th 2013), for instance, held that it was important to maintain the purity of species and that interbreeding was always a ‘loss’ because it did not eventuate in a new species (but see below). As an illustration, he recounted his experience in unintentionally crossbreeding captive budgies:

When we lived in Thailand for three years, to entertain the children I built a budgie house and I got some budgies and, of course, I didn’t know anything about breeding budgies. We got a yellow one and a blue one and green one and, in no time at all, we had the most motley collection of mongrel budgies you can imagine [laughs]. They did extremely well, but no one wanted them when we left (Ibid.).

As Massey stated, the resultant hybrid progeny were considered worthless, even though they ‘did extremely well.’ While the hybrids were healthy and vital they were considered to be better off dead. Muller (2010, p. 259) furthered this thesis of ‘loss’ arguing that hybridisations represented a ‘loss of evolutionary potential’ (also see N. Myers & Knoll, 2001; Rosenzweig, 2001b). The ‘reduction’ of diversity from one species into two – in the case of complete hybridisations – meant that in the future there would be ‘fewer separate starting points from which new forms can arise’ (Muller, 2010, p. 279).

The language used to describe ‘pure’ and ‘impure’ entities serves to reinforce these understandings of loss. ‘Unhybridised’ grey ducks continue to be described as ‘pure’ and ‘clean’ (e.g. Interview, Chris Bindon, Member, Ducks Unlimited New Zealand, March 22nd 2013; Interview, Ian Hogarth, ex-Department of Conservation (Northland), April 17th 2013; Interview, Murray Williams, Waterfowl biologist, January 22nd 2013). These labels invoke connotations of righteousness and un-adulteration. They also imply that the opposite – hybridised ducks – are ‘dirty’ and ‘contaminated.’ A population of grey ducks is referred to as a ‘brace’ or a ‘flock,’ but a population of hybrid grey duck/mallards is commonly referred to as a ‘hybrid swarm’ (e.g. see Muller, 2010; Norman, 1990; M. Williams & Basse, 2006). The word ‘swarm’ has very negative connotations and is readily associated with insect plagues epitomised in the 1978 movie The Swarm about a massive swarm of African bees attacking people. Arguing against the protection of ‘purity’ becomes immediately problematic, as does advocating for the sympathetic reappraisal of a ‘swarm.’
Despite such unpromising groundings, however, two emerging counter discourses challenge, firstly, the notion of purity, and secondly, the notion that hybridisation only represents a loss. From the outset, Muller (2010) acknowledged that purity is not biological, but rather a social construction. Therefore, although science is used to determine whether grey ducks are ‘free’ of mallard genes, science does not, and cannot, show that grey ducks are intrinsically ‘pure.’ Rather, since Carl Linnaeus devised a system of classification, scientists have merely categorised different living forms into constructions known as ‘species’ based on the criteria of the day. When humans, or other animals, contradict those classifications, or the understandings of how those classifications should be made change, a conceptual messiness ensues\textsuperscript{118}. As Tony Beauchamp (Interview, Technical Advisor Threats, Department of Conservation (Northland), February 25\textsuperscript{th} 2013) noted, purity of species is not akin to any intrinsic purity, ‘…it’s just a human-based system. We have devised a nomenclature-type system and we make value judgements on it.’

Ian Hogarth (Interview, ex-Department of Conservation (Northland), April 17\textsuperscript{th} 2013), noted that this state of ‘purity’ is a reflection, not of innate cleanliness or consistency, but simply of what people currently want:

If I buy a Labrador dog I expect it to be a Labrador, not collie/Labrador. [But] let’s face it; those dogs are actually derived from other…so they’re actually a mix. A pure Labrador is actually a mix of a whole lot of other dogs. So I think it’s a bit silly to say that they’re ‘pure,’ but that’s as pure as we want it. Because you want a Labrador because of all the traits that it has. So, OK, when you get a pure grey duck you get a grey duck that existed in New Zealand, that was developed in New Zealand, in the face of no other cross-breeding with any other species for generations of time. And, therefore, that’s about as genetically pure as you’ll probably get (Ibid.).

In other words, the ‘pure’ grey duck in New Zealand is reflective of a duck species that existed in the pre-human condition. It was ‘developed’ without any cross breeding with other species. This is not to say that it was not actually hybridising with other native species, but rather to emphasise that it was not cross-breeding with any \textit{introduced} species. As Hogarth noted, in this condition it was ‘about as genetically pure

\textsuperscript{118}Hence the ongoing debate over what constitutes a ‘species’ (see Stearns & Hoekstra, 2000, pp. 216-219).
as you’ll probably get.’ Put another way, purity simply defines a state of preference. In the context of wildlife, this understanding again relies on the assumption that human influences necessarily sully nature’s ‘pure’ constitution (see Chapter 4). Moreover, if people’s views change on how species should be defined, or by what mechanisms new ‘natural’ species can come about, then the understanding of purity can also change.

Muller (2010) argued that hybridisation between grey ducks and mallards constituted a ‘loss’ of evolutionary potential. However, like many other presentations of hybridisation that argue a thesis of ‘loss,’ it remains contentious. Whilst presenting a case that appears sympathetic to future evolution it largely ignores contemporary evolution. For example, although more species may mean more options for future evolutionary pathways, arguing that those should perennially be left open negates the ability for new species to ever realise their supposed ‘potential.’ Indeed, Muller (2010, pp. 277-278) acknowledged this, writing that:

…hybridisation might be an evolutionary adequate response to the rapidly changing environment. It makes sense to expect these often dramatic changes to induce strong selection pressures and change the course of evolution by favouring very different adaptations from those previously advantageous. If hybridisation can speed up such evolution, then for some species, selection might favour hybridisation as a way to rapidly acquire diversity and genes to cope with a rapid rate of change. This further complicates the question of when hybridisation is a desirable or undesirable feature for conservation. Species are not immutable, and it would be presumptuous of conservationists to try to preserve them as static entities. If humans alter a species’ habitat, they will alter its fate in the long term. Should we then attempt to preserve the species as it was, in an environment it is no longer adapted to, or are there cases in which the rapid alteration of a species should be seen as a natural process that increases a populations’ fitness, and therefore, its long term chances of survival?

Like Hogarth (above), however, Muller personally rejected changes that have been human-induced. She argued that hybridisations between species that ‘would not normally have had the chance of contact’
should be viewed as ‘unnatural and undesirable’ (Ibid., p. 279). Nevertheless, she also argued that preventing hybridisations between species that have not been brought together in some way by humans might be ‘just another intervention of humanity into a natural system’ that would otherwise be adapting to new environments (Ibid.). Either way, human contact, or rather the lack of it was said to define ‘appropriate’ evolutionary pathways. Because grey ducks and mallards had been brought together by humans, any evolutionary change resulting from hybridisation was therefore defined as necessarily deleterious (see Section 8.3).

On the contrary, some argued that hybridisation, whether human-induced or not, was still a ‘natural’ feature of evolution (e.g. Interview, Dominique Scott, Member, Kerikeri Gameshooters Club, March 19th 2013). As Rudi Hoetjes (Interview, Regional Manager, Fish & Game (Northland), February 27th 2013) remarked, ‘I personally just think it’s a natural part of life. You know, it’s been occurring for hundreds of thousands of years. Species do that.’ Indeed, for Murray Williams (Interview, Waterfowl Biologist, January 22nd 2013) hybridisation was one of the principal means through which new species evolve. For Williams,

…hybridisation is the means by which most species arise isn’t it? How many plants can you see here that haven’t arisen through hybridisation? None probably. It’s either population isolation and the development of unique characteristics in an isolated environment with no gene flow, or it’s through hybridisation (Ibid.).

Whether human-influenced or otherwise, the end result of hybridisation can thus be the development of new species. Moreover, as Muller (2010, p. 277) suggested, this hybridisation may be an ‘evolutionarily adequate’ response to rapid human-induced environmental changes, with dramatic changes inducing correspondingly strong selection pressures. This understanding questions whether effectively attempting to slow the process of evolution, a response characteristic of conservationists (Lugo, 2012), is in fact an ‘appropriate’ reaction to rapid global biotic change. For example, although allowing the extinction of the New Zealand sub-species of grey duck may result in the reduction of the ‘stock’ of global ‘biodiversity,’ there is no more guarantee that that sub-species was capable of surviving changed conditions than its hybridised progeny.
These ruminations on hybridisation also raise ethical questions. For example, whether it is desirable for humans to attempt to control wildlife down to the level of their sexual preferences. As I have already argued, hybridisation is likely a two-way process in which grey ducks ‘participate.’ They are not merely passive ‘victims.’ For example, hybridisations might not always be instigated by mallard drakes (Rhymer et al., 1994; M. Williams & Basse, 2006). In 1970, Game Management Officer for the Department of Internal Affairs, R.T. Adams, sided with earlier reports (e.g. Anon, 1937f) that, ‘contrary to popular belief the Grey male and Mallard female are mostly involved’ in hybridisations¹¹⁹ (but see M. Williams & Roderick, 1973, who argue the opposite). More recently, Muller (2010) also found that grey ducks generally appeared to prefer mating with mallards. For Olykan (2009, n.p.), ‘the real problem with greys is their desire to mate with mallards’ not mallards with greys. As Tony Beauchamp (Interview, Technical Advisor Threats, Department of Conservation (Northland) commented,

…the biggest problem, of course, is to the species themselves that are hybridising and that doesn’t matter to them. It’s just a selfish gene-type scenario of passing their genetics on to the next generation. They’re not thinking ‘do I look like a mallard or do I look like a grey duck any longer?’ [laughs]

Neither the species nor its genes, therefore, are ‘concerned.’ As Ian Hogarth (Interview, ex-Department of Conservation (Northland), April 17th 2013) remarked,

Obviously [grey ducks have] learnt to love a mallard [laughs]. So that’s their problem. They themselves are not too interested. I guess their one aim is to procreate. That’s what they’re set to do.

Conservationists act on behalf of the population in what they perceive to be the species’ best interests, however, ‘species’ are socially constructed and the individuals that make up those species are

¹¹⁹ Although it should be noted that forced copulations are common in Anas ducks. Therefore neither matings between nor within Anas species should be described as necessarily amicable.

demonstrating that they have no interest in sustaining particular human definitions of purity. This suggests
that conservation in the face of hybridisation may actually be working against wildlife, forcing individuals
to conform to rapidly dating definitions of their behaviour, genetics and morphology. It insists that people
are more astute in determining the future of these species than the individuals that make up those
species themselves. Given the changes in attitudes towards hybridisation just over the last century in
New Zealand (see above) this is difficult to sustain. This is not to say, moreover, that hybrid progeny are
necessarily better adapted for the current environment than their precursors. Indeed, as I argued above,
that may not be the case. It is merely to question whether the many environmental changes wrought by
humans, considered so negative by conservationists, will ultimately be any better ‘solved’ by humans than
by the species themselves which, up until their abductions (in the case of introduced species), were
considered faultless.

Finally, although discourses of loss centre on the ‘pure’ grey duck, the ‘pure’ mallard is also being 'lost' in
New Zealand. Mallards in New Zealand, for example, are now distinctly different in appearance to both
Australian (Interview, Murray Williams, Waterfowl Biologist, January 22nd 2013) and North American
mallards\textsuperscript{121} (Interview, Nathan Burkepile, Field Officer, Fish & Game (Northland), February 27\textsuperscript{th} 2013). As
Carl Cooper (Interview, Dargaville Biosecurity Officer, Northland Regional Council, March 19\textsuperscript{th} 2013)
explained, ‘The pure mallard as I remember them [in the 1970s], it’s a talking point if you shoot one.’ This
is constructed as not concerning because the mallard exists elsewhere and its conservation is thus the
responsibility of others\textsuperscript{122} (see above). As already mentioned, nonetheless, new ways of referring to this
novel entity are being coined. The most popular among these is ‘\textit{grallard}’ – a portmanteau of ‘grey duck’
and ‘mallard’ (e.g. Bryce Johnson, Fish and Game New Zealand in Olykan, 2009, n.p.; Interview, Ian
Hogarth, ex-Department of Conservation (Northland), April 17th 2013; Interview, Murray Williams,

\textsuperscript{121} Size differences between New Zealand mallards and North American mallards were recorded as early as the
1950s (see Balham, 1952).

\textsuperscript{122} Although it is notable that almost everywhere the mallard exists it is interbreeding with other native and introduced
ducks (Guay & Tracey, 2009; Merendino et al., 1993). This seriously challenges the assumption that the mallard itself
is 'safe' as a 'pure' entity either.
Waterfowl biologist, January 22nd 2013). Rather than emphasising the loss of the ‘pure’ grey duck, ‘grallard’ in effect celebrates the formation of a new ‘species.’ As Murray Williams suggested:

I just think get rid of that distinction [between grey ducks and mallards]. [The hybrid is] part of New Zealand. And in the end we will have a duck. I would like the word ‘grallard’ or ‘greylard’ or something like that to be introduced simply to use a different word. A different name [...] These are concepts that you can change with a word, and so ‘grallard’ is that we’re gonna end up with something [new], a genetic mix.

Indeed, as Williams noted, ‘…we could end up with a[another] unique New Zealand duck,’ (Ibid.) a bird perhaps not unlike the Mariana mallard (*Anas platyrhynchos oustaleti*), a recently extinct species that was thought to have arisen through hybridisation between grey ducks and mallards on the islands around Guam (Reichel & Lemke, 1994). In fact, as Tony Beauchamp (Interview, Technical Advisor Threats, Department of Conservation (Northland), February 25th 2013) suggested,

...you could argue that [this new] hybrid swarm is as unique as the species that you’re actually trying to save rather than arguing that you’re wanting to maintain the end of two continua which are breeding themselves into something different anyway.

Carl Cooper (Interview, Dargaville Biosecurity Officer, Northland Regional Council, March 19th 2013) went a step further, asking whether ‘grallards’ might warrant ‘native’ status:

...this interbreeding has created a new class of bird. I don’t know whether he’s a native now or is he an introduced animal, or what is it? [...] People are [native] after one generation aren’t they?

These discursive strands hint, at the least, at the capacity for new appreciations of this novel ‘species being’ that move beyond a begrudging acceptance. They emphasise that understandings of uniqueness and value can change with something as little as a change of name, but also as large as a nascent acceptance that humans played a part in the formation of this new entity and that this perhaps was not categorically ‘wrong.’
This section has shown, in summary, that the process of hybridisation is complex and often ambiguous. Legacies of racism, at least partially discarded in human societies, retain considerable currency in considerations of wildlife, wherein notions of purity remain of paramount importance. These are intimately tied to the nature-culture dualism which insists that human influences are not a part of 'natural' hybridisation and are thus only a source of 'loss.' Understandings of grey duck/mallard hybrids question both the nature of purity and its value. In concert with Section 8.2.2, this section shows that the desirability of the ‘pure’ grey duck has come second to the value of ducks generally as game birds. Both hunters and wildlife managers have tended to downplay the uniqueness of the grey duck in favour of supporting relationships between hunters and conservationists that are premised on maintaining sport. The same discourses employed to defend hybridisation between grey ducks and mallards are discarded when considering the hybridising activities of non-game species (see Chapter 5). This indicates that hegemonic discourses, in this case, are not related to ‘logic’ or ‘reason,’ but rather, are tailored to the perpetuation of certain biosocial collectivities.

These collectivities, nevertheless, do not challenge the thesis that hybridisation represents a ‘loss.’ Rather they simply define it as ‘inevitable’ and as something to be begrudgingly accepted. The agency of the individuals comprising the ‘population’ is quashed beneath conceptions of an ‘appropriate’ species identity and evolutionary trajectory. Introduced mallards are seen therein to effectively violate natural boundaries and precipitate the decline of ‘pure’ grey ducks. The agency of grey ducks themselves is largely ignored. They are presented as helpless ‘victims’ of a supposedly one-way process. Despite this framing, grey ducks resist victimisation by selecting mallards as mates and genetically ‘infiltrating’ the mallard population as well. ‘Pure' mallards are thus as rare in New Zealand as ‘pure’ grey ducks. This interaction challenges the thesis of ‘loss’ by demonstrating that hybridisation is, in fact, a two-way process in which neither ‘pure’ entity survives, but in which novel genetic beings arise. In addition, many interpretations of the new ‘species’ – the ‘grallard’ – resist morbid notions of loss only; highlighting that new associations can result in entities that are both novel and valuable. It also challenges the assumption that human-mediated changes are necessarily detrimental, suggesting that changes, in actuality, are complex and not without ‘gains.’ Whilst not suggesting that human interactions with environments are invariably positive, it resists the temptation to proclaim that they are categorically negative. Again, it also
suggests that conceptions of restoration that are based on an adherence to pre-human baselines may require revisiting.

8.3 The erasure of evolution

In the last section of this chapter I further elaborate on the sense to which human-mediated environmental changes have been denied legitimacy – changes extending to those precipitated by introduced species. Just as mallard hybridisation with grey ducks is seen only as a 'loss,' introduced species are seen to only ‘damage’ or ‘impact’ on the biota of their introduced ranges. Whether incrementally or otherwise, introduced species are constantly evolving behaviourally and genetically to their new circumstances, just as native species are to theirs. However, this process of adaptation, although widely acknowledged in principle, is effectively denied and trivialised. As Tony Beauchamp (Interview, Technical Advisor Threats, Department of Conservation (Northland), February 25th 2013) remarked on hybridising interactions between black stilts and pied stilts:

In essence, people are wanting to maintain the unique black and white bird here and the unique black bird there. They’re actually not wanting to view the process of evolution.

They’re trying to remove it.

Indeed, this comment aptly summarises discourses on evolution in New Zealand. Restorationist frames typically remain fixated on a prior state with little to no genuine recognition of evolving landscapes and the species that are evolving alongside them. The focus is on preserving ‘biodiversity,’ which tends to sanctify pre-human forms and assemblages, with little recognition of changed ecosystems or changed species when precipitated by human influences (see Chapter 5).

In Chapter Two, I showed that a concomitant of biopolitical understandings of biosecurity is the desire to maintain a relative stasis in the population and to preserve certain norms (Raman & Tutton, 2009). This is partly a consequence of the need to preserve particular kinds of distinctiveness as ‘commodities’ for exploitation (Maye et al., 2012; Yu & Liu, 2009). However, it is also about taming the unknown and ensuring that life can be predictably controlled and kept in order (Hinchliffe et al., 2012). When this order is contradicted a ‘state of emergency’ can be declared. This measure defines the appropriate state of
‘normal’ and insists that deviations to it should be removed (Anderson & Adey, 2012). As I will argue below, it also serves to trivialise alternative conceptions by highlighting the reputed importance of the state to which it aspires. I will demonstrate that nature in New Zealand, and the process of evolution that defines it, continues to be seen as a ‘pure’ state in isolation from humanity. Therein, restoration assumes only an ‘archival’ role (Yusoff, 2010), effectively discounting the value and importance of contemporary evolution to future environments.

As I argued in Chapter Four, the ideal to which discourses of restoration typically aspire is a pre-human environment. The emphasis is on ‘historical fidelity’ and the reversal of human-mediated changes (Throop, 2004, p. 47). Milton (2000), for instance, observed how restorationist discourses remain fixated on preventing changes to the status quo if the environment is considered ‘unmodified,’ or recreating a pre-human status quo if otherwise. He felt that the conservation of biodiversity was in many respects ‘an attempt to halt the process of evolution’ (Ibid., p. 237). In other words, human effects on evolution are discounted or even removed. Coupled with this is a continued reluctance to accept the consequences of ongoing evolutionary change. As I argued in Chapter Three, the potential for significant evolutionary change to occur on contemporary time scales has been increasingly recognised (Hendry & Kinnison, 1999; Parzer & Moczek, 2008; Sax et al., 2007). New diversities are seen to rapidly emerge from the disintegration of old ones. Many introduced species, moreover, may be at the forefront of new diversities (Sagoff, 2009b). Despite this, evolution is still regularly framed only as a long-term process, with any meaningful evolution deemed to be beyond the timeframe of human relations. In fact, human relations with wild biota are frequently relegated to the language of ‘effects’ and ‘impacts’ on the environment exclusively (see Chapter 4). As I will next argue, therefore, because of widespread acceptance that evolution both ‘takes a long time’ and is beyond the realm of human influence, adaptive change in introduced species, or its precursors, has been ignored or trivialised. In consequence, the scale and ramifications of contemporary evolution have been obscured and remain largely unappreciated.

8.3.1 ‘Genuine’ evolution

From around the 1990s, the understanding that evolutionary change was possible over relatively short timeframes was becoming more widely recognised (Youatt, 2008). In response, discourses of ‘genuine
evolution’ were employed in New Zealand as a means of differentiating ‘natural’ and worthwhile evolution from ‘adaptive change’ or ‘damage’ (e.g. see Holloway, 1993; Young, 2004). ‘Genuine evolution’ is presented as something that occurs only over immensely protracted timeframes. As Warwick Massey (Interview, Member, Royal Forest and Bird Protection Society (Mid North), January 16\textsuperscript{th} 2013) commented, ‘New species do evolve [but] they evolve over a very long time scale, as a rule.’ This was echoed in the responses of John Sutton (Interview, Area Manager, Department of Conservation (Whirinaki), April 15\textsuperscript{th} 2013): ‘You must [have evolution] over a million years or something,’ and Chris Bindon (Interview, Member, Ducks Unlimited New Zealand, March 22\textsuperscript{nd} 2013): ‘It’s a slow process – hell of a slow...’ In contrast, contemporary evolution in New Zealand was generally discounted or trivialised. It was presented as a universal ‘constant thing’ (Interview, Shona Myers, Secretary (ex-President), New Zealand Ecological Society, May 22\textsuperscript{nd} 2013) and something that ‘never stops’ (Interview, Grant Vincent, Chairman, Royal Forest and Bird Protection Society (Gisborne), February 22\textsuperscript{nd} 2013). However, most interviewees made it clear that meaningful evolution was largely a factor of geological timescales. Any notion that evolution may be occurring on a scale of decades or even centuries was trivialised. Evolution, in effect, was something that occurred well beyond the frame of human comprehension.

‘Genuine evolution’ was also seen to be that which is not human-influenced. Neither humans, nor the species that they introduce were seen to contribute to worthwhile evolution in New Zealand (see Holloway, 1993). Again, although the dynamic nature of ecosystems is increasingly realised (Lankau, 2011), this process was constructed as outside of an appropriate human realm. Shona Myers (Interview, Secretary (ex-President), New Zealand Ecological Society, May 22\textsuperscript{nd} 2013), for example, commented on the evolutionary effects of introduced deer:

> Forest ecosystems are very dynamic systems so they do actually require dynamic change to move into the future and be able to survive, but then when it’s also being impacted by [introduced] animal predators or animal browsers and things like that then that sort of compounds the issue really.

As this passage suggests, introduced deer are bracketed off from the ecosystems they live within. Changes precipitated by their presence are presented as ‘impacts’ on a prior native state or a desired
future state, not features of an evolving landscape. For some, in fact, evolution, under human-influenced systems has come to a halt. Chris Bindon (Interview, Member, Ducks Unlimited New Zealand, March 22nd 2013), for instance, felt that ‘in a modified world with an increasing human population,’ evolution was no longer occurring: ‘what possible new species are we going to see created? It just will never happen.’ Instead, human influences were only precipitating ecological losses, such as those brought about through hybridisation (see Section 8.2). To further clarify, Bindon distinguished between ‘evolutionary extinction’ and ‘man-induced [sic] extinction:’

JS: How is that different?

CB: Oh, it’s way different bro’! Holy moly, it’s huge! Because in a natural sense – if man [sic] wasn’t interfering – it’s basically one species turning to become something else over a period of time. It generally doesn’t mean a whole living colony of something just suddenly disappearing; dropping off the face of the world. It’s a transition. Whereas we’re talking about things that were alive in a colony or a flock or whatever just suddenly going. Just in one hit. You know, that’s quite different (Ibid.).

‘Evolutionary extinction’ was, therefore, a gradual process involving, not loss, but incremental change from one form into another. ‘Man-induced extinction,’ conversely, was where species are simply ‘lost’ without replacement. Again, in comparison to these ‘losses,’ contemporary evolution was seen as trivial and unimportant. The appropriate focus for the ‘modern conservationist’ in New Zealand, therefore, was not on contemporary evolution or hybridisation, but on the ‘desperate need to prevent further losses’ through extinction (D. Young, 2004, p. 148). Slowing current extinction rates was thus constructed as the ‘responsibility’ to which people should focus their attention (Interview, Andrew Glaser, Programme Manager Biodiversity – Northern Te Urewera, Department of Conservation (Whirinaki), April 10th 2013; Interview, Nathan Burkepile, Field Officer, Fish & Game (Northland), February 27th 2013). As I argued in Chapter Seven, this sense of ‘responsibility’ creates an obligation to one state while excluding the creation or acceptance of others. In this case, contemporary evolution is discounted in favour of historical changes.
On the topic of evolutionary change in introduced species, moreover, doubt was often expressed. Speaking on introduced trout in the Rotorua Lakes, for example, David Hamilton (Interview, Chair of Lakes Management and Restoration, Bay of Plenty Regional Council, February 14th 2013) suggested that there were not strong enough ‘selection pressures’ to drive evolutionary change. Any changes were, therefore, likely only the result of ‘founder effects’\(^{123}\), rather than adaptations to local conditions (Interview, Rob Pitkethley, Regional Manager, Fish & Game (Eastern), January 15th 2013). Some level of change was recognised. For example, Neal Hawes suggested that evolution was:

> …the way of the world. I mean, that’s the way it’s always happened. Unless you disagree with Darwin. An isolated population would definitely change over time and our New Zealand [trout] stock is probably adapted to certain environmental changes or environmental differences than their home environment in the west coast of America (Interview, Rotorua Anglers Association/Fish and Game New Zealand (Eastern), February 5th 2013).

Judy Gardner (Interview, Member, Royal Forest and Bird Protection Society (Rotorua), April 22nd 2013) also considered evolution in Rotorua lakes trout to be ‘quite likely given the length of time.’ However, both considered such changes to be inconsequential. For Gardener, change in Rotorua lakes trout would have to be considerable to warrant any measure of value. Phil Gates (Interview, Treasurer (Ex-president), Trout Unlimited New Zealand, March 26th 2013) offered a similarly long-term appraisal: ‘Not in my lifetime [laughs].’ The length of time that trout had been in the lakes was, in other words, dwarfed by geological time.

Contemporary evolution, if occurring at all, was therefore seen as unsubstantial and largely irrelevant. There was little evidence of it (Interview, Rob Pitkethley, Regional Manager, Fish & Game (Eastern), January 15th 2013; Interview, Dave Rowe, Freshwater Ecologist, January 18th 2013). Shane Grayling, in fact, was hesitant to use the word ‘evolution’ at all, noting that although,

\(^{123}\) A ‘Founder effect’ refers to the loss of genetic variation that occurs when a new population is established by a very small number of individuals from a larger population.
...animals adapt depending on their environment [...] I don't know if I'd call it evolution. Genetically sure, it doesn't take long for species to become genetically-independent (Interview, Senior Biosecurity Officer, Bay of Plenty Regional Council, March 11th 2013).

He conceded that such genetic changes might be considered evolutionary but 'only on a simple level.' Again, any evolution of trout in Rotorua since introduction was presented as something of marginal importance. Genuine, valuable evolution, in contrast, was a factor of deep-time.

Even when occurring, evolutionary changes in introduced species, in particular, have been largely ignored. Any hint of physical change, in fact, has typically not been associated with evolution or even a precursor thereof. Rather, consistent throughout the 20th century was the notion that changes in the morphology of introduced species were an expression of 'poor health.' For example, if mallards bred with grey ducks and the resultant hybrid progeny looked different to their parents, or were less suitable sporting birds, this was considered undesirable (Anon, 1937a, 1937c, 1937d). If trout decreased in size in the Rotorua lakes, this was because their population was too big or they did not have enough food, a situation that should be 'solved' (Anon, 1913a). If deer reduced in size, as they did in Te Urewera, the animals were considered to be in 'poor condition' and in need of 'adequate control' to 'improve' their state. As John Sutton (Interview, Area Manager, Department of Conservation (Whirinaki), April 15th 2013) commented,

The deer that are in the Ureweras are pretty poor. Through natural selection they're smaller within the forest than you'll find, say, out in the margins and in the farmland. And that's understandable. The head, the antler size and spread, is pretty pathetic as well. Yeah, they're not genetically a great trophy animal.


125 John Sutton (Interview, Area Manager, Department of Conservation (Whirinaki), April 15th 2013) considered, '...the same thing about natural selection of Māori. The Tuhoe people were quite small. The bigger Māori were the ones around the coast and particularly Northland. Because you had access to a lot more food and a longer growing season for gardening.'
Again, changes in the morphology of introduced species were seen as signs of ill health or similar ‘impoverishment.’ With the possible exception of hybrid ducks (see Section 8.2), at no point were any of these changes associated with adaptive evolutionary change. Although some behavioural changes, such as in feeding behaviour or migratory patterns were accepted, if physical changes, particularly reductions in size, were manifest, these were soon cited as candidates for ‘correction.’ These discourses continue to marginalise the role of human introductions by suggesting that they are incapable of contributing to ongoing evolutionary changes. Instead, their presence only damages or disrupts otherwise worthwhile natural processes. In consequence, introduced species are denied both a contemporary legitimacy and any future legitimacy in the landscape. Nevertheless, as I will now demonstrate, some recent scientific work in New Zealand challenges the belief that meaningful evolution does not occur on human timeframes or under human influences. Work on the evolution of salmonids in New Zealand shows, rather, that ‘rapid’ evolution can occur within centuries at the least, and that such changes can be highly significant.

8.3.2 Salmonid divergence as an example of ‘rapid’ evolution

In 1895 an article entitled ‘New Zealand Trout – the Development of a New Species’ appeared in the Bay of Plenty Times (Anon, 1895b). It reported that ‘considerable interest has been taken at Home lately regarding the trout which are in New Zealand waters’ noting that it was ‘now a vexed question among scientific piscatorialists what the nature is of the fish that are in our waters’ (Ibid., p. 3). A discussion was reported to have appeared in the pages of The Field\textsuperscript{126} that had suggested that introduced trout in New Zealand had ‘acquired a new character and new habits, and should be designated by the scientific term of ‘salmo Australis’ [sic]’ (Ibid., p. 3). This discussion was subsequently furthered in New Zealand in an article in the Transactions of the New Zealand Institute by the chairman of the Wellington Acclimatisation Society, A.J. Rutherfurd. He wrote that:

\begin{quote}
All these fish are gradually accommodating themselves to their new environment, and becoming very like the varieties found in corresponding northern latitudes...Even within the limits of a single species (so-called) no two are found to be exactly similar, but there is a
\end{quote}

\textsuperscript{126} A British periodical dedicated to hunting and fishing, founded in 1853.
tendency to diverge from the original type in such direction as to preserve and increase useful varieties—a law of variability by adaptation, which is destined to modify every organism so as to fit it for new conditions of existence…my theory is that, whatever variety we liberate of the ordinary species of trout, it will develop into a Salmo novae-zealandiae, suited to the water in which it is liberated…I do not think that these fish will retain the characteristics of the variety found in the environment from which they were taken, and consider that the results already obtained in New Zealand have proved this (Rutherfurd, 1901, p. 247, emphasis in original).

As this passage indicates, Rutherfurd felt that evolutionary change in introduced trout was a certainty. Indeed, he believed it had already occurred and had been ‘proven.’ However, this was not the case. In fact, perhaps unsurprisingly (see Chapter 9), no scientific work had been undertaken and, although trout had often grown to exceedingly large sizes since introduction (e.g. see Anon, 1903), there was no evidence that this was an heritable adaptation. Thomson (1922), therefore, dismissed Rutherfurd’s thesis of evolutionary change in trout. Evolution was seen as a process that occurred, sure enough, but over geological timeframes, not human ones.

The rate of evolutionary change in introduced salmonids in New Zealand was thenceforth not seriously questioned by scientists. Thomson’s dismissal basically stopped the conversation. It was not until around 70 years later that the thesis of evolutionary adaptation in introduced salmonids in New Zealand was seriously entertained. In 1991, popular hunting and fishing author Tony Orman wrote in his book Fishing the Wild Places of New Zealand, that trout in New Zealand were ‘the result of 100 years of adaptation’ (T. Orman, 1991, p. 14). He recounted a discussion with fishing guide, Jack McKenzie:

Jack, along with New Zealand’s top fisheries biologists, considers the wilderness rivers are a resource that has evolved over the century since trout were liberated. ‘What is unique,’ explained Jack, ‘is that the headwaters of these rivers often hold a population of rainbows and to a lesser extent browns, of incredible size, that are the result of 100 years of natural selection.’ He maintains that the process naturally favours the older and larger spawners each year. It is now believed by many biologists that New Zealand trout stocks represent
evolved genetic variants, distinct from the original stock. ‘This represents an astonishingly rapid evolution, with significant adaptation achieved in only a century since the trout were introduced to New Zealand late in the nineteenth century,’ said Jack (Ibid., p. 131).

Despite Orman and McKenzie’s assertions, however, neither New Zealand’s ‘top fisheries biologists’ nor freshwater scientists generally were so convinced of the thesis of ‘rapid’ evolutionary change. Other than a 1971 study on life history differences between native chinook salmon (Oncorhynchus tshawytscha) relative to those introduced to New Zealand (Parrott, 1971), there had been little research into the matter. McDowall (1991) only raised the question again, providing no support either way. Indeed, as freshwater scientist Martin Unwin (1999, p. 39) wrote in an article in Fish & Game New Zealand,

Unfortunately, while this question had been asked often enough by New Zealand fisheries biologists, most of us tended to assume the answer was an automatic “no”. The theory of evolution is based on the premise that species gradually adapt in response to their local environment, where the time-scale implied by “gradually” is usually thought of in geologic terms.

By those standards, the 90 plus years since most salmonid introductions was considered ‘far too short a time for any measurable change to develop’ (Ibid., p. 39). Unwin noted, nevertheless, that a 1992 visit by American fisheries scientist Tom Quinn began to question that idea. Based at the University of Washington, Quinn conducted research on variation in chinook salmon introduced to the South Island. In a subsequent paper, together with Unwin, he tested whether any life history traits of chinook salmon had diverged since their introduction to the South Island approximately 90 years previously (Quinn & Unwin, 1993). Among the rivers tested, he found differences substantial enough to be considered ‘highly significant in a biological as well as a statistical sense’ (Ibid., p. 1420). In fact, as Unwin (1999, p. 40) wrote, ‘virtually every trait we looked at seemed to differ from one [river] population to another’ indicating that salmon had diverged not only from their parent stocks, but also from one another according to the catchment they were inhabiting. This had occurred over only around 30 generations since introduction.

Subsequent papers have only consolidated the thesis that substantial post-introduction genetic changes have occurred in introduced salmon (see Quinn, Kinnison, & Unwin, 2001; Quinn, Unwin, & Kinnison,
2000; M. J. Unwin, Kinnison, Boustead, & Quinn, 2003). Not only were introduced salmon a part of novel New Zealand ecosystems, they were becoming novel species themselves (see Chapter 4). Changes were understood to be a consequence of adaptation to different spawning environments, not to ‘genetic drift’ or founder effects (Quinn et al., 2000), and these occurred ‘even under conditions where populations form without human control and maintain some gene flow’ (M. J. Unwin, Quinn, Kinnison, & Boustead, 2000, p. 956). ‘Rapid divergence’ was occurring (Quinn et al., 2001, p. 508), prompting Unwin et al. (2000, pp. 956-957) to hypothesise that chinook salmon populations in New Zealand were in an ‘intermediate stage on the evolutionary pathway towards establishment of genetically distinct…life histories.’ In other words, the precursors of speciation were already in evidence. This reinforces the understanding that novel species and ecosystems may be rapidly changing in response to changed circumstances and that these changes may not be all bad (Carroll, 2011, see Chapter 4). Indeed, many of those changes may spurn new diversities and new adaptations that positively compensate and respond to widespread human-induced effects on environments (Lugo, 2012).

Although these results relate only to introduced chinook salmon it is instructive to note that that species is the same genus (Oncorhynchus) as the rainbow trout, indicating that some level of genetic change might also be expected in some populations of rainbow trout. As I will argue in Chapter Nine, however, evidence relies on research being undertaken. To date, few studies have investigated the potential for evolutionary change in introduced trout in New Zealand. Rosenau (1991a, 1991b) studied variation in rainbow trout populations between different rivers draining into Lake Taupo, concluding that the phenotypic variation observed between river populations was partly heritable (but see Snowdon & Adam, 1992). However, there have been no such evolutionary studies on introduced deer (Interview, Graham Nugent, Deer ecologist, May 3rd 2013) or mallards. What studies on chinook salmon demonstrate, nevertheless, is that ‘meaningful’ evolutionary changes can be expected over relatively short time scales. They are not limited to geological time periods. Although there is no evidence that this has led to any

127 Defined as the change in the frequency of a gene variant in a population due to random sampling of organisms.
128 Graham Nugent (Interview, Deer ecologist, May 3rd 2013) wondered whether there might be an ‘evolutionary push for smaller-sized deer’ in Te Urewera.
widespread appreciation of the uniqueness of these introduced populations, when viewed in concert with the sometime recognition of ‘grallards’ in Section 8.2.3, it suggests that similar potentialities exist. Both ‘grallards’ and novel salmon may, in time, come to be seen as important forms of uniqueness in their own right.

This section has demonstrated that evolution contradicts a state of ‘normality.’ That normality has largely been defined by the pre-human environmental condition in New Zealand (see Chapter 4). Forms of evolution that are precipitated by introduced species contradict that prior state and, as such, they comprise a determinate threat to the existing order. The longstanding response to this threat has been to discount its relevance and potency by insisting that it is trivial in the short-term. By comparison, supposedly elevated rates of extinction have been constructed as the ‘crisis’ to which responsible citizens should direct their attention. What the above discussion demonstrates, however, is that notions of geological-scale evolution have precluded the realisation that changes are occurring on much shorter timeframes. These changes are significant, moreover, and may rapidly constitute the recognition of speciation in some taxa and species groups. I suggest that the human involvement in these evolutionary changes has also served to discount their significance. Just as scientists have tended to discount changes in domestic animals\footnote{129 For example, variation in dog breeds is considered a form of ‘artificial selection’ to be categorically distinguished from ‘natural selection.’ Evolutionary changes instigated by human interactions are consequently deemed impossible. As Stearns and Hoekstra (2000, p. 88) noted in their textbook on evolution, ‘These cases of fast change under strong directional artificial selection contrast sharply with what we know of long-term evolutionary change under natural selection, where rates of change estimated from the fossil record over very long periods of time are many orders of magnitude slower.’ Evolution is thus, by definition, both slow and exclusive of human influence.}, the notion that evolution is occurring in introduced species has been trivialised as ‘unnatural’ and therefore unworthy of repute. Again, however, as environments in New Zealand, and elsewhere, are increasingly influenced in every way by humanity (E. C. Ellis & Ramankutty, 2008; Hobbs et al., 2006), puristic discourses that position ‘genuine evolution’ as something that must be limited to non-human processes may become progressively untenable.
8.4 Conclusion

In this chapter, I have argued that understandings of complexity with regards to introduced species have been consistently denied and erased in New Zealand. Exploring the hybrid engagements between grey ducks and mallards, I have shown that this relationship has consistently been portrayed as an inevitable loss. For the last century, hunters and conservationists have accepted the intersubjective understanding that ‘pure’ grey ducks will eventually be lost and that this is a condition to be begrudgingly accepted. I showed, however, that this ‘loss’ is not inevitable. Indeed, such relationships in other taxa in New Zealand continue to be actively discouraged. An important realization underlying this contradictory framing, nevertheless, is that other native species are seen as valuable enough, where grey ducks are not. Their uniqueness is of a lesser, dispensable kind, constructed at best as a ‘low priority,’ at worst as a ‘lost cause.’ Just as introduced species are castigated for their lack of uniqueness, native grey ducks are diminished for their presence elsewhere and their troublesome similarity to mallards. What a focus on loss continues to perpetuate, moreover, is that this is the only notable outcome of hybridization. In contrast, the complexity of hybridization offers paths to many novel sources of uniqueness and value. Whilst painted as a ‘loss only’ the development of ‘grallards,’ a novel assemblage incorporating both species, hints at the possibility for emergent discourses that resist morbidity and finality in favour of exploring, and even celebrating, the unfolding of new entities, relationships and processes.

In the final section of this chapter I explored how evolution is constructed only as a long-term process, effectively excluding human engagement once again. I demonstrated how changes in introduced species are trivialised as unimportant and irrelevant and how the appropriate focus is seen to be forever on extinction and its prevention. Using introduced salmonids as an example; I showed, however, that in some taxa evolution is occurring rapidly and that these changes can be highly significant. These evolutionary changes highlight that human modifications to landscapes and biotas are not necessarily finalities to be forever mourned. Rather than attempt to reverse ecological history in favour of historical species assemblages, evolution of introductions (not to mention natives) shows that novel forms of uniqueness are developing. Rather than interpreting these adaptive changes only as losses, as is also common, new appreciations can also develop. In the next chapter I build on this realization, suggesting
that the reconciliation of introduced wildlife in New Zealand will require changes in prevailing discourses. These may sometimes be modeled on the ways in which introduced game species have been reconciled. I caution, nevertheless, that many of the ways that introduced game have been reconciled only mirror attempts to reconcile natives, which may work to accept only by erroneously excluding and alienating others.
Chapter Nine: The Reconciliation of Useful Species

9.1 Introduction

In Chapter Eight, I argued that understandings of complexity regarding introduced species have been consistently denied and erased. Too often, conservation discourses in New Zealand have fostered static constructions of wildlife that fail to adequately acknowledge indeterminacy and catastrophise change. In this chapter I assess whether attempts at reconciliation, particularly concerning introduced game species, may highlight the discursive means through which some of these static discourses may be resisted or challenged. Although much biopolitical scholarship has focused on highlighting the unjust aspects of biopolitical regimes, several authors have wrote on what they believe to be the more optimistic foundations of biopolitics (Esposito, 2008 [2004]; Hannah, 2011; Ojakangas, 2005b). Together, these authors have emphasised the possibility of an ‘affirmative biopolitics’ which, rather than selecting between valued lives, affirms the continuity of all life and works toward the good of all (see Chapter 2). The work of Esposito (2008 [2004], 2013), in particular, challenges both Foucault and Agamben’s notions of a negative domination over life, theorising, instead ‘a politics of affirmation for a multiplicity of different living forms’ (Lemm, 2010, p. 75). With direct reference to the reconciliation of introduced species in New Zealand, I demonstrate throughout this chapter, nevertheless, that while such theory is honourably intended, there is little evidence of its empirical fruition. Instead, I suggest that the biopolitics of wildlife in New Zealand more closely resembles the ‘dark’ biopolitics of Agamben than the more ‘optimistic’ thought of Esposito and colleagues.

In Section 9.2, I demonstrate that interpretations of introduced wildlife have principally been portrayed by scientists. This is problematic because although it is often presented as an exercise in simple ‘fact finding’ and presentation, science has often been used to further certain ends and certain interpretations of introduced wildlife. It is, in other words, not a simple presentation of ‘truth.’ Indeed, I demonstrate that scientific information on introduced species in New Zealand has often been used to argue for their control
and removal when, in reality, little scientific work had been undertaken to justify these steps. I show that science has often been used to support predetermined outcomes in relation to introduced species and that scientific consensuses on some important aspects of their management have also sometimes been inaccurate. These findings do not undermine the importance of science, but rather suggest that scientific information on introduced species needs to be assessed in the context of its production. Too often, science has been taken as the principal interpreter of introduced wildlife in New Zealand and this has probably afforded too much power to conservation biologists and ecologists who produce findings in support of what can be very limited and contestable value frameworks.

Lastly, in Section 9.3, I return to Esposito’s notion of ‘affirmative biopolitics’ to consider whether any further positive notions of reconciliation might be in evidence. In short, I find very few. Discourses of reconciliation remain largely restricted to considerations of valued game species. Although these are often presented as general arguments, in reality they are intended only for the specific reconciliation of certain favoured species. Although local perceptions of introduced species often differ from those of non-local conservationists, the reasons for those differences are rarely based in an encompassing biophilia or care for life in its totality. Rather, they support expressions of utility that simply contrast with those of conservationists. In other words, differences are the result of different perceptions of usefulness, not on any overarching propensity toward acceptance. Reconciliation of many valued game species, for example, is shown to not be intended to achieve parity with native species, but rather only to ensure their sustainable use in perpetuity. For that reason, only a ‘quasi-native’ status is sought. I argue, finally, and in the light of evidence, that ‘reconciliation’ may be too ambitious an objective. Rather than focusing on the ‘worth’ of introduced species, emphasizing that they are simply not ‘worthless’ might ultimately yield results that are as fruitful.

As I discussed in Chapter Two, scientific knowledge is a negotiated product, intimately attached to the social climate in which it is practised (Teubert, 2010). Science is not a method that can always be easily distinguished from non-science, but rather a means of authoritatively relaying certain interpretations of the world (Weinberg, 2008). Understandings, according to constructionists, are informed by the scientific paradigm of the day and are not a reflection of eternal truths (Hosking, 2011; Kuhn, 1962). Constructionists, moreover, have had a lot of success in demonstrating the ways that scientific knowledge may be coloured by cultural, political and economic interests (Cass & Pettenger, 2007; Latour & Woolgar, 1979; Restivo & Croissant, 2008). Such studies demonstrate that ‘facts’ need to be placed within an interpretive context (R. Holt & Mueller, 2011). In other words, it is not just what the facts are but also which facts are selected as being significant (Carolan & Bell, 2003). An overriding message from this literature is that scientific understandings about ‘nature’ and ‘the environment’ are not to be taken at face value. ‘Truth discourses’ indeed can sometimes offer merely a means of delineating ‘environmental resources’ and feeding them into systems of production and exploitation (Lemm, 2010). Rather than taking scientific information as the solid ground around, or upon which, analyses of the environment should be undertaken, therefore, they should instead be critiqued and analysed to the same extent as other knowledges about the environment.

In Chapter Three, I showed that scientific discourses on introduced species are frequently characterised by contestable assumptions and research biases. For example, despite the fact that introduced species can have both positive and negative effects on local environments, research has tended to focus on highlighting and quantifying the latter (Carroll, 2011; Sagoff, 2005). The effects of notable ‘invasive’ species are continually highlighted to the public to the detriment of the many species that have no such effects (Marris, 2009; Sagoff, 2007). Analyses often take the presence of introduced species as categorically harmful (Schlaepfer et al., 2011), and introduced species are regularly excluded from
definitions of biodiversity (Sagoff, 2009b). Hybridisation of species, when correlated with human interaction, is typically taken as detrimental regardless of its potential benefits or utility to the species involved (Smout, 2003). In addition, many standing assumptions about the overarching effects of introduced species have been found to be unsupported (J. H. Brown & Sax, 2007; Davis, 2011b). A growing body of work, therefore, shows that scientific analyses of introduced species deserve further critique.

In New Zealand, scientific knowledge on the environment has increasingly come to be seen as a contested territory. As I will demonstrate below, scientific work on introduced species in New Zealand has been characterised by numerous deficiencies, oversights and biases. Complex and dynamic understandings of introduced species and their relation with native biota have often come second to simplistic characterisations and one-dimensional ‘solutions.’ Firstly, many of the arguments made against introduced species in New Zealand have been based on weak empirical foundations. Too often, arguments against introduced species have been presented as if they were justified by voluminous scientific research when, in fact, little work had been undertaken. Secondly, much scientific research on introduced species has been undertaken on the basis of predetermined outcomes and designed to support, rather than accurately test and challenge, prevailing perceptions. Science has often been directed toward supporting introduced game species and proving the ‘guilt’ of introduced non-game species, with little research directed to alternative conceptions. Thirdly, a consensus of scientists has frequently misjudged crucial aspects of wildlife management, directing resources into initiatives that were counterproductive to overarching goals. Taken together, these highlight the need to continually monitor the use of scientific research on introduced species in New Zealand.

As I discussed in Chapter Five, scientists were some of the most important advocates of acclimatisation in the mid-19th century. Their promotion of ‘displacement theory’ was integral to that movement. It was only around the 1870s that the scientific consensus began to move in favour of a more cautious approach to introductions and an emphasis on the conservation of native species. The introduction of mustelids in the 1870s and 1880s, for example, was opposed by the majority of scientists in New Zealand who, by then, foresaw the effects of such taxa on native birds (D. Young, 2004). Nevertheless, very little scientific
work was undertaken to actually quantify the effect of introduced species on native species in the 19th century. Early fisheries scientists, for instance, devoted most of their efforts to documenting the success of trout liberations, rarely making observations on native freshwater fish (Crowl et al., 1992). In 1895 a paper in the Transactions of the New Zealand Institute concluded that ‘there is no evidence to show that the few native freshwater fishes have suffered from the introduction of...the trout’ (T. Kirk, 1895, p. 7). This ‘lack of evidence’ was widely taken as an indication that there had been no effects of trout on native freshwater fish (e.g. see G. D. Hamilton, 1904). It was, however, merely descriptive of the state of scientific knowledge in this area. Indeed, a scientific understanding of most freshwater species in New Zealand was severely limited at this stage (McDowall, 1991). In any case, as the president of the New Zealand Institute, P. Marshall wrote, ‘it is natural and inevitable that in this country research should tend to be centred...round those industries upon which the prosperity of the country depends’ (P. Marshall, 1926, p. 1). Aside from taxonomic work, most ‘wildlife’ science in New Zealand, until the early 20th century, was thus focused on how to grow and release game species, largely because they were one of the primary sources of revenue (see Chapter 7).

Wildlife management as a scientific discipline in New Zealand did not develop until the mid-1930s (Westerskov, 1957). At that time, it was focused on ‘the development of natural resources for the benefit of mankind,’ rather than the advancement of scientific knowledge per se (Anon, 1937e, p. 15). Again, the emphasis was on the health of game populations, often at the expense of native species. This focus on ‘natural resources,’ moreover, necessitated the destruction of ‘those parts of Nature – and they are in the majority – which are not of immediate use for economic ends’ (Ibid., p. 15). Research on game species was thus typically at the expense of other wildlife, either in the sense that it tended to disregard them, or in the sense that it considered them an impediment. Nonetheless, even for game species that were relatively well studied, there remained significant deficiencies in knowledge. Pellett (1935), for instance, noted that attempts to apply scientific knowledge to the propagation of trout was limited by a dearth of
scientific literature on the topic in New Zealand. He lamented that ‘…there has been almost no knowledge of what to do, and what results might be expected, from any effort expended’(Ibid., p. 11).

A 1941 editorial in *Forest & Bird* entitled ‘Research – An Urgent Need’ argued that research on wildlife in New Zealand, in general, remained in its infancy: ‘In New Zealand it has always been a practice to make decisions on wildlife matters without expert research and biological knowledge’ (Editor, 1941, p. 1). Study continued to be directed almost exclusively to those species that were deemed valuable. Indeed, ‘the truth is that nobody in New Zealand knows much about the more common species of wildlife inhabiting this country, because proper research and study by trained observers has never been considered worth payment’ (Ibid., p. 2). As Galbreath (1993) concurred, even in the relatively established areas of fisheries science and deer ecology, growing practical experience was backed up by little scientific investigation. Holloway (1950, p. 123), for example, reported that by 1950 ‘a very considerable amount of information is now on file’ regarding the effects of deer, ‘although it is not yet possible to make any detailed analysis of it.’ Indeed, having bemoaned the lack of scientific research into wildlife, the Royal Forest and Bird Protection Society took it upon themselves to rectify this discrepancy by undertaking highly unscientific ‘data’ collections. The Society considered the introduced magpie (*Cracticus tibicen*), for example, to be an aggressive ‘butcher bird,’ that was detrimental to native wildlife (Editor, 1950, p. 1). In the absence of scientific evidence they set about ‘proving’ the magpies ‘guilt’ themselves by setting up a ‘dossier of crimes,’ and asking members to submit any observations that supported the Society’s hunches (Ibid., p. 1). This was subsequently taken as the ‘evidence’ necessary to support widespread killing of magpies.

With some exceptions, it was not until the 1960s that any substantial quantitative research began to be undertaken on wildlife in New Zealand. It was the beginning of the kind of science, in other words, that would be considered worthy of the name by contemporary natural scientists. Following wider international

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131 This was, in part, because of an enduring reluctance ‘to accept the word of the trained research man if it conflicted with the general opinion or with general observations’ (Lumley, 1937, p. 4). Indeed, it was not until 1939 that the Department of Internal Affairs appointed a fisheries biologist to work in Rotorua, one of the most important fisheries in the country. The appointed scientist, a woman by the name of A.L.K. Welch, was not taken seriously and her superior did not think that scientific research was necessary (Galbreath, 1993).
trends, natural history was no longer deemed sufficient as science in New Zealand. Rather, results, from around this point, would have to be substantiated with quantifiable evidence. The 1960s, for example, marked the start of large-scale ornithological research in New Zealand; finally moving beyond the taxonomic and descriptive work of Walter Buller and others: ‘That’s about the time you start seeing the population studies on literally anything being studied in New Zealand’ (Interview, Tony Beauchamp, Technical Advisor Threats, Department of Conservation (Northland), February 25th 2013). It was also the beginning of scientific work on mammals such as deer. As Graham Nugent (Interview, Deer ecologist, May 3rd 2013) commented, ‘reasonably scientific publications [on deer] started in the 1950s until it came to be more quantitative in the [19]60s and [19]70s.’ Work in developing a scientific understanding of freshwater fish, particularly the native species, finally commenced too (McDowall, 1991). Lakes were particularly poorly researched: ‘Before 1966 there had been scant investigation of New Zealand lakes…only a few general limnological studies had been carried out and fewer still had been published’ (C. W. Burns, 1991, p. 359). This dearth of study began to be redressed with the appointment of limnologists to the staff of universities, the formation of the New Zealand Limnological Society, and the establishment of the Freshwater Section of the Department of Scientific and Industrial Research.

This emerging emphasis on scientific research, however, did not mean that any questions could be assessed; only those that were approved. A young R.M. McDowall, for example, was forced to shelve his investigation into the potential ecological effects of introduced largemouth bass (*Micropterus salmoides*) until the departure of a disapproving superior. As he later explained, ‘my analysis…was completed somewhat after the senior fisheries scientist promoting the introduction left New Zealand for overseas, and so I was no longer in danger from criticising my superiors’ (McDowall, 1999, p. 52). In the following three sections, I provide further illustrations of the ways in which science has consistently been used, or not used, to answer questions about introduced wildlife in New Zealand. Through these, I show the consequences of an overreliance on scientific understandings, how this reliance is beginning to be questioned, and why such questions are necessary.
9.2.1 Deer and erosion

Many of the scientists working on the ecology of deer through the early 20th century were predisposed to proving the impact of deer on New Zealand soils and vegetation (see Chapter 5). The question of whether they had an impact was generally not scientifically considered. Leonard Cockayne, a botanist, was foremost in the scientific castigation of deer. Noting early that deer ate the plants he had devoted his life to studying, he developed a ‘passionate hatred’ of them (Caughley, 1983, p. 68). According to Caughley, he ‘used every argument he could muster to urge their extermination,’ some of which were ‘less than impeccable scientifically or logically’ (Ibid.). Caughley argued that ‘when it came to deer [Cockayne] could not think straight. His finely honed scientific objectivity evaporated whenever they were mentioned’ (Ibid.). Importantly, Cockayne argued, with others, that deer caused ‘vast areas of mountain-side [to] be turned into moving debris’ (in Ibid., p. 63). This argument was widely replicated, though not assessed scientifically until the 1980s, when it was rejected (see below). Rather than assessing the effects of deer on native vegetation and soils, Cockayne, like most New Zealand scientists, was content to move his scientific reasoning straight to questions of extermination and how it could be undertaken. Scientists present at the Deer Menace Conference in 1930 (see Chapter 5), for example, accepted unanimously that deer were an environmental problem. They thus aimed only to provide ‘practical suggestions as to the best method of carrying out deer destruction’ (Figgins & Holland, 2012, p. 41).

By the 1930s it was already believed that a link between erosion and deer herbivory had been scientifically proven in New Zealand. Indeed, it was believed to have ‘been demonstrated beyond all possible doubt’ (Anon, 1936b, p. 8). As Grant Nugent (Interview, Deer ecologist, May 3rd 2013) commented, ‘the intuitive link in the [19]30s and [19]40s was that where there was no forest there was lots of erosion and you just had to look at the Southern Alps to see that.’ New Zealand was said to be ‘wasting away’ and deer were thought to be a primary cause (Anon, 1934c, p. 8). Numerous newspaper articles, for instance, pointed to the effects of deer on erosion rates in Te Urewera (e.g. Anon, 1930b, 1936e, 1938d). They suggested, as elsewhere, that the presence of deer in forested mountains would
ultimately bring about ‘landslides and sudden disastrous river-floods’\textsuperscript{132} (‘J.C.’, 1936, p. 6). This was apparently well supported by the science. The scientific work that should have gone into proving that deer caused damage to vegetation, and thus brought about erosion, however, was never undertaken. Indeed, such basic research was deemed unnecessary by most scientists at the time. For example, in 1934 the New Zealand Forestry League wrote to the Royal Society of New Zealand asking for support in a request to the Commissioner of State Forests to set up a Royal Commission to inquire into the effects of deer and other introduced mammals on native forests. The Native Bird Protection Society wrote on the same subject, ‘but expressed the view that there was no need to incur the expense in the setting up of a Commission, as there was abundant evidence of the destruction caused by these animals’ (Anon, 1934a, p. 375). However, at this stage there was no such ‘abundant evidence’ in the scientific literature. Rather there were only two papers dedicated to the issue, Walsh (1892) and Hutchinson (1930)\textsuperscript{133}, both of which provided only anecdotal reports of ‘damage.’ This was deemed sufficient for the Royal Society, nonetheless, who duly commended the Department of Internal Affairs ‘for the measures taken to reduce the number of deer, and urge[d] that its efforts be increased’ (Anon, 1939b, p. 24).

The case for a link between deer and erosion was further reinforced through the mid-20\textsuperscript{th} century. It was suggested, for example, that deer must be upsetting the natural equilibrium of the country’s biota (see Chapter 3). In his Presidential Address to the New Zealand Institute of Forestry, C. Biggs (1946, p. 214) argued that the ‘delicate balance’ of geological erosion was being upset by deer and that they should therefore be considered to be ‘the most serious enemy.’ This position was latterly supported by a range of other arguments. As I demonstrated in Chapter Seven, arguments for the effects introduced species might be having on economic prosperity were always prominent. For example, the supposed erosion caused by deer was an economic ‘cost we cannot afford to pay – national suicide’ (R. C. Nelson, 1956, p. 132)

\textsuperscript{132} Not only would erosion destroy the mountainlands and cause widespread flooding and soil infertility (Anon, 1941a), but, according to \textit{Forest & Bird}, it would also ruin angling opportunities. An article entitled ‘Deer Kill Trout’ explained that the erosion caused by deer was sullying waterways and destroying trout habitat (Anon, 1936, p. 16; also see Anon, 1934).

\textsuperscript{133} Scientists such as Cockayne (1926) and Poppelwell (1929) had also commented on the apparent effects of introduced deer and forester A.N. Perham had produced a report to parliament in 1922.
6). The ‘soil of the land, built up during millions of years by the forest is vital to our prosperity...Without this revenue we could import nothing and our standard of living would revert to that of the middle ages’ (Editor, 1956a, p. 2). Efforts to ‘utterly destroy the [deer] menace’ should therefore be supported ‘by all unbiased people’ (R. C. Nelson, 1956, p. 6). Deer were, seemingly without a doubt, causing accelerated erosion, and this was a threat to the economic foundation of the country. They were thus recast from tourism assets to geological nuisances (K. Hunter, 2009).

Writing in the New Zealand Science Review, McKelvey (1959, p. 28) reiterated the understanding that any animal effect on vegetation could cause accelerated erosion and flooding. This was seconded by Holloway (1959, p. 21) who considered ‘acceleration of erosion as an inevitable consequence of [vegetation] depletion.’ Suggestions to the contrary were swiftly rebuked. William Graf, a visiting American biologist, disputed claims that erosion was the inevitable consequence of deer browsing. His report, however, was dismissed by A.L. Poole, Assistant Director of the New Zealand Forest Service, who persisted with the claim that exposed faces of bare shingle in mountainous areas of the South Island, in particular, were ‘entirely unnatural’134. He suggested, somewhat improbably by this stage, that ‘Dr Graf evidently did not see any forest that was not frequented by [grazing] animals’ (Ibid., p. 5). In an article in the New Zealand Journal of Forestry, McKelvey (1960, p. 325) continued to claim that there was ‘much evidence’ that deer browsing was an important cause of erosion. This was backed up by the New Zealand Forest Service who printed regular educational advertisements to that effect in magazines such as Forest & Bird and journals such as the New Zealand Science Review (New Zealand Forest Service, 1960, 1962a, 1962b). These suggestions were thence frequently rehearsed in popular articles (e.g. see ‘Old timer’, 1963; de Gryse, 1958; McGregor, 1964). As is still the case (see Chapter 5), popular media in New Zealand uncritically accepted scientists’ views on introduced species.

By 1956, Thane Riney, another American biologist, considered research on introduced animals such as deer in New Zealand to still be in ‘an early phase of development’ (Riney, 1956, p. 16). Again, most of

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134 A.L. Poole, September 10th 1958, Comments on report by Dr William Graf, Division of Fish and Game, Territory of Hawaii, Board of Commissioners of Agriculture and Forestry, Honolulu, p. 5, AADY W3564 Box 42 90/1-3, Department of Internal Affairs – New Zealand Forest Service, Deer policy 1958-1963, Wellington, National Archives.
what little research that had been undertaken was still on game species (Westerskov, 1957). For Riney, links between deer and erosion were far from settled. Taking up a position at the Department of Internal Affairs, he was commissioned to undertake some of the first formal research on wild deer in New Zealand (DoC, 1998). There, he was highly innovative and energetic, producing around 25 published reports and papers (Caughley, 1983). Nevertheless, as Caughley wrote, 'since some of his questions were directed at Departmental beliefs he failed to receive the unqualified thanks of his superiors' (Ibid., p. 70). Indeed, he 'was soon in hot water with the Department because he had scant respect for holy writ and set about examining [the Department's] assumptions [about deer] as if they were hypotheses' (Ibid.). One of his papers showed that the areas prone to erosion had little overlap with the areas the Department were shooting deer. Another showed that the Department's shooting methods for exterminating deer were ineffective and doomed to failure. These results were not appreciated as they contradicted both the rationale and methods of the Department. As Caughley noted, 'hard facts are as often an impediment to attaining a goal as they are a help. If the goal is clear and the cause is just, information is not so much right or wrong as it is convenient or inconvenient' (Ibid., p. 119). As an internal scientist, Riney was expected to produce science that supported the Department's objectives. When this was not manifest his position became untenable. He thus resigned and departed the country in 1958.

By the 1970s, doubts began to creep into the thesis that deer were responsible for erosion rates (J. S. Holloway, 1993). The reservations of William Graf and Thane Riney were more frequently supported. Orman (1979 in Holden, 1987), for instance, observed that slips apparently caused by deer might just as easily have occurred without them. Noting the presence of such conflicting evidence, Holloway (1970, p. 11) accepted that 'depending on which pair of spectacles we choose to wear and which piece of country we choose to look at, we can find evidence that can be used to support almost any argument that may be advanced.' Indeed, Holloway had noted as early as 1959 that the rate of normal geological erosion in many parts of New Zealand was 'spectacularly high before grazing animals were introduced' and therefore not necessarily a correlate of deer herbivory or trampling (J. T. Holloway, 1959, p. 22). In the

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135 Caughley (1983, p. 70) noted, moreover, that 'Riney would not have been accepted fully into the officers of [the Department of] Internal Affairs whatever he did, given the degree of endemic xenophobia current at the time.'
1970s and 1980s ‘people began to realise,’ noted Graham Nugent (Interview, Deer ecologist, May 3rd 2013), ‘that what looked like current erosion in the form of screes were often very old.’ The earliest photographs of some of the mountainous headwaters of the Southern Alps, for example, showed that most of the screes and erosion gulleys were there in the 1860s and 1870s, when deer populations in New Zealand were in their infancy and largely restricted to the lowlands (Caughley, 1983). The pre-human rate of erosion was found to be much higher than earlier suspected. Erosion-prone areas, moreover, matched poorly with the areas the New Zealand Forest Service were killing deer (Ibid.).

Although the Forest Service had conducted much research into the effect of deer on erosion rates, its starting assumptions were flawed. They undertook repeated surveys every three or four years to measure the changes in vegetation cover in selected areas. In areas in which vegetation was not regenerating, more control measures against deer were instigated. This followed the understanding that vegetation cover determined erosion rates. At no point, however, was this assumption measured. Rather,

‘...all through the period that [both the Department of] Internal Affairs and [the New Zealand Forest Service] expended large sums of money on killing deer, no research was launched to discover how much this effort retarded erosion. The simplistic formula went: fewer deer means more vegetation, which means less erosion, which means less flooding. How much less was neither known nor investigated (Caughley, 1983, p. 73).

Caughley noted several reasons for this oversight, primarily referring to the seemingly ‘commonsensical’ nature of the supposed relationship between deer and erosion. He also noted, however, that there was a ‘reluctance of research staff to test what a department [had] promulgated as absolute truth’ (Ibid.). He argued that although,

‘...it can be done, and no insurmountable barrier will be placed in the way of doing it...it leads to hassles and ill-feeling that most researchers can do without. Far easier to tackle a problem whose purity is guaranteed by its answer having been anticipated officially (Ibid., pp. 72-73).
By the early 1980s it was established that the major determinant of erosion rates in mountain country was simply rainfall. The effects of plant cover ‘was so slight as to be virtually unmeasurable’ (Ibid., p. 76). The idea that forests absorb downpours and release them slowly over several days was applicable only for light to moderate rainfalls. The torrential downpours that cause flooding quickly saturate the thin forest floor and the vegetation is largely powerless to stop or even slow it down. The effect of deer on forests, therefore, was only very loosely related to erosion rates. The ‘final death knoll’ of animal control as a solution to erosion sounded in 1986 when Patrick Grant presented a talk at the annual conference of the New Zealand Geological Society (K. Hunter, 2009, p. 267). He showed that erosion rates had little to do with introduced animals, but rather were a consequence of long-term geological-scale weather patterns. In a subsequent paper in the New Zealand Journal of Ecology, he concluded that ‘even in the absence of humans and [other] animals, [New Zealand] vegetation would be in a dynamic state of imbalance and change’ (P. J. Grant, 1989, p. 143).

The thesis that deer caused erosion had survived for at least five decades without being scientifically tested. Despite this, it was regularly and often forcefully endorsed during that time by scientists. Again, this shows the ways that science can be employed to answer some questions to the detriment of others. Supposedly widespread deer-induced erosion was constructed as a threat to the underlying economy, elevating the importance of deer removal. This rhetoric of crisis was employed as a justification for disregarding basic scientific questions around the mechanisms of erosion. Prudent science was sacrificed under a rhetoric which declared that active intervention was required immediately. The fact that erosion was subsequently not attributed to deer only underlines the importance of questioning scientific discourses, especially during a state of emergency when ‘normal’ standards of proof may not be considered necessary.

136 Despite the demise of erosion as a scientific justification for deer control it still occasionally appears in the popular literature. A recent article in Forest & Bird, for instance, continued to perpetuate mid-20th century understandings, intimating that deer increase the risk of flooding (see Graeme, 2007).
9.2.2 Mallard science, or a continuing lack thereof

Despite the rising numerical importance of mallards and the broader importance of waterfowl to hunters nationally, scientific research on waterfowl was similarly underdeveloped and not officially instigated until 1947 when Ron Balham was appointed to the Wildlife Branch of the Department of Internal Affairs (Galbreath, 1993). Because the Wildlife Branch’s research was funded by levies on game licenses it focused mostly on game birds (*Ibid.*). Between 1947 and 1961 more than 30,000 wild grey and mallard ducks were leg banded as part of research on movement patterns and survivorship (Anon, 1961a). Work on waterfowl habitat began in 1949 in conjunction with the Department of Scientific and Industrial Research and the Marine Department (Galbreath, 1993). Despite these initiatives, few scientific results were published and little remained known of the life histories of either native or introduced ducks in New Zealand in the mid-20th century (Balham, 1952).

As late as 1963, Jenkin lamented that, ‘...there [had] never [even] been an official duck census taken’ (Jenkin, 1963, p. 12). The principal tool used to collect information on waterfowl from the late 1960s to mid-1980s was the National Waterfowl Diary. This was a New Zealand Wildlife Service scheme instigated by Tom Caithness in which shooters recorded their daily ‘bags.’ Murray Williams (Interview, Waterfowl Biologist, January 22nd 2013) described this scheme as ‘a bit hard case’¹³⁷ and, indeed, it had some significant shortcomings. For example, although the diary recorded numbers shot, ‘there was never any complementary data on what proportion of the population was being harvested’ (Interview, Murray Williams, Waterfowl Biologist, January 22nd 2013). Little of the resultant data, moreover, were ever scientifically assessed. This lack of accurate quantification has promoted ongoing confusion as to the status of the mallard population in New Zealand (e.g. see Barker, 1989; Muller, 2010; Moriarty et al., 2011). Although based partially on ‘hunters returns,’ most estimates over the years have relied on ‘educated guesswork’ (Creasy, 1987-88, p. 41).

By most accounts, however, mallards throughout New Zealand, increased rapidly from the mid-1960s through the early 1980s (Buchanan, 1990; N. Hayes, 1989; Marchant & Higgins, 1990). As a result, by the late 1970s and early 1980s concerns were even being expressed about their effects on horticultural

¹³⁷ ‘Hard case’ in New Zealand is defined as someone or something that is amusing or eccentric.
interests, particularly the seeding stages of grain and root crops which were sometimes partially consumed by mallards\(^{138}\) (Anon, 1978a; Buchanan, 1990). The extent or overall economic impact of this, however, was never assessed\(^ {139}\) (Interview, Murray Williams, Waterfowl Biologist, January 22\(^{nd}\) 2013). The response, nevertheless, was a general loosening of regulations on mallard harvest. As an anonymous contributor to *New Zealand Outdoor* argued, ‘The crop damage problem will only be solved by sensible applications of known wildlife management principles and research information’ (Anon, 1981, p. 15). In consequence, a 1986 Wildlife Branch, Department of Internal Affairs, internal report perceptively titled ‘Mallard Management – A “People” Problem or a “Duck” Problem?’ noted that:

Expanding mallard populations in the late 1970s and early 1980s led many districts toward an increasing liberalisation of conditions to allow hunters to take full advantage of high mallard numbers. The adoption of three month seasons and large or even no daily bag limits on mallards became acceptable practice\(^ {140}\).

However, any sense that mallards were in high numbers or expanding was not based on any accurate quantitative assessment. The author lamented, moreover, that the effects of these regulatory changes were never monitored, meaning that the ramifications of such changes were obscure: ‘Unfortunately during this period no real attempt was made to monitor the effects of changing regulations on harvest rates, nor to understand the relationship between hunting and population status’ (*Ibid.*).

Data from the diary scheme seemed to show, however, that the mallard duck population was levelling off in the mid-1980s (Poynter, 1986). One equilibrium-inspired theory was that the population had reached its

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\(^{138}\) In fact, discontent at this was acknowledged from as early as the 1960s (e.g. see ‘Old Duck Shooter’, 1961; H. Orman, 1961).

\(^{139}\) Rudi Hoetjes (Interview, Regional Manager, Fish & Game (Northland), February 27\(^{th}\) 2013) could recall only one or two incidents of ducks eating grain crops in his 18 years in Northland. Conversely, mallards (and grey ducks) were also reported to ‘help’ farmers, by reputedly eating ‘pests’ (Anon, 1939c; Coster, 1975).

‘carrying capacity’\textsuperscript{141} at this stage and was declining to a lower but stable, sustainable level. Barker (1989, p. 4), for instance, wrote that:

...the pattern of mallard population change has followed the classical form for an animal moving into a new environment. There are countless examples that illustrate that in a new environment, animal population levels increase rapidly, overshoot, then oscillate about a stable equilibrium, at a point somewhere below peak levels (also see Buchanan, 1990).

This thesis explained the ‘long establishment phase’ simply as a ‘classic’ invasion trajectory of a species entering a ‘favourable ecological niche.’ Equilibrium theory was used as a way of making apparently stable mallard populations seem natural and to be expected. It ignored, however, the fact that most waterfowl introduced to New Zealand did not follow such a ‘classic’ trajectory, instead declining rapidly to extinction (Thomson, 1922; G. R. Williams, 1962). Nor did it take into consideration the work of acclimatisers over the previous 100 years (Dyer & Williams, 2010, 2011; Veltman, Nee, & Crawley, 1996). The mallard’s supposed favourable ecological niche, for example, did not appear nearly as favourable in the 1930s when they were mostly abandoned as a future sporting proposition (see Chapter 5). Nor did it incorporate changes in hunting regulations or the substantial provision of new habitat by hunters from the 1950s onward. The thesis posited that the reputed changes in mallard numbers were simply to be expected, ignoring the fact that they were actually quite extraordinary and, if accurate, certainly influenced by a wide range of factors, most of which were poorly understood\textsuperscript{142}.

\textsuperscript{141} Defined as the theoretical maximum population size that a species can sustain indefinitely, given the food, habitat, water, and other necessities available in the environment.

\textsuperscript{142} Indeed, a concurrent theory was that mallards were doomed. A fall in numbers reflected, not a population on the path to stability, but a population on the cusp of downfall. Ford (1986b, p. 5), for instance, suggested that the mallard population in the 1980s was ‘under stress’. Murray Williams (Interview, Waterfowl Biologist, January 22\textsuperscript{nd} 2013), offered an additional theory. He cited the impact of a widespread drought in New Zealand associated with the El Nino weather event of 1982-83.
Murray Williams (Interview, Waterfowl Biologist, January 22\textsuperscript{nd} 2013) described the current system of monitoring waterfowl in New Zealand as an ‘inexact science’ at best, and ‘absolutely fraught’ at worst. Indeed, he suggested that Fish and Game New Zealand,

...do not have a reliable or even a nationally applied technique for monitoring game bird numbers. That may come as a surprise but it’s absolutely true [...] Fish and Game don’t employ any biologists as such to do that sort of work, even though they have some quite competent field staff. All the decisions are made around a council table by lay people. Often they will use their own observations or prejudices to guide hunting and the [only] thing that saves them is the fact that the number of hunters is declining year by year [...] They get data, but they’ve got no way of checking what they get. So they say, ‘Oh, it’s plus or minus, you know, 5% on this figure, is what it should be, you know, we shoot half a million,’ but if you gave them a hard time about it they couldn’t justify that figure (\textit{ibid.}).

Indeed, general scientific research on mallards in New Zealand, of any kind, remains underdeveloped. Despite being the most populous species of waterfowl in New Zealand, not a single scientific study\textsuperscript{143} has addressed their effects on the environment. In fact, it is only in the last decade that any questions about the effects of mallards in New Zealand have been raised in the scientific literature. Some studies suggested that mallards may be vectors for introduced plant species both from Australia and within New Zealand (de Lange, Rolfe, & Townsend, 2011; Heenan et al., 2004). A recent study in the \textit{New Zealand Journal of Marine and Freshwater Research} suggested that mallards may act as reservoirs of faecal contamination (Moriarty et al., 2011). Murray Williams (Interview, Waterfowl biologist, January 22\textsuperscript{nd} 2013) noted that mallards may also physically displace other waterfowl from breeding habitat (also see O’Connor, Maloney, & Pierce, 2007; M. Williams & Basse, 2006). Such suggestions, however, continue to await consideration.

The importance placed on mallard research is reflected in the number of scientists that have worked on them. Most of the research, to date, has been undertaken by just one researcher\textsuperscript{144} As Nathan Burkepile

\textsuperscript{143} Excepting the issue of hybridisation (see Chapter 8).

\textsuperscript{144} Again, not considering the issue of hybridisation.
(Interview, Field Officer, Fish & Game (Northland), February 27th 2013) exaggerated, ‘If it wasn’t done by Murray Williams it really hasn’t been done.’ This is partly a consequence of the legislative arrangement that vests responsibility and management of mallards solely with Fish and Game New Zealand. Their mandate is to provide game birds for hunters. There is little incentive to fund research looking into any potential negative effects of mallards. Even research on the extent of hybridisation between mallards and grey ducks (see below) has never been adequately funded:

Fish and Game [New Zealand] didn’t want to fund it. Cause all they wanted was to be able to say, ‘Look, if we try and separate grey duck from mallard in the bag in the way in which our regulations go, we can’t enforce it ‘cause somebody will stand up in court and say, ‘No, no that’s a hybrid’ […] I accumulated tissue from 2,000 birds and then went looking for money and [the Department of Conservation] wouldn’t fund it and nor would Fish and Game and so [the research] was never done (Interview, Murray Williams, Waterfowl biologist, January 22nd 2013).

As Rob Pitkethley (Interview, Regional Manager, Fish & Game (Eastern), January 15th 2013) noted, Fish and Game New Zealand is ‘an under researched organisation […] if you looked at our percentage research spend against total budget we would be right down the low end’ compared with other ‘natural resource managers.’ What little research that is undertaken, moreover, is not typically directed at questions that could potentially undermine the public perception of hunters’ quarry. This demonstrates the way that scientific information can be both used, and not used, to promote certain arguments and understandings of wildlife to the detriment of others. In this case, understandings of mallards have been directed by game managers who have no desire to investigate questions around the potentially negative impacts of their quarry. Equilibrium theory, though now routinely criticised (see Chapter 3), is used as a way of suggesting that the mallard population is stable and under control. This obscures the fact that very little scientific work has actually gone into proving this supposition. This again highlights the need to interrogate the motives of those in control of the science on different species of wildlife to ensure that the full scope of scientific questions is being asked.
9.2.3 The increasingly contested role of science in wildlife management

Although effort was increasingly directed towards ensuring the veracity of scientific research on wildlife in New Zealand in the late 20th century, there remained significant gaps in basic knowledge. In fact, Holloway (1993, p. 287) noted that despite the millions of dollars spent on the management of introduced species over the preceding one hundred years, much expenditure 'had little long-term effect because of persistent failure to understand the biology of the target animals.' Writing on trout stocking policy in the Rotorua Lakes in 1984, Principal Wildlife Officer N.B. Ewing, for instance, noted that methods of imposing regulations on anglers were based less on scientific knowledge and more on 'knowledge at the time, commonsense and gut feelings'\(^{145}\). He felt that scientific knowledge in fundamental areas such as fish population, 'crop' available and trends in angling were 'very weak' (Ibid.). Moreover, although it was considered 'likely' that introduced species in freshwater environments were having adverse impacts on native species, few studies had quantifiably documented them (Collier, 1993, p. 341). In lakes, there had been 'few studies in New Zealand of nutrient cycling, trophic interactions, and production that include vertebrates' (C. W. Burns, 1991, p. 371). Burns ascribed this omission partly to the 'institutional separation of governmental scientists engaged in research on plankton, fish and wildlife' (Ibid.). He also noted, however, that research on freshwater fauna had been largely 'management-oriented,' as it had since the late 19th century (Ibid., see above). In other words, it had tended to be used for the purposes of promoting certain favoured species and little else.

From around the 1970s both the employment of scientific research, and its supposed impartiality, became increasingly contested in New Zealand. An editorial in the New Zealand Science Review entitled 'The Name of the Game' made it clear that, even within the scientific community, the instrumental nature of much research was acknowledged (Anon, 1970). The production of scientific knowledge was tied to the interests of those who could afford to fund it. Those interests were increasingly influenced by businesses. Indeed, as expressed in the editorial,

The name of the game is business. Its creed is profit (which is the only alternative to loss), its Bible is the balance sheet, its emblem is the dollar sign, and cost is its watchword...The day is gone when one could invoke “science for the sake of knowledge,” nominate a project, and research the life out of it for the next twenty years. Science is now an investment, a business venture as vulnerable to an unfavourable annual report as any manufacturer. Clearly the message is getting through, for the [National Research Advisory Council] Annual Report notes, no doubt with some amusement, that “no organisation admits to doing pure research.” (Ibid., p. 88).

As this passage suggested, scientists’ research interests were seen to be tied inextricably to the interests of their financial backers, whether government or the private sector, necessarily limiting the direction of their results should they wish to expect future funding. Scientists were thus invited to see their work as a business transaction with results tailored to suit the objectives of their ‘clients.’ Rather than question the morality of this departure from ‘objectivity,’ scientists were asked to view business as a quasi-religion and profit as the final arbiter of right and wrong. Any diversions from this ‘morality’ would be swiftly punished through marginalisation and the withdrawal of funding. As a consequence of this solidifying approach to science, certain ‘omissions’ in knowledge frequently seemed to correlate with information that was not useful to the parties funding research. The lack of studies on the effects of trout on native freshwater biota, for example, was typical of this selective use of scientific information. Freshwater science was devoted to understanding how to grow more trout, bigger, and faster because this was what the authorities tasked with managing freshwater ‘resources’ were asked to achieve (McDowall, 1991; McIntosh et al., 2010). Questions that might disrupt the flow of research aimed in this direction were not only inconvenient, but potentially damaging.

This was not limited to freshwater research. Writing on the use of science to determine the effects of deer in New Zealand, Caughley (1983, p. 120), for instance, quoted from the notes of Minister of Parliament Richard Crossman in 1965. He observed that research outcomes very often were ‘precooked in the official committees to the point to which it [was] extremely difficult to reach any other conclusion than that already determined by the officials in advance’ (Ibid.). Indeed, following Caughley, criticisms of the use of
government science to advocate for the control or removal of deer in New Zealand became commonplace in many New Zealand hunting periodicals. An offering by McArthur (1985/86, pp. 16-17) in New Zealand Wildlife is typical:

Now one of the things which makes the environmental movement so credible is that its recommendations seem to be well founded scientifically. After all we live in a scientific age and people often take for gospel the pronouncements of scientists just as they used to believe what the church told them in previous generations...Well a scientific degree may be one thing – but a scientific attitude is another. A university degree by no means guarantees the graduate will attempt to be impartial.

As in the previous passage (Anon, 1970), McArthur directly compared science with religion. He noted that, just as religion has come to suffer ignominy through distortions of truth and other injustices, science too may be heading for a similar place of disrepute. Using a familiar constructionist argument, he encouraged readers, therefore, to question the word of scientists just as they had justifiably questioned the word of religious leaders. Understandings of science as simple and unproblematic were, like understandings of religion, becoming complex and often ambiguous. In an article in Fish & Game New Zealand, Speedy (1996, p. 75) engaged with a now common summation of the use of science in wildlife management in New Zealand, noting that it is ‘as much about value judgements as it is about good science;’ values that are not necessarily those of the scientists themselves.

Investigations over the 1980s and 1990s, furthermore, showed that there was good reason to be sceptical of much of the earlier faith placed in scientific understandings. Even introduced species that seemed to have been proven to be ‘bad’ by scientists, for example, were shown to require further consideration. Despite widespread castigation of ‘introduced predators,’ apparently well-founded in research, King (1985, p. 130), New Zealand’s foremost mammologist, argued that ‘even after considerable research effort, there is still no firm information on the effect that any common predator, such as the stoat (Mustela erminea), has on bird populations in contemporary times.’ She characterised supposed evidence against many introduced species at the time as ‘circumstantial,’ noting that it ‘would never stand up in a court of law’ (Ibid., p. 8). She offered, as perspective, the realisation that of the 153 distinct populations of birds
known to have disappeared from the islands of the New Zealand group since 1000 AD, stoats [as one example] could have come into contact with only five that are now extinct and 11 that are still threatened' (Ibid.). To King, the level of invective routinely directed at them, and other introduced mammals (see Chapter 5), was therefore misdirected and certainly not well substantiated by the scientific evidence of the time. Another common target of derision, the introduced possum (*Trichosurus vulpecula*), was also widely seen as demonstrably ‘bad’ for native wildlife. A study in 1999, however, showed that the long-term effects of possums on floral biodiversity, virtually unconsidered at that time, deserved further study (P. J. Bellingham et al., 1999). They found ‘no substantial changes in species composition’ in conifer/broadleaf forests inhabited by possums over periods of 14-25 years (Ibid., p. 5). Indeed, many species palatable to possums ‘remained relatively unchanged’ (Ibid.), casting doubt over some earlier cataclysmic predictions of forest collapse\(^{146}\) (e.g. Editor, 1969b; Kean, 1953) (see Chapter 5).

Reflecting on scientific assessments on the effects of deer in the early 20\(^{th}\) century in New Zealand, in particular, Graham Nugent (Interview, Deer ecologist, May 3\(^{rd}\) 2013) defended the work that was undertaken. Conceding apparent inadequacies of science at that time from a contemporary perspective, he suggested that they had, nevertheless,

> …what they believed was reasonable evidence […] While it was not quantified, it was reasonably good natural history of that sort of post-Darwinian [kind]. There’s nothing wrong with qualitative science (natural history) if it’s accurate […] [Ultimately] it was the science of the day. We can cast aspersions about it now because it wasn’t quantitative, but that’s what they had access to. That was the way they were trained. It was the most systematic observations they were able to make (Ibid.).

Whilst this is undoubtedly true, it avoids an important realisation: that what is considered to be ‘good science’ changes. The methods used to indict introduced species in the 19\(^{th}\) and early 20\(^{th}\) centuries frequently no longer stand as ‘reasonable’ evidence. Typically they are now negatively characterised as ‘anecdotal’ or ‘circumstantial’ (e.g. see McDowall, 1991, on the effects of trout on native fish in New Zealand). Furthermore, as the standards of good science change, there is no reason to suspect that

\(^{146}\) This finding is supported by further recent evidence (e.g. see DoC, 2012a, pp. 108-109).
many modern appraisals may suffer similar falls from credibility, if not respectability, in future. Again, I highlight this, not in an attempt to discredit the use of science to assess issues in relation to wildlife in New Zealand, but to maintain that a healthy scepticism of scientific knowledge is not only justified, but demonstrably sound. It suggests that scientific knowledge must be assessed alongside other literatures interpreting introduced species.

Regardless of the above, much scientific research on introduced species in New Zealand remains in its infancy. For example, calls from conservation organisations such as the Royal Forest and Bird Protection Society to research the effects of introduced birds (see above) have rarely been addressed. According to Tony Beauchamp (Interview, Technical Advisor Threats, Department of Conservation (Northland), February 25th 2013), ongoing insinuations of ‘guilt’ attributed to many introduced species (e.g. see Anon, 1951; Anon, 1956; Camp, 1997) often remain based in ‘folklore and ignorance more than anything else.’ Only recently have studies even begun to quantify the effects of many widely castigated introduced birds in New Zealand (e.g. see Anon, 2003a). In addition, much research on introduced species remains based on short-term studies whose conclusions may not apply long term. As Graham Nugent (Interview, Deer ecologist, May 3rd 2013) noted on research into deer in New Zealand:

There’s a lot of detail gaps that are missing […] In terms of vegetation lifetimes, it’s all pretty short-term stuff. It’s decades or less and yet most of the trees we’re working with have millennial or semi-millennial turnover times.

Indeed, until Forsyth et al. (2011) there had been no long-term studies of ungulate population dynamics in New Zealand. According to Dave Rowe (Interview, Freshwater Ecologist, January 18th 2013), there similarly remain many unknowns about the long-term dynamics of freshwater ecosystems that contain trout in New Zealand, including the Rotorua Lakes. Although Fish and Game New Zealand have long historical records dating back to the mid-1960s in Rotorua (Interview, Rob Pitkethley, Regional Manager, Fish & Game (Eastern), January 15th 2013), much of it remains unanalysed or otherwise tied into the overarching management of the lakes (Interview, David Hamilton, Chair of Lakes Management and Restoration, Bay of Plenty Regional Council, February 14th 2013). It is important to note, nevertheless, that the current state of knowledge is not necessarily opposed, particularly by game advocates. Neil
Hawes (Interview, Rotorua Anglers Association/Fish and Game New Zealand (Eastern), February 5th, 2013), for example, felt that,

...they’ve got some pretty switched on guys there [at Fish and Game New Zealand] in terms of fisheries science and I don’t know that they miss much. So, you know, from a personal point of view I’m quite happy with the science side of things.

However, this may only be because the current state of knowledge – that determined from a fisheries science perspective – tends to uncritically support the persistence of trout in New Zealand. Further ecological-oriented science on trout may not provide the same answers and, from the perspective of anglers, may not be desirable at all.\(^{147}\)

As discussed above, this is mirrored in science on mallards which has almost invariably been conducted ‘from the perspective of the fishing and hunting fraternity’ (Interview, Tony Beauchamp, Technical Advisor Threats, Department of Conservation (Northland), February 25th, 2013). As Tony Beauchamp commented, ‘there are phenomenal numbers [of mallards] that have been [leg] banded\(^{148}\), but the studies that have been done have primarily been related to hunting and maintaining sport and not actually looking ecologically at where they actually fit in the processes’ (Ibid.). Again, much science on introduced wildlife has been directed to answering the ‘right’ questions. There has been little incentive to produce science on mallards, in particular, that might conflict with their ongoing use as a sporting bird. Government authorities dedicated to conserving native wildlife, such as the Department of Conservation and its precursor the New Zealand Wildlife Service, are effectively discouraged from scientifically questioning the status quo. They are placated by the protection and ‘enhancement’ of wetlands by Fish and Game New Zealand (McLeod, 2007), just as the New Zealand Forest Service was by the Acclimatisation Societies (see below). As Ian Hogarth (Interview, ex-Department of Conservation (Northland), April 17th, 2013) reasoned,

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\(^{147}\) This may be one reason why science on the effects of introduced trout on native ecosystems in New Zealand (and elsewhere in the Southern Hemisphere) only began to be seriously addressed in the 21\(^{st}\) century (Garcia de Leaniz, Gajardo, & Consuegra, 2010).

\(^{148}\) For the purposes of research (see above).
...you’ve gotta understand that [Fish & Game New Zealand] are very very strong supporters of wetland preservation and wetland management. And the Department of Conservation is fully behind that. And that’s one of the major reasons why we’re in that supporting role.

Close social links between the two organisations also carry important weight. Staff at the Department of Conservation, for instance, are often keen hunters and anglers. Ian Hogarth recalled his experiences working for the New Zealand Forest Service in Northland:

One of the big parts of the job was actually hunting with the local acclimatisation fraternity. So we were going out hunting with them and participating in some of their programs [...] The [New Zealand] Wildlife Service, in particular, had very close connections with the acclimatisation societies. We were very close (Ibid.).

Promoting science that might devalue favoured quarry and sour relations with the Acclimatisation Societies was not a high priority. Investigating any possible impacts of introduced mallards was therefore a question that was not politically suitable to ask.

In contrast, much of the science on deer has been conducted from the perspective of conservationists that are opposed to them. Rather than finding ways to enhance deer populations, science on deer tends to be focused on discovering potential negative attributes and quantifying perceived ecological harm. This was highlighted by Clyde Graf (Interview, Urewera hunter/Anti-1080 activist, February 4th 2013). He suggested, for instance, that the Department of Conservation,

...have got [a Departmental scientist] doing a project at the moment trying to prove that deer are a pain in the arse. But, once again, that sort of research is not research. It’s just advocacy science – predetermined outcomes (Ibid.).

He wondered if opinions on deer might change if the research was directed toward answering different questions:
Who’s doing the research on what good deer are actually doing? You know. All the research on deer in this country is ‘OK, go and prove that they’re bad.’ Let’s do some research to see if they’re actually doing something good (Ibid.).

Reflecting on the science on introduced mammalian ‘predators,’ Tony Beauchamp (Interview, Technical Advisor Threats, Department of Conservation (Northland), February 25th 2013) made a similar reflection. Although research is directed to assessing their potential negative effects, ‘there’s not a lot of work that’s actually being done to prove benefit. I’m not saying that there isn’t some benefit, but [rather] it’s not actually an area of enquiry’ (Ibid.). This may explain why there is so much scientific evidence for the negative attributes of introduced species and so little for any positive contributions. The latter question is simply not asked.

A consequence of this imbalance is that the perceived impartiality of science on wildlife in New Zealand now suffers from a legacy of advocacy and agenda setting. As Ian Hogarth (Interview, ex-Department of Conservation (Northland), April 17th 2013) commented, although scientists may sometimes enter their research with ‘pure’ intentions, ‘the objectivity disappears as they get into the subject.’ Most ecologists in New Zealand, moreover, enter their fields already well-schooled on the value of native species and the disvalue of most introduced species, meaning that any sense of impartiality is typically disavowed from the outset. Others have become disillusioned with the pace of research or with changes and reversals in policy. Pete Shaw, for example, offered a jaded view of the value of science. He advocated a pragmatic approach: ‘Do the best with what you’ve got now and never mind the theoretical arguments [laughs]’ (Interview, Pete Shaw, ex-Department of Conservation (Northern Te Urewera), March 1st 2013). As a result, contributions to New Zealand hunting and fishing magazines continually point to a now-enduring mistrust in scientific authority. Two letters in New Zealand Hunting and Wildlife are typical. Hanson (2004, p. 12), furthering the now ‘traditional’ lamentation of deer as ‘pests’ in government legislation, asked detractors to avoid using science altogether: ‘Please don’t quote recent “science” as evidence against this. Science has been so tainted by the privatisation agenda and bidding for contracts, that much of it

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149 In its first ten years the Department of Conservation was restructured four times (Askes, 1997). While writing this thesis it was undertaking another.
lacks integrity today’ (also see Watson, 2006). This overarching scepticism of scientists themselves is a poor outcome as it undermines their credibility, making it difficult for future studies to receive the resonance they may well deserve.

To summarise, this section has demonstrated that scientific research on introduced species is not an impartial arbiter of ‘truth.’ It furthers the thesis of many constructionist appraisals of science, arguing that scientific ‘truths’ cannot be taken at face value (see Chapter 3). Rather, they often conceal biases and assumptions that work to implicitly exclude and marginalise some in favour of others. Science on wildlife in New Zealand has consistently worked to marginalise certain introduced species in favour of native species and introduced game animals. In addition, many scientific appraisals of introduced species were initially based on very little research whatsoever, and some continue to be. In the case of some introduced game species, research continues to focus on their propagation and promotion, ignoring their effects on native species. In addition, much scientific work has been obstructively tied to the support of predetermined policy outcomes. This was most clearly demonstrated in the science connecting deer with accelerated erosion rates. Scientists worked to prove a connection rather than to investigate whether there was a connection. What an analysis of the science on game species has shown is that science can be used to positively represent both native and introduced species. In fact, it may be no coincidence that the species that are important to New Zealand’s national identity and economy are also those that are considered demonstrably ‘good’ for the environment, or at least not demonstrably bad for it. As Negri (1991) recognised, once a species is deemed useful (or otherwise) science is largely directed toward proving that value judgement with alternative questions receiving little consideration.

This section has also demonstrated how the standards for ‘good science’ change. Prior to the 1930s there was no formal wildlife science in New Zealand and assessments were largely based on what would now be considered ‘expert opinion.’ Only from around the 1960s did assessments of wildlife begin to fully quantify those opinions. Nevertheless, many studies since remain based on short-term data that do not fully explore the long-term ramifications of introductions. Despite claims to truth, therefore, science provides an inaccurate measure of the effect of introductions in New Zealand and would best be contextualised within a framework that incorporates alternative understandings. Understandings of
science in New Zealand are increasingly moving from simple fact-based accounts to complex understandings that incorporate the many social, economic and political factors that underlie the production of scientific knowledge. In the case of introduced species, these understandings demonstrate that scientific assessments of ecological effects – or lack thereof – in particular, need to be read in the context of the assumptions of the research and the predispositions of their funding sources.

9.3 Reconciliation: Beyond death?

Despite the slightly pessimistic tone of much of the preceding discussion, Esposito (2008, p. 11, emphasis in original) and others, argue that an affirmative biopolitics remains ‘capable of overturning the Nazi politics of death in a politics that is no longer over life but of life.’ Therein, the concept of ‘community’ could replace the self-destructive logic of ‘immunity’ (Lemke, 2011). Ojakangas (2005), for example, argued that the foundations of biopolitics, as enumerated by Foucault, were not in violence, as Agamben had suggested, but rather in love and care for individual life. Indeed, Hannah (2011, p. 17) suggested that an affirmative biopolitics has a core in biophilia, mobilised as ‘a form of solidarity to help combat injustice and inequality, and to make the world a better place.’ It would be ‘global and universalist, extending in principle at least to all of living humanity, and perhaps to other living beings as well’ (Ibid.). The relation with life would be an affirmative one that would refuse the imperative to divide between valued and unvalued lives, and to cultivate ‘turning points’ through which new potentialities could come into being (Anderson, 2011, p. 29).

These notions are far removed from the gloomy biopolitics of, for example, war (Smith, 2009) or murder (Dillon, 2007), which emphasise the exploitative and destructive tendencies of biopolitical regimes. Nevertheless, for all the optimism of affirmative moves within biopolitics, I could find little in my analysis to support such hopeful claims in the context of wildlife management in New Zealand. As I showed in Chapter Four, there is abundant evidence that local people’s attitudes toward local introduced species often differ from those of many conservationists (see Barbour & Schlesinger, 2012; Trigger, 2008, 2011). However, their arguments for reconciliation of introduced species, as I have argued above, remain grounded in moves to ensure the continuing use of certain valuable species as resources.
Below, I briefly discuss the scarce instances of discourse alluding to the general reconciliation of introduced species before returning to the thesis that these moves are largely fostered with intentions of reconciliation only for specific useful species. This is then demonstrated through reference to the growing practice of ‘catch-and-release’ which is widely presented as a ‘softening’ attitude to wildlife, when it might more accurately be interpreted as an attempt to ensure the sustainability of favoured species. Reconciliation of many valued game species is shown to not be intended to achieve parity with native species, but rather only to ensure their sustainable use. For that reason, only a ‘quasi-native’ status is sought. Finally, I argue that ‘reconciliation’ may be too ambitious an objective for the reconsideration of introduced species. Rather than focusing on the ‘worth’ of introduced species, emphases might more productively shift toward presenting the more achievable realisation that introduced species are rarely worthless.

9.3.1 Reservations regarding the death function

There is now widespread recognition that the environment in New Zealand has changed dramatically since the arrival of humans. More importantly, many also recognise that much of this landscape modification is irreversible (see Chapters 5). Indeed, as early as 1956 a paper in the New Zealand Science Review noted that it was the contemporary biota, not that of previous centuries that would form the basis of future life in New Zealand (K. R. Allen, 1956). Therein, both native and introduced species would significantly ‘contribute to the forces which are shaping the future’ (Ibid., p. 3). As I noted in Chapter Five, there is an emerging recognition that the ecological future of New Zealand will likely be different from the present configuration, but that the scale of such changes might not be quite as unprecedented as earlier thought. Despite ongoing tropes of balance and equilibrium, therefore, there remains some sympathy for the notion that the current biota, both native and introduced, represents not a break with the past, but rather a manifestation of the ongoing dynamics of life in this country.

In consequence, the need to accept at least some elements of the introduced biota was recognised by many of my interviewees (e.g. Interview, Tony Beauchamp, Technical Advisor Threats, Department of Conservation (Northland), February 25th 2013; Interview, Ian Hogarth, ex-Department of Conservation
(Northland), April 17th 2013). Murray Williams (Interview, Waterfowl biologist, January 22nd 2013), for example, reflected at length on what he considered to be the,

...ludicrous distinction now between...You know, you pick up a book [on New Zealand wildlife and every species is either] introduced or native. Why the hell are we persisting with this dichotomy?! Things like blackbirds, chaffinches and sparrows, starlings, redpolls\textsuperscript{150} and whatever, they’re here forever. They’re part of New Zealand’s suite of fauna. And so we should recognise that they are part of our diversity forever, until such time as the next bloody comet arrives!

According to Williams, the unproductive and myopic distinction between native and introduced species continued to marginalise the latter, setting up expectations of future environments that were both unrealistic and unreasonable (also see Chapter 5). Carl Cooper (Interview, Dargaville Biosecurity Officer, Northland Regional Council, March 19th 2013) contrasted the treatment of introduced species with the treatment of immigrant humans in New Zealand (but see Chapter 3). He noted that while introduced species were subjected to the most rigorous inspections and that many continued to be considered ‘foreign’ and unwanted after over a century in the country, human immigrants were ‘reconciled’ under comparatively few conditions:

Yep, pay your dollars, swear on the Bible and salute the flag and you’re in mate, you’re a Kiwi, aye [laughs]. Even if you can’t speak English, you’re still a Kiwi aye [laughs] (\textit{Ibid.}).

According to much biopolitical scholarship, the reason for this discrepancy is clear. Human immigrants provide worthwhile sources of labour while ‘immigrant’ biota may interfere with valued biota, reducing the ‘natural capital’ of the latter (but see Chapter 7) (Lemke, 2011). Nevertheless, reflections such as Cooper’s point to some recognition that ongoing attempts to remove certain introduced species may be fostered within a climate of hypocrisy.

Though only very occasional, other interviewees expressed their reservations regarding the supposed imperative to kill introduced species. Judy Gardner (Interview, Member, Royal Forest and Bird Protection

\textsuperscript{150} All introduced species.
Society (Rotorua), April 22nd 2013), for example, reflected on an earlier resistance to the notion that there might be a death imperative to conservation:

Yep, it took me a long time to join the possum trapping, ‘kill possums’ thing in our care group because I…because of that. Because I couldn’t quite see that we should have to kill these things. But gradually I was worn down. I don’t know what I was worn down by. A drip of water…

Ian Hogarth (Interview, ex-Department of Conservation (Northland), April 17th 2013), expressed similar reservations, noting that the killing of introduced species might latterly be compared unsympathetically to the medieval crusades: ‘Chopped thousands of people’s heads off in the face of thinking they were doing the right thing.’ As I noted in Chapter Five, the acclimatisation of introduced species in New Zealand was furthered within a wholeheartedly supportive environment in which colonists believed that introductions would help to make the country a better place. Hogarth’s insight points to the unsettling possibility that a similar reversal of attitudes may come to elevate the status of introduced species once again in New Zealand, leaving the work of many well-meaning people – in this case restorationists – similarly compromised.

Rather than suggesting that currently marginalised species should be ‘reconciled,’ a more productive path might simply be to suggest that introduced species should not so readily be dismissed as worthless, partly because much of this worthlessness, and its attendant dissatisfaction, is clearly self-imposed. As Graham Nugent (Interview, Deer ecologist, May 3rd 2013) commented on the landscape in Queenstown in New Zealand’s South Island:

It’s like overseas tourists think Queenstown’s a beautiful landscape. We look at it and we see [introduced] radiata pines and don’t like it so much. So we’re kind of depriving ourselves of a pleasure we could have.

Again, this kind of reflection, though rare, points to the ever-present prospect that attitudes toward introduced species may change. In Chapter Seven, I argued that the killing of introduced species was a source of deep satisfaction for many New Zealanders who are able to realise a place or role in the
country through it. What is notable, however, is that killing is not the only way of obtaining such satisfaction. As partial evidence of this, I refer to a personal communication of mine. Prior to this thesis, I worked with a Danish woman who had recently arrived in New Zealand and I have often reflected on an experience of hers. Reminiscing on her first year in the country, she related a short story which I express in essence below:

As a wildlife enthusiast, she had quickly set about learning New Zealand’s biota, which she found fascinating. One day she described happening upon a possum while walking in the forest and her delight at the encounter. However, upon returning to her lodging, she was informed by others of the introduced and pestiferous status of the possum in New Zealand. Having learnt this, she realised her ‘mistake’ in enjoying the encounter and determined to rectify it in future. Not long after, she happened upon another possum in the forest – possibly a sick or injured animal – walking on the ground. Having learnt of the diminutive status of possums in New Zealand she knew what needed to be done. Obtaining a large fallen tree branch, she dispatched the animal with a series of strong blows to the head and forequarters. Having achieved her objective, she reported delight at having ‘helped’ New Zealand’s environment.\(^{151}\)

What was interesting to me was the fact that my colleague obtained happiness both from killing the possum and from letting it alone. However, it was only in ‘ignorance’ that she was afforded the latter pleasure. I related this short account of my colleague’s changed perceptions to several of my interviewees as a conversation piece. Joe Doherty (Interview, Te Urewera Guide, Te Urewera Treks, February 22\(^{nd}\) 2013), having just heard the story, related a similar experience:

JD: And people can change in an instant as well, because I remember just sitting up at the bush [one night] with a group of seven or eight people from the Netherlands. They’d just been briefed on how ‘the only good possum is a dead possum’ and just talking about the fact

\(^{151}\) I accept that this presentation is unorthodox and not valid as an empirical presentation on its own. I use it only in concert with formally recorded accounts. It is also included because of its personal reflexive significance in the development of my thinking with regards to reconciliation.
that they’d never seen one. And then suddenly we hear a little sort of scratching sound and I flick the torch on and there’s one sitting there looking at us. And everyone is like, ‘Wow! What a wonderful creature!’ you know. And they charge off and get cameras and all the rest of it. And so, you know…I’d like to pop it off [i.e. kill it]! [laughs].

JS: What would they have thought if you had done that?

JD: I just left it…

These encounters show how rapidly perceptions of introduced species can change from enjoyment to loathing, and vice versa. They suggest that there may be other ways of ‘enjoying’ possums other than killing them to ‘help’ the environment. ‘Ignorant’ tourists do not to understand how ‘bad’ the possums are and therefore obtain enjoyment from observing them. Even those that are made aware of their ‘disrepute’ sometimes overlook this in favour of appreciating them as objects of interest or beauty in their own right. Reflections such as these point to the possibility that it is not ignorance but rather a wayward morality that determines that the killing of certain introduced species is the only means through which they can be interpreted and enjoyed. This reinforces the socially constructed nature of many prevailing discourses on wildlife and how these constructions may be capable of being influenced. In the next section I show how, with the help of the ‘right’ education, even a ‘useless’ pest can become a valued member of the biota.

9.3.2 The necessary death of brown trout

Brown trout were introduced to Lake Rotorua in the late 19th century under the assumption that they would improve fishing in the lake (see Chapter 5). However, over the mid- to late 20th century attitudes toward brown trout reversed and they were netted and removed from the lake in large numbers due to the belief that they were damaging the local fishery. By the late 20th century attitudes toward brown trout reversed again. The removal of brown trout is now widely considered to have been an ‘act of piscatorial

152 Whilst it might be suggested, then, that possums could be ‘reconciled’ as tourist attractions, this presentation of reconciliation only furthers existing understandings of wildlife in New Zealand, which tend to judge introduced species only by how useful or otherwise they are to people (see Chapter 7).
genocide’ (K. Smith, 1997, p. 60) and they are now considered the most desirable sports fish in the lake.

In this section, I investigate whether the discourses used to present brown trout as both ‘pest’ and ‘prize’ may demonstrate some of the rhetorical mechanisms through which introduced species could be reconciled more generally in New Zealand.

In 1918, W.J. Phillipps completed a ‘Report on a Scientific Investigation into Questions Relative to the Trout Fisheries of the Thermal District.’ He noted that although brown trout were common in the Rotorua Lakes they were not ‘found in such large numbers as the rainbow and [were] less easily secured.’ For example, although they comprised around 30% of the trout in Lake Rotorua, they represented no more than 5% of the anglers’ catch (Anon, 1963a). The reasons for this were not initially clear. It was later discovered, however, that brown trout are primarily ‘benthic’ feeders and therefore less likely to take a dry fly or be captured by ‘trolling’ than rainbow trout. This discrepancy in catch rates was seen as a problem because it meant that the lakes were supporting some fish (i.e. brown trout) that did not provide as reliable a return for anglers as others (i.e. rainbow trout). As F.L. Newcombe of the Marine Department communicated it in a letter to the Rotorua Acclimatisation District:

> All trout consume food. If a significant proportion of the trout population complete their life-cycle without being caught, such as the case with browns, in lake systems where rainbow are also present, food supplies are wasted from the angler’s point of view. More fish could be caught by a greater number of anglers if such lakes carried rainbow only. It is realised that to

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153 They are present only in Lakes Rotorua and Rotoiti.

154 Phillipps, W.J. 1918. Report on a scientific investigation into questions relative to the trout fisheries of the Thermal District, Auckland Province, New Zealand, p. 8, AFKC A1700 198/g 7/10/0(1), Department of Internal Affairs, Fish & Fishing 1960-1986, Auckland, National Archives.

155 Defined as an organism living on or near the bottom of a water body.

156 ‘Trolling’ is a method of fishing wherein one or more fishing lines are drawn through the water behind a moving boat. Due to local regulations, these are baited with lures only in the Rotorua Lakes.

remove or reduce brown trout populations of large lakes quickly is not practical, but such lakes should be managed to make available the maximum number of more readily caught rainbow\textsuperscript{158}.

As this passage attests, trout that were not caught were seen as ‘wasted’ resources that had no other use. Their one role in the lakes was to satisfy anglers. Brown trout, relative to rainbow trout, were thus a sub-optimal use of the lakes: ‘They utilise food resources of the lakes, without giving significant returns to the angler’s bag’ (Wildlife Branch - Department of Internal Affairs, 1962, p. 15). To make matters worse, brown trout were seen to be an inferior sporting proposition relative to rainbow trout (Wildlife Branch - Department of Internal Affairs, 1962). They did not ‘display the same fighting qualities\textsuperscript{159}.’ They were thus both harder to catch and less fun when they were caught.

From the 1950s new management initiatives were undertaken in attempts to solve the brown trout ‘problem’\textsuperscript{160}. Firstly, in an effort to increase the catch of brown trout, restrictions on daily ‘bags’ for brown trout were removed in the lakes (Wildlife Branch - Department of Internal Affairs, 1962). This proved ineffective. Ironically, the removal of restrictions only increased the number of rainbow trout captured and the proportion of brown trout caught remained the same as before the removal of restrictions\textsuperscript{161}. As a

\begin{footnotesize}
\textsuperscript{158} Newcombe, F.L. 1961. Bulletin No. 6 For the information of the members of the Shooting and Angling Clubs and Associations of the Rotorua Acclimatisation District, pp. 1-2, AFKC A1700 198/g 7/10/0(1), Department of Internal Affairs, Fish & Fishing 1960-1986, Auckland, National Archives.


\textsuperscript{160} Not all proposed initiatives met with acceptance. For example, an approach to the Minister of Internal Affairs by underwater spear fisherman – aiming to take brown trout with spear guns – was rejected ‘for ethical and management reasons’ (Burstall, P.J. 1971. Report to the Rotorua and Taupo Federations of Angling Clubs on brown trout (Salmo trutta), p. 4, AFKC A1700 194/f 7/0/10, Department of Internal Affairs, Report on Brown Trout 1971, Auckland, National Archives).

\textsuperscript{161} Burstall, P.J. 1971. Report to the Rotorua and Taupo Federations of Angling Clubs on brown trout (Salmo trutta), AFKC A1700 194/f 7/0/10, Department of Internal Affairs, Report on Brown Trout 1971, Auckland, National Archives.
\end{footnotesize}
second measure, in 1960 the Department of Internal Affairs issued a pamphlet entitled ‘How to Catch Brown Trout’ which ‘set out the problem for the angler’s attention,’ lest they were unaware of it (Wildlife Branch - Department of Internal Affairs, 1962, p. 16). Around 40,000 copies were distributed to anglers in the 1960/61 fishing season encouraging them to increase their ‘take’ of this species. Nevertheless, this measure too proved ineffective in significantly reducing the numbers of brown trout. An increase in the use of trolling as a fishing method from the 1950s onward only exacerbated the problem as it primarily targeted rainbow trout (Ibid.).

From 1958 an experimental fish trap was set up in the Ngongotaha Stream, a trout spawning tributary of Lake Rotorua. Research provided further evidence of the inutile nature of brown trout, indicating that they competed for food with the rainbow trout and also ate juveniles at stream mouths (Anon, 1964b). As the number of anglers in Rotorua climbed, the need for a solution to the problem was increasingly felt. P.J. Burstall recounted the logic behind the decision to begin systematic killing of brown trout:

> We had a responsibility to try and ensure that the best use was made of the waters, and that all means available should be directed towards ensuring that the optimum production of the lakes was realised...It was felt that a reduction in the proportion of brown trout could mean an increase in the carrying capacity of the waters for rainbow trout and consequently, a means of providing more fish for this increasing effort.

Much like the removal of other introduced pests, people determined that it was their ‘responsibility’ to do something about the brown trout problem (see Chapter 7). Destruction of brown trout at Ngongotaha duly commenced in 1958. The formal objective of this initiative was to understand how an experimental reduction in the brown trout population would affect the more desirable rainbow stocks (Wildlife Branch -

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Department of Internal Affairs, 1962). Initial numbers of brown trout removed from the trap were very large. Indeed, 'literally truckloads' were removed from the trap (K. Smith, 1997, p. 60). These were initially sent to Auckland where they were converted into fish meal, sent back to Rotorua, and fed to juvenile rainbow trout at the Ngongotaha hatchery (K. Smith, 1997, p. 60). In this way, inutile lives were directly translated into the growth of utile ones. In 1962 alone, 6,993 brown trout were killed in the Ngongotaha trap and converted to rainbow trout food (Anon, 1963).

Nevertheless, the numbers of brown trout caught quickly declined. Within a few years the much smaller numbers of brown trout caught in the trap were sent to local hospitals as human food\textsuperscript{164}. In 1959, 20,269 rainbow trout passed through the Ngongotaha trap. 9,416 brown trout (34\% of trout) were destroyed in the same year. Eleven years later, in 1970, 16,589 rainbow trout passed through the trap, while only 596 brown trout (3.5\% of trout) were destroyed. Both the numbers and weight of both species had declined since the commencement of trapping. Rainbow trout had declined in weight from an average of 1.4 kilograms in 1959 to 1.2 kilograms in 1970. Brown trout had declined from an average weight of 2.4 kilograms in 1959 to 1.4 kilograms in 1970 (\textit{Ibid.}). Although the drop in numbers was attributed to the operation of the trap, the decline in average weights was attributed to a fall in water quality due to surrounding land use. Both G.R. Williams, Head of the New Zealand Wildlife Service\textsuperscript{165}, and D. MacIntyre, Minister for the Environment\textsuperscript{166}, therefore, maintained that the removal of brown trout had been a worthwhile management initiative.

This was disputed by others, nevertheless, who claimed that the decline in the fishery was solely related to the removal of brown trout. The views of Kevin Bryant of British Columbia, quoted in an article in \textit{New Zealand Outdoor}, were typical of opposition:


\textsuperscript{165} Williams, G.R. 1971, June 14, Letter to T.G. Northcote. AANS W3546 Box 32 WIL 24/5/3, Department of Conservation (Head Office), Lake Rotorua Spawning 1962-1969, Wellington, National Archives.

\textsuperscript{166} D. MacIntyre, Minister for the Environment, 19 May 1972, Letter to M. Leipst. AANS W3546 Box 32 WIL 24/5/3, Department of Conservation (Head Office), Lake Rotorua Spawning 1962-1969, Wellington, National Archives;
New Zealand is killing off its brown trout and allowing poorly-conditioned rainbow trout to propagate a degenerate race...[the rainbow trout released from the hatchery] would never recover, but would breed a race of runts...They are putting Darwin’s survival of the fittest in reverse. It’s unforgivable in a country whose sheep and dairy industry show that they are alert to selection (in McNab, 1971, p. 9).

Indeed, the Department of Internal Affairs had provided a similar commentary in 1962, stating that:

The removal of the predator [in this case brown trout] would mean that utilisation of rainbow trout must be high, i.e. preferably angling pressure, otherwise an excess number of small rainbow trout could be produced (Wildlife Branch - Department of Internal Affairs, 1962, p. 16).

By the early 1980s the proportion of brown trout being trapped in the Ngongotaha had fallen to less than 1% (S. Smith & Pitkethley, 2000, p. 22). However, as the number of browns declined towards extinction, resistance towards their removal steadily increased. Appreciation for their uniqueness and rarity in the lakes rose. Rod Morris, a Wildlife Service employee around the time, noted that workers at the Ngongotaha trap began to let some of the brown trout pass through the trap: ‘...there were these beautiful brownies coming through – just stunning looking fish. More than a few were let go rather than tapped on the head [i.e. killed] they were such beautiful fish’ (Anon, 2013b, n.p.). Indeed, increasing opposition to the removal of brown trout resulted in the discontinuation of trapping around 1983.

Monitoring in the late 1990s showed that the proportion of brown trout caught in the Ngongotaha trap had ‘recovered’ to 12% (S. Smith & Pitkethley, 2000, p. 26). In stark contrast to the 1950s, a two-fish daily limit was placed on brown trout ‘to protect these trophy sized fish as they become increasingly attractive to anglers’ (S. Smith & Pitkethley, 2000, p. 26). As a consequence, the proportion of brown trout in Lake Rotorua is now thought to be back to around 30%, the level it was at in the early 20th century (Interview, Rob Pitkethley, Regional Manager, Fish & Game (Eastern), January 15th 2013). Rob Pitkethley summed up Eastern Fish & Game New Zealand’s contemporary attitude towards brown trout in the Rotorua Lakes:
What we’ve done [is] instead of thinking of the browns as a competition [with rainbows], we’ve said, ‘right, let’s work hard to promote the brown fishery.’ So, we’ve gone out there and we’ve tried to educate anglers about targeting browns. You know, ‘if you want to catch a trophy trout in the Rotorua system the best trophy trout, or the best chance you’ve got of catching a trophy trout is to actually go fishing for a brown trout in the Ngongotaha Stream.’ And so we’ve promoted it to try and shift our users, rather than to change the species (Ibid.).

The construction of brown trout had thus come full circle. Initial research had facilitated the construction of brown trout as a ‘problem.’ Many anglers were evidently not aware of the existence of this problem, however, and required ‘education’ to learn the importance of killing brown trout. Inutile brown trout were killed en masse, their bodies industrially processed and fed to utile rainbow trout. Nevertheless, as their numbers declined their value increased and a new appreciation was developed for them. It was ‘discovered’ that brown trout were beautiful fish and that the difference in angling experience they provided from rainbow trout was valuable. The scarcity of brown trout effectively increased their economic value. Large brown trout were now a unique ‘trophy’ fish and a worthwhile entity in the lakes. Having earlier ‘educated’ the public to remove brown trout as impediments to the fishery, management authorities now ‘educate’ the public to value them as an important fishery in their own right. This shows how education can be used, not only to advocate for the death of introduced species, but to also promote potentially more affirmative readings. When considered in conjunction with the reservations toward the supposed necessity of death expressed by some of my interviewees (see above), it suggests that there may be scope for reconceptualising some other species in future.

What this case does not show, however, is a resistance to the overarchingly instrumental mentality of much wildlife management in New Zealand. The outcome is characteristic of the immunitary logic of biopolitics which promotes only power over life (Esposito, 2013). In this instance, brown trout were ‘reconciled’ into conceptions of acceptable biodiversity in Lake Rotorua, but primarily because people learnt the ways that they could use them. As Rob Pitkethley suggested in the quotation above, an alternative means of approaching introduced species was to ‘shift our users’ rather than ‘change the species.’ There was no new appreciation for the independent existence of the trout. Rather, it was simply
recognised as a new tool in the shed. Because this instrumental approach only assesses how a species is currently useful to people, it disregards the ways in which that perceived utility might change. In this instance, brown trout were culled almost into extinction only to be latterly deemed valuable and now cherished. There is little to suggest that they might not again fall from favour in the near future should some research or educational initiative promote some novel negative reading of their presence in the lake. This leaves brown trout in a very tentative and precarious position. Should their perceived usefulness decline at some stage they may 'need' to be industrially slaughtered once again. In the last section of this chapter I discuss the extent to which this instrumental logic of immunity remains, and may remain, characteristic of wildlife management in New Zealand.

9.3.3 The rhetoric of reconciliation

Moves to affirmative biopolitics insist that the basis of biopolitics lies in biophilia and care for life, suggesting that such notions may be not only desirable but also practicable. However, while this may be possible to some extent in human societies, I have found little evidence to support the contention that nonhuman life is likely to be conceptualised or governed in such a way in New Zealand. Regardless of which reconciliatory frame for introduced species is employed, the rationale invariably leads back to human use. In fact, on the basis of this research there seems little prospect that introduced species will be 'reconciled,' in the sense of a compassionate reconsideration, in the foreseeable future. Though biophilia no doubt exists, it is a love for useful things not a love for things as they are or could be. Whilst, in some societies, humans from different ethnic and cultural backgrounds are able to be reconciled into serviceable harmonies, there are few incentives and many disincentives to offer such scope to nonhuman forms of life. I argue, therefore, that reconciliation as a general goal for introduced species is poorly supported by my empirical evidence and that, on the contrary, introduced species are likely to continue to be exploited on the basis of their current utility.

In Chapter Six, I acknowledged my own positionality as a natural scientist who had become frustrated at the perspectives of some of my peers. Initially, this thesis was intended as an attempt to contribute to arguments for reconciliation and to challenge those that sought to obstruct that vision. However, as the thesis progressed I became increasingly aware of the extent to which my thesis was not a vehicle for truth
per se but, rather less ambitiously, for an alternative reading of reality. I had thought that my selection of introduced game species would work as a good vehicle for illuminating reconciliatory discourses. However, while this proved to be accurate in part, I found that the arguments being forwarded were merely rhetorical in nature and not intended for application outside of those favoured species. They were mostly arguments for the persistence of hunting and fishing, not arguments for the persistence of those species. In other words, they were transparently instrumental. My somewhat unvarnished initial impression of reconciliation had been that it might involve the compassionate acceptance of species and the belief that these species had a 'right' to a place in New Zealand as well as natives. However, what I increasingly found was that all species – native or introduced – were accepted in New Zealand only when they were found to be useful. As I noted in Chapter Seven, species were accepted if they provided value to the national identity or economy, otherwise they were considered dispensable. This was an important but mildly depressing realisation as it suggested that no species was in reality accepted in the generous and affirmative sense that I had originally presumed.

While introduced game species are frequently 'reconciled' in New Zealand, the ways that they are reconciled are directed at ensuring their continuing use, not on promoting any genuine regard for their welfare or belonging as a member of the biotic community. In fact, during interviews it became clear that instrumental views towards introduced game remain dominant (see Chapter 5). Most interviewees spoke of introduced species only in terms of how they could be used. An 'ideal' trout, for example was, 'oh, about six pounds [...] nice, fresh, fat' (Interview, Phil Gates, Treasurer (Ex-president), Trout Unlimited New Zealand, March 26th 2013). In other words, it is defined by 'what the angler wants' (Interview, Rob Pitkethley, Regional Manager, Fish & Game (Eastern), January 15th 2013). Consequently, trout that fall outside of desired metrics or fishable water bodies are dispensable: 'My view is that if there’s trout in a place that has not been fished they have no value' (Ibid.). In the same vein, Nathan Burkepile (Interview, Field Officer, Fish & Game (Northland), February 27th 2013) jokingly described his image of a mallard duck as: ‘a little orange marmalade and a BBQ, no [laughs].’ However, this view was shared by many. For Carl Cooper (Interview, Dargaville Biosecurity Officer, Northland Regional Council, March 19th 2013), mallards were principally a foodstuff: ‘That’s what you’re there for.’ Janet Snell (Interview, Member, Ornithological Society of New Zealand (Whangarei), February 1st 2013) concurred: ‘What other value
ducks] is there? Do you know of anything else?’ The notion that mallard ducks might have an agency, purpose or legitimacy outside of the rubric of game was seen as almost inconceivable.

Clyde Graf (Interview, Urewera hunter/Anti-1080 activist, February 4th 2013) adopted the language of production farming to similarly describe his ideal deer as a ‘good condition…free-range’ animal. Worthwhile deer were those that conform to the expectations of deer stalkers who:

…want to go into country and see sign of game animals, preferably more than one species. He will want to be able to see at least one animal in a reasonable period of time and physical activity. He will want to have a reasonable chance of getting to an animal…Last, but not least, he will want to find a healthy animal in healthy habitat (A. Evans, 1981, p. 46).

‘Healthy’ deer are interpreted as animals that can be tracked down, shot, and usually eaten within a ‘reasonable’ period of time. Under these criteria deer that are not ‘fit’ or available for consumption are not ‘healthy’ (also see Chapter 8). Even when deer are seen to have no legitimate place in the wild, they are still seen to have a place in New Zealand as farmed foodstuffs (e.g. Shona Myers, Secretary (Ex-president), New Zealand Ecological Society, May 22nd 2013). In either case, their place is as harvestable resources rather than as animals that have any non-instrumental role or belonging in New Zealand.

It is important to note, furthermore, that even introduced game never reach beyond the status of quasi-natives. A survey by Fraser (2001) indicated, most New Zealanders felt that introduced species could never be considered native. This exclusion is also reflected in the common names for many species. For example, many New Zealand native species – particularly birds and trees – are now referred to exclusively by their Māori names, further emphasizing their uniqueness and belonging. In contrast, introduced species, whether game or otherwise, are rarely referred to by their Māori names167. In a New Zealand Outdoor article, Willems (2002, p. 76) referred to introduced tahr (Hemitragus jemlahicus) as ‘New Zealand tahr,’ in an attempt to present an argument for the belonging of this species. However, this assignation of belonging is notable only for its rarity, for this type of construction is almost never used.

167 Richard White (Interview, Te Urewera Guide, Ahurei Adventures, April 8th 2013) offered one local exception, noting that the possum was often referred to by its Māori name (paihamu) in Te Urewera.
What I propose is that the reluctance to name introduced species – even valued game – is related to their status as ‘bare life’ in the case of the former, and their status as a harvestable commodity in the case of the latter. It ensures that they continue to be treated dispassionately as ‘things’ either to be disposed of or conserved. As Stevenson (2012) suggested, the state of being what she called ‘a-nonymous’ (literally ‘without a name’) insists that their deaths cannot be mourned (also see Chapter 7). They are ‘introduced populations’ with generic, foreign-sounding names. One does not, for example, harvest ‘tui’ or ‘kokako’\(^{168}\), because these are part of the community, but one does harvest ‘trout’ or ‘deer’ or ‘mallards’\(^{169}\), because these things are there to be hunted and killed. Their names emphasise how they are to be treated\(^{170}\).

It is notable that comments or advocacy alluding to the general reconciliation of introduced species is not common in New Zealand. Views on overarching notions of reconciliation from interviewees, for example, were generally only elicited after direct questions. I found little evidence of unprovoked discussion in either the New Zealand scientific or popular literature. In contrast, arguments for reconciliation were common in articles that vouched for the acceptance of particular valued introduced game species. Hunters and anglers often furthered reconciliatory discourses as a way of enforcing the belonging of their favoured quarry (e.g. see Speedy, 2005; Turner, 1995; Yeats, 2003). Regularly portrayed was the length of time that many introduced species have been in New Zealand as a supposed validation for their acceptance (e.g. see Editor, 1999a; Hope, 2008; Zander, 1994). Hunters often compared attitudes to introduced species with those towards immigrant humans, emphasizing the length of time that favoured non-human species had been present in comparison with their human equivalents. For example, writing in *New Zealand Hunting & Wildlife*, both ‘Stalker’ (1994) and Marshall (2002) felt that deer should be

\(^{168}\) Although some Māori would disagree – suggesting that native birds should also be harvestable – their perspective contradicts the imperative of conservation biology which insists that native species are vital to the perpetuation of native ecosystems and therefore not to be removed.

\(^{169}\) The continuation of European names for introduced game species might also be a way of sustaining or celebrating European hunting culture. However, this does not explain why non-game introduced species are similarly left commonly unadorned by their Māori names.

\(^{170}\) Similarly, as pests, ‘rats’ are ‘bare life,’ unproblematically killed, but when they become ‘kiore’ (Māori for the Polynesian rat (*Rattus exulans*)) their interpretation immediately becomes problematic (e.g. see J. L. Craig, 2002).
considered native because they had been in New Zealand, as a species, for longer than anybody alive today (Ibid., p. 13). Even the language used to describe introduced game tends to further reconciliation, often by avoiding the use of ‘introduced’ altogether. For example, Instead of referring to mallard ducks as ‘introduced’ game, they are instead referred to as ‘wild’ game, ‘just to get away from that negative idea’ (Interview, Nathan, Burkepile, Field Officer, Fish & Game (Northland), February 27th 2013). Similarly, ‘introduced’ deer are ‘wild’ deer (Editor, 1999a; Lowes, 1977) and ‘introduced’ trout are ‘wild’ trout (Kent & Madsen, 1997; G. Thomas, 1997).

What is problematic with such justifications and framings, however, is that they are very rarely used outside of the context of advocacy for favoured species. Wishes for a more general reconciliation of introduced species, in other words, are only broached when they are favourable to an argument for the reconciliation of a specific favoured species. Pete Shaw (ex-Department of Conservation (Northern Te Urewera), March 1st 2013), for instance, expressed admiration for the survivorship of deer in New Zealand in spite of hunting pressure. I asked him, therefore, whether he might have the same admiration for the survivorship of other introduced species, such as possums, which have also persisted despite attempts to remove them throughout the country:

PS: Oh, no. Kill every last one. Yeah, get rid of the bloody things.

JS: So you wouldn’t argue that there was some similar admiration to be had for possums?

PS: Nope [laughs]

JS: How do you reconcile that?

PS: Yeah, I think part of it is that possums aren’t as useful to humans. They aren’t a food source. They aren’t a hunting challenge. They aren’t good to look at in the wild. I don’t know anybody that goes out and photographs possums in the natural environment (Ibid.).

As Shaw demonstrated, possums have no current use\textsuperscript{171}. They are surplus to requirements and therefore unworthy of consideration. Again, what is most striking about reconciliatory discourses on introduced

\textsuperscript{171} Although others might argue that they could in fact be used as sources of fur or meat.
game species are not the strategies employed, but rather their general lack of transferral to non-game introduced species. Many interviewees were well aware both of this stark distinction and its brutality. Hera Smith (Interview, Executive Officer, Te Arawa Lakes Trust, March 11th 2013), for example, offered an unvarnished appraisal:

I’ll be quite frank, I think the only reason trout [are accepted] is [because], compared with possums or stoats or rabbits or whatever, the Crown [i.e. the Government] has basically recognised that they’re a sports fish that need to be managed for recreational purposes and that they will be managed through the New Zealand [Fish and Game] Councils. So they essentially have a place in our society because the Crown owns them as property.

For Smith, trout were simply ‘profiled and marketed in a different way to stoats and possums’ (Ibid.). They were ‘reconciled’ only because they were an important source of revenue as a fishing ‘commodity’ and because of their cultural identity value for many New Zealanders. There was, in other words, no sense that they would be reconciled were it not for such obvious instrumentality. The arguments used to support their reconciliation, though not always deliberately deceptive, therefore, were also ultimately instrumental.

This is not mere supposition, rather several interviewees made this point themselves. Phil Gates (Interview, Treasurer (Ex-president), Trout Unlimited New Zealand, March 26th 2013), for instance, took the unusual step of reconciling trout by declaring them to be ‘native,’ but recognised immediately that he would not wish this argument to be applied to other introduced species:

I consider trout all native if they’re working well with the ecosystem and they’re propagating without any help from man [sic] then that’s…[but] would I say the same thing about [introduced] coarse fish? No, fuck, get rid of them! [laughs]. So I realise that there’s a dichotomy there.

172 ‘Coarse fish’ in New Zealand include introduced species such as rudd (*Scardinius erythrophthalmus*), tench (*Tinca tinca*) and perch (*Perca fluviatilis*). In terms of the persistence of trout, these fishes can disadvantageously alter freshwater habitats. For this reason, trout fishermen are often in conflict with coarse fishermen.
During a similar conversation, this time on the aesthetic value of deer as a justification for reconciliation, Maureen Coleman (Interview, Urewera hunter, New Zealand Deerstalkers’ Association, February 20th 2013) made a similar reversal. Initially reflecting that she liked all ‘healthy’ animals, she immediately recanted when presented with an introduced animal that she did not view favourably:

MC: I like animals and nice healthy looking animals are a picture to look at.

JS: What about healthy stoats?

MC: No [laughs] (Ibid.).

These examples show the way that hunters and anglers are using reconciliatory arguments selectively and are often quite conscious of their lack of transferability. As noted above, rather than suggest that trout, as introduced species, should be reconciled, they are instead rhetorically re-cast as ‘wild’ trout, thus excluding them from the stigma attached to the ‘introduced’ label. Similarly, while some hunters supported the persistence of deer because of a relatively long duration in New Zealand, such arguments were never used to vouch for the belonging of other introduced species with comparably protracted residences, such as stoats or rats. This suggests that arguments for reconciliation based on ‘length of stay,’ functional equivalence (e.g. deer to extinct moa, see Brennan, 2004), protection of the wider environment (e.g. trout in relation to waterways, see Chadderton, 2003), or similar justifications are aimed only at furthering specific species, despite sometimes appearing to be presented as general arguments. The sense that these arguments are only intended to further the interests of favoured species, moreover, undermines their resonance as it suggests that they are used merely as rhetorical strategies. Again, while I do not suggest that apparent reconciliatory arguments for introduced game species are deliberately propagated to deceive, they are often motioned with little regard for their transferability. This is why it is valid to suggest that they are instilled not to ‘reconcile’ per se but, perhaps more prosaically, to justify – by whatever means – why a valued introduced species should be preserved for use.

A final sign that attitudes towards introduced species might be ‘softening’ could be ascribed to moves, in New Zealand hunting and angling culture, towards killing less often, or at least reducing the emphasis on killing. ‘Catch-and-release,’ for example, describes the practise of releasing rather than killing captured
trout. It has been undertaken in New Zealand since the early days of acclimatisation, firstly as a conservation measure (e.g. see ‘H.F.G., 1937; James, 1982). Moves to catch-and-release have been described as the manifestation of a maturing general ethic with regards to killing. Writing in The Sport in Fishing, Orman (1979, p. 7), for instance, felt that ‘angling outlooks differ through the ages of any fisherman.’ While young anglers were motivated to catch and kill as many trout as possible, he believed that ‘in most individuals this attitude mellows with the passing of each fishing season’ such that the ‘earnestness’ of fishing to kill can eventually become secondary (Ibid., p. 8). Although uncommon before the 1980s, catch-and-release grew in popularity until, by the 2000s, approximately two-thirds of the legal trout catch in New Zealand was routinely released (Hill, 1999; Kent & Madsen 1997; Maclean, 2010).

Evolving attitudes towards the slaughter of deer and other game animals in New Zealand show similarities with the growth in popularity of trout catch-and-release (R. Smith, 2000). Following widespread deer culling from the 1930s (see Chapter 5), for instance, many hunters became increasingly dissatisfied with attempts at extermination and with the scale of destruction involved. Subsequently, instead of priding themselves on numbers shot, or even sizes, some hunters began to judge the merits of their hunting efforts on the degree of restraint and selectivity shown. In a New Zealand Outdoor article entitled ‘Unwinding in the Ureweras,’ White (1982, p. 25), for example, wrote that his attitudes towards hunting had changed ‘since the “culling” days.’ Rather than killing deer, he ‘simply watched most of the deer [he and his party] saw, shooting only enough to keep us…in tucker’ (Ibid.). Similarly, Orman’s (1979 in Holden, 1987) reflections on deer mirrored his thoughts on trout (see above). He wrote that:

One’s first days of hunting are always dictated by a desire to kill…Gradually the desire to kill may, or may not, be submerged by the love and respect for the animals. Killing is done when needed but it is never needless or unreasoned (Ibid., p. 215).

Many of my interviewees’ comments reflected and substantiated Orman’s belief that hunters often became less motivated to kill as they matured. In fact, many expressed a fundamental change in their motivations as they progressed from youth to middle and later years (e.g. Interview, Joe Doherty, Te Urewera Guide, Te Urewera Treks, February 22nd 2013). Andrew Glaser’s (Interview, Programme
it’s changed over time funnily enough. As a young fulla I wanted to shoot everything [laughs]. I did shoot everything. You know, very seldom would you let one go. Nowadays I enjoy actually seeing them […] I’ve shot enough over the years to, I guess, develop a, not so much a compassion for it, but…I enjoy seeing them in the wild.

Ian Hogarth (Interview, ex-Department of Conservation (Northland), April 17th 2013) and Carl Cooper (Interview, Dargaville Biosecurity Officer, Northland Regional Council, March 19th 2013) made similar reflections on their changed attitudes towards game bird hunting. Both admitted to having ‘gone soft.’ As Hogarth commented:

I think I’ve killed enough in my life [laughs]. I think while working with these birds I’ve got soft-hearted [laughs]. I’m still a keen shooter, but I shoot clay birds.

Although continuing to hunt waterfowl, Cooper commented that he did not kill like he used to, ‘you know, when I was a child shooting 60, 70 wax eyes in an afternoon with a slug gun, things like that. I don’t do that [now].’ Instead, his approach had become selective and oriented towards long-term management. For example, on some days he would endeavour to only shoot mallard drakes. Rather than shooting everything that fell within range, birds with particular qualities were often spared. For example,

I’ve actually gone soft on pheasants. One day I shot a pheasant and felt so guilty I haven’t shot one for about eight years […] I just think they look beautiful now. Where once we used to shoot, well, we were in the double-figures every season, like 60, 70 roosters a season, my dad and I. But, yeah, suddenly I just decided, ‘Hey, they look too nice. And I’d like to think there’ll be some around for my grandkids.’

Rather than shooting animals with bullets, many had turned, at least in part, to ‘shooting them with a camera’ (Interview, Andrew Glaser, Programme Manager Biodiversity – Northern Te Urewera, Department of Conservation (Te Urewera Whirinaki Area Office), April 10th 2013; also Interview, Pete
Upon discovering these discursive streams I initially wondered whether they might demonstrate a further ‘reconciliation’ of these introduced species. Rather than killing, hunters and conservationists appeared to be developing an ethic based on non-violent appreciation. I questioned whether this might indicate an emerging general acceptance of introduced species. What became clear to me, however, was that although hunters views were often ‘softening,’ these views related only to their favoured quarry. There was no general softening. As Pete Shaw (Interview, ex-Department of Conservation (Northern Te Urewera), March 1st 2013), commented, although he knew many hunters who now enjoyed photographing deer rather than killing them, ‘I don’t know of anybody who enjoys watching a possum at all apart from just before they shoot it [laughs], or trap it, or kill it and pluck it.’ Indeed, ostensibly compassionate views merely indicated a growing awareness that unrestricted harvest would precipitate the decline of their favoured quarry. The desire to ‘use’ these species had not diminished at all173.

9.4 Conclusion

In this chapter, I have argued two things. Firstly, I have suggested that science on introduced species in New Zealand has too often been enrolled as a mechanism for supporting prevailing beliefs about the species studied. Research on favoured species has focused on proving their positive characteristics or increasing their health, rarely on whether they might do damage. Conversely, research on unpopular species has focused on proving their negative effects and on how they might therefore be removed. Secondly, I have suggested that the social discourses employed to reconcile those species, though often presented as universalist, have been employed largely as rhetorics to support certain favoured species. Many of my interviewees, for example, were quite aware of the invalidity of their arguments when applied outside of the species their discourses were intended to promote.

173 Furthermore, exhibitions of selectivity might only underline hunters’ and anglers’ mastery over nature (see Chapter 5). Moves to photographing deer, for example, may simply be an alternative way of displaying masculine prowess (Brower, 2005). As Smith (2000) commented, some hunters now regard the capture of a wild ‘trophy’ stag on film as a greater accomplishment than the physical possession of his antlers.
To some extent, these arguments undermine the validity of scientific research on introduced species and also the social discourses that have long been employed to reconcile certain species. My intent, nevertheless, has not been to discount the worth of scientific discourses or the ways that people choose to present their favoured species. Rather, I have simply sought to illuminate the ways through which these have both been undertaken in the past. Whether through scientific means, or otherwise, the worth of some species has been elevated over others. This is not wrong and I am not arguing for a kind of ambivalence or apathy based on the shortcomings I have highlighted. Instead, I am suggesting that these realisations might be used to promote the consideration of more nuanced interpretations of introduced species. These might move beyond considering whether species are more or less useful to people in favour of emphasising and appreciating their contributions to unique ecological and social histories. These considerations might also demonstrate the ways in which the ongoing presence of introduced species is likely to contribute to the longstanding biological flux in these species’ respective receiving environments.
Chapter Ten: Introduced Species: Reconciled?

10.1 Introduction

This study has examined whether introduced wildlife might be able to be reconciled into understandings of acceptable biodiversity in New Zealand. In particular, I have asked whether it might be possible to accept species currently deemed to be ecological pests. What I have found is that it will be difficult to generalise about the future of introduced species in New Zealand or elsewhere. While there are many compelling arguments for the reconciliation of introduced species, there remain significant countervailing discourses that, I believe, will frustrate attempts to argue for any widespread reconciliation of species. Understandings of introduced species are at the forefront of beliefs people hold about themselves and their place within nature. Attempts to reconcile introduced species can therefore be read as challenges to peoples’ fundamental beliefs. Most importantly, reconciliation questions assumptions about New Zealand’s national identity and potentially undermines industries based on the protection of native assets. While some changes to existing discourses should be expected, this thesis does not lend weight to the notion that any broad-scale reconciliation of introduced species should be expected in the immediate future. Rather, it is likely that many of the complexities and contradictions around understanding of introductions will endure. As I will discuss below, further research on introduced wildlife in New Zealand that incorporates broader social and ethical discourses, alongside scientific ones, will be needed to tease apart the various layers of ambiguity that characterise this topic.

To recapitulate, my central research question was:

*How do changing discourses of nativism and authenticity influence the reconciliation of introduced species into socio-environmental systems in New Zealand?*

This was supported by these objectives:
• Scrutinise the rhetorics used to justify both why some introduced species are allowed to live and why others are required to die, exploring why some frames are so enduring.

• Investigate whether there is any relationship between the removal of surplus lives and the imperatives of capital accumulation and, if so, indicate how this might affect notions of reconciliation.

• Explore the motivations behind why science is used to answer certain questions about introduced species and not others, asking whether science could be used in different ways, and if other perspectives might also be needed.

• Highlight the consequences of prevailing discourses on introduced species and indicate the means through which they might be capable of changing.

In Section 10.2, I note how these objectives have been addressed in my empirical chapters and provide a synthesis of their findings. Section 10.3 highlights and discusses the importance of my contributions to the literature, while Section 10.4 describes the limitations of my research findings and provides some reflections on the research experience and my own positionality. Section 10.5 outlines some suggestions for further research that came to light during the study. Finally, in Section 10.6, I provide some brief concluding comments.

10.2 Synthesis of empirical findings

The main empirical findings of this study are chapter specific and analysed within each of the respective empirical chapters (see Chapters 7-9). As noted above, this section synthesises and further discusses those findings with respect to the central objectives of the thesis. I argue that the conceptual estrangement of humans from nature continues to foster the removal of introductions in New Zealand. These understandings are only reinforced by the use of militant constructions that conceal and obfuscate the reality of the engagement between native and introduced and the imperatives of capitalism, which support the economic exploitation of native nature and the economic opportunities emanating from the defence of nature. Understandings of hybridisation and evolution challenge these discourses, emphasising that the interaction between native and introduced is not only one of loss, but rather
frequently of gain. Nevertheless, these continue to be undermined by the selective use and presentation of scientific research, which supports understandings of currently valued species, both native and introduced, while suppressing the emergence of new beliefs. While not discounting the potential for the reconciliation of some species, I suggest that the discursive means through which this would likely be achieved deserve further critique.

My research shows that New Zealanders often still see themselves as separate from nature but that they nevertheless have ‘natural’ roles as ‘archivists’ and ‘moral predators.’ Although Māori have long considered themselves to be a part of nature, most New Zealanders’ understandings of nature continue to perpetuate the notion that humans are discrete entities that are separate, if not divorced, from their environments. Restoration discourses have only encouraged this belief, fostering the view that environments were superior in their ‘natural’ pre-human condition. Rather than encourage the development of environmentally sustainable lifestyles, restoration has most frequently been interpreted as a means through which environments can and should be divested of human influence. Although elsewhere discarded, Victorian social discourses of orderliness and permanence have also continued to influence understandings of nature in New Zealand. These have perpetuated the view that everything has a place in the world and that it is the role of humans to ensure that those places are respected and maintained. This archival role is supported by the construction of humans as ‘moral predators,’ tasked with fostering lives that naturally belong and removing those that do not. If perhaps only for a lack of alternatives, this role has been accepted with much enthusiasm by New Zealanders, who enforce their own belonging through the culturally ritualised and legitimised slaughter of foreign biota. However, while the killing of introduced species reinforces peoples’ belonging as guardians, it also prevents humans from ever developing a genuine interrelationship with other biota. As guardians of current states, humans still sit largely outside of the ambit of ecosystems, a notion that continues to foster an estrangement from nature.

Like elsewhere around the world (see Chapter 3), the use of war metaphors to characterise and justify the engagement between humans and certain introduced species in New Zealand remains prevalent. In this research, I found that many New Zealanders were quite conscious of the extent to which war metaphors
inaccurately positioned the relationship between introduced species, native species and humans. Despite these reservations, a common view was that war had to be invoked if only as a ‘means to an end.’ The rhetoric of crisis around the threat of introduced species cast a pall of doom upon valued native species that were seen to be in dire need of protection. Militant constructions were presented as a way of rhetorically prodding people to action and countering any reservations toward the construction of crisis, or the need to kill in defence of the innocent. These metaphors encourage dogmatic acceptance of the work of conservationists and even add a flavour of treason or conspiracy to opposition. What war metaphors in New Zealand have consistently concealed, however, is their ineffectiveness. The frame of war has been employed as a form of opposition to most high-profile introduced weed and pest species in New Zealand, and yet all of those species still exist in the country. Indeed, all continue to thrive and most have expanded their populations. The rhetoric of war in response to crisis has been used repeatedly; moving from species to species in New Zealand over the past century. If the goal was to defeat the ‘opposition,’ then these wars have all been lost, and continue to be lost, at the cost of immense expenditure, time and suffering. As I note in Section 10.3, war metaphors persist because they conceal the evidence of their own widespread failure and because they frustrate attempts to highlight the inconsistencies and contradictions around how we choose to understand introductions.

In Chapter Three, I explained how nature has become commoditised and subsumed under capitalism. Although introduced species remain profitable commodities for primary industries, the value of native nature to New Zealanders has also become ever more apparent. This value is recognised in the contribution of native biodiversity to New Zealand’s important tourist industry and even in the value of land (e.g. adjacent to nature reserves). Introduced game species have also supported ongoing recreational industries. Less recognised has been the importance of weed and pest management as industries in themselves. The value of these industries has often gone unrecognised because it is presented as a kind of ‘necessary evil’ for countering an obvious threat. However, what should be recognised is that these industries are comparable in profitability to the industries (e.g. nature tourism) that are based on exploiting the species (e.g. native birds) that weed and pest management activities seek to protect. This has rarely been highlighted, I suggest, partly because of its vaguely conspiratorial undertones. However, this is not the only example of industries flourishing under conditions (or rhetorics)
of crisis or disaster. For example, New Zealand’s economic recovery from the Global Financial Crisis is partly attributed to the growth of industries connected to the re-building of the city of Christchurch following a major earthquake in 2011. In Section 10.3, I expand on the implications of a recognition that the death of introduced species is not an economic ‘cost’ that is born by all. Rather, for some, those deaths provide obvious economic benefits.

Understandings of hybridisation have continually tested the assumption that introduced species, or their genes, necessarily corrupt or despoil ‘pure’ states. By exploring the hybrid engagements between introduced mallard and native grey ducks, my research emphasised that the process of hybridisation is complex and the assignation of value to hybrid beings is often ambiguous. I showed how legacies of racism, at least partially discarded in human societies, retain considerable currency in considerations of wildlife, wherein notions of purity remain of paramount importance. For wildlife, the agency of the individuals comprising the ‘population’ often remains quashed beneath conceptions of an appropriate species identity and evolutionary trajectory. Introduced mallards are seen therein to effectively violate natural boundaries and precipitate the decline of ‘pure’ grey ducks. The agency of grey ducks themselves is largely ignored. They are presented as helpless ‘victims’ of a supposedly one-way process. Despite this framing, grey ducks resist victimisation by selecting mallards as mates and genetically ‘infiltrating’ the mallard population as well. ‘Pure’ mallards are thus as rare in New Zealand as ‘pure’ grey ducks. This interaction challenges the thesis of ‘loss’ by demonstrating that hybridisation is, in fact, a two-way process in which neither ‘pure’ entity survives, but in which novel genetic beings arise. In addition, many interpretations of the new ‘species’ – the ‘grallard’ – resist morbid notions of loss only; highlighting that new associations can result in entities that are both novel and valuable.

My research has shown how the complexities around the valuation of hybridization are only further emphasised by considering the wider frame of evolution itself. I demonstrated how many New Zealanders still see evolution only as a long-term process, with human management largely trivialised. Although the reality of contemporary evolution is acknowledged, for most people the appropriate focus remains on the prevention of extinction. The forestallment of loss is emphasised in preference to the potential gain of new diversities. Potential examples of rapid evolution have been dismissed in the past, but recent work on the
evolution of introduced salmonids in New Zealand shows that this may be changing. These evolutionary changes highlight that human modifications to landscapes and biotas are not necessarily finalities to be forever mourned. Rather than attempt to reverse ecological history in favour of historical species assemblages, as is so common in restorationist discourses, evolution of introductions (not to mention natives) shows that novel forms of uniqueness are developing. Rather than interpreting these adaptive changes only as losses, as is also common, new appreciations can also develop.

Finally, my research has emphasised the extent to which science on introduced species has regularly been employed as an advocacy tool to ‘prove’ certain, mostly predetermined, positions. Thus advocates for game species fund and endorse research showing how to improve the survivorship and fecundity of favoured game species, but fail to fund any research on the effects of game species on native species. In contrast, work funded by conservationists commonly investigates the impacts that introduced species have on natives, but fails to ask whether they might be providing benefits. In both cases, scientific knowledge is paraded as an impartial arbiter of truth to an increasingly sceptical public. A consequence of this ongoing science as advocacy is an erosion in the credibility of science itself, making appeals for more social and cultural analyses of introduced species all the more pertinent. Understandings of science in New Zealand are increasingly moving from simple fact-based accounts to complex understandings that incorporate the many social, economic and political factors that underlie the production of scientific knowledge. This thesis demonstrates that, in the case of introduced species, scientific research that demonstrates the ecological effects of introduced species needs to be more cautious and explicit in communicating the assumptions of that research (including value assumptions) and the predispositions of its funding sources.

Taken together, these findings show the deeply unstable grounds on which any general reconciliation of introduced species in New Zealand might be based. Although the justifications for moves toward reconciliation are well-evidenced, the desire to reconcile on any broad-scale is poorly supported. Instead, it is likely that many species will continue to be reconciled on a case-by-case basis, largely as a factor of their perceived utility to certain interest groups. The arguments used to reconcile favoured introduced species, such as game, are scarcely, if ever, applied to other species, showing that they are not intended
as universal logics, but merely as forms of rhetoric to foster the reconciliation of certain useful species. What is perhaps most disappointing about discourses of reconciliation is that they mostly seem to return to rigidly anthropocentric understandings of wildlife that premise acceptance on instrumentality. This does not mean that reconciliation is not a possibility, or that pursuing this direction is not worthwhile. Rather, it supports the notion that attempts to reconcile need to be carefully considered to ensure that they do not foster the perpetuation of discourses that are likely to reverse as soon as a study, anecdote, or newspaper article shows that the now-accepted introduced species inconveniences some other desired species, value, or state.

### 10.3 Key contributions to the literature

In this section, I highlight the key contributions my research has made to the various literatures that are grappling with how to understand introduced species. Using theoretical insights from biopolitics, in concert with a general constructionist orientation, I demonstrate how some literatures have been supported or challenged by my research.

Firstly, my research has shown how advocates for more broad-scale reconciliation have not adequately addressed, or interrogated, the sense to which the destruction of introduced species feeds into prevailing situational narratives. New Zealanders, for example, have reconciled their own place in the country through introduced species. The death of foreign biota makes the country ‘healthier’ because it removes extraneous, damaging lives that do not belong. The physical work of killing and removing species that do not belong is a very real and very personal way that people in New Zealand interact with their environment. Although this might seem to suggest that humans, as similarly foreign entities, should depart also, humans have instead found their role as protectors or guardians of nature, ironically guarding against themselves and their own past actions. As ‘moral predators’ humans have reconciled their own place in nature. Requests to discontinue this role, therefore, are a threat not only to current ecological management initiatives, but also to peoples’ sense of identity. Biopolitical research has often demonstrated the ways that humans enrol nonhumans into their social networks and spheres of influence and the consequences of these biosocial collectivities. I suggest that other literatures need to be more
aware of the profound cultural importance not only of the connections between humans and the species they value, but also between humans and the species they choose to routinely persecute.

Secondly, reconciliatory discourses have failed to grasp the importance of death as an economic imperative. Native species such as birds must be protected not only because they make the environment more ‘healthy,’ but also because they generate important tourist economies. Indeed, this nature tourism has long been central to New Zealand’s economy. The removal of threats is also an important facet of the economy, generating a multi-million dollar pest control industry. The extent to which people economically rely on the destruction of pests has rarely been highlighted outside of popular discourses, perhaps because of its conspiratorial undertones. Nevertheless, I have shown how, in light of the contributions of Negri (1991), these kinds of vested economic interests are merely to be expected. As all of life is subsumed under the influence of capital accumulation, it is a matter of course that the destruction of threats to valued lives will also become industries in their own right. Calls to discontinue ongoing pest management initiatives are thus a threat to New Zealanders’ identities and incomes. Further interdisciplinary research into the reconciliation of introduced species must incorporate these economic implications of reconciliation. Otherwise, such research risks leaving one of the fundamental facets of the introduced species problematic unaddressed.

As a partial response to the portrayal of introduced species as a valueless form of ‘bare life,’ it has been argued that many introduced species may be more useful than they currently seem. For example, some introduced species may provide habitat for natives or become important prey items. In Chapter Nine, I noted how introduced possums were seen as fascinating by some tourists in New Zealand, indicating that they could perhaps be developed as a tourist feature of the country alongside natives. Whilst such suggestions are tempting, I caution that this approach to wildlife may only exacerbate existing tendencies to value species on the basis of their obvious and immediate instrumentality. As I have shown, trout have largely been reconciled in New Zealand as recreational commodities, but this has often obstructed understandings of their wider ecological effects. Valuing species on the basis of how they currently seem to benefit people may therefore work to suppress important understandings. As I noted in Chapter Nine, an alternative to stressing the immediate or prospective value of introduced species might be to stress the
extent to which current understandings are both temporally and context specific. In that light, rather than stressing the value of certain introduced species as a means of countering discourses of disparagement, stressing the extent to which all species can be seen as valuable might be more productive.

A substantial literature has developed critiquing the routine use of war metaphors to present the engagement between native species and humans, and introduced species. This thesis has furthered those criticisms by also pointing out the injustices and inaccuracies of militant frames. In Chapter Seven, I showed how many interviewees saw the potential flaws in the use of war metaphors and expressed reservations. Nevertheless, I stress that this typically did not prevent them from using them and indeed many interviewees returned to their use during our interviews, even just after discussing their shortcomings. I suggest that the constant recourse to war metaphors is a means of suppressing reservations about the need to kill. The act of destruction is consoled by the sense that it is furthered only as a means of averting impending catastrophe. Moreover, despite the glorification of war having been severely criticised, particularly since the World Wars of the 20th century, war metaphors continue to promote a sense of pride and patriotism in the work of killing that might otherwise be missing. The ongoing use of war to dramatise and elevate the work of pest management may then, in some senses, be a narrative that people wish to propagate as a means of deliberately suppressing potentially unpleasant alternative narratives, not only in others but also within themselves. Just as restoration, as a belief, is impossible to contradict, the use of war to characterise the engagement between people and introduced species may simply be a story people wish to live by, meaning that it may ultimately be difficult to ever fully negate. This may mean that further critique of war metaphors in relation to introduced species may be no more productive than ongoing critiques of religious belief. Indeed, in the social realm they may even be somewhat inappropriate, given that they contradict and attempt to ‘disprove’ what people want to believe. While I do not suggest that further criticism of war metaphors would be unwarranted, therefore, it is worth cautioning that this way of seeing may never be categorically discounted.

In Chapters Three and Four, I showed how over the last few decades many other longstanding beliefs about nature have come into question and have been debated extensively through both ecological and social science literatures. Understandings from both point to a nature that is characterised by flux and
indeterminacy. They also point to a nature that is very much interrelated with human society. Moves toward reconciliation have built upon these foundations to explore the possibility that introduced species might be able to be incorporated into contemporary notions of acceptable biodiversity. What my thesis has shown, however, is that the belief that constructions of nature have changed in the last few decades in any fundamental way may be misguided. In fact, putting aside the drastic reconfiguration of nature from ‘bad’ to ‘good’ in the late 19th century, I have argued that prevailing beliefs about nature have not changed. In New Zealand, in particular, nature is often still constructed as equilbrial and human-exclusive (see Chapter 7). These enduring constructions of nature have important implications for the acceptance of introduced species that may not have been adequately considered in many reconciliatory discourses.

As I have argued, belief in the human-exclusivity and balance of nature contradict the existence of introduced species. In response, moves to reconciliation often reference the flux of nature as a justification for the acceptance of at least some of the changes wrought by introductions. The notion that humans are part of nature is also employed as a way of softening potential antagonism at the presence of human introductions. These attempts may be well justified. However, in isolation, they fail to acknowledge the outstanding importance of these beliefs and the degree to which they ‘should’ be accepted is sometimes erroneously taken as a given. As is well argued by others, a balanced and human-exclusive nature, for peoples’ use, has a long history and remains intimately connected to religious doctrine, especially to the Judeo-Christian tradition. These beliefs are also important to the commercial exploitation of nature as resource. Equilibrium, for example, imagines a malleable but predictable nature that can be reliably monitored and regulated. The notion of an inherent flux to nature, in contrast, is deeply unsettling and even threatening both to commerce and to notions of belonging and identity. For that reason, it could be argued that unless these constructions lose their broad cultural and economic importance, it will remain difficult for many to accept the presence of introduced species. In that sense, continuing to argue for the reconciliation of humans into the natural world, and an acceptance of ecological change more generally might be more pressing and important than specifically arguing for the reconciliation of introduced species. It could be argued that until the dynamism and human-inclusivity of nature is more generally and genuinely accepted, there may be little prospect for a general reconciliation of introduced species.
10.4 Limitations of the study and personal reflections

This section discusses some of the limitations of my research and offers some personal reflections on the research process. I discuss how my choice of case studies, and the cases chosen, influenced my results. I also comment on some of my methods and how useful they were to answering my research question. Lastly, this section reflects on the contentious nature of the research, how that influenced the responses of interviewees, and how it affected my own ability and desire to pursue it. I believe these reflections offer worthwhile considerations that both support and better contextualise my central arguments.

This thesis has focused on introduced game species as exceptions to common understandings of introduced wildlife in New Zealand. In doing so, it risked fostering the impression that introduced species are already reconciled in the country. I have tried to consistently balance this potential impression by presenting some of the more common attitudes toward introduced species. In addition, I have made it clear that the reasons for the reconciliation of game spaces are not without question and may not be generally applied to introduced species. I have not suggested that, because these species are afforded some level of reconciliation, a general reconciliation of introduced species must therefore by inevitable. On the contrary, reconciliation of game may only reinforce the problematics of trying to reconcile other introduced species. Moreover, as I noted in Chapter Six, much of my research seemed to gravitate away from my case studies and towards general issues around the construction of introduced species, and indeed people, in relation to nature. During interviews, in particular, conversations often migrated toward the discussion of the place or role of introduced species in nature and away from considerations relating to specific cases. This was later reflected in my empirical chapters, which often considered issues that were neither local nor species-specific. In this sense, my case studies may have been less useful than originally thought. Perhaps they were necessary as starting points for conversation but not for addressing the full scope of discussion.

Despite this, I am confident that my case studies were good vehicles for investigating the nuances of discourses on introduced species. Notably, arguments used to casually discredit non-game species were often not used or accepted as valid when applied to game. I do not believe this is because such arguments are ‘logically invalid,’ but rather they are ‘socially invalid,’ in the sense that they upset
seemingly workable intersubjectivities and seemingly useful social balances. Interviewees, in general, were careful to fully validate and contextualise any negative views expressed towards introduced game species. While perspectives on non-game were often simplistic and unbridled, those on game were more permissive of possible complexities. As Judy Gardner (Interview, Member, Royal Forest and Bird Protection Society (Rotorua), April 22\textsuperscript{nd} 2013) remarked:

\begin{quote}
...once again it's a case of my heart tells me it'd be good to get rid of possums and no amount of facts will tell me that I should cease all efforts. Trout I have this, as you say, I have this little conflict because I do see this other side that people get enjoyment from trout fishing. It's a bit of a worry.
\end{quote}

This is a reflection of two things. Firstly, the dominant discursive construction of game species is of valued species that require conservation. There are few popular alternative discourses to tap into to oppose this construction. Hence, even if interviewees were to express negative views, they would often have to create novel discursive streams which, through lack of repetition, typically have far less resonance. Secondly, interviewees were well aware of the stakeholders that would oppose negative views towards game. The hunting and fishing lobby has a long history in New Zealand of active and successful opposition to game species’ detractors. Interviewees were typically aware of the important economic considerations at play and of the almost ‘sacred’ cultural place of introduced game (McDowall, 2008a, p. 50). This meant that they were often reluctant to strongly oppose them in the way they would non-game species. As I discussed in Chapter Six, my choice of introduced game species meant that interviewees were more likely to see the complexities at play in the acceptance or opposition of certain introduced species and this facilitated nuanced interpretations.

The use of multiple methods meant that I was able to approach this thesis from multiple discursive angles. This has hopefully contributed to a fuller exposition of the discourses around introduced species in New Zealand than studies that have focused on a smaller range of information sources. However, there have also been downsides to this breadth of information. For some topics of investigation, multiple sources of information did not usefully add to the thesis. For example, although observations of signage and displays at museums and parks sometimes yielded worthwhile information, many of these only
doubled-up on understandings that had been gleaned from other textual sources. In some senses, my desire for comprehensiveness actually impeded progress as it often necessitated wading through countless repetitions of discourses on which I was sometimes already well-versed. This is not to say that I covered all sources or forms of discourse on introduced species in New Zealand in this research – or even on my specific case studies – but to suggest that the breadth of information considered was sometimes unhelpful to the performance of the limited scope of this thesis. It is important to note, nevertheless, that a discursive constructionist analysis relies on text as the basis for empirical proof. Although I have attempted to limit them, I believe that the regular use of quotations in this thesis, while extending the thesis’ length, was necessary to support my arguments.

During this research I engaged in several debates with colleagues at my then-work and with peers in academia. For example, I led a workshop discussion on the reconciliation of introduced species at a national ecology conference and an e-mail debate with colleagues at my work. Unfortunately, it became clear through these fora that my sympathies for introduced species were not well received among the ecological community. Some of the exchanges at the conference became quite heated and my e-mail exchange with colleagues at work was discontinued after it was judged that some were taking offence to my line of argumentation. At that fairly early stage I genuinely considered abandoning the project altogether as it was damaging my reputation as an ecologist and therefore my ability to make a living. According to some, my views had become ‘crazy.’ Although I persisted with the research, my framing of questions since then has tended to be much less direct and I have distanced myself from active debate. I note this to express the very real and very personal reality of ostracism that may prevent further moves toward reconciliation (see Chapter 4). As a professional working in the field of environmental services in New Zealand, arguing for a reconciliation of introduced species is not economically sensible as it contradicts the paradigm of restoration that is furthered by employers. The problem, in other words, is that there is no market for reconciliation (aside from game species) and no organisation that will pay for such views. There are, however, many that will pay for advocacy of restorationist positions. Although this may come across as an admission of ‘selling out,’ it is simply an economic reality for someone working in this industry. I believe that this personal reflection only reinforces my argument that the reconciliation of
introduced species may continue to be at least partly undermined by the economics of restoration, which tends to support the elimination of introduced species.

Two incidents serve to illustrate the sometimes controversial nature of attitudes towards introduced species in New Zealand and the difficulties in avoiding harm. Although 30 interviews were conducted without any obvious issue, for example, one additional interviewee later withdrew permission to use their transcript. The interview itself was not dissimilar in its general form and progression to any of the others and I departed from the interview on apparently good terms with the interviewee. However, after returning the transcript I received a curt e-mail castigating me for the order and structure of interview questions. This concern was not voiced at the time of the interview. Later attempts to contact the interviewee were unanswered and no further correspondence was received. Because of the lack of communication it would not be appropriate to read too much into this event. The participant may have felt aggrieved for any number of reasons, explicit or otherwise. It serves, nonetheless, as a reminder of the delicate ground and possible ethical sensitivities of the topic.

In a similar vein, on two occasions interviews conducted at cafes were briefly interrupted by a patron at a neighbouring table who, eavesdropping, subsequently felt aggravated enough at our personal conversation to chime in with a question or comment of their own. Most memorable was the following exchange involving Phil Gates (Treasurer (Ex-president), Trout Unlimited New Zealand, March 26th 2013), an American:

JS: So, what is the attraction of the pre-human or pre-European condition [of the environment]?

PG: I think they’re soft in the head. If they want New Zealand to be what it was like before humans were here they got way too much money and they have never roughed it. They don’t know how rough things were when humans first came here and how much it wasn’t an enjoyable place to be.

JS: So, you feel that they’re romanticising?

PG: Oh, yeah...
[From a neighbouring table a person loudly interjects, ‘Someone’s gotta romanticise about something though!’ then abruptly leaves]

PG: [whispered] I’ll get kicked out of New Zealand if I don’t watch what I say! [laughs].

Once again, this illustrates the sensitivities of these issues. Such exchanges indicate that discussions of this nature in future should probably be conducted only in private settings. In this research I met interviewees at a place of their choosing. However, the public setting of some private interviews at cafes was, in hindsight, not sufficient for avoiding all possible conflicts.

Finally, all interviewees selected to have their real names used in this research. Upon reflection, I would probably have preferred it if all interviewees had been given pseudonyms. I suggest this because some comments could be viewed as being contentious and, whether they were faithfully represented or not, could still ultimately reflect poorly on participants. Although they were generally presented as representatives of wider discourses, readers of the thesis could still identify participants directly and offering views associated with wider discourses does not insulate individual participants from criticism. For this reason, I believe that the potential for conflicts in future research of this nature could be reduced by insisting on anonymity for all interviewees.

10.5 Recommendations for future research

This study highlighted several potential avenues for further research, some of which I have already referred to in this chapter. There is a clear need for more social and cultural research into the understanding of introduced species in New Zealand. Although there have been some notable contributions from within New Zealand in the past few decades, the majority of scholarship originates from the United States and the United Kingdom. Although these are important contributions, they are articulated within a framework of vastly different social and ecological histories from that of New Zealand.

For example, as I have argued in previous chapters, some of the arguments for human-exclusivity resonate more with New Zealanders than others because of the relatively short period of human occupation in New Zealand. The effects of certain introduced species can also be more pronounced in island environments, making changes more noticeable and therefore perhaps more likely to be
considered disagreeable. New Zealand scholarship on wildlife to date has focused disproportionately on charismatic native species (e.g. birds) and introduced game. Therein, research has focused on identifying the social and ecological benefits of these species, and on what might threaten them. There is now a clear need for more research on the species that have long fallen outside of those categories. This research should identify not only the current benefits these species provide but also the benefits they might provide in future.

As I noted in Section 10.2, this thesis has contributed to ongoing critiques of the role of science in constructing and promoting certain visions of nature. Most social constructionist interpretations have pointed to the understanding that scientific knowledge as a truth discourse is often used to legitimise certain positions. This research has furthered this contention. However, it also builds on it by showing how scientific knowledge is also not used to portray the same. As I demonstrated in Chapter Nine, many questions about introduced game species remain unanswered because their resolution would not be useful to the game advocates who fund their science. In addition, my research points to the understanding that scientists, and those who reference scientific work, often rhetorically extend limited results to give the impression that questions have been resolved when they have actually had little effort expended on them. Though it is hardly a novel realisation, this thesis has reinforced the view that further scientific studies on introduced species, whether in support or in contradiction of them, must be written so as to portray the assumptions and value positions of the authors. These studies should also reference the fact that those positions are likely to be disputed and that the study should be interpreted only in that admittedly rather disorderly and contentious light. At present, both support for the removal and reconciliation of introduced species can be well demonstrated through recourse to the natural science literature. To some extent, this shows how inadequate recourse to a natural scientific literature only is in this respect. Both positions can be proven. As a consequence, I suggest that further interdisciplinary research, which takes light of work both within the natural and social sciences, and also within the arts, is probably the most useful means of progressing existing understandings.

There is an urgent need for more research on introduced wildlife in New Zealand that incorporates and builds upon understandings from the animal ethics literature. As I discussed in Chapter Nine, my research
was somewhat limited in this respect because of the way that ethical questions in relation to game species are generally framed. However, the framing of death with regards to introduced wildlife is also poorly considered in general. Mostly, whether game species or pests, the death of introduced species is portrayed as necessary and desirable. It is not mere caricature to note that the ethics of game mostly revolve around deciding how to hook or shoot most sympathetically, while the ethics of pest management typically consider only whether it is preferable to poison or trap. The question of whether death itself is necessary has been left to conservation biologists, with the ethical dimensions of death dominated by animal welfare research. This has meant that ethical discourse has tended to focus on the alleviation of suffering exclusively. Unfortunately, this has meant that ethics has become something of a blunt instrument in the field of wildlife research because it rarely seems to challenge the dominant paradigms of conservation. Indeed, it seems most often to only feed into and support them. I do not think this is because one right way has been clearly established, but rather because a full range of questions are not being asked and, perhaps less charitably, the funding sources for such alternative questions are lacking. The questions that now must be asked are around ‘Why is this death necessary?’ and the answers must go beyond recourse to the now well-rehearsed positions of conservation biologists.

This thesis has worked with the concept of ‘exceptions’ in two contrasting senses. Firstly, it has employed case studies that focus on species that do not meet the typical characterisation of wild introduced species in New Zealand. This methodological reading of exceptions does not emphasise whether they are interpreted positively or negatively, only that they are outliers from the norm. Although highly disruptive of native biodiversity, the game species chosen in this research are currently considered valued members of the biota, or in the case of deer, their status is at least in contention. This is in contrast to most wild introduced species that have demonstrably negative direct effects on native species, which are typically considered invasive. Secondly, it has worked with the concept of exceptions in the sense of abnormality or difference as employed within biopolitical theory. This reading typically emphasises the worthlessness of certain exceptions in so far as they are considered to be ‘bare life.’ It is notable that all my cases have been interpreted, at various times, as both exceptional good things and exceptional bad things. Brown trout, for example, were removed en masse from the Rotorua Lakes in the mid-20th century only to be re-conceptualised as valuable things in the latter part of the 20th century (see Chapter 9). This highlights how
the negative framing of exceptions, characteristic of biopolitics, should not be taken as a given. Rather, it supports affirmative readings of biopolitics that emphasise the potential for new understandings of exceptions to emerge. What future research must consider, nevertheless, is whether the reconciliation of existing biopolitical exceptions into understandings of acceptable wild biodiversity will lead to a reduction in exceptions *per se* or whether those exceptions will simply be replaced by the conceptualisation of new exceptions elsewhere. In other words, it must ask whether reconciliation of certain species is genuinely leading to a broadening biophilia, or whether it is merely replacing one set of ‘enemies’ and ‘opponents’ with others.

### 10.6 Conclusion

This study has investigated whether introduced species might be capable of being reconciled as acceptable components of the wild biota of New Zealand. A move to reconciliation is consistent with the growing body of literature that emphasises the roles of flux in the environment and the integral role of humans. It is also consistent with modern social interpretations of concepts such as ‘race’ and ‘nation’ that emphasise the incorporation of difference and understandings of hybridity. Although these literatures suggest reasons for optimism, however, I have argued that any broad-scale acceptance of introduced species will await a more genuine acceptance of the place of humans within dynamic ecosystems. Unless that occurs, I argue that species, native and introduced, will continue to be appraised primarily on the basis of their value to humans as sources of identity and income. Although this conclusion supports a fairly dark reading of the future for many wild introduced species, I nevertheless suggest that the literatures advocating for a more nuanced approach to introductions are likely to grow. As this happens, more affirmative understandings of novel ecologies and ecosystems will develop. These developments should be looked upon with interest by researchers and practitioners in the field of wildlife management as they will continue to challenge, though not necessarily overturn, some common beliefs.
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Appendices

Appendix 1: What are invasive species?

An enduring problem for invasion biologists and other scientists studying introduced and invasive species is that attempts to define the subjects of their studies are often ‘shot through with contradictions, anomalies and contingencies’ (Selge et al., 2011; Smout, 2011; C. R. Warren, 2011, p. 69). Even the delineation of native and introduced is ‘anything but straightforward’ (Peretti, 1998; Selge et al., 2011; C. R. Warren, 2011, p. 69). Rather, as Warren (2011) suggested, native and introduced are essentially relative terms, in both time and space. Davis and Thompson (2001, p. 206) believed that ‘discriminating between the traits of natives and spreading aliens has, with a few honourable exceptions, proved to be a largely unrewarding exercise’ (also see Dawson, Fischer, van Kleunen, & Suding, 2012; Sagoff, 2013). As Leopold (1966 [1949]) understood, biologically the two groups are effectively indistinguishable meaning that ecologists are only able to distinguish between native and introduced through recourse to historical research (Sagoff, 2009a). Rather than representing some fundamental conceptual divide, then, the native/alien dichotomy is grounded on a single, narrow criterion. That is, whether a species was facilitated to a particular area by human vectors or by other means. Preston (2009) wrote that the narrowness of this designation means that the classification of native or introduced is only useful in specific contexts, rarely as a general predictive classification. Woods and Moriarty (2001) agreed, noting that there is no ‘bright line’ separating native and introduced. They are, instead, ‘cluster concepts;' distinctions that ‘admit of degrees’ (Ibid., p. 164).

What ecologists and invasion biologists frequently make clear is that they are not concerned with introduced species *per se*; only the minority of species that become what is termed ‘invasive’ (see J. L. Lockwood, Hoopes, & Marchetti, 2011; Simberloff & Signatories, 2011). Unfortunately, this is no easy task because there are ‘widely divergent perceptions of the criteria of ‘invasive species’” and ‘multiple
ways to define’ them\textsuperscript{174} (Colautti & MacIsaac, 2004, p. 135; Molnar et al., 2008, p. 486). For example, it is
sometimes claimed that both native and introduced species can be invasive. This is, somewhat curiously,
to say that although ‘invasives take over,’ in the case of natives, ‘they may take over places in which they
belong’ (Head & Muir, 2004, p. 199). Publicised instances of native species doing so, nevertheless, are
so infrequent that ‘invasive’ is generally interpreted as a sub-category of non-native (see Larson, 2011;
Rahel & Olden, 2008; Woods & Moriarty, 2001). However, not all agree and many see invasive species
as categorically introduced. For example, Reichard \textit{et al.} (2001, p. 182) defined invasive species as those
‘non-native species that can establish self-sustaining populations in environments with little to no
disturbance.’ They wrote that ‘to become invasive a species must cross a geographic barrier\textsuperscript{175} (such as
that between continents)’ (\textit{Ibid.}).

Molnar \textit{et al.} (2008) used a similar definition that included any species reported to have become
established outside of its native range. However, they acknowledged that their definition differed from that
used for public policy purposes, which requires that the species precipitate ‘negative economic,
environmental, or public health impacts’ (\textit{Ibid.} p. 486) (e.g. see Diederik, Assaf, & Francois, 2011;
Macdonald & Burnham, 2010). Blackburn \textit{et al.} (2010, p. 227) were careful to distinguish native from non-
native invasive species. They defined ‘invasive alien species’ as ‘organisms introduced by man [sic] into
places out of their natural geographic range, where they become established and disperse, negatively
impacting on local ecosystems and species’ (\textit{Ibid.}). To become ‘invasive’ under such criteria an
introduced species simply has to become ‘established’ and then have some perceived negative effect on
a native species or ecosystem. However, the criteria for the level of impact that is considered necessary
to be considered invasive is very poorly defined (Macdonald & Burnham, 2010). In practise, therefore,
any introduced species that inconveniences a valued native species in any way can readily be classified
‘invasive,’ should someone choose to do so (see Davis, 2012).

\textsuperscript{174} This problem is compounded by the frequent use of ‘invasive’ as a synonym for ‘introduced’ (Selge \textit{et al.}, 2011).
This is not limited to popular literature, with scientific papers frequently conflating the two terms (e.g. see Molnar,
Gamboa, Revenga, & Spalding, 2008; Pizzatto & Shine, 2011; Rahel & Olden, 2008).

\textsuperscript{175} Note how this definition presents introduced species as if it were they that crossed the barrier when, in reality, they
were forcibly transported by people across the barrier. They would not be considered introduced if they had not.
Because the criteria for invasive species are so varied and varying, lists of invasive species grow ever longer (e.g. see Lowe, Browne, Boujelas, & De Poorter, 2000). As Robbins (2004, p. 139) highlighted, it is no coincidence that ‘invasive species seem to be everywhere these days.’ It is because the identification of invasive species is not a biological activity, but a social one that is open to various interpretations. These differences mean that species can be deemed invasive according to a raft of different criteria which are often quite removed from science. Indeed, the scientific consensus is that invasive species have no common traits (Moles et al., 2012). Rather, any species, under certain conditions, can be deemed invasive: ‘the perceived traits of invasive species thus do not derive from scientific study’ (J. A. Goldstein, 2009). Scientific research has shown that in invasive plants, for example,

...when compared with natives or non-invasive aliens, invasive aliens grow faster, have higher leaf nutrients, higher specific leaf areas, shorter life cycles, devote more resources to reproduction and produce more seeds that are better dispersed and germinate faster (Thompson & Davis, 2011, p. 155).

However, this is simply to say that invasives ‘have the same general suite of traits exhibited by most successful plants in the world today, irrespective of their alien or native status’ (Ibid., p. 156). A flourishing introduced species will often be deemed ‘invasive’ simply because it thrives, but if a like native species thrives similarly, it is considered quite commendable. A simple error in the understanding of a species’ origins and one is liable to call bad good and good bad – something that has happened often (see Smout, 2003). Therefore, while scientists often refer to the myriad effects of invasive species, they have no scientific basis for determining whether these are good or bad. Instead, the negative effects alluded to are typically based on underlying value judgements grounded in contested equilibrium assumptions (see Chapter 4) (Sagoff, 2009a).

For Robbins (2004, p. 140), ‘it is not species but sociobiological networks that are invasive.’ The idea that invasive species do not belong, but that others do, is a construction designed to further a particular agenda. That agenda can change according to who is involved in the debate, whether scientists, policy makers, the commercial sector, or other groups (Schuttler et al., 2011). While the delineation of an ‘invader’ may appear authoritative it is actually the result of an entirely contestable discursive
presentation. Using the ‘invader’ discourse simplifies the argument over a particular organism’s ‘place’ in nature, caricaturing it as something incontrovertibly negative (Eskridge & Alderman, 2010). Protagonists know that ‘invasion’ is associated, in the popular consciousness, with something horrible and terrifying, akin to diseases, foreign armies, legal or financial intrusions, or even linguistic corruption (see J.A. Goldstein, 2009). Hence, the discourse of invasion is a powerful rhetorical tool. Once a species is labelled an ‘invader’ with some semblance of legitimacy the public imagination will inevitably work on its alienation, disparagement and destruction. With repetition, such discourses become increasingly permanent and unquestioned. That a given species is ‘invasive’ becomes a taken-for-granted assumption (Eskridge & Alderman, 2010). The delineation of ‘invasive’ thus works to perpetuate the claims of protagonists. The argument is that the species is invasive and therefore it is bad. When everyone has learnt to see a particular species as invasive, questioning that status subsequently becomes heresy.

Robbins (2004) showed that there is a cultural and political ecology of species invasion. The probability that a species will be defined as problematic and thus deemed ‘invasive’ is related to the extent to which it is networked within existing social ecologies. Introduced species that are poorly ‘networked’ are liable to be excluded from ethical and social consideration (Garcia-Quijano & Carlo-Joglar, 2010; J. A. Lockwood & Latchininsky, 2008; Tantillo, 2006). Put more bluntly, species without friends are dispensable. Introduced species that are ugly or predatory are often most likely to be targeted (Schuttler et al., 2011). Species that are inconspicuous may also suffer because, while their negative environmental effects may become apparent, their positive aspects are not readily accessible. Conversely, conspicuousness can also be detrimental. Consider, for example, the highly conspicuous noisy miner bird (Manorina melanocephala) in Australia which is considered invasive and widely loathed in that country (M. J. Grey, Clarke, & Loyn, 1997). Trimble and Van Aarde (2010) felt that such discrepancies are unlikely to represent the relative importance of different taxa from the perspective of ecosystem conservation. Rather, certain taxa are favoured over others for reasons that are largely value-based and unscientific (also see Jackson et al., 2004; Warren, 2007).
Appendix 2: The effects of introduced species on biodiversity

Here I analyse two common positions. Firstly, that biodiversity is a good thing and, secondly, that introduced species decrease it or reduce its value. These positions are the cornerstone of many objections to the reconciliation of introduced species and are commonly cited in the restoration literature. I show that biodiversity is a recent construction furthered mainly by ecologists in efforts to rhetorically relate the conservation of native species to the support of cultural diversities. However, although frequently positioned as ‘fact,’ diversity is not a scientific concept but rather an abstract value judgement that has been furthered on the basis of certain understandings about ecology. Over the last few decades many of these understandings have been disproven, leaving arguments for the removal of introduced species on the basis of a support for biodiversity increasingly exposed to criticism. I show that the ecological effects of introduced species on biodiversity are generally unclear meaning that actions against introduced species are mostly premised only on the support of certain diversities. As the value of novel ecological assemblages become more widely known, I suggest that current biodiversity preferences may change.

In the early 1980s ‘the term biodiversity was unknown and it was not to be found in any compendium of threats to the environment’ (Hannigan, 2006, p. 122). It was first coined in 1986 when a ‘National Forum on BioDiversity’ was held in Washington. Although prominent biologist E.O. Wilson protested that the term was ‘too catchy’ and ‘lack[ed] dignity’ it was persisted with on the grounds that it was simple and distinctive and would therefore be more easily remember by the general public (Ibid.). It indeed enjoyed a rapid ascent in the popular consciousness such that by 1992 the United Nations Environment Program had signed it into international statute through the Convention on Biodiversity. Article Two of the Convention defined biodiversity as:

The variability among living organisms from all sources including…terrestrial, marine and other aquatic ecosystems and the ecological complexities of which they are a part. This includes diversity within species, between species and of ecosystems (J. H. Myers & Bazely, 2003, p. 15).

Biodiversity thus has various layers of meaning; something that I will return to below. In 1993 it was considered the ‘hottest’ environmental topic of the year with a burgeoning academic and popular literature
devoted to its exploration and advancement (Hannigan, 2006). In the early 2000s it was still considered the latest big issue and in 2010 it was further enshrined through the United Nations International Year of Biodiversity. Reflecting on the modern popularity of the concept of ‘biodiversity,’ Smout (2011, p. 55) noted that ‘earlier ages would not have known what we were talking about.’ He suggested that the modern preference for biodiversity over bio-uniformity was ‘like the privileging of rare and unusual taxa over common ones,…a cultural construct of recent times’ (Ibid.).

The rhetorical and normative power of ‘diversity’ per se grew out of a growing acceptance, in the 1960s and 1970s, of the notion of ‘cultural diversity’ or ‘multiculturalism’ as a means of reconciling diverse peoples within modern global democracies (Malfatti, 2009). Its transfer to biological considerations was relatively seamless. However, despite its political, social and normative significance, diversity has no scientific meaning (Sagoff, 2005). It is not a demonstrably good thing. If it were, then we would have to increase the number of women in prison, where they are under-represented (Bouville, 2008, p. 54). Having more varieties of sickness in the world for people to endure would similarly increase variety, while not being in any way desirable (see B. Rogers, 2000). Diversity, then, is not enough. Only a diversity of certain currently perceived worthwhile things is desirable (see Bouville, 2008). As I will discuss below, the notion that biodiversity in and of itself is desirable is another frequently unquestioned value judgement that has arisen in very recent times to rhetorically foster the conservation of certain types and certain kinds of nature above others.

In fact, the modern conception of biodiversity fosters a narrow window of life indeed. Its primary focus is the conservation of global species diversity. This component of biodiversity is said to be uniquely threatened by predatory and competitive pressures from introduced species on their native counterparts. Indeed, since a paper by Wilcove et al. (1998), introduced species are often considered to be the runner-

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176 In fact, it has been latterly used to foster acceptance for the diversities from which it came. As the United Nations Educational, Scientific and Cultural Organisation asserted in Article One of their Universal Declaration of Cultural Diversity (2001), ‘cultural diversity is as necessary for humankind as biodiversity is for nature.’
up biggest threat to biodiversity, second only to habitat loss\(^{177}\) (e.g. see Allendorf & Lundquist, 2003). Nevertheless, the ‘considerable hyperbole’ about the impacts of introduced species on biodiversity has led to ‘growing disquiet among [some] ecologists that the scientific literature has...become rife with uncritical generalizations’ (Didham, Tylianakis, Hutchison, Ewers, & Gemmell, 2005, p. 471; also see Macdonald & Burnham, 2010). For Simberloff (2011, p. 130), the ‘contrarian view’ is to ‘enumerate and minimise the documented harmful impacts of introduced species’ on biodiversity (also see Richardson & Ricciardi, 2013). However, this hardly distinguishes it from the ‘orthodox’ approach of many ecologists, which is to emphasise and hyperbolise the harmful effects of certain introduced species (e.g. rats (\textit{Rattus} spp.) or cane toads (\textit{Bufo marinus})). The mainstream vision of introduced species remains one of introduced plants such as kudzu (\textit{Pueraria lobata}) ‘forming dense monocultural stands that take over everything else in their path’ (Marris, 2009, p. 453). However, species like kudzu are rare and the effects of introduced species are generally similar to those of natives. According to Sagoff (2009b) the problem is that the indictment of introduced species is commonly based on lists of preselected and biased examples, rather than the investigation of random samples, or samples selected on independent grounds (also see Schuttler et al., 2011). As Sagoff (2007, p. 20) noted, ‘examples can shore up nearly any thesis; that is why examples are not arguments\(^{178}\). In a study of wetlands, Houlahan and Findlay (2004) found that introduced plant species were no more likely to dominate wetlands than native species. Moreover, the proportion of dominant non-native plant species that had a negative effect on the native plant community was the same as the proportion of native species with a negative effect. While introduced species are capable of precipitating negative effects, so too are native species. For example, the hantavirus (causing Lyme disease), the Colorado beetle (\textit{Leptinotarsa decemlineata}), and the mountain pine beetle

\(^{177}\) This paper has been criticised by several authors (see Gurevitch & Padilla, 2004; Marris, 2005), most recently by Davis (2011b).

\(^{178}\) This criticism may appear to contradict my employment of ‘exceptions’ as case studies. The critical difference is that I accept that the species in my study are pre-selected and have done so for very explicit methodological reasons (see Chapter 6). The emphasis in the ecological literature on exceptional introduced species is in contradiction to the objectives of natural science which is to uncover generalizable truths about the natural world, something it does not always share with the social sciences.
(Dendroctonus ponderosae) are all native species and serious pests in North America (Davis, 2011a). Nevertheless, native species, in general, are rightly not painted with the brush of these examples. I have discovered no ecological textbook chapters on native species beginning with the story of the mountain pine beetle’s effects on lodgepole pine (Pinus contorta) forest, for instance, but many chapters on introduced species that commence with an extended narrative on the effects of well-known ‘invasive’ introduced species (e.g. see C. R. Townsend, 2007).

For Gurevitch and Padilla (2004, p. 474) ‘evidence supporting a general and primary role for invasive aliens in extinctions remains limited.’ They argued that the generalization that introduced species were playing a widespread role in extinctions was therefore ‘too unspecific to be either accurate or useful’ (Ibid.). Research over the last decade has shown that there are innumerable subtleties to the correlation between introduced species and native species extinctions, proving any all-encompassing generalisation demonstrably invalid. Introduced plants, for example, rarely cause the extinction of native species, while introduced animals can (J. H. Myers & Bazely, 2003). Competition from introduced species is not generally a cause of native extinctions, but predation can be (Moles et al., 2012). In addition, the assumption that many high profile invaders are the principal cause of extinctions can be drawn into question (Gurevitch & Padilla, 2004). Although extinction may coincide with the appearance of certain introduced species, and even be furthered by their interactions, it can be difficult to separate the effects of introductions from other environmental stressors. For example, the Nile perch (Lates niloticus), introduced into Lake Victoria during the 1960s, is frequently implicated in the extirpation of native cichlids in that lake. However, the decline in cichlid populations probably started in the 1920s when development caused an increase in erosion and shoreline destruction. Urbanization during the 1970s also increased eutrophication and significantly decreased lake transparency. With increased nutrient loading, anoxic events resulting in fish kills became common. In this context, the removal of the Nile perch, even if possible, would not solve environmental problems created by altered land use and pollution (Gurevitch & Padilla, 2004).

The diversity-invasibility hypothesis, introduced by Elton (2000 [1958]), held that native ecosystems were effective at repelling intruders; the more diverse the more repellent. All else being equal, biotic
assemblages with higher native species richness would contain fewer introduced species because the latter would find it difficult to find a niche. However, ‘in the real world all else is never equal’ (Bartomeus, Sol, Pino, Vicente, & Font, 2011, p. 8). Studies from the 1990s onward have consistently disproven Elton’s hypothesis. Diverse native ecosystems are demonstrably more likely to harbour high diversities of introduced species (Bartomeus et al., 2011; Davis, 2011b; Fridley et al., 2007). Furthermore, decreases in local species richness are almost never associated with human introductions. Rather, the extinction of native species is typically more than offset by the colonization of introduced species (J. H. Brown & Sax, 2007). As Reise et al. (2006, p. 81) wrote, ‘in coastal aquatic ecosystems, an equilibrium perspective in the sense that if some species come in then others have to get out, finds no support.’ Sax and Gaines (2008) showed, instead, that local diversities have generally increased due to human introductions. Despite extinctions of local native species, both continental and island species diversities, around the world, have sharply increased. North America, for instance, has more mammal and bird species than when Europeans arrived four centuries ago (J. H. Brown & Sax, 2004). Quantitative studies at regional spatial scales show that most regions of the world can absorb more introductions than they are likely to lose by extinctions (Sax et al., 2007). The net effect of introductions is, therefore, an increase in species richness at a regional level. Sax et al. (2007) provided several illustrations of this pattern. For vascular plants, the trend is one of a handful of extinctions counterbalanced by copious additions. Over the last few hundred years most islands have doubled their lists of floral species, with increases in continental regions in the order of 20%. Other groups are more extreme. For example, Hawaiian freshwater fish species richness has increased by 800% with the introduction of 40 species and the extinction of none.

The presumed outcome of globalisation is homogenisation (Theodoropoulos, 2003). Local ‘authentic’ cultures and ecosystems are passive in the face of change. The only way to save them is to buffer them from outside influences or lock them away safe (see O’Brien, 2006). As Marris (2011, p. 114) wrote, ‘monocultures of exotics…haunt ecologists’ nightmares.’ The ecological evidence, however, consistently contradicts this belief. Native species commonly adapt to changed conditions, just as introduced species adapt to the environments to which they are introduced (Lugo, 2009). Ecosystems incorporating introduced species are not homogenous – far from it. Rather, even ecosystems dominated by introduced species are just as diverse as native-dominated ones (Sax et al., 2007). As early as 1979, ecologist Ariel
Lugo conducted a study in Puerto Rico which found that some exotic-dominated forests had understories with higher species richness's than their nearby native-dominated counterparts (Marris, 2011). He submitted his results to the journal *Ecological Monographs*, but,

The scientists chosen by the journal to review the paper were horrified at the heresy...Some reviewers tried to reclassify pine as a native plant to escape the troubling conclusion Lugo was reaching. In the end, it took more than a decade to get the paper past review. It was finally published in 1992 (*Ibid.*, p. 114).

Nevertheless, since then Lugo’s findings have been widely replicated in other contexts. For example, a recent study in Panama compared the number of species in 'undisturbed' old-growth forests with mixed or non-native-dominated forests (see Vince, 2011). They found that biodiversity levels in mixed or non-native-dominated forests were the same or exceeded those of comparable native forests. In another study, on the reputed floristic homogenisation of Central European cities, Lososova et al. (2012) found that introduced species contributed to floristic differentiation rather homogenisation. This applied both to the entire urban floras and each of the seven habitat types studied. Globalisation is thus not synonymous with low diversity (Rosenzweig, 2001a). Rather, as Davis (2003, p. 488) wrote, ‘one need only look to the most diverse communities in the world, coral reefs, to see the consequences of regular long-distance dispersal.’ Coral reefs generally have very low levels of endemism, while at the same time being famously vibrant and diverse. The biotic mixing brought about by globalisation leads to diverse, site-specific outcomes. It is non-deterministic, and often random and unpredictable. It is different from previous conditions; nonetheless, it is not demonstrably good or bad. It also does not entail a choice between one or the other: native or ‘tainted.’ The postcolonial concept of ‘hybridity’ (Bhabha, 1994) evades the ‘stark choice between purity and obliteration’ (O’Brien, 2006, p. 73).

Once again, the ongoing focus on global species diversity obscures the fact that the results of globalisation are often not generalizable. As McKinney (2008, p. 1960) wrote, ‘the notion of a homogenizing biosphere…is seductively simplistic.’ At the scale of continents, regions and countries introduced species generally increase species richness. However, on a global scale they decrease it (Winter et al., 2009). It is not obvious that this global scale of diversity should be given precedence and
that unique forms should categorically trump cosmopolitan ones. If it were then we would resist all manifestations of globalisation. To generalise that homogenisation is the trend is also to hide the complexity of diversity and its varied levels and manifestations. Biodiversity, as a whole, incorporates all forms of living diversity from genes through to ‘communities,’ comprising multiple ecosystems (Wilby & Perry, 2006). The classification of ‘species,’ in this continuum, is an intermediate abstraction. It is not necessarily more valuable than higher (e.g. ecosystem) or lower (e.g. genes) forms of diversity. Indeed, modern conservationist discourses often emphasise the protection of unique ecosystems as opposed to the unique species within them. On an ecosystem level, the addition of a new species or the removal of an existing one does not necessarily decrease diversity because the new system is still distinguishable from others; it is still unique. When considering uniqueness, one might further question why rare native ecosystems should be valued above rare non-native or ‘novel’ ecosystems (see below) (Kendle & Rose, 2000). Many novel ecosystems consist of species assemblages found nowhere else on the planet. Unlike native ecosystems, novel ecosystems are also temporally unique, comprising species that have never lived in the same assemblages in ecological history (see Lindenmayer, Fischer, et al., 2008). It is not obvious that novel uniqueness should be valued below that of native uniqueness.
Appendix 3: Participant information sheets and consent forms

Participant information sheets and consent forms were provided for employers (where applicable) and non-employers. These are shown separately below.
PARTICIPANT INFORMATION SHEET

(Employer)

Project title: Deconstructing introduced wildlife and the future of biodiversity in New Zealand

Researcher: Jamie Steer, School of Environment

Dear Sir, Madam,

My name is Jamie Steer. I am a PhD student at the School of Environment, University of Auckland. I am conducting interviews as part of my thesis on social interpretations of introduced wildlife in New Zealand. The thesis will involve detailed investigation of three case studies: trout in the Rotorua Lakes, deer in Te Urewera National Park and mallards in Northland.

As part of my research I would like to interview some of your staff. I am interested in your staff’s knowledge and beliefs concerning the status of wild introduced species in New Zealand, particularly on their perspectives with regards to my case study species. Research aims to contribute to academic literature on wildlife management and facilitate understanding within and between social groups. It is not intended to directly inform policy makers. The proposed one-on-one interviews will occur at a time and place of the interviewee’s choosing and last up to 1.5 hours. I would like to ask for your assurance that the participation or non-participation of any staff member, and the information they provide, will not affect their standing within your organisation.

Your staff are under no obligation at all to participate and can request to stop an interview at any time. I would prefer to audio record interviews but this would only be done with the consent of your staff and the recorder can be turned off at any time. If the interview is not recorded I will take notes. If at any time your staff wish to withdraw the information they have provided, you may do so until April 1st 2013. Transcripts of the interview - which I will personally transcribe - will be stored in a locked cabinet at the University of Auckland. Audio files will be stored on my University computer which is password protected. After a period of six years transcripts and recording files will be deleted, and consent forms will be shredded. I will use the information in my thesis and perhaps in an article for an academic journal. Upon completion, I can offer you a PDF of my entire PhD thesis if you are interested.
I would like to use the name of your organisation in my thesis but will only do so with your consent. If you do not wish for the organisation to be identified then I will use a generic name for the organisation (e.g. local government authority). However, the identity of you organisation might still be recognised by some readers of the PhD thesis, particularly if yours is one of only a few that could have been interviewed on the specific topic. Hence, your organisation’s anonymity cannot be guaranteed.

I thank you in advance for your help and time. Please do not hesitate to contact me by telephone (tel: 09 373 7599 ext. 89917) or email (J.steer@auckland.ac.nz) if you have any questions about the research or about the procedure of the interview. You can also contact my supervisor for further enquiry.

My supervisor:
Dr. Brad Coombes
The University of Auckland
Private Bag 92019
Auckland
Tel: 09 373 7599 ext. 88455

Director of the School of Environment:
Prof. Glen McGregor
The University of Auckland
Private Bag 92019
Auckland
Tel: 09 373 7599 ext. 85284

For any queries regarding ethical concerns you may contact: The Chair, Human Participants Ethics Committee, The University of Auckland, Office of the Vice Chancellor, Private Bag 92019, Auckland 1142, Tel: 09 373 7999 ext. 83711

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE

On 27/09/11 for 3 years, Reference Number 7573
PARTICIPANT INFORMATION SHEET
(Non-employers)

Project title: Deconstructing introduced wildlife and the future of biodiversity in New Zealand

Researcher: Jamie Steer, School of Environment

Dear Sir, Madam,

My name is Jamie Steer. I am a PhD student at the School of Environment, University of Auckland. I am conducting interviews as part of my thesis on social interpretations of introduced wildlife in New Zealand. The thesis will involve detailed investigation of three case studies: trout in the Rotorua Lakes, deer in Te Urewera National Park and mallards in Northland.

You are invited to participate in my research as an interviewee. I am interested in your knowledge and beliefs concerning the status of wild introduced species in New Zealand, particularly on your perspectives with regards to my case study species. Research aims to contribute to academic literature on wildlife management and facilitate understanding within and between social groups. It is not intended to directly inform policy makers. The proposed one-on-one interview will occur at a time and place of your choosing and last up to 1.5 hours, though I can interview you for a duration of your choosing. Your CEO has given me permission to conduct this research and has given assurance that your choice to participate, or not participate, and the information that you provide during the interview will not affect your standing within the organisation. You are under no obligation at all to participate and you can request to stop the interview at any time.

I would prefer to audio record the interview but this would only be done with your consent and the recorder can be turned off at any time. If the interview is not recorded I will take notes. If at any time you wish to withdraw the information you have provided, you may do so until April 1st 2013. Transcripts of the interview - which I will personally transcribe - will be stored in a locked cabinet at the University of Auckland. Audio files will be stored on my University computer which is password protected. After a period of six years transcripts and recording files will be deleted, and consent forms will be shredded. If you wish I can send you a copy of the transcripts which you will be able to edit or clarify before the
information is used. I will use the information in my thesis and perhaps in an article for an academic journal. Upon completion, I can offer you a PDF of my entire PhD thesis if you are interested.

I would like to use your name in my thesis, but this is not essential and you may request to remain anonymous. If you wish to remain anonymous you will be referred to by way of a pseudonym. However, your identity might still be recognised by some readers of the PhD thesis, particularly if you are one of only a few people that could have been interviewed in your organisation on the specific topic. Hence, your anonymity cannot be guaranteed.

I thank you in advance for your help and time. Please do not hesitate to contact me by telephone (tel: 09 373 7599 ext. 89917) or email (j.steer@auckland.ac.nz) if you have any questions about the research or about the procedure of the interview. You can also contact my supervisor for further enquiry.

My supervisor: Dr. Brad Coombes
The University of Auckland
Private Bag 92019
Auckland
Tel: 09 373 7599 ext. 88455

Director of the School of Environment: Prof. Glen McGregor
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For any queries regarding ethical concerns you may contact: The Chair, Human Participants Ethics Committee, The University of Auckland, Office of the Vice Chancellor, Private Bag 92019, Auckland 1142, Tel: 09 373 7999 ext. 83711

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE

On 27/09/11 for 3 years, Reference Number 7573
CONSENT TO BE INTERVIEWED
(employer)

THIS FORM WILL BE HELD FOR A PERIOD OF SIX YEARS

I have read and understood the Participant Information Sheet for the research project entitled:

Deconstructing introduced wildlife and the future of biodiversity in New Zealand

Researcher: Jamie Steer, School of Environment

- I have read the Participant Information Sheet and understand why this organisation has been selected to participate. I have had an opportunity to ask questions and have them answered.
- I agree that selected staff from this organisation will be approached to take part in this research.
- I agree that the participation/non-participation of the staff members will not affect their standing within the organisation.
- I agree that the information they provide will not affect their standing within the organisation.
- I understand that the data will be stored for six years in a locked filing cabinet at the office of the researcher at the University of Auckland.
- I consent / do not consent to the name of this organisation being disclosed in the course of this research project.
  (please edit)
- I understand that if I choose not to disclose the name of my organisation any information/data from the interview will be attributed to a generic name (e.g. local government authority).
- I understand that staff members that have been interviewed have the right to withdraw any of the information/data they have provided up to April 1st 2013.
- I wish /do not wish to receive a PDF of the completed PhD research.
  (please edit)

Signed: ____________________________
Name: ____________________________
(Please print clearly)

Date: ____________________________

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS COMMITTEE

On 27/09/11 for 3 years, Reference Number 7573
CONSENT TO BE INTERVIEWED
(Non-employer)

THIS FORM WILL BE HELD FOR A PERIOD OF SIX YEARS

I have read and understood the Participant Information Sheet for the research project entitled:

_Deconstructing introduced wildlife and the future of biodiversity in New Zealand_

**Researcher:** Jamie Steer, School of Environment

- I agree to take part in this research.
- I have read the Participant Information Sheet and understand why I have been selected as a participant. I have had an opportunity to ask questions and have them answered.
- I understand that my CEO has given permission for staff to participate in this research and that my participation, or the information that I provide will not affect my standing within the organisation.
- **I agree / do not agree** that I will be audio recorded and understand that, even if I agree, I have the right to have the recorder turned off at any time.
  
  *(please edit)*
- I understand that the data will be stored for six years in a locked filing cabinet at the office of the researcher at the University of Auckland.
- **I wish / do not wish** to receive the transcripts of the interview.
  
  *(please edit)*
- I understand that I can revise, clarify, and/or edit the transcripts of the interview until 3 months after I have received the transcripts.
- **I consent / do not consent** to my name being disclosed in the course of this research project.
  
  *(please edit)*
- I understand that if I choose not to disclose my name any information/data from the interview will be attributed to a pseudonym.
- **I consent / do not consent** to my job title being disclosed in the course of this research project.
  
  *(please edit)*
- I understand that even if I choose to not disclose my name or job title, members of my community may know that I have provided the information.
• I understand that I am free to withdraw from the research at any time without giving reason.
• I understand that I have the right to withdraw any of the information/data I have provided up to April 1st 2013.
• I wish /do not wish to receive a PDF of the completed PhD research.
  (please edit)

Signed: ____________________________

Name: ____________________________

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS COMMITTEE

On 27/09/11 for 3 years, Reference Number 7573