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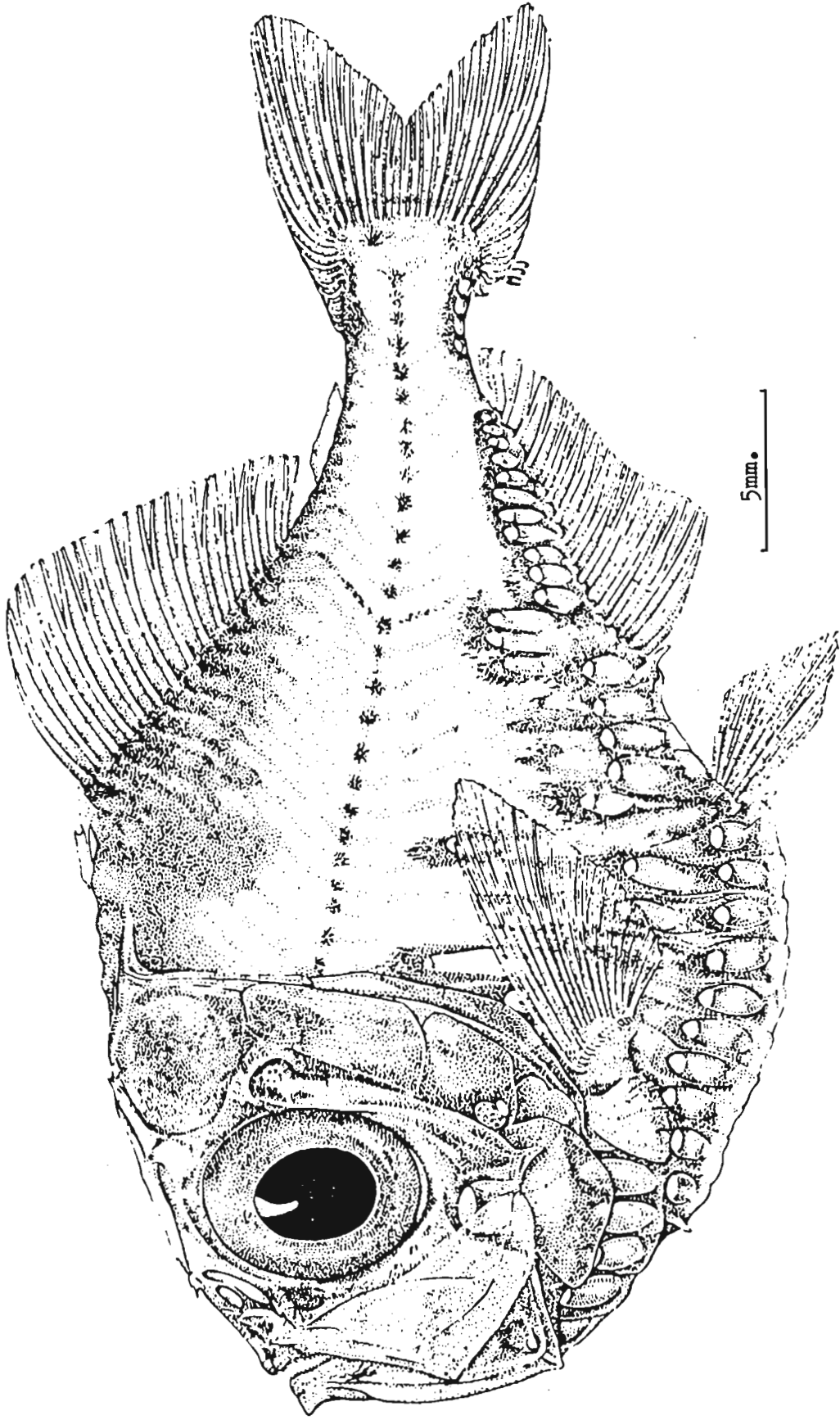
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*Polyipnus laternatus* Garman.

FRONTISPIECE

From

Baird 1971

LOWER MIOCENE TELEOST OTOLITHS FROM

PARENGARENGA HARBOUR

HUGH R. GRENFELL

A THESIS SUBMITTED IN PARTIAL FULFILMENT  
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ERRATA

- 1/ ALL SCALE BARS ON FIGURES 1 m.m. NOT 2m.m. ( N.B. figures not Plates.)  
except figs. 18a,b,c.
- 2/ Congridaruum should read Congridarum pg. 28.
- 3/ Maurolicus aff. mueller should read M. aff. muelleri pg. 31; also  
spelt incorrectly on pp. 23,32, and fig. caption Plate I
- 4/ Discussion of K. aff. admirabilis is on pg. 66 not pg. 65 i.e. pages  
out of sequence.
- 5/ Lepidorhincus should read Lepidorhynchus pp.23,68,120,122, fig. caption  
Plate 4, fig. caption Plate 7 (Appendix II).
- 6/ Coelorhincus should read Coelorinchus pp.23,122, fig. caption Plate 4,  
fig. captions Plates 6 & 7 (Appendix II).
- 7/ tentively should read tentatively pg. 76.

H.R.G May 1982

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## ABSTRACT

The study area is located at the Parengarenga Harbour, Northland where early Miocene (Otaian and Altonian) flysch-like sediments of the Parengarenga Group outcrop along the northern and, less extensively, the southern shores. A number of localities, in particular in the Waioha Shellbeds and the Waiheuehu Shell lenses, have teleost otolith (calcareous secretions of the middle ear) faunas. These otolith faunules are described and illustrated and then used for paleoenvironmental analysis.

The fauna is found to be moderately diverse and this study describes 55 species from 31 families. Dominant in terms of abundance and diversity are the families Congridae (2 taxa), Sternoptychidae (2 taxa), Myctophidae (7 taxa), Moridae (4 taxa), Bregmacerotidae (1 taxon), Macrouridae (7 taxa), Hoplichthyidae (1 taxon) and Gobiidae (1 taxon). Many species are considered new to the New Zealand fossil fauna e.g. Gnathophis sp. 1, Polyipnus sp. 1 and sp. 2, Chlorophthalmus cf. corniger, Scopelarchus aff. analis, a number of myctophid species, Lophius sp. 1 etc. Some are first fossil records in New Zealand for particular families, e.g. Scopelarchus aff. analis. Others are known from other localities, such as Chlorophthalmus miocenicus from the Altonian of Otago; Hygophum circularis, Altonian, Otago; Actuariolum bicaudatum, Altonian, Otago and Clifdenian, Southland; Coelorhincus cf. toulai, Tongaporutuan, Wairarapa, Altonian Otago and Miocene of Europe. Other species indicating influences from outside the Australasian region are Oligopus aff. bassolii, Hoplostethus aff. mediterraneus and Cepola cf. rubescens.

Paleoecologic analysis reveals that the fauna is of mixed origin with rare allochthonous upper shelf and shallower water species (e.g. Gobius sp. 1, Pseudolabrus sp., Apogonidarum sp. 1, Carapus spp.) and the more common autochthonous deepwater species (e.g. Polyipnus sp. 2, Diaphus sp. 1, Bregmaceros sp. 1, Coelorhincus cf. toulai and Hoplichthys aff. gilberti)



Sedimentation occurred under marginally tropical conditions at depths of 200 to 500 metres (i.e. lower continental shelf/upper continental slope).

Problems encountered and techniques adopted during the study are briefly discussed.