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SELECTED ECOLOGICAL ASPECTS

OF THE

MANUKAU HARBOUR

by

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ABSTRACT

Several ecological aspects of the Manukau Harbour related to its benthic flora and fauna, water chemistry, sedimentology, and bacteriology were investigated.

Vertical colour aerophotographs were taken of all vegetated tidelands within the Harbour and six vegetation types were identified, mapped, and discussed in terms of their ecological significance.

Meadows of the intertidal seaweed Gracilaria secundata var. pseudoflagellifera near the Manukau Sewage Oxidation Ponds were found to have increased virtually logarithmically in extent since the commencement of operations of the Manukau Purification Works. The possible relation of this increase to contributions of nutrients and fine sediments from the Ponds is considered.

The effects of stress, sediment type, and the presence of macrovegetation on benthic faunal community structure are studied. The majority of the findings are somewhat inconclusive; however, it is found that mangrove swamps and eelgrass flats clearly appear to increase faunal species diversity.

Water and sediment nutrients were examined and found to be at high levels in the north-east region of the Harbour. It is concluded that sediments probably undergo less temporal variation in nutrient levels than do overlying waters and might therefore provide a more cost-effective method of studying cultural eutrophication in the Manukau and similar harbours.

Sediment particle size distribution was looked at and it was determined that sediments are extremely fine near the Manukau Sewage Oxidation Ponds, coarser but still muddy in most of the inlets of the Harbour, and sandy in most of the open Harbour intertidal flats remote

from pollution sources.

Counts of coliform bacteria were made and levels in intertidal sediments were found to be generally higher than in overlying waters but not less temporally variable. It was also determined that waters and sediments of the north-east region of the Harbour are of poor sanitary quality.

Several management considerations are discussed in relation to the results of the study. Further research needs are outlined in terms of 22 research projects addressed to waste water management, land erosion control, and tidelands management.

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