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An Ecological Study of a Sandy Beach near Auckland,  
New Zealand

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Abstract

DURING 1961 a quantitative survey of the distribution of the macro-fauna of Howick Beach, 14 miles east of Auckland on the Hauraki Gulf, was carried out together with a survey of the physico-chemical factors: (1) exposure to wave action; (2) tidal levels; (3) temperature; (4) sand grade; (5) calcium carbonate (shell) content; (6) organic content; (7) water content; (8) oxygen content; (9) hydrogen ion concentration; (10) salinity. The distribution of the fauna in relation to these physical factors, particularly sand grade, is discussed, and three physico-biological regions are delimited. The occurrence of the same species in association on Howick and other beaches, and the designation of these groups as Associations, is also discussed. The division of the beach into three zones based on the occurrence of the larger crustaceans as suggested by Dahl (1953) is commented upon.

INTRODUCTION

LITTLE ecological study has yet been made of the faunas of the extensive sandy intertidal areas of New Zealand. In his classical pioneering survey of littoral marine communities in New Zealand, Oliver (1923) classified the animal associations in sandy areas by the dominant bivalves, and lists a few of the subordinate species. The only other published work is the short article by Ralph and Yaldwyn (1956) who investigated the differences between the *Austrovenus stutchburyi* (= *Chione stutchburyi*\*) in this paper where molluscan nomenclature follows Powell, 1962) association of the sand banks, and the *Maoricolpus roseus* association of the channels of the Otago Harbour.

In the present study the qualitative and quantitative distributions of the macro-fauna on a sandy beach (Howick) were investigated and the physico-chemical factors: (1) exposure to wave action; (2) tidal levels; (3) temperature; (4) sand grade; (5) calcium carbonate content; (6) organic content; (7) water content; (8) oxygen content; (9) hydrogen ion concentration; (10) salinity, of the beach were examined. A comparative study, between the fauna and physical properties of the sandy beach and those of an adjacent small sheltered beach and an area of *Zostera nana*, will be published as a separate paper.

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\* The full names and authors of all species quoted through the paper are listed in Table I.