# The Biotic Community of a Salt Meadow in New Zealand

By KITTY PAVIOUR-SMITH
University of Otago

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## *Summary*

THE results of seasonal studies of the fauna of a salt meadow on the Otago Peninsula are given. The plant community consisted of 4 species of plants, their average height is about 1 cm, and they form a dense peaty turf about 20 cm deep on the top of pure sand. Faunal samples taken from sea to dry land showed considerable variation. The mesofauna was at its maximum in late summer (February) and at its minimum in winter (July to September). The microfauna changed in the opposite sense. A food web was constructed to indicate the trophic levels in the community. The maximum number of animals found in the salt meadow was approximately 7½ million per square metre, when the microfauna was at its maximum. Zoomasses tended to show an inverse relationship to the pyramid of numbers and the maximum zoomass per square metre, approximately 32 g occurred when the microfauna was at its maximum.

## INTRODUCTION

THIS study analyses a simple terrestrial community with reference to its seasonal variations and spatial changes, and particularly to its pyramid of numbers, food web and biomass. The complexities of terrestrial communities are such that it is very difficult indeed to deal thoroughly with them. For this reason previous investigators have selected only a part of their communities, such as arthropods, insects or nematodes. As far as I am aware, only van der Drift (1950) has made any effort to deal with all the animals, but the beech litter with which he was working is itself only part of a community.

The simplest and most uniform terrestrial community available was a salt meadow in Hooper's Inlet, Otago Peninsula, New Zealand. The vegetation consists of four plant species only, whose average height is 1 cm. The plants all multiply vegetatively by means of creeping stolons, and thus an excessively dense turf is formed by the intertwining stolons and roots. The soil is highly organic and peaty, and extends to a depth of about 20 cm, where there is almost pure sand. It was most suitable for this study because of its short vegetation, and uniformly dense and highly organic soil, this in spite of the physical conditions being complicated by periodic covering by the tide, and the difficulty of extracting animals from the dense turf.

## DESCRIPTION OF THE AREA

Hooper's Inlet is a shallow tidal inlet, almost cut off from the sea by a wide spit of sandhills. The area under investigation is a flat region on the inlet side of the spit. Nearest the water's edge is a broad area dominated by *Salicornia australis* Soland. This merges gradually into the relatively narrow band of salt meadow, which in its turn gives way to grass and herbs. The ecotone between the salt meadow and the grassy meadow is clearly marked by the presence of scattered tussocks of *Poa caespitosa* Forst. and *Scirpus nodosus* Rottb. A transect was taken to examine the zonation of plants and animals in more detail.