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Structure of a rocky intertidal community in New South Wales: Patterns of vertical distribution and seasonal changes

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Abstract

Patterns of vertical distribution of common intertidal animals and plants were sampled in transects and groups of replicated quadrats on a sandstone rock-platform (Green Point, New South Wales) from October 1972 to October 1976. Zones corresponding to those described in previous qualitative studies were consistent throughout the study. The bottom of the shore was dominated by 100% cover of foliose macroalgae and there were few animals present. Mid-shore levels were dominated by grazing molluscs, sessile animals (notably barnacles and tubeworms) and/or encrusting algae. At the upper levels of the shore was a zone of littorine gastropods of three species. In mid-shore areas, foliose algae were sparse except in pools and were positively correlated with the abundance of sessile animals.

The upper limits of vertical distribution of dense cover of foliose algae, the height of peak abundance of mid-shore grazers and the upper limits of these grazers were at higher levels on the shore where exposure to wave-action was greater. There was considerable patchiness in the occupancy of primary substratum from one part of the shore to another, and no clear trends of diversity of species with the gradient of exposure to wave-action were evident. There were, however, clear seasonal trends in the vertical distributions of some algae, which extended to higher levels on the shore during colder months than during the summer. In addition, some species of algae were only present during some seasons of the year, and others showed marked seasonal variability in frequency of occurrence in quadrats.

These observations are discussed with respect to known aspects of the ecology of some of the organisms, and provide a background for experimental tests of some hypotheses raised about the structure of this community.

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