



RECENT ADVANCES IN UNDERSTANDING GRAZING AS A MAJOR PROCESS INFLUENCING BIODIVERSITY ON ROCKY SHORES

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Grazing by gastropods and starfish is probably the most important ecological process influencing the structure and composition of intertidal assemblages on rocky shores in south-eastern Australia. On sheltered shores, grazing in the mid- and upper parts of the shore prevents the establishment of foliose macro-algae. It seriously decreases survival of newly-settled barnacles, although there are also positive effects of grazing when at reduced intensity. Overgrazing of micro-algae (diatoms, cyanobacteria, early stages of development of macro-algae) also results in intense inter- and intra-specific competition amongst grazing ropods. Until recently, however, it was difficult to quantify the amounts of micro-algal food available to grazers and the effects of grazing, because of the relatively large spatial scale at which measurements had to be taken and because sampling was destructive. New methods have been developed that involve spectrophotometry, allowing characterization of the micro-algal assemblages at small (mm) scales. Colour-infrared photography has been calibrated against chemical measures of chlorophyll, allowing non-destructive, real-time estimation of amounts of micro-algal food at scales of a few mm. These are the scales at which the grazers operate. Results from these new methods will be illustrated to demonstrate some aspects of selectivity by grazers that were previously unknown. The roles of grazing by a starfish have also, for the first time, been illustrated using these techniques. Potential consequences of increased air-temperature due to climatic change will be demonstrated. Newer developments will also be described; these allow feeding activities to be sampled in relation to availability of resources.