Cervin, Gunnar 2002. Interactions between grazers and algal canopies, an experimental approach.
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Abstract: Interactions between macroalgae and grazers were investigated in manipulative field experiments on intertidal sheltered rocky shores on the Swedish west coast and on the Isle of Man. One grazer exclosure experiment was also made on semi-exposed shores on the Swedish west coast.

On sheltered shores in Sweden, exclusion of periwinkles *Littorina* spp. did not affect the survival of germlings of the brown alga *Ascophyllum nodosum* in presence of adult canopy. Other grazers such as isopods and amphipods were suggested to be important. However, increased encaged numbers of *L. littorea* caused lower survival. In another experiment the germling survival was affected by complex interactions between *Littorina* spp., adult canopy and germling density. Survival was low in absence of canopy and presence of *Littorina* spp., but higher in absence of *Littorina* spp. Later the survival was lower in presence of *Littorina* spp., irrespective of canopy treatment. Survival of germlings in high densities was lower in presence of canopy than in areas cleared of canopy, but only in presence of ephemeral green algae.

A four-year experiment explored the effect of canopy removal and grazer exclosure on recruitment of *A. nodosum* juveniles and the community structure. Canopy removal transformed the assemblage for at least 31 months. Removal of both canopy and periwinkles increased ephemeral green algae after 3 months. After 18 months a canopy of *Fucus* spp. had developed in plots initially cleared of canopy, but *A. nodosum* juveniles were not affected. A similar experiment on the Isle of Man, manipulating also the red algal turf, canopy removal in interaction with intact turf, resulted in higher abundances of juvenile *A. nodosum*. Removal of both canopy and the limpet *Patella vulgata* resulted in much higher *A. nodosum* recruitment. Canopy removal in interaction with either turf or limpet removal gave a dense cover of ephemeral green algae after 5 months, and later a dense cover of *Fucus* spp.

On semi-exposed rocky shores in Sweden, exclosure of *Littorina* spp. gave no recruitment of fucoids, the reason might be that the exclosure was only effective during the first months.

The results emphasized that complex interactions control these communities.

Key words: Adult canopy; *Ascophyllum nodosum*; Ephemeral green algae; *Fucus serratus*; *Fucus vesiculosus*; Germling survival; Grazer exclusion; Grazing; Interaction; Juvenile survival; *Littorina littorea*; *Littorea saxatilis*; Spatial variation

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