

Comparative ecology of *Lessonia nigrescens* and *Durvillaea antarctica* (phaeophyta) in Central Chile

Santelices, B.; Castilla, J. C.; Cancino, J.; Schmiede, P.

Abstract

The *Lessonia nigrescens*-*Durvillaea antarctica* belt is the most conspicuous feature of the intertidal-subtidal boundary in Central Chile, with *L. nigrescens* attaining larger cover and biomass values than *D. antarctica*. Human predation of the otherwise competitively dominant *D. antarctica* has been suggested as accounting for its scarcity. Testing of this hypothesis included field studies of species distribution in places with and without human accessibility and various degrees of wave impact, comparative morphometric and population studies, evaluation of the ecologic role of the limpet-kelp association and comparative measurements of growth, reproduction and survival capacity. Results indicate that *L. nigrescens* and *D. antarctica* have morphologies typically adapted to habitats with different wave shock. Contrary to previous predictions, *L. nigrescens* appears as a plant better adapted for places with strong wave impact, which are the most common in Central Chile. Complete space monopolization by *L. nigrescens* is prevented by a series of adaptations of *D. antarctica*. Certain morphological forms of this species are less affected by wave action, allowing a population stock to persist even at the most exposed places. Boring into algal holdfasts by invertebrates weakens the mechanical resistance of old, eroded plants providing open space where juveniles of either species could settle. *D. antarctica* seems to take greater advantage of this primary space by means of a fugitive life history. Finally, the survival of *D. antarctica* increases if attached to the top of *L. nigrescens* holdfasts. It is therefore concluded that result of the interaction between these 2 brown algae depends on the degree of water impact. In sheltered habitats competitive displacement of *L. nigrescens* could occur but it is unlikely to be a continuous process. In exposed habitats *D. antarctica* is constantly removed by water movement, but persists because of a higher colonization rate.

Keywords Brown Alga, Wave Impact, Conspicuous Feature ,Primary Space, Complete Space