

Seasonal variation in epifaunal communities associated with giant kelp (*Macrocystis pyrifera*) at an upwelling-dominated site

Winkler, N. S., Pérez-Matus, A., Villena, Á. A., & Thiel, M. (2017). Seasonal variation in epifaunal communities associated with giant kelp (*Macrocystis pyrifera*) at an upwelling-dominated site. *Austral ecology*, 42(2), 132-144. <10.1111/aec.12407> Accessed 29 Apr 2021.

Abstract

Kelp forests are highly productive and species-rich benthic ecosystems in temperate regions that provide biogenic habitat for numerous associated species. Diverse epifaunal communities inhabit kelp sporophytes and are subject to variations in the physical environment and to changes experienced by the kelp habitat itself. We assessed seasonal variations in epifaunal invertebrate communities inhabiting giant kelps, *Macrocystis pyrifera*, and their effects on this seaweed. Six seasonal samplings were conducted over a year at an upwelling-dominated site in northern-central Chile where physical conditions are known to fluctuate temporally. More than 30 taxa were identified, among which peracarid crustaceans stood out in both diversity and abundance. Species richness and abundance differed among sporophyte sections (holdfast and fronds) and throughout the year. The frond community was dominated by two grazers (the amphipod *Peramphithoe femorata* and the isopod *Amphoroidea typa*), while suspension feeders, grazers, and omnivores (the amphipod *Aora typica*, the isopod *Limnoria quadripunctata*, and polychaetes) dominated the holdfasts. Abundances of the dominant species fluctuated throughout the year but patterns of variation differed among species. The most abundant grazer (*P. femorata*) had highest densities in summer, while the less abundant grazer (*A. typa*) reached its peak densities in winter. Interestingly, the area of kelp damaged by grazers was highest in autumn and early winter, suggesting that grazing impacts accumulate during periods of low kelp growth, which can thus be considered as 'vestiges of herbivory past.' Among the factors determining the observed seasonal patterns, strong variability of environmental conditions, reproductive cycles of associated fauna, and predation by fishes vary in importance. Our results suggest that during spring and early summer, bottom-up processes shape the community structure of organisms inhabiting large perennial seaweeds, whereas during late summer and autumn, top-down processes are more important..

Keywords

associated epifauna, kelp, *Macrocystis pyrifera*, seasonal fluctuations, temperate regions.