

Understory algae associations and predation risk influence broad-scale kelp habitat use in a temperate reef fish

Pérez-Matus, A., Sánchez, F., González-But, J. C., & Lamb, R. W. (2016). Understory algae associations and predation risk influence broad-scale kelp habitat use in a temperate reef fish. *Marine Ecology Progress Series*, 559, 147-158. <10.3354/meps11892> Accessed 08 Jan 2021.

Abstract

Habitat selection and predation are ecological processes that operate at small spatial scales. How these influence large-scale patterns in abundance and distribution of fauna remains to be resolved, especially in structurally complex systems such as kelp beds. In order to explain whether habitat selection, differential predation, or a combination of factors explain variation in fish abundance among sites, we conducted field surveys of abundance and microhabitat use of a temperate reef fish (Tripterygiidae, *Helcogrammoides cunninghami* Smitt, 1898) at sites of varying kelp cover and different understory algal assemblages. We observed variation in abundance among sites and, particularly, that sites with abundant kelp individuals have 4 times fewer fish. In order to explain these differences in habitat use and variation in abundance among sites, we conducted choice chamber experiments in the laboratory and tethering experiments in the field. In the laboratory, individuals tend to discriminate among options by selecting substrata with understory biogenic habitat (i.e. filamentous algae) and avoiding kelp. Finally, tethering experiments in the field evaluating *H. cunninghami* mortality rates in preferred habitat types compared to kelp beds confirmed an increase in predator richness and a 2-fold increase in predation rates inside kelp habitats. Together, these results suggest that multiple mechanisms that operate mainly at small spatial scales (predation and habitat selection) may influence the distribution and abundance of organisms over large areas..

Keywords

Reef fish, Kelp forest, Habitat selection, Mortality rates.