

GEOGRAPHICAL VARIATION OF MULTIPLEX ECOLOGICAL NETWORKS IN MARINE INTERTIDAL COMMUNITIES

Miguel Lurgi , Núria Galiana , Bernardo R. Broitman , Sonia Kéfi, Evie A. Wieters, and Sergio A. Navarrete

Study Description

In the associated study, we analyzed the structure of multiplex networks of ecological interactions (i.e., multiple interaction types) in rocky shore marine intertidal communities across ~970 km of shoreline in the coast of Chile (South Pacific). We searched for the mechanisms behind latitudinal changes in this structure focusing on variability in environmental conditions. We found that factors influencing productivity and environmental predictability constitute strong drivers of organization in these ecological networks. These effects are different across interaction types. Our research unveils the effects of the geographical variation of environmental factors on the structure of networks of ecological interactions with multiple interaction types.



Photo 1. A wave-exposed rocky shore study site showing sampling methodology used. Photo credits: Evie Wieters.



Photo 2. Marine rocky shore intertidal habitat. (Upper) A typical wave-exposed rocky intertidal shore in central Chile. (Lower) Close-up on rocky formation. Rock surface dominated by cover of diverse sessile organisms such as algae, mussels, and barnacles. Photo credit: Evie Wieters (upper panel) and Bernardo Broitman (lower panel).



Photo 3. Ecological interaction; competition. Competition for space can be strong in these intertidal communities, both among mollusks (upper) and algal (lower) species. Photo credits: Evie Wieters.



Photo 4. Ecological interaction; positive. In intertidal communities, some species provide habitat or shelter for others, as exemplified here by the kelp (*Lessonia spicata*) harboring multiple species of chitons and limpets. Photo credit: Bernardo Broitman.



Photo 5. Ecological interaction; trophic. On top of fierce competition, organisms living in intertidal communities are also exposed to strong predation, like the mussels, sea snails, limpets, and crabs consumed by the sunstar *Heliaster helianthus*. (Upper panel) Sunstars foraging on intertidal habitat (Lower panel) remains of prey found under an individual sunstar. Photo credit: Sergio Navarrete.

These photographs illustrate the article “Geographical variation of multiplex ecological networks in marine intertidal communities” by Miguel Lurgi, Núria Galiana, Bernardo R Broitman, Sonia Kéfi, Evie A Wieters and Sergio A Navarrete published in *Ecology*. <https://doi.org/10.1002/ecy.3165>.