

# Spatial and short-term variability of larval, post-larval and macrobenthic assemblages associated with subtidal kelp forest ecosystems in Central Chile.

Cita:

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## Abstract

Identifying patterns of spatial and temporal variability in the composition of communities associated with kelp forests is critical to understand the functioning of this productive, yet vulnerable ecosystem. We used a suite of sampling methods (light attraction and airlift devices) to evaluate the variability of larval, post-larval and macrobenthic assemblages associated with kelp forests (*Lessonia trabeculata*) in Central Chile (30° to 33°S). Pelagic collections identified two assemblages: early-life stages and emerging macrobenthos, with the later contributing three quarters to the total abundance regardless of the source of illumination (permanent or flashing). Field experiments showed that moon phases affected the structure and composition of the samples. Surveys carried out during new moon showed the highest abundances and taxonomic richness of emergent assemblages. However, species composition varied in both assemblages depending on the moon phase. Although the pelagic assemblages collected at sites with contrasting upwelling intensity did not show differences in community structure, differences in composition were evident for early-life stages. The relationship between pelagic and benthic collections indicated that four decapod crustaceans were represented at both larval and early juvenile stages; however, only the high abundances and densities of *Paraxanthus barbiger* allowed for estimations of benthic-pelagic coupling. For this species, larval abundances and benthic juvenile densities demonstrated contrasting local and regional patterns, suggesting a decoupling between pelagic and benthic environments. These findings highlight the differential variability in smaller components of kelp forests, but also suggest that post-settlement processes may be driving biological interactions through these highly productive and complex environments.