

# Variation and persistence of the middle rocky intertidal community of central Chile with and without human harvesting

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## **Abstract**

Humans are an important intertidal predator in central Chile. Following a five-year study we report on the effects of the exclusion of humans from the rocky intertidal at Las Cruces, central Chile. The middle intertidal of harvested and non-harvested areas diverged in species diversity and composition during the experiment. In harvested areas the middle intertidal rocky shore was dominated throughout the study by a monoculture of mussels, *Perumytilus purpuratus*. When humans were excluded, the middle intertidal community switched to one dominated by barnacles (predominantly *Jehlius cirratus* and *Chthamalus scabrosus*); this community has persisted for at least three years, despite the presence of forces e.g. mussel larvae, that have the potential to alter the community structure. Such changes were mediated by the muricid gastropod *Concholepas concholepas*, a key-stone predator. As a consequence of the above changes, the species diversity,  $H'$ , (primary space occupiers) in the non-harvested area increased from  $H'=0$  at the beginning of the study in 1983 (when the middle intertidal community was dominated by mussels), to values ca  $H'=2$  toward the middle of the study in 1984 (which coincided with the maximum predatory impact of *C. concholepas*) and subsequently decreasing to ca  $H'=0.5$  at the end of the study in 1987 (when the middle intertidal community was dominated by barnacles).

**Keywords** Community Structure, Species Diversity, Rocky Shore, Primary Space, Intertidal Community