

Effects of Human Exclusion on Parasitism in Intertidal Food Webs of Central Chile

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Abstract

Numerous ecological studies have demonstrated the dramatic effects that humans have on coastal marine ecosystems. Consequently, marine reserves have been established to preserve biodiversity. Recent reviews show that this strategy has paid off because inside reserves, most species have rapidly increased in size and abundance. Even though these studies focused on free-living organisms and paid little attention to parasite populations, numerous authors support the hypothesis that parasitism levels could be good indicators of ecosystem stability. We examined harvesting effects on the dynamics of a parasitic trematode (*Proctoeces lintoni*) that completes its life cycle in intertidal mussels (*Perumytilus purpuratus*), keyhole limpets (*Fissurella crassa*), and clingfish (*Sicyases sanguineus*). All of these species are directly or indirectly affected by humans. Prevalence and abundance of the trematode *P. lintoni* in the three host species were compared in four study sites that differed in the intensity of human harvest. Parasitism infection in limpets and mussels was significantly higher in areas protected from human harvesting than in open-access areas, which suggests a significant change in parasite dynamics inside reserves. Yet the average parasitic biomass found in the gonads of *F. crassa* did not differ between protected and open-access areas. These results show, then, that the parasite system responded by increasing infection rates in marine protected areas without implication for reproductive success of the intermediate host. Our findings show that the indirect effects of harvesting by humans on the embedded parasite communities of littoral ecosystems require further scientific investigation.