Effects of human trampling in the barnacle zone along a gradient of use
in Olympic National Park

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Abstract

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The impacts of human activities in coastal areas have been studied by researchers for many decades. Many recent studies have focused on the effects of trampling associated with coastal recreation. Studies show that trampling alters intertidal communities by reducing the cover of living flora and fauna and changing the abundance of common motile species. However, most research in this area has employed experimental trampling, the results of which have then been extrapolated to large stretches of publicly owned tidelands. Recommendations are then made for management of the shoreline.

In this paper I present a ranked-site analysis of the effects of human trampling in the upper-littoral barnacle zone on the shore of Olympic National Park, Washington. I used non-manipulative methods to describe biological effects of trampling along a gradient of visitor use. I found that barnacles are significantly smaller in areas that are accessible to foot traffic—a finding that has not been presented in the literature to date. Results do not show a statistically significant correlation between human visitation and changes in the cover and abundance of common intertidal species that are known to respond to trampling. This study supports the hypothesis that barnacle size can be used as an indicator of human trampling impacts. It also highlights the value of using experimentation to discern anthropogenic effects in naturally dynamic habitats.