



Rocky Intertidal Monitoring

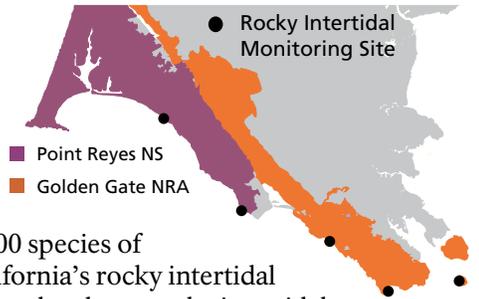
Golden Gate National
Recreation Area

Point Reyes National
Seashore

Resource Brief

Why is the Rocky Intertidal Zone Important?

The rocky intertidal zone, or the band of rocky shore covered up by the highest of tides and exposed by the lowest of tides, is an extraordinarily diverse and productive ecosystem. More than 1,000 species of invertebrates and algae live in Central California's rocky intertidal areas, and many more fish, birds and mammals rely on rocky intertidal species as a source of food. While rocky intertidal communities can withstand pounding surf and scorching sun, they are also highly sensitive to pollution, oil spills, invasive species and changing air and ocean temperatures. The National Park Service Inventory and Monitoring Program monitors rocky intertidal communities at five sites in Golden Gate National Recreation Area and Point Reyes National Seashore. Though rocky intertidal monitoring has taken place at some sites since 1989, a new monitoring protocol developed for the Multi-Agency Rocky Intertidal Network (MARINE) was adopted in 2006 to allow results to be directly compared to more than 100 other MARINE network sites.



Above: Colorful ochre stars are key predators in California's rocky intertidal zone and a focal species for rocky intertidal transect-based monitoring.

Below: Clockwise from the top left are a limpet, a turban snail, rockweed algae, and barnacle encrusted mussels. Mussels, barnacles, and algae, all stationary organisms, are monitored via photo plots that enable scientists to measure what percent of the plot they occupy. Motile invertebrates like snails and limpets are counted in subsections of each photo plot. Photos by Jessica Weinberg. Rockweed photo by the Rocky Intertidal Research Group, UCSC.



Why Do We Monitor Rocky Intertidal Communities?

- To detect population trends for select rocky intertidal organisms
- To detect trends at multiple scales—from site- and park-wide trends to regional patterns—by contributing this data to the larger MARINE monitoring network
- To better understand normal variations in rocky intertidal communities, and to identify abnormal changes such as overuse, disease spread or oil spill impacts

How Do We Use the Monitoring Data?

- To inform decisions about issues like coastal access, over-harvest, oil spill clean-up and endangered species (e.g. black abalone) recovery
- To study the effectiveness of California's new Marine Protected Areas
- To assess and forecast the effects of climate change on rocky intertidal species

What Have We Learned?

Trends have been variable among the five sites monitored in Golden Gate and Point Reyes, each of which have their own distinct species assemblages. The clearest trends have been observed at the Alcatraz site where rockweed and red algae have been steadily regaining lost ground in the aftermath of a 2007 oil spill.

For further details, visit: <http://www.sfnps.org/intertidal>.
Summary written by Jessica Weinberg, July 2013.

For More Information

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SF Bay Area National Parks Science and Learning
<http://www.sfnps.org/intertidal>

San Francisco Bay Area Network
<http://science.nature.nps.gov/im/units/sfan/>

