MARINe Rocky Intertidal Biological Monitoring

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www.MARINe.gov
MARINE is a Partnership of Agencies, Universities and Private Organizations
Our Mission is to monitor the rocky intertidal community on a long-term basis and provide this information to the public.
MARINE Status Highlights

- Core Monitoring
- Database
- Biodiversity Surveys
- Websites
- Cooperative Endeavors
- Education/Outreach/Policy
Types of MARINE Monitoring

- Core Surveys
- Biodiversity Surveys
- Other Surveys
  - Photo
  - Temperature
  - Motile invertebrates
  - Recruitment
  - Research studies
Northern California Monitoring Sites

- Biodiversity
- Core
- Core and Biodiversity

Map of Northern California monitoring sites, including locations such as Enderts Beach, Damnation Creek, False Klamath Cove, Cape Mendocino, Shelter Cove, and more. The map also highlights the Pacific Ocean and distance markers in kilometers.
Central California Monitoring Sites

- Biodiversity
- Core
- Core and Biodiversity

Pacific Ocean
Southern Channel Islands Monitoring Sites

- Biodiversity
- Core
- Core and Biodiversity

Map of monitoring sites in the Southern Channel Islands with labeled locations such as Santa Barbara Island, Sea Lion Rookery, Landing Cove, Little Harbor, Bird Rock, and Thousand Springs.
2008/2009 Core Monitoring

- 113 sites in California, Oregon, Washington; 9 Sites on East Coast (Maine, Massachusetts)
- 100 sites currently in MARINe Database
- 66 sites $\geq 10$yr; 19 sites $\geq 20$yr; 5 sites $= 28$yr
Core Surveys

- Targeted assemblages of invertebrates and algae are photographed, counted and/or measured. Examples include: black abalone, seastars, surfgrass, mussels, acorn barnacles, owl limpets, *Endocladia muricata*, and several other types of algae.
- Surveys are conducted at least once a year and are conducted fall and spring at most sites.
- Most Southern California sites have been sampled since the 1980’s or 1990’s.
2008/2009 Biodiversity Surveys

- 118 sites from Alaska to Mexico
- 76 of 113 Core sites w/ Biodiversity surveys
- Overall: 54 sites sampled twice
  18 sites sampled three times
- Biodiversity website: http://cbsurveys.ucsc.edu
Biodiversity Surveys

- Intended to allow extrapolation from core surveys to larger site.
- Provides documentation of rare species.
- Allows mapping of site to show how assemblages move across an area.
- Core team of highly trained biologists monitor all the sites; each site surveyed once every three or four years.
Intertidal Health: Human Impacts in Intertidal Communities

What is a healthy rocky intertidal community?
Natural disturbance vs human impacts?
How uniformly can ecologists classify disturbed/impacted communities based on survey data?

- Pollution
- Collecting
- Trampling

Data from various sources as summarized in Tenera (2003) and Ambrose and Smith (2005)
34 SoCal Mussel Watch Sites
15 at/near MARINe Sites
Areas of Special Biological Significance

34 Rocky Intertidal ASBS
23 with MARINe Sites
Black Abalone: Endangered Species!

*Haliotis cracherodii*. Densities and sizes of abalone.