



NATIONAL MARINE
SANCTUARIES™

TIDEPOOL PROTECTION

Action Plan Summary

MONTEREY BAY NATIONAL MARINE SANCTUARY

THE ISSUE:

Rich and diverse tidepool communities often intrigue and attract people visiting the Monterey Bay National Marine Sanctuary's (MBNMS) rocky shores. Although the extent of visitor impacts to sanctuary tidepools is not fully known, with visitation comes the potential for human disturbance.

BACKGROUND INFORMATION

OUR GOAL

The sanctuary's goal is to evaluate and reduce visitor impacts to tidepools.

Rocky shores make up about half of the sanctuary's shoreline, and are one of the richest, most variable environments in the ocean. At the rocky shore, water advances and retreats daily with the changing **tides**, making it alternately part of land and ocean – the **intertidal** zone. At low tide, the shore is exposed, leaving life to endure sun and drying conditions. With high tide, huge waves may roll in, pounding the shoreline with crashing surf.

Low tide at the rocky shore often attracts large numbers of human visitors.

At low tide, **tidepools** are accessible and seashore life is easy to find. Because the rocky shore is so accessible to humans, it is also vulnerable to their disturbance. Although the extent of visitor impacts to sanctuary tidepools is not fully known, public concern has been raised about disturbance in many areas including Fitzgerald Marine Reserve, Pigeon Point, Bean Hollow, Santa Cruz, Monterey, Pacific Grove, Pebble Beach, Big Sur, and Cambria.

Concerns raised in areas of high visitor traffic include trampling of resources, turn over of rocks, displacement of both living and nonliving resources, and collecting of intertidal species or shells that can provide habitat.



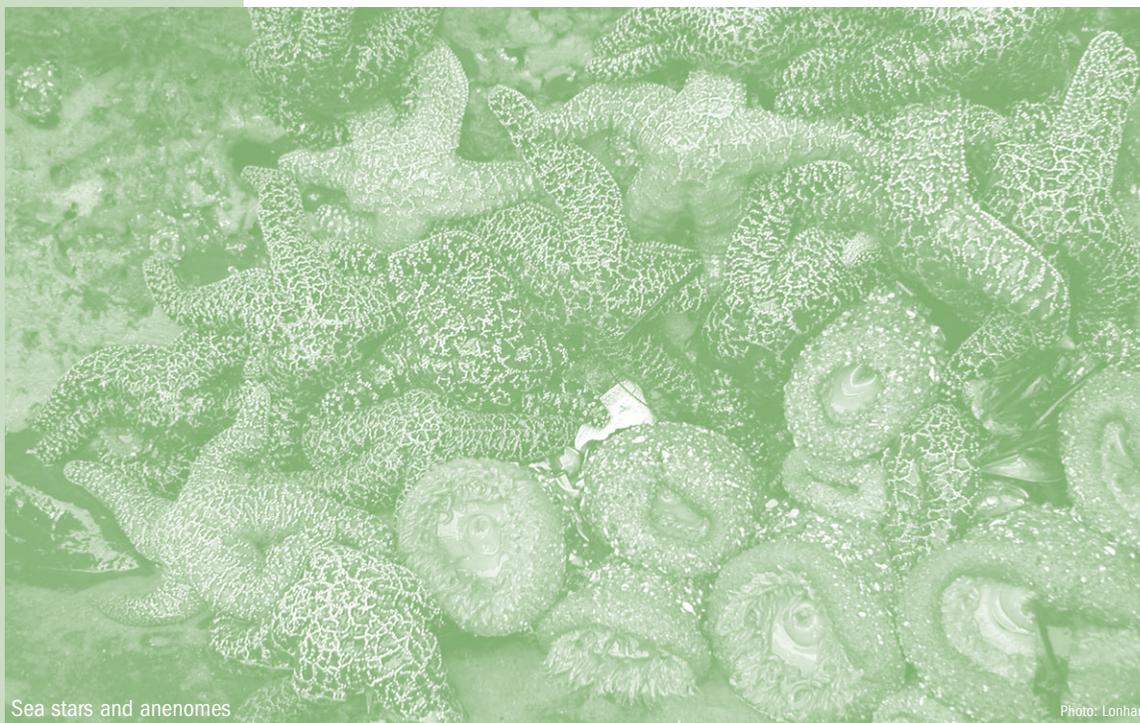
Monterey Bay rocky intertidal.

Concern about human impacts on tidepools ranges from trampling of natural resources, displacement of organisms or **substrate**, to collection of marine life, shells, or rocks. Trampling may occur if animals or **algae** are crushed, damaged, or dislodged. Disturbance may also take place if animals or rocks are moved from their original location. Collecting is the removal or “taking” of marine life. Large and more common organisms, like sea stars, are collected most often, since they are easily found. Some species are harvested purposely for human consumption including owl limpets, abalone, turban snails, and mussels.

Within the sanctuary, a monitoring study of eight intertidal sites from Monterey to Big Sur showed trampling, collecting, and other human impacts can lead to changes in species composition. Locations without restrictions on access or harvest showed decreased abundance of common species and increased abundance of rare species compared to sites with restricted access and effective enforcement.

Studies at Fitzgerald Marine Reserve in San Mateo County showed increased **diversity** of marine life at small rocky shore areas protected from human impact. In addition, many typical animal and algae species decreased in abundance or were absent from the unprotected part of Moss Beach Reef, the most heavily visited portion of the reserve. Also, **invertebrate** populations increased during fall and winter when high tides and bad weather reduce visitation at the reserve.

An intertidal study at Point Pinos in Pacific Grove found trampling by visitors most likely caused lower coverage of some types of algae in the upper intertidal zone and around the edges of tidepools. Besides trampling, disturbing, or collecting marine life, other human activities may impact sanctuary tidepools, including polluted **runoff**, trash, **coastal armoring**, landslide disposal, small boat groundings, and behavioral disturbance of marine mammals.



Sea stars and anemones

Photo: Lonhart

A mandate of the National Marine Sanctuaries Act is to “maintain natural biological communities” in our nation’s marine sanctuaries, and “to protect, and, where appropriate, restore and enhance natural habitats, populations, and ecological processes.” Human impacts that could harm sanctuary rocky shores are a concern. Most tidepool locations in the sanctuary lack effective monitoring, enforcement, or education programs to minimize human impacts.

THE SANCTUARY'S ACTION PLAN

The sanctuary's "Tidepool Protection Action Plan" was developed jointly with a variety of stakeholders and partners and includes, but is not limited to, the following components:

- Evaluating the issue more comprehensively
- Developing education and outreach programs
- Strengthening enforcement efforts
- Improving tracking and evaluation of take (marine life collecting)
- Considering limited use in selected locations
- Evaluating the effectiveness of tidepool management efforts
- Identifying partnership and funding opportunities
- Addressing the full range of human activities which may impact tidepools



Students and parents explore tidepools with sanctuary staff.

Photo: K. Maupin

GLOSSARY

Algae: Any of chiefly aquatic nonvascular plants with chlorophyll, includes the seaweeds.

Coastal Armoring: Shoreline protective structures, like seawalls, installed in an attempt to protect private and public structures from the forces of coastal erosion.

Community: All the animals and plants living in a specific area.

Diversity: The number of different species inhabiting a particular area.

Intertidal: The area of shore between the highest and lowest tides.

Invertebrate: An animal without a backbone or spinal column.

Runoff: Water drained from the land and entering creeks, streams, rivers, or the ocean.

Substrate: The material on or in which an organism lives.

Tidepool: A pool of water left along the shore as the tidal level falls.

Tides: The daily rise and fall of sea level along the shore.

For a complete listing of the sanctuary's "Tidepool Protection Action Plan" please visit http://sanctuaries.nos.noaa.gov/jointplan/m_reptoad.html and scroll down the page.

The Joint Management Plan Review (JMPR)

"Tidepool Protection" is one of the action plans in the Monterey Bay National Marine Sanctuary Draft Management Plan. The MBNMS Draft Management Plan includes twenty-eight plans that, once finalized, will guide sanctuary management for the next five years. The plan is a revision of the original management plan, adopted with sanctuary designation in 1992, and is focused on how to best understand and protect the sanctuary's resources.

The National Marine Sanctuary Program (NMS) is updating the management plans for the Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries in a process known as the Joint Management Plan Review (JMPR).



Some Simple Things You Can Do To Reduce Impacts When Visiting Tidepools

If you visit the rocky shore, please do your part to preserve this special community! Intertidal creatures can survive extreme environmental conditions, but not human carelessness.

Below are some ways you can help care for tidepool life:

Learn before you go. To get the most from your experience, learn about tidepools before you go. Check on locations, regulations and tides, and use the internet or field guides to help you learn about seashore life.

Step lightly. Most rocks are covered with living animals and plants. Step carefully to avoid crushing animals or plants.

Look closely. Sit quietly and watch for a few minutes. You'll see and learn much more this way.

Touch gently. If you touch an animal or plant, touch it gently.

Take only pictures and memories. Strict laws govern the collecting of intertidal life. Enjoy seashore life in its natural environment and leave the plants and animals exactly as you found them.

Share your knowledge with others. Speak up if you notice other visitors behaving in a way that disturbs tidepool life.

How You Can Get Involved in the MBNMS Management Plan Process

The MBNMS welcomes your ideas about important resource management issues in the sanctuary. A Draft Management Plan and Draft Environmental Impact Statement are scheduled for release to the public in 2006. Following their release, hearings will be held in several locations throughout the region to gather public comment. Written comments will be accepted as well. To find out about public hearings, or how to submit written comments, please visit our website at <http://www.sanctuaries.nos.noaa.gov/jointplan>.

Resources

California Tidepools (Rocky Shores) <http://www.biosbcc.net/ocean/marinesci/03ecology/tpindex.htm>
Monterey Bay National Marine Sanctuary <http://montereybay.noaa.gov>
Monterey Bay National Marine Sanctuary: Rocky Shores <http://montereybay.noaa.gov/sitechar/rocky.html>
NOAA's Tides Online <http://co-ops.nos.noaa.gov/tides06>
Rocky-shore Community Variation Along Natural and Anthropogenic Gradients of Disturbance http://www.mbnms-simon.org/sections/rockyShores/project_info.php?pid=100181&sec=rs
Sanctuary Integrated Monitoring Network (SIMoN): Rocky Shores <http://www.mbnms-simon.org/sections/rockyShores/overview.php?.sec=rs>
Tenere Environmental: A Comparative Intertidal Study and User Survey, Point Pinos, California http://www.mbnms-simon.org/sections/rockyShores/project_info.php?pid=100183&sec=rs

THE MONTEREY BAY NATIONAL MARINE SANCTUARY

Stretching from Marin to Cambria, the Monterey Bay National Marine Sanctuary encompasses 276 miles of shoreline and 5,322 square miles (4,625 nautical miles) of ocean, extending an average distance of 30 miles from shore. At its deepest point, the sanctuary reaches down 10,663 feet (more than two miles). The sanctuary was established for the purposes of resource protection, research, education, and public use. Its natural resources include one of our nation's largest kelp forests and one of North America's largest underwater canyons. It is home to one of the most diverse marine ecosystems in the world, including 33 marine mammal species, 94 seabird species, 345 fish species, and numerous invertebrates and plants. This remarkably productive marine environment is fringed by spectacular coastal scenery, including sandy beaches, rocky cliffs, rolling hills, and steep mountains.

