Olympic Coast National Marine Sanctuary

Marine Mammal and Seabird Characterization

Management Issue

Distribution patterns and population dynamics of marine mammals and seabirds in the Olympic Coast National Marine Sanctuary (OCNMS or Sanctuary) can provide insight into ecosystem function since many are top level predators and some are listed species.

Description

Marine mammals and seabirds thrive off the Olympic Coast, where strong seasonal upwelling of nutrient rich waters promotes high primary productivity. Long-term monitoring of these populations is essential as they are integral to understanding ecosystem function and trophic dynamics. OCNMS researchers and collaborators also characterize the diversity, abundances, and health of marine mammals and seabirds to correlate habitat use patterns with changing oceanographic conditions.

Lunge-feeding humpback whales in OCNMS: Photo Credit: OCNMS

Twenty-nine species of marine mammals have been sighted in the Sanctuary, including eight species listed under the Endangered Species Act. Humpback and killer whales are seasonal foragers in the sanctuary. Gray whales travel through the Sanctuary along their annual migration route, with some lingering for foraging opportunities. Sea otters forage in nearshore waters and rest among kelp beds, while harbor seals and Steller and California sea lions haul out on coastal islands throughout much of the year when not foraging offshore.

Birds are one of the most conspicuous members of the coastal fauna. Over 90 bird species use the Sanctuary during their breeding, foraging or migrating seasons. Sea stacks and islands provide critical nesting habitat for 19 species of seabirds, raptors and shorebirds. Productive offshore waters provide food that attracts large aggregations of seabirds, many that breed in other regions of the world but travel great distances to feed in sanctuary waters. Beaches furnish foraging areas for shorebirds, while eagles, gulls and a host of other birds frequent nearshore waters. The sanctuary's coastline forms an important migratory pathway for millions of birds transiting to northern breeding areas during the spring and southward as winter approaches.

Questions and Information Needs

1) What are the distribution, abundance, diversity and seasonality patterns of marine mammals and seabirds throughout sanctuary habitats?

2) How will marine mammal and seabird populations be affected by climate change in terms of upwelling patterns, water temperature and food web alterations?

3) Are current monitoring efforts and frequency sufficient to assess long-term trends in distribution and abundance patterns?

4) Have we selected the best key indicator species to monitor?

Black-footed albatross. Photo credit OCNMS.

Scientific Approach and Actions

- Conduct vessel based visual surveys for both marine mammals and seabirds along established track lines, including oceanographic measurements and trophic investigations.
- Determine frequency of survey efforts, both nearshore and offshore, to detect significant changes in distribution and abundance patterns.
- Conduct annual sea otter surveys for long-term monitoring of total population and distribution patterns.
- Ensure that resource partners and/or OCNMS conduct annual seabird colony surveys and pinniped haul-out counts to assess long-term trends in population structure.
- Conduct monthly beach surveys to inventory 'normal' seabird mortality rates as part of the Coastal Observation and Seabird Survey Team (COASST), a long-term monitoring program of volunteers and staff.

Potential Key Partners and Information Sources

Washington Department of Fish and Wildlife, NOAA Northwest Fisheries Science Center, U.S. Fish and Wildlife Service, Olympic National Park, Cascadia Research Collective, COASST, Biological Resources Division of USGS, University of Washington, Scripps Institution of Oceanography and The Seattle Aquarium.

Management Support Products

- Associated GIS layers to map and overlay marine mammal and seabird abundance with physical oceanographic features such as upwelling fronts, sea surface temperatures and mesoscale eddies.

Planned Use of Products and Actions

- Monitoring key indicator species will help assess long-term ecosystem health, especially in light of climate change.
- Monitoring species most at-risk from a future catastrophic oil spill, such as sea otters and certain seabirds, will assist in determining risk factors and planning for adequate response.

Ship-based surveys for pelagic marine mammals and seabirds. Photo Credit: OCNMS

Program References

OCNMS Management Plan

- 1994 Management Plan: Research (III) 1&2, baseline research & monitoring
- 2008 Management Plan Review: Priority Topics C & E
- http://olympiccoast.noaa.gov/protection/mpr/mpr_prioritytopics.html

OCNMS Condition Report

- Questions 9 - 14

ONMS Performance Measures

- By 2015, 100% of the sanctuary system is adequately characterized.

Other Documents

- OCNMS Science Framework, 2003 *(http://olympiccoast.noaa.gov/research/interested/welcome.html)*