National Park Service
U.S. Department of the Interior
Pacific Coast Science and Learning Center
Research Project Summary May 2007

Harbor Seal Monitoring at Point Reyes National Seashore and Golden Gate National Recreation Area

The Question: *What information does monitoring of harbor seals at Point Reyes National Seashore and Golden Gate Recreation Area provide the parks?*

Harbor seals (*Phoca vitulina*) have been monitored at Point Reyes National Seashore (PORE) and Golden Gate Recreation Area (GOGA) for 30 years, often with the help of dedicated volunteers. Harbor seals are one of 30-plus marine mammals documented at PORE, but they are the only marine mammal to live at PORE year-round. Because harbor seals are top predators in the marine food web and their populations respond to changes in oceanography, they are an excellent indicator of marine ecosystem condition. Twenty percent of the harbor seal population of mainland California resides at PORE, an estimated 7,000 seals.

At Point Reyes National Seashore, harbor seal pups are born from March through June. Surveys are done more frequently during these months to monitor how the numbers of seals change weekly and annually.

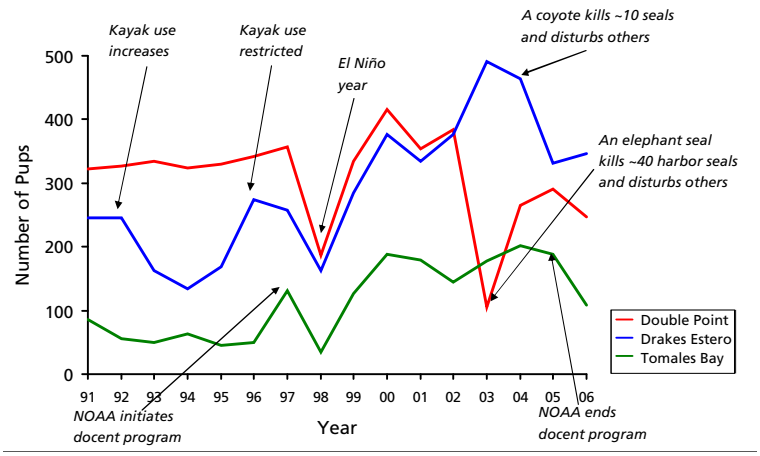
Scientists closely observe the seals within the park, but visitors also enthusiastically watch them. Visitors can easily see harbor seals from many lookouts and beaches, and the seals attract the attention of hikers and boaters. Unfortunately, visitors sometimes alarm harbor seals resting onshore, causing them to flush into the water. Pups that flush into the water can become separated from their mothers and lose essential nursing time to build up blubber. The information gained from monitoring seal response to park visitors guides managers trying to protect seals and their habitats.

The Project: *Monitor the numbers of seals and their pups within Point Reyes National Seashore and Golden Gate National Recreation Area. Also, record human disturbances.*

Volunteer biologists stand above the beach to count the number of seals resting below. They view the seals through binoculars to let seals rest without being disturbed.

Volunteer biologists monitor seal numbers at several sites where seals rest within and adjacent to PORE and GOGA, from Tomales Bay to Point Bonita. They also record the number of pups born and mortality of any age class. Counts are conducted at low-medium tides to maximize the number of seals that are hauled out onshore to rest, give birth and nurse. Surveyors also record any human disturbances that affect or have the potential to affect the seals, noting the source and seal reaction.

Survey frequency increases when the seals are pupping and molting (March through July) from two surveys per month to two surveys per week. Data are summarized in annual and five-year reports.



The harbor seal pup population is sensitive to human disturbance, climate variability and interactions with other species. Different management approaches also affect the seal population.

Preliminary Results: *Harbor seal colonies are stable, but vulnerable to human disturbance and climate change.*

The harbor seal population at PORE has increased over the past 30 years. However over the past few years, the population has stabilized and may be at carrying capacity for haul-out space and/or food availability. The 2006 pup count was 6% lower than 2005, but still within the normal range of variation for the past 10 years. Humans on foot were the primary cause of 21% of all disturbances, non-motor boats were 13%, and motor boats were 11%. The park has adaptively managed seal colonies by restricting human activity in places where disturbances prevented seals from resting onshore. Boating, for example, is restricted from March through June in Drakes Estero to protect pupping seals.

Harbor seals are also sensitive to changes in oceanography and rising sea levels. Future climate change may dramatically alter the number of seals and the location of their colonies if predictions are fulfilled. During the past 30 years, monitoring at PORE has documented how several El Niño events, including the largest one ever recorded in 1998, negatively affected seal numbers and productivity. Global climate change models predict that El Niño events will increase in number and intensity, which could reduce food for seals. Global climate change may also cause sea level to rise. Changes to the shoreline of the Point Reyes peninsula will leave fewer available haul-out sites for seals to pup, molt and rest. Monitoring harbor seals at PORE and GOGA will be crucial for understanding the global implications of future climate change on the marine ecosystem.

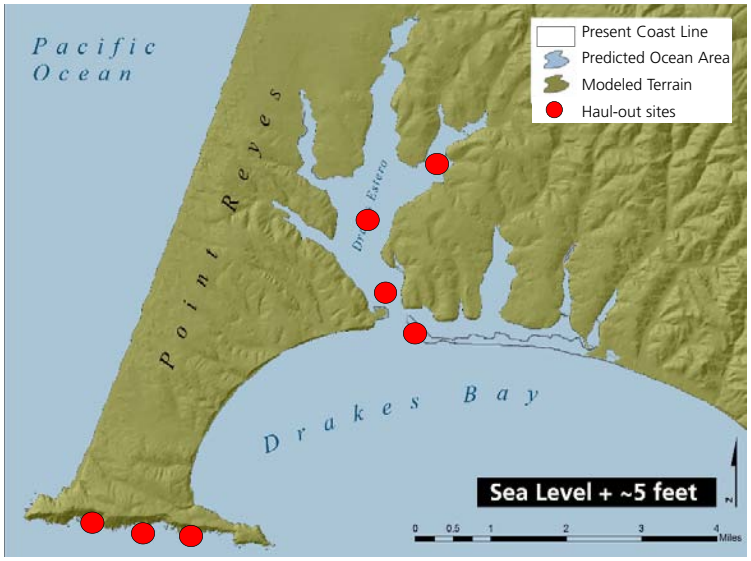
Additional Resources:

National Park Service Inventory and Monitoring, Harbor Seal Updates
http://www1.nature.nps.gov/im/units/sfan/vital_signs/Harbor%20Seals/Harbor%20Seals.cfm

For More Information:

Marcus Koenen, Inventory and Monitoring Coordinator, National Park Service, San Francisco Bay Area Network, Fort Cronkhite Bldg. 1063, Sausalito, CA 94965. Marcus_Koenen@nps.gov

Sarah Allen, Senior Science Advisor, Point Reyes National Seashore, Point Reyes, CA 94956. Sarah_Allen@nps.gov



A 2007 Intergovernmental Panel onl Climate Change report estimated than sea level will rise between 0.6 feet and 2 feet by 2100. If sea level was to rise by 5 feet, the ocean would submerge beach pockets nestled against cliff-faces where harbor seals haul out to rest, give birth, nurse and molt.