National Park Service
U.S. Department of the Interior
San Francisco Bay Area Network
Research Project Summary August 2010

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. Of the 30-plus marine mammals known to live at PORE, harbor seals are the only year-round residents, and with an estimated 7,000 individuals, the park is home to 20% of mainland California's harbor seal population. These key marine predators are very sensitive to changes in their environment and so monitoring harbor seals can provide insight into the status and condition of the larger marine ecosystem.



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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.

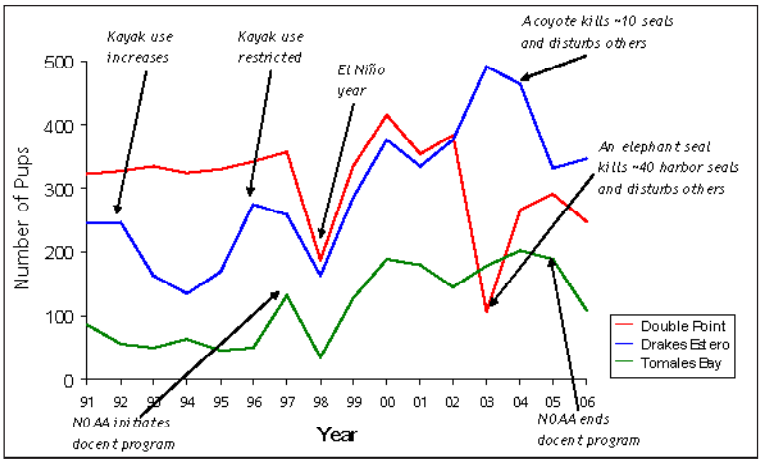
During the pupping and molting seasons the seals congregate en masse on the beaches of PORE often attracting the attention of visitors who can easily see them from lookouts and beaches. Unfortunately, visitors can sometimes alarm harbor seals resting onshore, causing them to flush into the water. When pups flush like this they risk becoming separated from their mothers and lose nursing time essential to building up blubber. The information gained from monitoring the seals' response to park visitors helps managers connect visitors to the resource while still protecting the seals and their habitat.



Volunteer biologists count the number of seals resting below using binoculars to let seals rest without being disturbed.

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 "citizen scientists" monitor seal numbers at several resting sites within and adjacent to PORE and GOGA from Tomales Bay to Point Bonita. They also record the number of pups born and mortality of seals of any age. 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



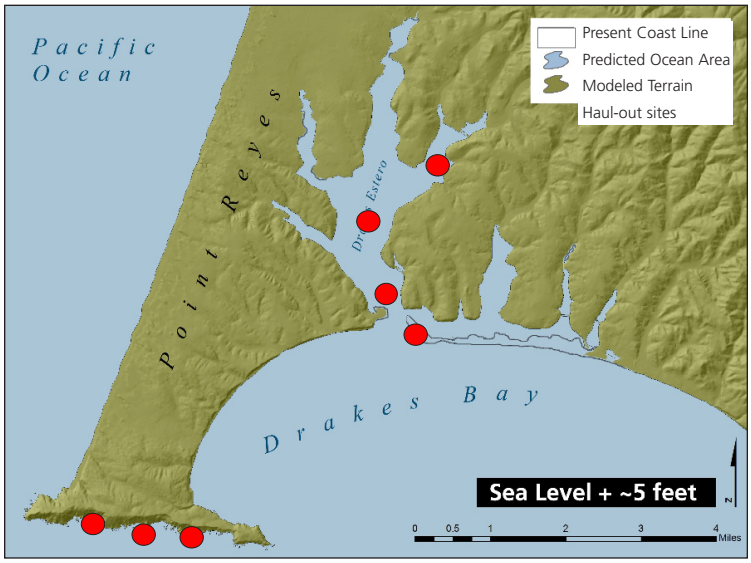
The harbor seal pup population is sensitive to human disturbance, climate variability and interactions with other species. Different management approaches also affect the seal population.

seals, noting the source and seal reaction. In the pupping and molting seasons (March through July) survey frequency increases from two surveys a month to two surveys a week. Data from these surveys is summarized in annual and five-year reports.

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 last 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. Although the 2009 pup count was the third lowest in the last 10 years, it was still within the normal range of variation. Most of the disturbances (28%) were attributed to unknown sources. Humans on foot were responsible for 23% of the disturbances and another 22% of disturbances were from motor boats. These results have helped the park to adaptively manage seal colonies by restricting human activity in places where disturbances prevented seals from resting onshore. Boating, for example, is now 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. 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. Global climate change models predict that El Niño events will increase in number and intensity, which could reduce food for seals. Although the 2010 data has not yet been published, it seems as if the effect of this year's El Niño was not as great as that of the 1998 event. Global climate change may also cause a rise in sea level, changing the shoreline and reducing the number of haul-out sites for seals to pup, molt, and rest. Continued monitoring harbor seals at PORE and GOGA will be important for understanding the implications of future climate change on the marine ecosystem.



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.

Additional Resources:

National Park Service Inventory and Monitoring, Harbor Seal Updates http://science.nature.nps.gov/im/units/sfan/vital_signs/pinnipeds/HarborSeals.cfm

For More Information:

Marcus Koenen, SFAN Inventory and Monitoring Coordinator, Marcus_Koenen@nps.gov or Sarah Allen, Senior Science Advisor, Point Reyes National Seashore, Sarah_Allen@nps.gov.