

# NOAA Fisheries Service

## Alaska Fisheries Science Center

### Steller Sea Lion

*Eumetopias jubatus*

- Length** 2.7 m (9 ft) male  
2.1 m (7 ft) female\*
- Weight** 680 kg (1500 lbs) males  
272 kg (600 lbs) females\*
- Age** 18 males, 30 females\*\*  
\*average  
\*\*maximum



Protecting  
Conserving  
Managing  
Marine Resources  
in  
Alaska

The Alaska Fisheries Science Center is a scientific research organization responsible for the development and implementation of NOAA's scientific research on marine resources in Alaska waters. Our research focuses on more than 250 fish and 42 marine mammal stocks off the coasts of the Bering Sea, Gulf of Alaska and Aleutian Islands.



National Marine Fisheries Service  
National Oceanic and Atmospheric Administration  
U.S. Department of Commerce

#### Range/Habitat

Steller sea lions range throughout the North Pacific Ocean Rim from northern Japan to northern California. This area includes the Kuril Islands, Kamchatka Peninsula and Sea of Okhotsk (in Russia), the Aleutian Islands, Bering Sea, and southern coast of Alaska, British Columbia, Washington, Oregon and northern California. On shore, Steller sea lions congregate on traditionally-used haul-out and rookery (for breeding and pupping) sites on a variety of surfaces from sandy beaches to rock ledges on islands, offshore rocks, or isolated mainland locations. Some sites are utilized year-round, while others are seasonal. The northernmost rookery is on Seal Rocks near the entrance to Prince William Sound, Alaska, and the southernmost rookery is on Año Nuevo Island off the central California coast. The largest rookeries were formerly in the Aleutian Islands and northern Gulf of Alaska, but are now in Southeast Alaska and British Columbia due to declines in the western Alaska population which began in the 1970s. No rookeries exist in Washington State. At sea, Steller sea lions travel and forage over continental shelf waters, but also occasionally over deep-ocean basin habitats. Steller sea lions do not undertake large migrations, though long-distance movements have been recorded and seasonal movements are common regionally in response to shifting prey availability and weather patterns.

#### Diet/ Role in Ecosystem

Steller sea lions are top-level carnivores that consume a wide variety of fish and cephalopods including commercially important species of fish such as walleye pollock, Atka mackerel, Pacific cod, salmon, flatfishes, sculpins, Pacific hake, Pacific herring, sand lance, and eulachon, while cephalopods in the diet include squid and octopus. Diet composition varies seasonally and geographically and capitalizes on abundant prey species.

#### Reproduction

Steller sea lions are a sexually dimorphic (breeding-age males are much larger than females) polygamous (males breed with multiple females) species that gather seasonally on rookeries to pup and breed. Adult males begin defending territories on rookeries in May prior to arrival of females, who give birth to a single pup (twins are very rare) from late-May to mid-July. Breeding occurs within 2 weeks after pups are born, but gestation does not begin until October. Pups remain on rookeries during maternal foraging trips until a few months old, when pups may leave rookeries with their moms to other haul-out sites presumably closer to food resources. Pups are suckled for at least a year, but may not be completely weaned until 2-3 years of age.



## Population

The Steller sea lion is comprised of at least two genetically distinct stocks: a western stock that breeds on rookeries located in Alaska west of 144°W longitude and Asia (though recent genetic analysis supports separating Asia and the western Aleutian Islands as a third stock), and an eastern stock whose breeding range spans from Southeast Alaska to California. Steller sea lion populations are monitored primarily using oblique 35mm, vertical medium-format or vertical high resolution digital images collected from aerial surveys during the summer reproductive period. Depending on the survey timing, pups or non-pups are the primary target for counting. In Alaska, aerial surveys for pups and non-pups are ideally flown in alternating years. The western stock was estimated to be 220,000-265,000 animals in the late 1970s, but declined over 80% to less than 50,000 animals in 2000. The western stock in Alaska increased at about 3% per year between 2000 and 2004, but in subsequent years (2004-2007) may have stabilized. In contrast, the eastern stock steadily increased at about 3-4% per year between the late 1970s and 2002, when it was estimated to number between 46,000-58,000 sea lions.

## Research

AFSC Steller sea lion studies focus on monitoring population trends, estimating survival and reproductive rates, measuring foraging behavior and diet composition, and assessing health and condition. Activities in 2007 included an aerial survey in collaboration with the Southwest Fisheries Science Center to count juvenile and adult sea lion numbers in Alaska, and evaluate photographic formats. During two cruises in the Eastern Aleutian Island through Eastern Gulf of Alaska areas observations were made of sea lions permanently marked as pups to estimate survival and reproductive rates, and to collect scats for diet analysis. For the first time since 2002, rookeries were visited in the western Aleutian Islands to measure pup health and growth for comparison with other areas. Because there are many issues to study with Steller sea lions and because they range widely in remote locations, AFSC collaborates with scientists from universities and federal and state government institutions from around the world, and also with Alaska Native co-management organizations.

## Management

Estimates of population trends and abundance are considered in annual reviews of Steller sea lion Stock Assessment Reports to compare with estimates of human-caused mortality. Information on population trends, vital rates, foraging biology, and diet are considered in evaluating potential impacts of commercial fisheries and fishery management actions through U.S. Endangered Species Act consultations and National Environmental Policy Act environmental impact assessments.

## Issues

The western stock is listed as endangered, and the eastern stock as threatened species under the U.S. Endangered Species Act. Factors causing the decline and limiting recovery of Steller sea lion populations in Alaska are not well understood, and thus the effectiveness of fisheries management measures intending to mitigate potential impacts of prey removal is not well-quantified. Continued monitoring of population status, diet, and foraging behavior, and improved understanding of the effects of fisheries, oceanographic and climate conditions on foraging success and vital rates are needed to effectively conserve this species, and to evaluate among multiple hypotheses for the lack of population recovery.

### For more information

#### Species information

[http://www.afsc.noaa.gov/nmml/species/species\\_ringed.php](http://www.afsc.noaa.gov/nmml/species/species_ringed.php)

#### Research at AFSC:

[http://www.afsc.noaa.gov/nmml/species/species\\_ringed.php#research](http://www.afsc.noaa.gov/nmml/species/species_ringed.php#research)

#### Management:

<http://www.fakr.noaa.gov/protectedresources/seals/ice.htm>

*Photo credit:* Lowell Fritz and NOAA Fisheries

### Questions or Comments?

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