

Steller sea lion, western DPS

Class: Mammalia
Order: Carnivora

Eumetopias jubatus pop. 1

Note: In Alaska, the Steller sea lion is divided into two Distinct Population Segments (DPS): eastern and western. This assessment focuses on the western DPS, which includes all animals from rookeries west of Cape Suckling (144°W).

Review Status: Peer-reviewed

Version Date: 05 April 2018

Conservation Status

NatureServe: Agency:

G Rank: G3 ADF&G: Species of Greatest Conservation Need IUCN: Near Threatened Audubon AK:

S Rank: S3 USFWS: Listed Endangered BLM:

Final Rank		
Conservation category: VII. Yellow		
low status and either high biological vulnerability or high action need		
<u>Category</u>	<u>Range</u>	<u>Score</u>
Status	-20 to 20	6
Biological	-50 to 50	-16
Action	-40 to 40	0
Higher numerical scores denote greater concern		

Status - variables measure the trend in a taxon’s population status or distribution. Higher status scores denote taxa with known declining trends. Status scores range from -20 (increasing) to 20 (decreasing).

Score

Population Trend in Alaska (-10 to 10)

4

Experienced important declines from the late 1970s to 2003 (Fritz et al. 2016; Muto et al. 2019). Counts of pups and non-pups have increased from 2002 to 2017, though some regions, such as the western Aleutians, are still decreasing (Fritz et al. 2016; Muto et al. 2019). To take these regional differences into account, we have ranked this question as $0.5 * B + 0.5 * C$.

Distribution Trend in Alaska (-10 to 10)

2

Current distribution is likely stable, but the population experienced historical extirpations due to overhunting. For example, at the beginning of the 20th century, colonies occurred on several of the Pribilof Islands, but only one (Walrus Island) is still active today (Loughlin et al. 1984).

Status Total: 6

Biological - variables measure aspects of a taxon’s distribution, abundance and life history. Higher biological scores suggest greater vulnerability to extirpation. Biological scores range from -50 (least vulnerable) to 50 (most vulnerable).

Score

Population Size in Alaska (-10 to 10)

-10

>25,000. Minimum adult population size is estimated at 42,315 (Muto et al. 2019).

<i>Range Size in Alaska (-10 to 10)</i>	-8
The western DPS ranges from Cape Suckling in the Gulf of Alaska (144°W), west to the Aleutian Islands and north to the Bering Strait (NMFS 2008b). During pup-rearing and breeding, restricted to terrestrial rookeries and nearshore foraging areas. Including a 20 nautical-mile buffer around rookeries (as per critical habitat designation; Federal Register 1993b), range size is estimated to be between 100,000 and 400,000 sq. km.	
<i>Population Concentration in Alaska (-10 to 10)</i>	-6
During breeding and pup-rearing, Steller sea lions aggregate on land at sites known as rookeries. Sea lion tends to return to the same rookeries every year (Federal Register 1993b). Thirty-eight rookeries have been identified for the western DPS in Alaska (NMFS 2008b).	
<i>Reproductive Potential in Alaska</i>	
<u>Age of First Reproduction (-5 to 5)</u>	1
Age of first reproduction for females is between 3 to 8 years old (Pitcher and Calkins 1981).	
<u>Number of Young (-5 to 5)</u>	5
Females give birth to one pup per year. Pitcher and Calkins (1981) estimated that the annual birth rate for adult females was ~63%.	
<i>Ecological Specialization in Alaska</i>	
<u>Dietary (-5 to 5)</u>	1
Feeds on over 100 species of fish and invertebrates, including pollock, sand lance, mackerel, herring, polychaete worms, and cephalopods (Sinclair and Zeppelin 2002; Call and Loughlin 2005; McKenzie and Wynne 2008; Tollit et al. 2017; Sinclair et al. 2019). Diet changes regionally and seasonally in response to the timing and distribution of prey aggregations (Sinclair et al. 2019). Despite this broad diet, Steller sea lion have a relatively specialized dietary niche and target prey items at specific age classes or seasons when they exhibit certain characteristics (Sinclair et al. 2019). Nearly all prey items consumed exhibit seasonal migrations or concentrations near the bottom of the water column and are associated with specific features of the continental shelf (see Discussion in Sinclair et al. 2019). Given this specificity, we rank this question as B- Moderately adaptable.	
<u>Habitat (-5 to 5)</u>	1
When at sea, Steller sea lion use both coastal and offshore waters, and are most often found on the continental shelf (NMFS 2008b). They use terrestrial habitats as haul-out, rafting sites, and rookeries (breeding colonies). Rookeries in Alaska are almost exclusively located on remote island beaches that are exposed to waves and have rock or cobble substrates (Call and Loughlin 2005; Ban and Trites 2007; NMFS 2008b). Sea lions exhibit strong site fidelity to these rookeries, suggesting some degree of habitat specialization.	
Biological Total:	-16

Action - variables measure current state of knowledge or extent of conservation efforts directed toward a given taxon. Higher action scores denote greater information needs due of lack of knowledge or conservation action. Action scores range from -40 (lower needs) to 40 (greater needs).

Score

<i>Management Plans and Regulations in Alaska (-10 to 10)</i>	-10
Protected by the Marine Mammal Protection Act and the Endangered Species Act. Subsistence harvest is permitted and subject to regulations (NMFS 2008b). A recovery plan is in place for this DPS (NMFS 2008b).	

Knowledge of Distribution and Habitat in Alaska (-10 to 10) 2

The use, distribution, and habitat characteristics of major haul-outs and rookeries has been documented (Loughlin et al. 1984; Federal Register 1993b; Call and Loughlin 2005; Ban and Trites 2007; NMFS 2008b; Jemison et al. 2018). In addition, there is some information on the distribution and characteristics of foraging grounds at sea (e.g. Fadely et al. 2005; Sinclair et al. 2005; Lander et al. 2009; Lander et al. 2011). However, although we have substantial telemetry data for juvenile age classes in some regions of Alaska, in most regions we have relatively little telemetry data for adult age classes (but see Jemison et al. 2018). Additional survey efforts are needed to determine prey concentrations and habitat associations, especially of older age classes.

Knowledge of Population Trends in Alaska (-10 to 10) -2

Counts are conducted throughout the range of the western DPS every one or two years (NMFS 2008b) and analysis of long-term data provides some measure of population trends (Fritz et al. 2016). However, reliable population estimates cannot be calculated because detection rates and vital rates are unavailable (see Population Size in Muto et al. 2019).

Knowledge of Factors Limiting Populations in Alaska (-10 to 10) 10

Although there is relatively good understanding of population parameters across most of the western DPS (e.g. Pitcher and Calkins 1981; Pendleton et al. 2006; Winship and Trites 2006; reviewed in NMFB 2008b), there is no consensus about the factors that contributed to their recent (1970-2000) decline and that are impeding their recovery (NMFB 2008b). Several hypotheses have been proposed, including human-caused mortality, predation from killer whales, environmental contamination, and declining food availability (reviewed in Atkinson et al. 2008; DeMaster et al. 2006; Trites et al. 2007a; NMFB 2008b; Maschner et al. 2014). Subsistence harvest and competition with fisheries are not believed to be a current concern (Atkinson et al. 2008; Hui et al. 2015; Conn et al. 2014b; Muto et al. 2019), though the latter may have been an issue in the past (Hennen 2006). Other anthropogenic causes of mortality (by-catch, commercial and illegal hunting) are not considered significant factors explaining current or historic population declines (DeMaster et al. 2006; Maschner et al. 2014; Muto et al. 2019). Additional research is needed to determine the role of disease on population health (Esquible 2018).

Action Total: 0

Supplemental Information - variables do not receive numerical scores. Instead, they are used to sort taxa to answer specific biological or management questions.

Harvest:	Not substantial
Seasonal Occurrence:	Year-round
Taxonomic Significance:	Monotypic genus
% Global Range in Alaska:	>10%
% Global Population in Alaska:	25-74%
Peripheral:	No

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