

Bearded seal

Class: Mammalia

Order: Carnivora

Erignathus barbatus nauticus

Note: Only one subspecies of bearded seal occurs in Alaska: *Erignathus barbatus nauticus*. *E. b. nauticus* is managed as two Distinct Population Segments (DPS); only the Beringia DPS occurs in Alaskan waters and is the focus of this assessment.

Review Status: Peer-reviewed**Version Date:** 12 March 2018**Conservation Status***NatureServe:**Agency:*

G Rank: G4G5

ADF&G: Species of Greatest Conservation Need

IUCN: Least Concern

Audubon AK:

S Rank: S4

USFWS: Listed Threatened

BLM:

Final Rank		
Conservation category: III. Orange		
high status and low biological vulnerability and action need		
<u>Category</u>	<u>Range</u>	<u>Score</u>
Status	-20 to 20	6
Biological	-50 to 50	-30
Action	-40 to 40	-16
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)*

0

Reliable data for determining population trends are unavailable (Quakenbush et al. 2011; Muto et al. 2019).

Distribution Trend in Alaska (-10 to 10)

6

Habitat is suspected to be declining as a result of decreasing sea ice (Kovacs and Lyndersen 2008).

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

Uncertain, but >25,000. Recent estimates suggest a minimum population of 273,676 in the U.S. portion of the Bering Sea (Conn et al. 2014a; Muto et al. 2019).

Range Size in Alaska (-10 to 10)

-10

Bearded seals are circumpolar in their distribution and closely associated with sea ice. In Alaska, they are distributed over the continental shelves of the Beaufort Sea, the southern Chukchi Sea, and the northern Bering Sea (Boveng and Cameron 2013; MacIntyre et al. 2015; Citta et al. 2018).

Estimated range size is >400,000 sq. km.

Population Concentration in Alaska (-10 to 10) -10

Bearded seals are usually solitary, except for mother-pup pairs (Simpkins et al. 2003; Cameron et al. 2010). They make seasonal migrations as they follow the movement of the sea ice (Boveng et al. 2012; MacIntyre et al. 2015). Although sea ice restricts distribution during migration, bearded seals are considered to be generally dispersed and do not form large congregations.

Reproductive Potential in Alaska

Age of First Reproduction (-5 to 5) 1

Females can become sexually mature as early as 3 years old, though most reach sexual maturity at age 5 (reviewed in Cameron et al. 2010; Quakenbush et al. 2011).

Number of Young (-5 to 5) 3

Females can bear up to one pup per year, with overall reproductive rates estimated to be between 91.1% and 98.6% (Quakenbush et al. 2011; Crawford et al. 2015).

Ecological Specialization in Alaska

Dietary (-5 to 5) -5

Bearded seals are primarily benthic feeders that feed opportunistically, and their diet varies with location and age (Young et al. 2010; Crawford et al. 2015). Diet consists primarily of epibenthic invertebrates (e.g. crustaceans, molluscs, worms), schooling demersal fishes, and/or octopuses (reviewed in Cameron et al. 2010). Invertebrates appear to be most important in the Bering and Chukchi Seas (Quakenbush et al. 2011).

Habitat (-5 to 5) 1

Because they are benthic feeders, bearded seals prefer relatively shallow waters associated with the continental shelf (Burns 1970; MacIntyre et al. 2015; Cameron et al. 2018). Sea ice is a requirement for many ecological functions such as whelping, nursing young, and thermoregulation. In general, these seals prefer ice that is in constant motion and that has natural openings, and they usually avoid areas of thick, unbroken, ice (Cameron et al. 2010). Ice preferences may also change with age, though the reasons for this are not clear (Cameron et al. 2018) Although this species occasionally hauls out on land, this behavior is thought to be rare (Cameron et al. 2010). Additional research is needed to evaluate how this species is responding to losses in sea ice as a result of climate change (Cameron et al. 2010; MacIntyre et al. 2015).

Biological Total: -30

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

Management Plans and Regulations in Alaska (-10 to 10) -10

The bearded seal is protected through the Marine Mammal Protection Act (NMFS 2015), and actively managed by NOAA's National Marine Fisheries Service (NMFS; <https://alaskafisheries.noaa.gov/pr>). Subsistence harvest is permitted for Native Alaskans and harvest regulations are co-managed by the Ice Seal Committee and NOAA Fisheries (www.fakr.noaa.gov/protectedresources/seals/ice.htm).

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

Habitat relationships, seasonal movements and distribution patterns are well-understood (e.g. Burns 1970; Bengston et al. 2005; Boveng and Cameron 2013; Jones et al. 2014; MacIntyre et al. 2015; Frouin-Mouy et al. 2016; Cameron et al. 2018; Citta et al. 2018).

<i>Knowledge of Population Trends in Alaska (-10 to 10)</i>	2
Data collected to date are insufficient to assess population trends (Muto et al. 2019). Human-caused mortality is assessed annually by NOAA (Muto et al. 2019). The Alaska Department of Fish and Game has been monitoring the health and status of bearded seals in Alaska since 1960, and collects tissue samples and measurements annually to evaluate indices of population status and health (Quakenbush et al. 2011; Crawford et al. 2015).	
<i>Knowledge of Factors Limiting Populations in Alaska (-10 to 10)</i>	2
Population dynamics are thought to be driven by juvenile survival, which is low (Burns and Frost 1983, qtd. in. Cameron et al. 2018). Mortality related to by-catch and subsistence harvest is low, and current levels of oil and gas development are not a major concern (Muto et al. 2019). Perhaps the largest uncertainty is how this species will respond to the loss of sea ice (Kovacs and Lyndersen 2008; Laidre et al. 2008; Cameron et al. 2010). At present, we lack a good understanding of this species' resilience to a reduction in sea ice. More research is also needed to study the effects of disease, algal toxins, ocean acidification, and shipping (Cameron et al. 2010; Quakenbush et al. 2011; Lefebvre et al. 2016; Muto et al. 2019; Hauser et al. 2018).	
Action Total: <hr style="display: inline-block; width: 50px; vertical-align: middle;"/> -16	

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

References

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