COSEWIC
Status Appraisal Summary

on the

Northern Fur Seal
Callorhinus ursinus

in Canada

THREATENED
2022

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada

COSEPAC
Comité sur la situation
des espèces en péril
au Canada

COSEWIC status appraisal summaries are working documents used in assigning the status of wildlife species suspected of being at risk in Canada. This document may be cited as follows:

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COSEWIC
Assessment Summary

Assessment Summary – December 2022

Common name
Northern Fur Seal

Scientific name
Callorhinus ursinus

Status
Threatened

Reason for designation
The population of this eared seal that is found in Canadian Pacific waters comes from a limited number of small breeding colonies on 3 islands in Alaska (87%), 3 sets of islands in Russia (10%), and 2 islands in California (3%). The number of pups born annually is used as an index of population size and has declined in Alaska by 84% since 1950. Ongoing declines in Canada have been slowed by growth of a new colony on a small volcanically active Aleutian island, and recolonization of an extirpated colony in California. However, the estimated number of mature individuals occurring in Canadian waters has still declined by 39% over the past 30 years (1990–2020). Causes of the continuing population decline are not fully understood, but this species is impacted by on-going threats which include entanglement in marine debris, disturbance, pollution, decline in habitat quality, and reduced availability of prey due to fisheries and climate change.

Occurrence
British Columbia, Pacific Ocean

Status history
COSEWIC Designated Not at Risk in April 1996. Status re-examined and designated Threatened in April 2006. Status re-examined and confirmed in November 2010 and December 2022.

COSEWIC
Status Appraisal Summary

Northern Fur Seal

Otarie à fourrure du Nord

Callorhinus ursinus

Range of occurrence in Canada: British Columbia, Pacific Ocean

Status History: Designated Not at Risk in April 1996. Status re-examined and designated Threatened in April 2006. Status re-examined and confirmed in November 2010 and December 2022.

SAS 6
Wildlife species:

Change in eligibility, taxonomy or designatable units:	yes ☐ no ☒
Explanation: The Northern Fur Seal (*Callorhinus ursinus*, Linnaeus 1758) is an eared seal, polygynous and sexually dimorphic. Body masses average 100–200 kg for adult males, and 35–45 kg for adult females. As such, mature males are 3.4–5.4 times bigger than adult females (Trites and Bigg 1996). Adult males are black to reddish brown in colour, while females are grey-brown along their dorsal surface, and lighter along their ventral surface. Breeding males establish and maintain territories on land during summer, and mate with several females in a ratio of about nine females to one male. Juvenile fur seals remain at sea for two years, while older fur seals only return to land during the breeding season.	

Range:

SAS 7	Change in Extent of Occurrence (EOO):	yes ☐ no ☒ unk ☐
SAS 8	Change in Index of Area of Occupancy (IAO) :	yes ☒ no ☐ unk ☐
SAS 9	Change in number of known or inferred current locations[1]:	yes ☒ no ☐ unk ☐
SAS 10	Significant new survey information	yes ☒ no ☐

Explanation:

Northern Fur Seals range throughout the North Pacific Ocean and Bering Sea. They breed at three sites in Russia (Tyuleny Island, the Kuril Islands, and the Commander Islands) and four in the United States (Pribilof Islands, Bogoslof Island, San Miguel Island, and the Farallon Islands) (Figure 1).

Northern Fur Seal breeding colonies were historically thought to be restricted to the Pribilof and Commander Islands. The Pribilof Islands consist of two main breeding islands (St. Paul and St. George; Figure 2) and a smaller site (Sea Lion Rock). However, new islands were colonized in North America when breeding began in 1965 on San Miguel Island off southern California, in 1980 on Bogoslof Island in the southern Bering Sea, and in 1996 on the Farallon Islands off central California (Figures 2 & 3).

Fur seals were hunted in California from 1786 to 1840, and were extirpated from the Farallon Islands by a Russian sealing station (Thompson 1896; Pyle *et al.* 2001; Rick *et al.* 2019). The small colony founded in 1996 on the Farallon Islands has grown rapidly over the past 15 years and is likely a new source of seals coming to Canadian waters (Pyle *et al.* 2001; Lee *et al.* 2018).

[1]. Use the IUCN definition of “location.”

Since the last COSEWIC assessment was conducted (COSEWIC 2010), the Farallon Islands have become a secure breeding location for Northern Fur Seals. Recent surveys at Bogoslof Island (Figure 2) have also revealed substantial growth of this colony, and a significant source of animals coming to Canadian waters, although volcanic eruptions may threaten its long-term sustainability.

Growth of the three new colonies (Bogoslof, San Miguel, and Farallon islands; Figure 3) reflects eight years of initial colonizations from the established breeding islands in Russia and Alaska (Lee *et al.* 2014, 2018). Northern Fur Seals are a panmictic species (i.e., a species where all adults are potential breeding partners) with large ranges and high dispersal rates of 85% per generation into new breeding colonies (Pinsky *et al.* 2010).

The Alaskan subpopulation currently makes up 50% of the world population, while the Californian subpopulation accounts for 2%, and the Russian subpopulation the remaining 48% (Figures 2 and 3; Blokhin *et al.* 2008; Gelatt *et al.* 2015; Zhdanova *et al.* 2017). Of the seals that migrate and feed in Canadian waters, Olesiuk (2012b) estimated that 75% originated from the Pribilof Islands, 15% from the rapidly growing breeding site established on Bogoslof Island in 1980, 8% from the Commander Islands, and less than 1% from each of the growing but distant breeding sites in the Kuril Islands and Tyuleny Island. However, these estimates should be slightly lowered to account for the overlooked fur seals coming from San Miguel Island and the rapidly growing Farallon Islands colony (Figure 3). Fur seals breeding in California do not appear to leave the California Current system (Lea *et al.* 2006; Melin 2012; Zeppelin *et al.* 2019), which extends into Canadian waters, and likely make up ~2% to 4% of the fur seals that migrate and feed in Canadian waters. In total, there are seven breeding locations for Northern Fur Seals using Canadian waters – two in California, three in Alaska, and three in Russia. The total area of these locations, which represents the Index of Area of Occupancy, is <100 km^2.

In Canada, Northern Fur Seals are restricted to waters off the west coast, although vagrants have been noted, at least historically, in the Canadian Beaufort Sea (Rice 1998; COSEWIC 2010). Off Canada's west coast, females and sub-adult males are typically found along the continental shelf during winter and spring (Bigg 1990; Trites and Bigg 1996). Northern Fur Seals occur in highest concentrations from December to May off Vancouver Island and in Queen Charlotte Sound (Bigg 1990; Olesiuk 2012a; Pelland *et al.* 2014; Zeppelin *et al.* 2019). The largest numbers occur about 20–150 km offshore, although some have also been occasionally observed ashore at sea lion haulouts and rookeries.

La Pérouse Bank is a particularly important feeding area in British Columbia based on historical sealing records, research collections, and satellite tracking data (Olesiuk 2012a; Pelland *et al.* 2014). Relative to other age classes in the population, higher than expected numbers of adult females from Alaska feed in these waters. Canadian waters are also likely important habitat for adult females, adult males, and juveniles originating from California based on the historical presence of bones recovered from middens of Indigenous peoples living in British Columbia (Crockford *et al.* 2002).

The small colony of Northern Fur Seals founded in 1980 on Bogoslof Island in the southeastern Bering Sea has grown rapidly since COSEWIC's last assessment. Bogoslof Island is the summit of a submarine stratovolcano that rises 1,800 m from the seabed (Figure 4; Alaska Volcano Observatory 2022). The island emerged above sea level in 1796, and has experienced at least nine major eruptions over the past 225 years. Most of the island was formed over the past century. Bogoslof Island was ~0.3 km^2 in 1980 when Northern Fur Seals began colonizing it (Figures 2 and 3). However, the island has recently grown to ~1.3 km^2 following six eruptions between December 2016 and August 2017 (Figure 4). The colony has continued to grow despite these eruptions, likely due in large part to immigration from other breeding sites. This suggests that Bogoslof Island will continue to support the presence of Northern Fur Seals in Canadian waters in winter even if declines on the Pribilof Islands continue, unless future eruptions obliterate the island or take place during the breeding season.

Population Information:

SAS 11	Change in number of mature individuals:	yes ☒ no ☐ unk ☐
SAS 12	Change in population trend:	yes ☒ no ☐ unk ☐
SAS 13	Change in severity of population fragmentation:	yes ☐ no ☒ unk ☐
SAS 14	Change in trend in area and/or quality of habitat:	yes ☐ no ☐ unk ☒
SAS 15	Significant new survey information	yes ☒ no ☐

Explanation:

Pup counts (Figures 2 and 3) are commonly used as an abundance index for pinnipeds (Berkson and DeMaster 1985). In the United States, the National Marine Fisheries Service multiplies pup counts by a factor of 4.475 (Lander 1981; Loughlin *et al.* 1994) to estimate total population size (including newborns) and track overall population trends of Northern Fur Seals (Muto *et al.* 2019).

Overall, the Alaskan subpopulation (Bogoslof Island and the Pribilof Islands combined) has declined by 40% over the past 30 years (3 generations; 1990–2020; Figure 2). In terms of breeding colonies, the Pribilof's St. Paul Island colony declined by 64%, and the St. George Island colony by 8%, while the Bogoslof Island colony increased (Figure 2). Rates of decline in Alaska have slowed over the past 17 years due in large part to increases in breeding numbers at Bogoslof Island (Figure 2).

Most of the Alaskan subpopulation breeds on St. Paul Island (Figure 1). In the 1950s, St. Paul accounted for 83% of the Alaskan subpopulation. As of 2021, it had declined by 84% (1950–2021) and now accounts for 63% of the Alaska subpopulation. In contrast, 15% of the subpopulation is now born on St. George, and 22% on Bogoslof.

The Bogoslof colony (established in 1980) now produces 36,000 pups annually (2021 census), and has increased at an average annual rate of 1,400 pups per year since 1997 (Figure 2). The initial growth rate of 14% per year exceeded the 8.6% per year thought to be the maximum rate at which the species can naturally increase (COSEWIC 2010; Lee *et al.* 2018), indicating that growth of this colony is partly due to immigration. The Bogoslof Island colony appears to have transitioned to self-supporting in more recent years, and shows no signs of having been significantly affected by the volcanic eruptions of the island (Figures 2 and 4).

In terms of the total Alaskan subpopulation (all ages combined), ~0.6 million fur seals currently migrate south from the Bering Sea each fall (based on 2021 census data), in contrast to the 2.4 million that departed annually during the 1950s (i.e., a loss of ~1.8 million seals), and the 666,000 in 2008 when the last COSEWIC assessment was conducted (a loss of 66,000 seals in 13 years, 2008–2021, based on data in Figure 2).

In terms of the total Californian subpopulation (all ages combined), ~24,000 Northern Fur Seals leave the breeding islands to feed within the California Current waters (based on an average of 5,375 pups born over the past 5 years, 2016–2020; Figure 3). This represents a doubling of the Californian subpopulation over the past 30 years (three generations). A significant portion of this increase is due to the recolonization of the Farallon Islands. The Farallon Islands colony currently accounts for ~40% of the Californian subpopulation and is increasing exponentially (Figure 3). However, this trend may be affected by future El Niño events, when reduced availability of prey can cause high death rates and loss of breeding animals (as has occurred in the past on San Miguel Island; see Figure 3).

Adding the increasing numbers of fur seals from California to the declining numbers from Alaska results in a total population size of 624,000 Northern Fur Seals—and reduces the total loss in numbers of seals migrating to Canadian waters from 40% to 39% since 1990 (three generations). However, this 1% difference is unlikely to be significant given the uncertainty in abundance estimates. Overall, the population decline in Canadian waters (driven by the Pribilof Islands) has been occurring since the mid-1950s, during which time the population declined by 75%.

As the Pribilof Islands colonies have declined, animals from the southern breeding sites (Bogoslof Island and the California colonies) that have been stable or increasing have begun playing an increasingly important role in maintaining fur seal numbers in Canada.

SAS 16
Threats:

Change in nature and/or severity of threats:	yes ☐ no ☐ unk ☒
Explanation: It is unknown whether the nature or severity of threats has changed since the last assessment (COSEWIC 2010). It remains unknown why fur seals have declined on the Pribilof Islands. Primary threats are thought to be entanglement in marine debris, disturbance, pollution, and reduced availability of energy-rich prey (due to fisheries or environmental change) (Trites 1992; Trites *et al.* 2015; Zhdanova *et al.* 2017; Jeanniard-du-Dot *et al.* 2018; Kuzin and Trukhin 2019; Muto *et al.* 2019; Short *et al.* 2021; Cortés *et al.* 2022; Divine *et al.* 2022).	

SAS 17
Protection:

Change in effective protection:	yes ☐ no ☒ unk ☐
Explanation: Northern Fur Seals continue to be protected in Canadian waters under the *Marine Mammal Regulations* of Canada's *Fisheries Act*, which generally prohibit hunting or disturbing pinnipeds except for subsistence use. Northern Fur Seals were assessed by COSEWIC in 1996 as "not at risk." In 2006, COSEWIC recommended "threatened" status owing to the declines in pup production on the Pribilof Islands. In 2010, COSEWIC again assessed the species as threatened because the population had declined by 38% over the last three generations—and the cause of the decline was unknown. The species has not been listed under SARA. In the United States, Northern Fur Seals are protected by the *Marine Mammal Protection Act*. The eastern North Pacific population (Pribilof Islands and Bogoslof Island) has been designated as "depleted" under the Act since 1988 because it is below its optimum sustainable population size (i.e., it is less than 50% of levels observed in the late 1950s). As a species, Northern Fur Seals are classified throughout their range (i.e., eastern and western Pacific) as "Vulnerable" by the IUCN Red List because of the overall long-term, unexplained reduction in numbers (Gelatt *et al.* 2015). NatureServe (2022) last reviewed the species in 2016, and ranked it as Globally G3 (Vulnerable). It is ranked N2M (Migratory, Imperiled) in Canada and S2M in British Columbia. In the US, it is ranked N3; S2S3 (Imperiled to Vulnerable) in Alaska, Critically Imperilled (S1) in California, and SNA (status not applicable with no breeding colonies) in Oregon. It is not listed in any Appendix to CITES.	

SAS 18
Rescue Effect:

Change in evidence of rescue effect:	yes ☐ no ☒
Explanation: Most of the Northern Fur Seals foraging in Canadian waters originate from the Pribilof Islands. However, increasing numbers are now coming from the new colonies in California, and from Bogoslof Island in the Bering Sea. The species' presence in Canadian waters is likely assured by the growth of these new colonies, despite significant losses from the Pribilof Islands. Small numbers of fur seals are also migrating to Canadian waters from the breeding islands in Russia (Pinsky *et al.* 2010; Olesiuk 2012b).	

SAS 19
Quantitative Analysis:

Change in estimated probability of extirpation:	yes ☒ no ☐ unk ☐
Details: No quantitative analysis was available during the last COSEWIC assessment. Since then, a quantitative analysis of the viability of the Alaskan population of Northern Fur Seals has concluded that all colonies (i.e., breeding sites) are at little risk of extirpation within the next century (0.00%–0.42%) due to the relatively large size of the Pribilof Islands colonies (Olesiuk 2012b). An estimated 75% of the seals migrating to and through Canadian waters are believed to originate from the Pribilof Islands, compared with 97% that once came before the new breeding sites were colonized (Olesiuk 2012b). Some of the seals now spending time in Canadian waters originate from Bogoslof Island (15%), the Commander Islands (8%), and the Kuril Islands and Tyuleny Island (1%) (Olesiuk 2012b). These estimates do not include the fur seals coming from California, which likely account for a minimum of 2%–4% of the individuals feeding in British Columbia waters (Figure 1).	

Summary and Additional Considerations [e.g., recovery efforts; summarize exactly what has changed since the previous assessment]

Since the last COSEWIC assessment in 2010, the Farallon Islands (California) have become a new and secure breeding colony for Northern Fur Seals. Recent surveys have also revealed substantial growth of the Bogoslof Island colony (southern Bering Sea, Alaska), which has become a significant source of animals foraging in Canadian waters. However, volcanic eruptions may threaten the long-term viability of this colony.

Based on satellite tracking and the presence of all age classes of fur seals in the historical middens of Indigenous peoples of British Columbia, the fur seals born in California appear to remain within the California Current System (which extends from Mexico to Canada). As such, the growing numbers of fur seals born in California are likely to become increasingly reliant on feeding in Canadian waters.

Significant declines continue to occur on the Pribilof Islands, which are being offset to some extent by increases in births at the three colonized islands in California (San Miguel and the Farallon Islands) and Alaska (Bogoslof Island).

The inferred percent decline in total number of mature individuals over the past three generations (30 years; 1990–2020) is 39%.

The total population numbered 2.4 million fur seals (all ages) in the mid-1950s, and now numbers about 624,000. Causes of the continued decline in numbers remain unknown.

A quantitative analysis of the viability of the Alaskan subpopulation of Northern Fur Seals (which makes up ~90% of the seals coming to Canadian waters) suggests that, as of 2010, all colonies (i.e., breeding sites) were predicted to have little risk of extirpation within the next century (0.00%–0.42%). However, their future is less certain should the rate of decline increase or continue beyond this point.

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TECHNICAL SUMMARY

Callorhinus ursinus

Northern Fur Seal

Otarie à fourrure du Nord

Range of occurrence in Canada: British Columbia, Pacific Ocean

Demographic Information

Generation time (usually average age of parents in the population; indicate if another method of estimating generation time indicated in the IUCN guidelines (2011) is being used).	10 yrs 10 years was used in previous COSEWIC (2010) reports and is calculated from age-specific pregnancy and survival rates of female Northern Fur Seals (Lander 1981). Note that the IUCN uses an estimate of 14 years based on the prediction of a simple general model used to estimate the generation times of 5,427 species of mammals (Pacifici *et al.* 2013)
Is there an [observed, inferred, or projected] continuing decline in number of mature individuals?	Yes
Estimated percent of continuing decline in total number of mature individuals within [5 years or 2 generations, whichever is longer, up to a maximum of 100 years]	Not calculated
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over the last [10 years or 3 generations, whichever is longer, up to a maximum of 100 years].	Estimated decline of 39% (3 generations; 1990–2020) 36% decline in total fur seal abundance (all animals) on rookeries in Alaska (known to overwinter in or migrate through Canadian waters) from 1978 to 2009 (derived from an exponential decay fit to pup counts); 39% decline in pup production at Alaskan breeding sites, used as an index of abundance
[Projected or suspected] percent [reduction or increase] in total number of mature individuals over the next [10 years or 3 generations, whichever is longer, up to a maximum of 100 years].	Unknown
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over any period [10 years or 3 generations, whichever is longer, up to a maximum of 100 years], including both the past and the future.	Unknown
Are the causes of the decline a. clearly reversible and b. understood and c. ceased?	a. Unknown b. No c. No
Are there extreme fluctuations in number of mature individuals?	No

Extent and Occupancy Information

Estimated extent of occurrence (EOO)	>20,000 km²
Index of area of occupancy (IAO)	<100 km^2 Area of occupancy based on breeding locations, which include Bogoslof and Pribilof islands (Alaska); San Miguel and Farallon islands (California); and Commander, Tyuleny and Kuril islands (Russia)
Is the population "severely fragmented" i.e., is >50% of its total area of occupancy in habitat patches that are (a) smaller than would be required to support a viable population, and (b) separated from other habitat patches by a distance larger than the species can be expected to disperse?	a. No b. No
Number of "locations"∗ (use plausible range to reflect uncertainty if appropriate)	7 Breeding colony at Bogoslof Island is vulnerable to volcanic activity; colonies at San Miguel and Farallon islands in California vulnerable to oil spills and El Niño effects; colonies at Pribilof Islands have been declining for >20 years for unknown reasons
Is there an [observed, inferred, or projected] decline in extent of occurrence?	No
Is there an [observed, inferred, or projected] decline in index of area of occupancy?	Unknown
Is there an [observed, inferred, or projected] decline in number of subpopulations?	No
Is there an [observed, inferred, or projected] decline in number of "locations"*?	No
Is there an [observed, inferred, or projected] decline in [area, extent and/or quality] of habitat?	Unknown, but habitat change is probably partly, or largely, responsible for the decline of the Pribilof colonies
Are there extreme fluctuations in number of subpopulations?	No
Are there extreme fluctuations in number of "locations"*?	No
Are there extreme fluctuations in extent of occurrence?	No
Are there extreme fluctuations in index of area of occupancy?	No

∗ See Definitions and Abbreviations on COSEWIC website for more information on this term.

Number of Mature Individuals (in each subpopulation)

Subpopulations (give plausible ranges)	N Mature Individuals
Alaska California	~298,000 ~ 12,000 Estimated as 50% (percent mature) of 4.475 times the sum of most recent pup counts; Calculation based on computation table for females 3+ years and males 4+ years (see Table 9 in York *et al.* 2000). Note that the estimates of mature individuals reflect the total numbers using breeding sites within two geographic regions. There are no breeding sites in Canada
Total	~310,000

Quantitative Analysis

Is the probability of extinction in the wild at least [20% within 20 years or 5 generations, whichever is longer, up to a maximum of 100 years, or 10% within 100 years]?	No. Population Viability Analysis suggests they have <1% chance of going extinct within 100 years (Olesiuk 2012b)

Threats (direct, from highest impact to least, as per IUCN Threats Calculator)

Was a threats calculator completed for this species? No

i. Reduction in food availability (IUCN 5, 7, 11)
ii. Breeding habitat degradation and disturbance (outside Canada) (IUCN 6, 9, 10, 11)
iii. Environmental pollution (IUCN 9)
iv. Entanglement in debris (IUCN 9)

What additional limiting factors are relevant?

Rescue Effect (immigration from outside Canada)

Status of outside population(s) most likely to provide immigrants to Canada.	**US – Alaska** (Pribilof and Bogoslof island colonies: Depleted under the US *Marine Mammal Protection Act*; **US – California** (San Miguel and Farallon island colonies): Depleted under the US *Marine Mammal Protection Act*, small, sensitive to El Niño events. **Russia** (no known official status for populations)
Is immigration known or possible?	Yes
Would immigrants be adapted to survive in Canada?	Yes
Is there sufficient habitat for immigrants in Canada?	Probably
Are conditions deteriorating in Canada?[+]	Unknown

[+] See Table 3 (Guidelines for modifying status assessment based on rescue effect).

Are conditions for the source (i.e., outside) population deteriorating?[+]	Unknown
Is the Canadian population considered to be a sink?[+]	No
Is rescue from outside populations likely?	No

Data Sensitive Species

Is this a data sensitive species?	No

Status History

COSEWIC Designated Not at Risk in April 1996. Status re-examined and designated Threatened in April 2006. Status re-examined and confirmed in November 2010 and December 2022.

Status and Reasons for Designation

Status:	**Alpha-numeric codes:**
Threatened	A2bce, B2ab(iii,v)

Reasons for designation:
The population of this eared seal that is found in Canadian Pacific waters comes from a limited number of small breeding colonies on 3 islands in Alaska (87%), 3 sets of islands in Russia (10%), and 2 islands in California (3%). The number of pups born annually is used as an index of population size and has declined in Alaska by 84% since 1950. Ongoing declines in Canada have been slowed by growth of a new colony on a small volcanically active Aleutian island, and recolonization of an extirpated colony in California. However, the estimated number of mature individuals occurring in Canadian waters has still declined by 39% over the past 30 years (1990–2020). Causes of the continuing population decline are not fully understood, but this species is impacted by on-going threats which include entanglement in marine debris, disturbance, pollution, decline in habitat quality, and reduced availability of prey due to fisheries and climate change.

Applicability of Criteria

Criterion A (Decline in Total Number of Mature Individuals): Meets Threatened, A2bce. Estimated 39% decline in number of mature individuals over the last three generations based on pup counts as an index of abundance; cause(s) of continuing decline unknown but threats include a decline in habitat quality through a reduction in prey, and pollutants in the form of marine debris causing entanglement and risk of oil spill.
Criterion B (Small Distribution Range and Decline or Fluctuation): Meets criteria for Endangered, B2ab(iii,v), as IAO estimated at breeding colonies outside of Canada (<50 km²) is below the threshold for Endangered, occurs at <10 locations, and there is a continuing decline in quality of habitat and estimated number of mature individuals. However, designated Threatened because the species is not at risk of imminent extirpation due to its large estimated population size (about 310,000 mature individuals).
Criterion C (Small and Declining Number of Mature Individuals): Not applicable. Population is large.
Criterion D (Very Small or Restricted Population): Not applicable. Population is large.

[+]See Table 3 (Guidelines for modifying status assessment based on rescue effect).

Criterion E (Quantitative Analysis):
A population viability analysis suggests risk of extirpation over next 100 years is low, but unexplained decline continues.

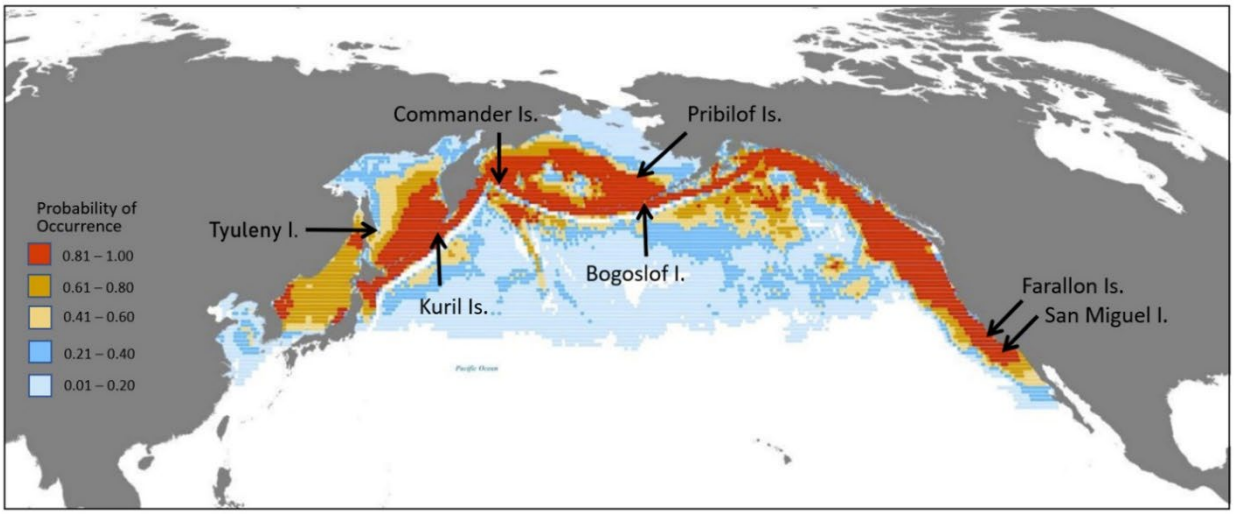

Figure 1. Worldwide range of Northern Fur Seals and the sites of their breeding islands in Russia (Commander Islands, Kuril Islands, and Tyuleny Island) and the United States (Pribilof Islands, Bogoslof Island, Farallon Islands, and San Miguel Island). Colours indicate the relative probability of occurrence of Northern Fur Seals as modelled using the AquaMaps approach (Ready *et al.* 2010). Over 92% of the fur seals foraging and travelling in Canadian waters breed in Alaska and California. Modified from Martin *et al.* (2014).

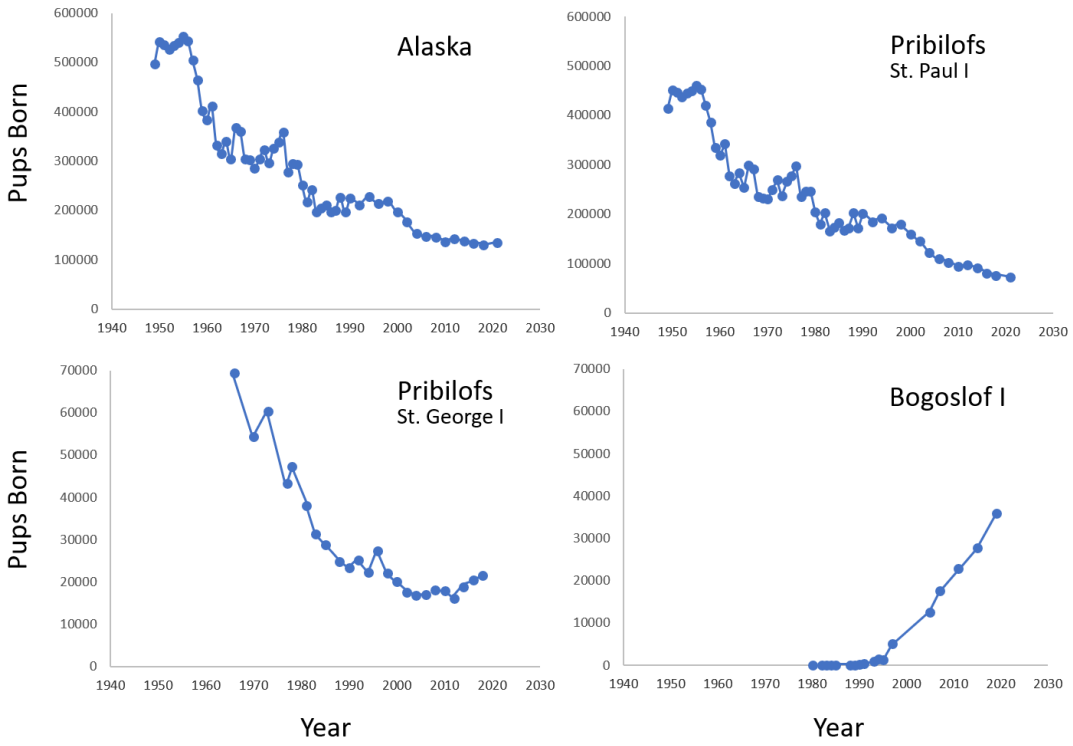

Figure 2. Estimated numbers of Northern Fur Seal pups born in Alaska from 1949–2021 by breeding islands—Bogoslof Island and the Pribilof Islands (St. Paul and St. George islands). Note that Bogoslof Island erupted six times between December 20, 2016, and August 30, 2017, with no apparent effect on the population trajectory. Also note the differences in axes scales (i.e., 600,000 pups maximum for St. Paul Island, and 70,000 for St. George and Bogoslof islands; data source: US National Marine Fisheries Service).

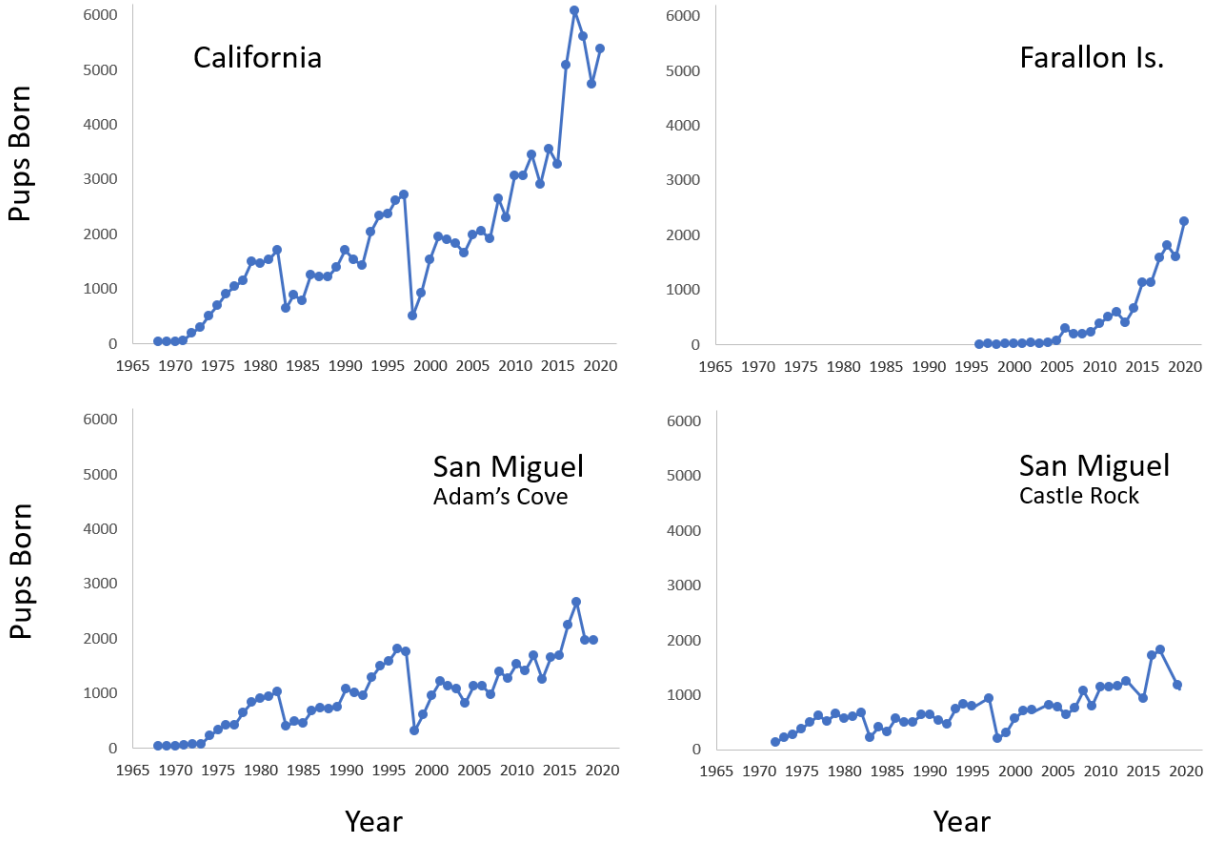

Figure 3. Total numbers of Northern Fur Seal pups born in California from 1968–2020 by breeding islands—Farallon Islands and San Miguel Island (Adam's Cove and Castle Rock). Note maximum of y-axis is 6,000 pups (data source: US National Marine Fisheries Service). Note also that sharp declines in numbers of pups born reflect high death rates of mature animals during El Niño events when warm water pushes prey to deeper colder waters and makes them more difficult to obtain.

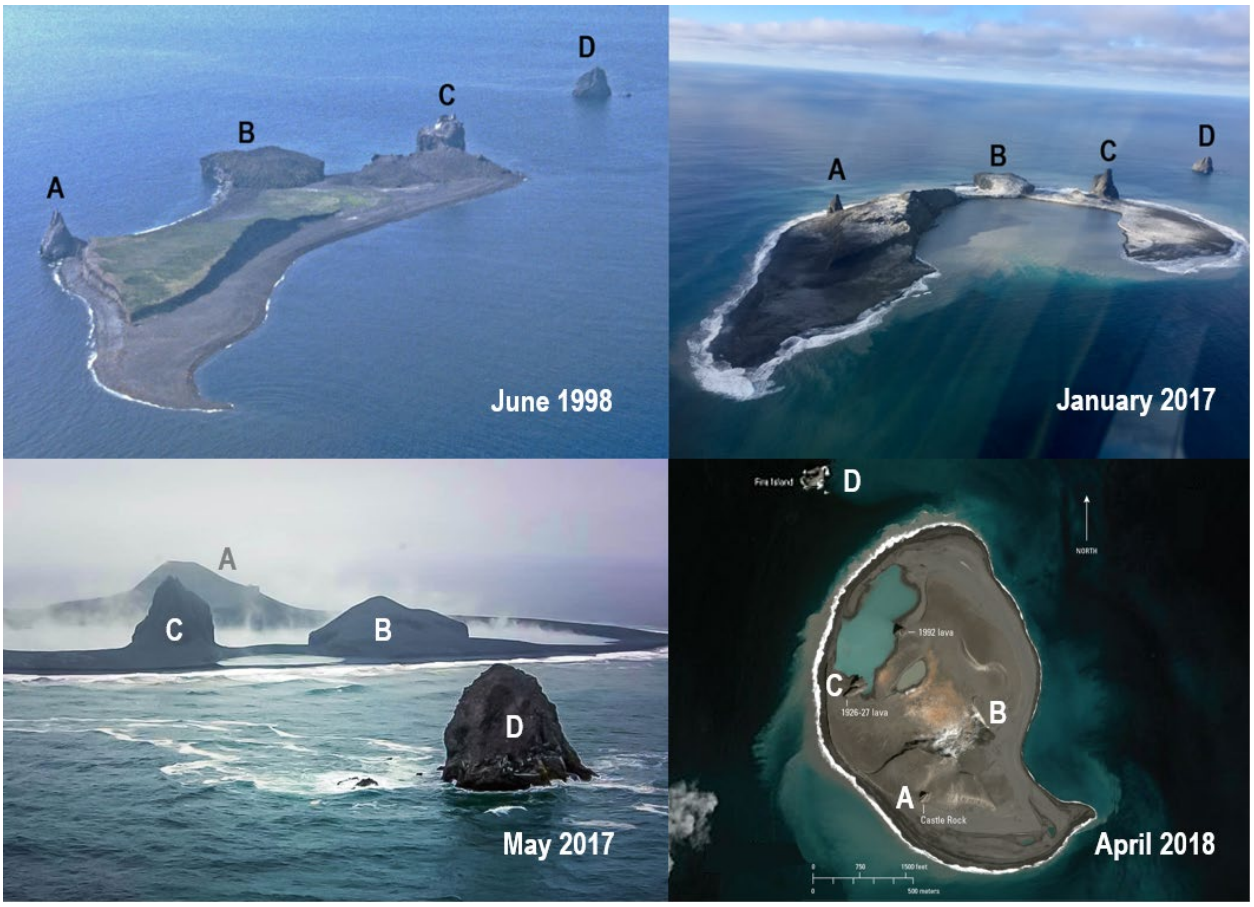

Figure 4. Bogoslof Island, Alaska, before (1998) and after the volcanic eruptions that occurred from December 20, 2016, to August 30, 2017. Note that the points A–D are the same in all photos; and the distance from A to C is ~800 m. Photos by John Sease, NMFS/NOAA (June 13, 1998), Dan Leary, Maritime Helicopters (January 10, 2017), Max Kaufman, Alaska Volcano Observatory (May 8, 2017), and Alaska Volcano Observatory / US Geological Survey (April 20, 2018).

COSEWIC HISTORY

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list. On June 5, 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species, subspecies, varieties, or other designatable units that are considered to be at risk in Canada. Designations are made on native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, mosses, and lichens.

COSEWIC MEMBERSHIP

COSEWIC comprises members from each provincial and territorial government wildlife agency, four federal entities (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biodiversity Information Partnership, chaired by the Canadian Museum of Nature), three non-government science members and the co-chairs of the species specialist subcommittees and the Aboriginal Traditional Knowledge subcommittee. The Committee meets to consider status reports on candidate species.

DEFINITIONS
(2022)

Wildlife Species	A species, subspecies, variety, or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and is either native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)**	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)***	A category that applies when the available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

* Formerly described as "Vulnerable" from 1990 to 1999, or "Rare" prior to 1990.

** Formerly described as "Not In Any Category", or "No Designation Required."

*** Formerly described as "Indeterminate" from 1994 to 1999 or "ISIBD" (insufficient scientific information on which to base a designation) prior to 1994. Definition of the (DD) category revised in 2006.

Environment and Climate Change Canada
Canadian Wildlife Service
Environnement et Changement climatique Canada
Service canadien de la faune
Canada

The Canadian Wildlife Service, Environment and Climate Change Canada, provides full administrative and financial support to the COSEWIC Secretariat.