DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 223

[Docket No. 101126591–0588–01]

RIN 0648–XZ58

Endangered and Threatened Species; Proposed Threatened and Not Warranted Status for Subspecies and Distinct Population Segments of the Bearded Seal

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; 12-month petition finding; status review; request for comments.

SUMMARY: We, NMFS, have completed a comprehensive status review of the bearded seal (*Erignathus barbatus*) under the Endangered Species Act (ESA) and announce a 12-month finding on a petition to list the bearded seal as a threatened or endangered species. The bearded seal exists as two subspecies: *Erignathus barbatus nauticus* and *Erignathus barbatus barbatus*. Based on the findings from the status review report and consideration of the factors affecting these subspecies, we conclude that *E. b. nauticus* consists of two distinct population segments (DPSs), the Beringia DPS and the Okhotsk DPS. Moreover, based on consideration of information presented in the status review report, an assessment of the factors in section 4(a)(1) of the ESA, and efforts being made to protect the species, we have determined the Beringia DPS and the Okhotsk DPS are likely to become endangered throughout all or a significant portion of their ranges in the foreseeable future. We have also determined that *E. b. barbatus* is not in danger of extinction or likely to become endangered throughout all or a significant portion of its range in the foreseeable future. Accordingly, we are now issuing a proposed rule to list the Beringia DPS and the Okhotsk DPS of the bearded seal as threatened species. No listing action is proposed for *E. b. barbatus.* We solicit comments on this proposed action. At this time, we do not propose to designate critical habitat for the Beringia DPS because it is not currently determinable. In order to complete the critical habitat designation process, we solicit information on the essential physical and biological features of bearded seal habitat for the Beringia DPS.

DATES: Comments and information regarding this proposed rule must be received by close of business on February 8, 2011. Requests for public hearings must be made in writing and received by January 24, 2011.

ADDRESSES: Send comments to Kaja Brix, Assistant Regional Administrator, Protected Resources Division, Alaska Region, NMFS, Attn: Ellen Sebastian. You may submit comments, identified by RIN 0648–XZ58, by any one of the following methods:

- *Electronic Submissions:* Submit all electronic public comments via the Federal eRulemaking Portal *http://www.regulations.gov*.
- *Mail:* P.O. Box 21668, Juneau, AK 99802.
- *Fax:* (907) 586–7557.
- *Hand delivery to the Federal Building:* 709 West 9th Street, Room 420A, Juneau, AK.

All comments received are a part of the public record. No comments will be posted to *http://www.regulations.gov* for public viewing until after the comment period has closed. Comments will generally be posted without change. All Personal Identifying Information (for example, name, address, *etc.*) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

We will accept anonymous comments (enter N/A in the required fields, if you wish to remain anonymous). You may submit attachments to electronic comments in Microsoft Word, Excel, WordPerfect, or Adobe PDF file formats only.

The proposed rule, maps, status review report and other materials relating to this proposal can be found on the Alaska Region Web site at: *http://alaskafisheries.noaa.gov/*.

FOR FURTHER INFORMATION CONTACT: Tamara Olson, NMFS Alaska Region, (907) 271–5006; Kaja Brix, NMFS Alaska Region, (907) 586–7235; or Marta Nammack, Office of Protected Resources, Silver Spring, MD, (301) 713–1401.

SUPPLEMENTARY INFORMATION: On March 28, 2008, we initiated status reviews of bearded, ringed (*Phoca hispida*), and spotted seals (*Phoca largha*) under the ESA (73 FR 16617). On May 28, 2008, we received a petition from the Center for Biological Diversity to list these three species of seals as threatened or endangered under the ESA, primarily due to concerns about threats to their habitat from climate warming and loss of sea ice. The Petitioner also requested that critical habitat be designated for these species concurrent with listing under the ESA. Section 4(b)(3)(B) of the ESA of 1973, as amended (16 U.S.C. 1531 *et seq.*) requires that when a petition to revise the List of Endangered and Threatened Wildlife and Plants is found to present substantial scientific and commercial information, we make a finding on whether the petitioned action is (a) Not warranted, (b) warranted, or (c) warranted but precluded from immediate proposal by other pending proposals of higher priority. This finding is to be made within 1 year of the date the petition was received, and the finding is to be published promptly in the **Federal Register**.

After reviewing the petition, the literature cited in the petition, and other literature and information available in our files, we found (73 FR 51615; September 4, 2008) that the petition met the requirements of the regulations under 50 CFR 424.14(b)(2), and we determined that the petition presented substantial information indicating that the petitioned action may be warranted. Accordingly, we proceeded with the status reviews of bearded, ringed, and spotted seals and solicited information pertaining to them.

On September 8, 2009, the Center for Biological Diversity filed a lawsuit in the U.S. District Court for the District of Columbia alleging that we failed to make the requisite 12-month finding on its petition to list the three seal species. Subsequently, the Court entered a consent decree under which we agreed to finalize the status review of the bearded seal (and the ringed seal) and submit this 12-month finding to the Office of the Federal Register by December 3, 2010. Our 12-month petition finding for ringed seals is published as a separate notice concurrently with this finding. Spotted seals were also addressed in a separate **Federal Register** notice (75 FR 65239; October 22, 2010; see also, 74 FR 53683, October 20, 2009).

The status review report of the bearded seal is a compilation of the best scientific and commercial data available concerning the status of the species, including the past, present, and future threats to this species. The Biological Review Team (BRT) that prepared this report was composed of eight marine mammal biologists, a fishery biologist, a marine chemist, and a climate scientist from NMFS' Alaska and Northeast Fisheries Science Centers, NOAA's Pacific Marine Environmental Lab, and the U.S. Fish and Wildlife Service (USFWS). The status review report underwent independent peer review by five scientists with expertise in bearded seal biology, Arctic sea ice, climate change, and ocean acidification.

ESA Statutory, Regulatory, and Policy Provisions

There are two key tasks associated with conducting an ESA status review. The first is to delineate the taxonomic group under consideration; and the second is to conduct an extinction risk assessment to determine whether the petitioned species is threatened or endangered.

To be considered for listing under the ESA, a group of organisms must constitute a "species," which section 3(16) of the ESA defines as "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." The term "distinct population segment" (DPS) is not commonly used in scientific discourse, so the USFWS and NMFS developed the "Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act" to provide a consistent interpretation of this term for the purposes of listing, delisting, and reclassifying vertebrates under the ESA (61 FR 4722; February 7, 1996). We describe and use this policy below to guide our determination of whether any population segments of this species meet the DPS criteria of the DPS policy.

The ESA defines the term "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range." The term "threatened species" is defined as "any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range." The foreseeability of a species' future status is case specific and depends upon both the foreseeability of threats to the species and foreseeability of the species' response to those threats. When a species is exposed to a variety of threats, each threat may be foreseeable in a different timeframe. For example, threats stemming from well-established, observed trends in a global physical process may be foreseeable on a much longer time horizon than a threat stemming from a potential, though unpredictable, episodic process such as an outbreak of disease that may never have been observed to occur in the species.

In the 2008 status review of the ribbon seal (Boveng *et al.,* 2008; see also 73 FR 79822, December 30, 2008), NMFS scientists used the same climate projections used in our risk assessment here, but terminated the analysis of threats to ribbon seals at 2050. One reason for that approach was the difficulty of incorporating the increased divergence and uncertainty in climate scenarios beyond that time. Other reasons included the lack of data for threats other than those related to climate change beyond 2050, and the fact that the uncertainty embedded in the assessment of the ribbon seal's response to threats increased as the analysis extended farther into the future.

Since that time, NMFS scientists have revised their analytical approach to the foreseeability of threats and responses to those threats, adopting a more threat-specific approach based on the best scientific and commercial data available for each respective threat. For example, because the climate projections in the Intergovernmental Panel on Climate Change's (IPCC's) *Fourth Assessment Report* extend through the end of the century (and we note the IPCC's *Fifth Assessment Report,* due in 2014, will extend even farther into the future), we used those models to assess impacts from climate change through the end of the century. We continue to recognize that the farther into the future the analysis extends, the greater the inherent uncertainty, and we incorporated that limitation into our assessment of the threats and the species' response. For other threats, where the best scientific and commercial data does not extend as far into the future, such as for occurrences and projections of disease or parasitic outbreaks, we limited our analysis to the extent of such data. We believe this approach creates a more robust analysis of the best scientific and commercial data available.

Species Information

A thorough review of the taxonomy, life history, and ecology of the bearded seal is presented in the status review report (Cameron *et al.,* 2010; available at *http://alaskafisheries.noaa.gov/*). The bearded seal is the largest of the northern ice-associated seals, with typical adult body sizes of 2.1–2.4 m in length and weight up to 360 kg. Bearded seals have several distinctive physical features including a wide girth; a small head in proportion to body size; long whiskers; and square-shaped fore flippers. The life span of bearded seals is about 20–25 years.

Bearded seals have a circumpolar distribution south of 85° N. latitude, extending south into the southern Bering Sea in the Pacific and into Hudson Bay and southern Labrador in the Atlantic. Bearded seals also occur in the Sea of Okhotsk south to the northern Sea of Japan (Figure 1). Two subspecies of bearded seals are widely recognized: *Erignathus barbatus nauticus* inhabiting the Pacific sector, and *Erignathus barbatus barbatus* often described as inhabiting the Atlantic sector (Rice, 1998). The geographic distributions of these subspecies are not separated by conspicuous gaps. There are regions of intergrading generally described as somewhere along the northern Russian and central Canadian coasts (Burns, 1981; Rice, 1998).

Although the validity of the division into subspecies has been questioned (Kosygin and Potelov, 1971), the BRT concluded, and we concur, that the evidence discussed in the status review report for retaining the two subspecies is stronger than any evidence for combining them. The BRT defined geographic boundaries for the divisions between the two subspecies, subject to the strong caveat that distinct boundaries do not appear to exist in the actual populations; and therefore, there is considerable uncertainty about the best locations for the boundaries. The BRT defined 112° W. longitude (*i.e.,* the midpoint between the Beaufort Sea and Pelly Bay) as the North American delineation between the two subspecies (Figure 1). Following Heptner *et al.* (1976), who suggested an east-west dividing line at Novosibirskiye, the BRT defined 145° E. longitude as the Eurasian delineation between the two subspecies in the Arctic (Figure 1).

Seasonal Distribution, Habitat Use, and Movements

Bearded seals primarily feed on benthic organisms that are more numerous in shallow water where light can reach the sea floor. As such, the bearded seal's effective range is generally restricted to areas where seasonal sea ice occurs over relatively shallow waters, typically less than 200 m in depth (see additional discussion below).

Bearded seals are closely associated with sea ice, particularly during the critical life history periods related to reproduction and molting, and they can be found in a broad range of different ice types. Sea ice provides the bearded seal and its young some protection from predators during the critical life history periods of whelping and nursing. It also allows molting bearded seals a dry platform to raise skin temperature and facilitate epidermal growth, and is important throughout the year as a platform for resting and perhaps thermoregulation. Of the ice-associated seals in the Arctic, bearded seals seem to be the least particular about the type and quality of ice on which they are observed. Bearded seals generally prefer ice habitat that is in constant motion and produces natural openings and areas of open water, such as leads, fractures, and polynyas for breathing, hauling out on the ice, and access to water for foraging. They usually avoid areas of continuous, thick, shorefast ice and are rarely seen in the vicinity of unbroken, heavy, drifting ice or large areas of multi-year ice. Although bearded seals prefer sea ice with natural access to the water, observations indicate that bearded seals are able to make breathing holes in thinner ice.

Being so closely associated with sea ice, particularly pack ice, the seasonal movements and distribution of bearded seals are linked to seasonal changes in ice conditions. To remain associated with their preferred ice habitat, bearded seals generally move north in late-spring and summer as the ice melts and retreats, and then move south in the fall as sea ice forms.

The region that includes the Bering and Chukchi Seas is the largest area of continuous habitat for bearded seals. The Bering-Chukchi Platform is a shallow intercontinental shelf that encompasses about half of the Bering Sea, spans the Bering Strait, and covers nearly all of the Chukchi Sea. Bearded seals can reach the bottom everywhere along the shallow shelf, and so it provides them favorable foraging habitat. The Bering and Chukchi Seas are generally covered by sea ice in late winter and spring, and are mostly ice free in late summer and fall. As the ice retreats in the spring most adult bearded seals in the Bering Sea are thought to move north through the Bering Strait, where they spend the summer and early fall at the southern edge of the Chukchi and Beaufort Sea pack ice and at the wide, fragmented margin of multi-year ice. A smaller number of bearded seals, mostly juveniles, remain near the coasts of the Bering and Chukchi Seas for the summer and early fall. As the ice forms again in the fall and winter, most seals move south with the advancing ice edge through Bering Strait and into the Bering Sea where they spend the winter.

There are fewer accounts of the seasonal movements of bearded seals in other areas. Compared to the dramatic long range seasonal movements of bearded seals in the Chukchi and Bering Seas, bearded seals are considered to be relatively sedentary over much of the rest of their range, undertaking more local movements in response to ice conditions. These differences may simply be the result of the general persistence of ice over shallow waters in the High Arctic. In the Sea of Okhotsk, bearded seals remain in broken ice as the sea ice expands and retreats, inhabiting the southern pack ice edge beyond the fast ice in winter and moving north toward shore in spring and summer. In the White, Barents, and Kara Seas, bearded seals also conduct seasonal migrations following the ice edge, as may bearded seals in Baffin Bay. Excluded by shorefast ice from much of the Canadian Arctic Archipelago during winter, bearded seals are scattered throughout many of the inlets and fjords of this region from July to October, though at least in some years, a portion of the population is known to overwinter in a few isolated open water areas north of Baffin Bay.

Throughout most of their range, adult bearded seals are seldom found on land. However, some adults in the Sea of Okhotsk, and more rarely in a few other regions, use haul-out sites ashore in late summer and early autumn until ice floes begin to appear at the coast. This is most common in the western Sea of Okhotsk and along the coasts of western Kamchatka where bearded seals form numerous shore rookeries that can have tens to hundreds of individuals each.

Reproduction

In general, female and male bearded seals attain sexual maturity around ages 5–6 and 6–7, respectively. Adult female bearded seals ovulate after lactation, and are presumably then receptive to males. Mating is believed to usually take place at the surface of the water, but it is unknown if it also occurs underwater or on land or ice, as observed in some other phocids. The social dynamics of mating in bearded seals are not well known; however, theories regarding their mating system have centered around serial monogamy and promiscuity, and on the nature of competition among breeding males to attract and gain access to females. Bearded seals vocalize during the breeding season, with a peak in calling during and after pup rearing. Male vocalizations are believed to advertise mate quality to females, signal competing males of a claim on a female, or proclaim a territory.

During the winter and spring, as sea ice begins to break up, perinatal females find broken pack ice over shallow areas on which to whelp, nurse young, and molt. A suitable ice platform is likely a prerequisite to whelping, nursing, and rearing young (Heptner *et al.,* 1976; Burns, 1981; Reeves *et al.,* 1992; Lydersen and Kovacs, 1999; Kovacs, 2002). Because bearded seals whelp on ice, populations have likely adapted their phenology to the ice regimes of the regions that they inhabit. Wide-ranging observations of pups generally indicate whelping occurs from March to May with a peak in April, but there are considerable geographical differences in reported timing, which may reflect real variation, but that may also result from inconsistent sighting efforts across years and locations. Details on the spatial distribution of whelping can be found in section 2.5.1 of the status review report.

Females bear a single pup that averages 33.6 kg in mass and 131.3 cm in length. Pups begin shedding their natal (lanugo) coats in utero, and they are born with a layer of subcutaneous fat. These characteristics are thought to be adaptations to entering the water soon after birth as a means of avoiding predation.

Females with pups are generally solitary, tending not to aggregate. Pups enter the water immediately after or within hours of birth. Pups nurse on the ice, and by the time they are a few days old they spend half their time in the water. Recent studies using recorders and telemetry on pups have reported a lactation period of about 24 days, a transition to diving and more efficient swimming, mother-guided movements of greater than 10 km, and foraging while still under maternal care.

Detailed studies on bearded seal mothers show they forage extensively, diving shallowly (less than 10 m), and spending only about 10 percent of their time hauled out with pups and the remainder nearby at the surface or diving. Despite the relative independence of mothers and pups, their bond is described as strong, with females being unusually tolerant of threats in order to remain or reunite with pups. A mixture of crustaceans and milk in the stomachs of pups indicates that independent foraging occurs prior to weaning, at least in some areas.

Molting

Adult and juvenile bearded seals molt annually, a process that in mature phocid seals typically begins shortly after mating. Bearded seals haul out of the water more frequently during molting, a behavior that facilitates higher skin temperatures and may accelerate shedding and regrowth of hair and epidermis. Though not studied in bearded seals, molting has been described as diffuse, with individuals potentially shedding hair throughout the year but with a pulse in the spring and summer. This is reflected in the wide range of estimates for the timing of molting, though these estimates are also based on irregular observations.

The need for a platform on which to haul out and molt from late spring to mid-summer, when sea ice is rapidly melting and retreating, may necessitate movement for bearded seals between habitats for breeding and molting. In the Sea of Okhotsk, the spatial distribution of bearded seals is similar between whelping and molting seasons so only short movements occur. In contrast, bearded seals that whelp and mate in the Bering Sea migrate long distances to summering grounds at the ice edge in the Chukchi Sea, a period of movement that coincides with the observed timing of molting. Similar migrations prior to and during the molting period have been presumed for bearded seals in the White and southeastern Barents Seas to more easterly and northern areas of the Barents Sea, where ice persists through the summer. Also during the interval between breeding and molting, passive movements on ice over large distances have been postulated between the White and Barents Seas, and from there further east to the Kara Sea. A post-breeding migration of bearded seals to molting grounds has also been postulated to occur from the southern Laptev Sea westward into the eastern Kara Sea. In some locations where bearded seals use terrestrial haul-out sites seasonally, the molting period overlaps with this use. However, the molting phenology of bearded seals on shore is unknown.

Food Habits

Bearded seals are considered to be foraging generalists because they have a diverse diet with a large variety of prey items throughout their circumpolar range. Bearded seals feed primarily on a variety of invertebrates and some fishes found on or near the sea bottom. They are also able to switch their diet to include schooling pelagic fishes when advantageous. The bulk of the diet appears to consist of relatively few prey types, primarily bivalve mollusks and crustaceans like crabs and shrimps. However, fishes like sculpins, Arctic cod (*Boreogadus saida*), polar cod (*Arctogadus glacialis*), or saffron cod (*Eleginus gracilis*) can also be a significant component. There is conflicting evidence regarding the importance of fish in the bearded seal diet throughout its range. Several studies have found high frequencies of fishes in the diet, but it is not known whether major consumption of fish is related to the availability of prey resources or the preferential selection of prey. Seasonal changes in diet composition have been observed throughout the year. For example, clams and fishes have been reported as more important in spring and summer months than in fall and winter.

Species Delineation

The BRT reviewed the best scientific and commercial data available on the bearded seal's taxonomy and concluded that there are two widely recognized subspecies of bearded seals: *Erignathus barbatus barbatus,* often described as inhabiting the Atlantic sector of the seal's range; and *Erignathus barbatus nauticus,* inhabiting the Pacific sector of the range. Distribution maps published by Burns (1981) and Kovacs (2002) provide the known northern and southern extents of the distribution. As discussed above, the BRT defined geographic boundaries for the divisions between the two subspecies (Figure 1), subject to the strong caveat that distinct boundaries do not appear to exist in the actual populations. Our DPS analysis follows.

Under our DPS policy (61 FR 4722; February 7, 1996) two elements are considered when evaluating whether a population segment qualifies as a DPS under the ESA: (1) The discreteness of the population segment in relation to the remainder of the species or subspecies to which it belongs; and (2) the significance of the population segment to the species or subspecies to which it belongs.

A population segment of a vertebrate species may be considered discrete if it satisfies either one of the following conditions: (1) It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation; or (2) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the ESA.

If a population segment is considered to be discrete under one or both of the above conditions, its biological and ecological significance to the taxon to which it belongs is evaluated in light of the ESA's legislative history indicating that the authority to list DPSs be used "sparingly," while encouraging the conservation of genetic diversity (see Senate Report 151, 96th Congress, 1st Session). This consideration may include, but is not limited to, the following: (1) Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon; (2) evidence that loss of the discrete population segment would result in a significant gap in the range of the taxon; (3) evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range; or (4) evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

If a population segment is discrete and significant (*i.e.,* it is a DPS) its evaluation for endangered or threatened status will be based on the ESA's definitions of those terms and a review of the factors enumerated in section 4(a)(1).

Evaluation of Discreteness

The range of the bearded seal occurs in cold, seasonally or annually ice-covered Arctic and subarctic waters, without persistent intrusions of warm water or other conditions that would pose potential physiological barriers. Furthermore, the seasonal timings of reproduction and molting vary little throughout the bearded seal's distribution, suggesting that there are no obvious ecological separation factors.

The underwater vocalizations of males during the breeding season recorded in Alaskan, Canadian, and Norwegian waters are often more similar between adjacent geographical regions than between more distant sites, suggesting that bearded seals may have strong fidelity to specific breeding sites. However, these observed differences in vocalizations may be due to other factors such as ecological influences or sexual selection, and not to distance or geographic barriers. Bearded seals are known to make seasonal movements of greater than 1,000 km, and so only very large geographical barriers would have the potential by themselves to maintain discreteness between breeding concentrations. As primarily benthic feeders, bearded seals may be constrained to relatively shallow waters and so expanses of deep water may also pose barriers to movement.

Erignathus barbatus nauticus: Given the bearded seal's circumpolar distribution and their ability to travel long distances, it is difficult to imagine that land masses pose a significant barrier to the movement of this subspecies, with one exception: The great southerly extent of the Kamchatka Peninsula. The seasonal ice does not extend south to the tip of that peninsula, and the continental shelf is very narrow along its eastern Bering Sea coast. The seals' affinity for ice and shallow waters may help to confine bearded seals to their respective sea basins in the Bering and Okhotsk Seas. Heptner *et al.* (1976) and Krylov *et al.* (1964) described a typical annual pattern of bearded seals in the Sea of Okhotsk to be one of staying near the ice edge when ice is present, and then moving north and closer to shore as the ice recedes in summer. Unlike other researchers describing tendencies of the species as a whole, Krylov *et al.* (1964) described the bearded seal as more or less sedentary, based primarily on observations of seals in the Sea of Okhotsk. Indeed, published maps indicate that the southeastern coast of the Kamchatka Peninsula is the only location where the distribution of the bearded seal is not contiguous (Burns, 1981; Kovacs, 2002; Blix, 2005), and there are no known records of bearded seals moving between the Sea of Okhotsk and Bering Sea.

Kosygin and Potelov (1971) conducted a study of craniometric and morphological differences between bearded seals in the White, Barents, and Kara Seas, and bearded seals in the Bering Sea and Sea of Okhotsk. They reported differences in measurements between the three regions, although they suggested that the differences were not significant enough to justify dividing the population into subspecies. Fedoseev (1973, 2000) also suggested that differences in the numbers of lip vibrissae as well as length and weight indicate population structure between the Bering and Okhotsk Seas. Thus, under the first factor for determining discreteness, the BRT concluded, and we concur, that the available evidence indicates the discreteness of two population segments: (1) The Sea of Okhotsk, and (2) the remainder of the range of *E. b. nauticus,* hereafter referred to as the Beringia population segment. Considerations of cross-boundary management do not outweigh or contradict the division proposed above based on biological grounds. In all countries in the range of the Beringia segment (Russia, United States, and Canada) annual harvest rates are considered small relative to the local populations and harvest is assumed to have little impact on abundance. In addition, if the Kamchatka Peninsula serves as a geographic barrier, the entire population of bearded seals in the Sea of Okhotsk may lie entirely within Russian jurisdiction.

Erignathus barbatus barbatus: The Greenland and Norwegian Seas, which separate northern Europe and Russia from Greenland, form a very deep basin that could potentially act as a type of physical barrier to a primarily benthic feeder. Risch *et al.* (2007) described distinct differences in male vocalizations at breeding sites in Svalbard and Canada; however, they also suggested that ecological influences or sexual selection, and not a geographical feature restricting gene flow, could be the cause of these differences. Gjertz *et al.* (2000) described at least one pup known to travel from Svalbard nearly to the Greenland coast across Fram Strait, and Davis *et al.* (2008) failed to find a significant difference between populations on either side of the Greenland Sea. Both of these studies suggest that the expanse of deep water is apparently not a geographic barrier to bearded seals. However, it should be noted that not all of the DNA samples used in the study by Davis *et al.* (2008) were collected during the time of breeding, and so might not reflect the potential for additional genetic discreteness if discrete breeding groups disperse and mix during the non-breeding period. When considered altogether, the BRT concluded, and we concur, that subdividing *E. b. barbatus* into two or more DPSs is not warranted because the best scientific and commercial data available does not indicate that the populations are discrete.

The core range of the bearded seal includes the waters of five countries (Russia, United States, Canada, Greenland, and Norway) with management regimes sufficiently similar that considerations of cross-boundary management and regulatory mechanisms do not support a positive discreteness determination. In addition, in all countries in the range of *E. b. barbatus,* annual harvest rates are considered small relative to the local populations and harvest is assumed to have little impact on abundance. Since we conclude that the *E. b. barbatus* populations are not discrete, we do not address whether they would be considered significant.

Evaluation of Significance

Having concluded that *E. b. nauticus* is composed of two discrete segments, here we review information that the BRT found informative for evaluating the biological and ecological significance of these segments.

Throughout most of their range, adult bearded seals are rarely found on land (Kovacs, 2002). However, some adults in the Sea of Okhotsk, and more rarely in Hudson Bay (COSEWIC, 2007), the White, Laptev, Bering, Chukchi, and Beaufort Seas (Heptner *et al.,* 1976; Burns, 1981; Nelson, 1981; Smith, 1981), and Svalbard (Kovacs and Lydersen, 2008) use haul-out sites ashore in late summer and early autumn. In these locations, sea ice either melts completely or recedes beyond the limits of shallow waters where seals are able to feed (Burns and Frost, 1979; Burns, 1981). By far the largest and most numerous and predictable of these terrestrial haul-out sites are in the Sea of Okhotsk, where they are distributed continuously throughout the bearded seal range, and may comprise tens to more than a thousand individuals (Scheffer, 1958; Tikhomorov, 1961; Krylov *et al.,* 1964; Chugunkov, 1970; Tavrovskii, 1971; Heptner *et al.,* 1976; Burns, 1981). Indeed, the Sea of Okhotsk is the only portion of the range of *E. b. nauticus* reported to have any such aggregation of adult haul-out sites (Fay, 1974; Burns and Frost, 1979; Burns, 1981; Nelson, 1981). Although it is not clear for how long bearded seals have exhibited this haul-out behavior, its commonness is unique to the Sea of Okhotsk, possibly reflecting responses or adaptations to changing conditions at the range extremes. This difference in haul-out behavior may also provide insights about the resilience of the species to the effects of climate warming in other regions.

The Sea of Okhotsk covers a vast area and is home to many thousands of bearded seals. Similarly, the range of the Beringia population segment includes a vast area that provides habitat for many thousands of bearded seals. Loss of either segment of the subspecies' range would result in a substantially large gap in the overall range of the subspecies.

The existence of bearded seals in the unusual or unique ecological setting found in the Sea of Okhotsk, as well as the fact that loss of either the Okhotsk or Beringia segment would result in a significant gap in the range of the taxon, support our conclusion that the Beringia and Okhotsk population segments of *E. b. nauticus* are each significant to the subspecies as a whole.

DPS Conclusions

In summary, the Beringia and Okhotsk population segments of *E. b. nauticus* are discrete because they are markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, and behavioral factors. They are significant because the loss of either of the two DPSs would result in a significant gap in the range of the taxon, and the Okhotsk DPS exists in an ecological setting that is unusual or unique for the taxon. We therefore conclude that these two population segments meet both the discreteness and significance criteria of the DPS policy. We consider these two population segments to be DPSs (the Beringia DPS and the Okhotsk DPS) (Figure 1).

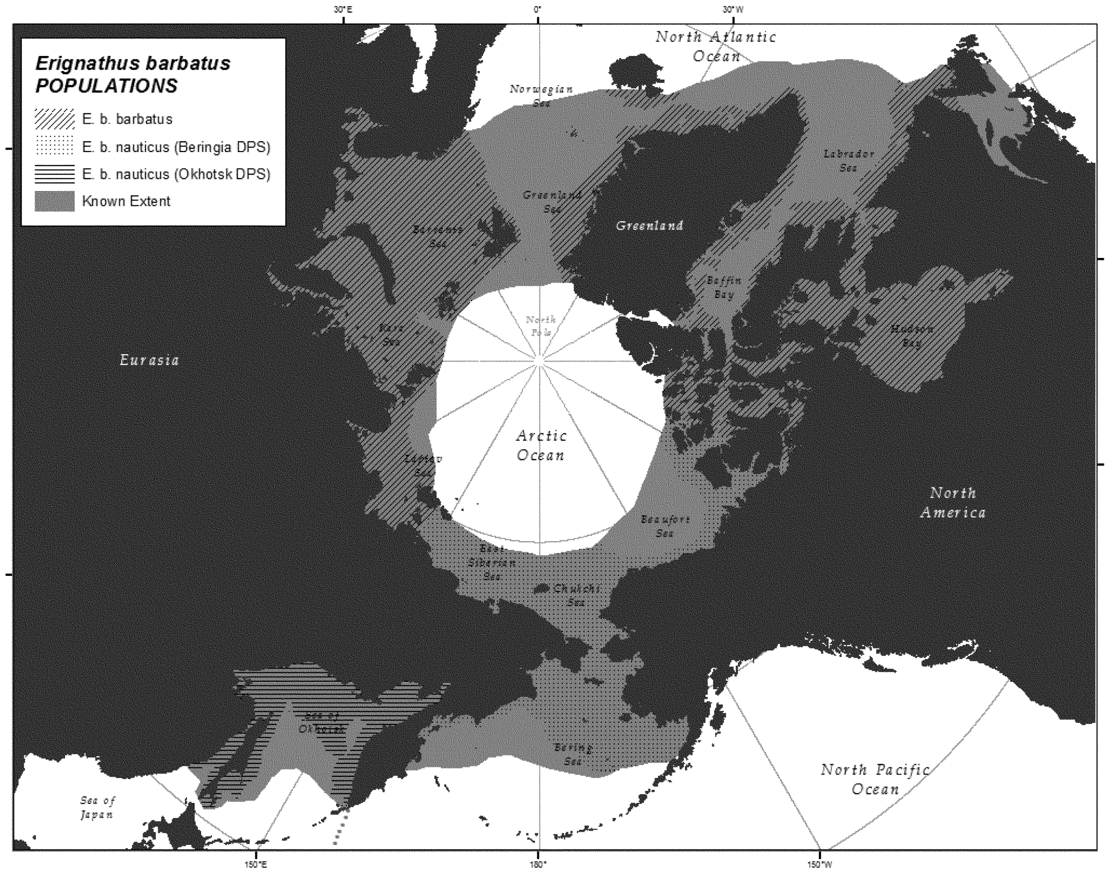

Figure 1. The global distribution of bearded seals as adapted by Cameron et al. (2010) from maps of known extent in Burns (1981) and Kovacs (2002). Two bearded seal subspecies are currently recognized: E. b. nauticus, which is sub-divided into the Beringia DPS and the Okhotsk DPS, and E. b. barbatus. The core distributions (defined as areas of known extent in water <500 m deep) of E. b. barbatus and the two DPSs are also illustrated (represented by the patterned areas). The boundary between the Beringia DPS and the Okhotsk DPS (dotted line) is considered to be 157° E. longitude, and the subspecies boundaries were approximated from the literature.

Abundance and Trends

No accurate worldwide abundance estimates exist for bearded seals. Several factors make it difficult to accurately assess the bearded seal's abundance and trends. The remoteness and dynamic nature of their sea ice habitat, time spent below the surface and their broad distribution and seasonal movements make surveying bearded seals expensive and logistically challenging. Additionally, the species' range crosses political boundaries, and there has been limited international cooperation to conduct range-wide surveys. Details of survey methods and data are often limited or have not been published, making it difficult to judge the reliability of the reported numbers. Logistical challenges also make it difficult to collect the necessary behavioral data to make proper adjustments to seal counts. Until very recently, no suitable behavioral data have been available to correct for the proportion of seals in the water at the time of surveys. Research is just beginning to address these limitations, and so current and accurate abundance estimates are not yet available. We make estimates based on the best scientific and commercial data available, combining recent and historical data.

Beringia DPS

Data analyzed from aerial surveys conducted in April and May 2007 produced an abundance estimate of 63,200 bearded seals in an area of 81,600 sq km in the eastern Bering Sea (Ver Hoef *et al.,* 2010). This is a partial estimate for bearded seals in the U.S. waters of the Bering Sea because the survey area did not include some known bearded seal habitat in the eastern Bering Sea and north of St. Lawrence Island. The estimate is similar in magnitude to the western Bering Sea estimates reported by Fedoseev (2000) from surveys in 1974–1987, which ranged from 57,000 to 87,000. The BRT considers the current total Bering Sea bearded seal population to be about double the partial estimate reported by Ver Hoef *et al.* (2010) for U.S. waters, or approximately 125,000 individuals.

Aerial surveys flown along the coast from Shishmaref to Barrow during May–June 1999 and 2000 provided average annual bearded seal density estimates. A crude abundance estimate based on these densities, and without any correction for seals in the water, is 13,600 bearded seals. These surveys covered only a portion (U.S. coastal) of the Chukchi Sea. Assuming that the waters along the Chukchi Peninsula on the Russian side of the Chukchi Sea contain similar numbers of bearded seals, the combined total would be about 27,000 individuals.

Aerial surveys of the eastern Beaufort Sea conducted in June during 1974–1979, provided estimates that averaged 2,100 bearded seals, uncorrected for seals in the water. The ice-covered continental shelf of the western Beaufort Sea is roughly half the area surveyed, suggesting a crude estimate for the entire Beaufort Sea in June of about 3,150, uncorrected for seals in the water. For such a large area in which the subsistence use of bearded seals is important to Alaska Native and Inuvialuit communities, this number is likely to be a substantial underestimate. A possible explanation is that many of the subsistence harvests of bearded seals in this region may occur after a rapid seasonal influx of seals from the Bering and Chukchi Seas in the early summer, later than the period in which the surveys were flown.

In the East Siberian Sea, Obukhov (1974) described bearded seals as rare, but present during July–September, based on year-round observations (1959–1965) of a region extending about 350 km east from the mouth of the Kolyma River. Typically, one bearded seal was seen during 200–250 km of travel. Geller (1957) described the zone between the Kola Peninsula and Chukotka as comparatively poor in marine mammals relative to the more western and eastern portions of the northern Russian coasts. We are not aware of any other information about bearded seal abundance in the East Siberian Sea.

Although the present population size of the Beringia DPS is very uncertain, based on these reported abundance estimates, the current population size is estimated at 155,000 individuals.

Okhotsk DPS

Fedoseev (2000) presented multiple years of unpublished seal survey data from 1968 to 1990; however, specific methodologies were not provided for any of the surveys or analyses. Most of these surveys were designed primarily for ringed and ribbon seals, as they were more abundant and of higher commercial value. Recognizing the sparse documentation of the survey methods and data, as well as the 20 years or more that have elapsed since the last survey, the BRT recommends considering the 1990 estimate of 95,000 individuals to be the current estimated population size of the Okhotsk DPS.

Erignathus barbatus barbatus

Cleator (1996) suggested that a minimum of 190,000 bearded seals inhabit Canadian waters based on summing the different available indices for bearded seal abundance. The BRT recommends considering the current bearded seal population in Hudson Bay, the Canadian Archipelago, and western Baffin Bay to be 188,000 individuals. This value was chosen based on the estimate for Canadian waters of 190,000, minus 2,000 to account for the average number estimated to occur in the Canadian portion of the Beaufort Sea (which is part of the *E. b. nauticus* subspecies). There are few estimates of abundance available for other parts of the range of *E. b. barbatus,* and there is sparse documentation of the methods used to produce these estimates. Consequently, the BRT considered all regional estimates for *E. b. barbatus* to be unreliable, except for those in Canadian waters. The population size of *E. b. barbatus* is therefore very uncertain, but NMFS experts estimate it to be 188,000 individuals.

Summary of Factors Affecting the Bearded Seal

Section 4(a)(1) of the ESA and the listing regulations (50 CFR part 424) set forth procedures for listing species. We must determine, through the regulatory process, if a species is endangered or threatened because of any one or a combination of the following factors: (1) The present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; or (5) other natural or human-made factors affecting its continued existence. These factors are discussed below, with the Beringia DPS, the Okhotsk DPS, and *E. b. barbatus* considered under each factor. The reader is also directed to section 4.2 of the status review report for a more detailed discussion of the factors affecting bearded seals (*see* **ADDRESSES**). As discussed above, data on bearded seal abundance and trends of most populations are unavailable or imprecise, and there is little basis for quantitatively linking projected environmental conditions or other factors to bearded seal survival or reproduction. Our risk assessment therefore primarily evaluated important habitat features and was based upon the best available scientific and commercial data and the expert opinion of the BRT members.

A. Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range

The main concern about the conservation status of bearded seals stems from the likelihood that their sea ice habitat has been modified by the warming climate and, more so, that the scientific consensus projections are for continued and perhaps accelerated warming in the foreseeable future. A second concern, related by the common driver of carbon dioxide (CO_2) emissions, is the modification of habitat by ocean acidification, which may alter prey populations and other important aspects of the marine ecosystem. A reliable assessment of the future conservation status of bearded seals therefore requires a focus on observed and projected changes in sea ice, ocean temperature, ocean pH (acidity), and associated changes in bearded seal prey species.

The threats (analyzed below) associated with impacts of the warming climate on the habitat of bearded seals, to the extent that they may pose risks to these seals, are expected to manifest throughout the current breeding and molting range (for sea ice related threats) or throughout the entire range (for ocean warming and acidification) of each of the population units, since the spatial resolution of data pertaining to these threats is currently limited.

Overview of Global Climate Change and Effects on the Annual Formation of the Bearded Seal's Sea Ice Habitat

Sea ice in the Northern Hemisphere can be divided into first-year sea ice that formed in the most recent autumn-winter period, and multi-year sea ice that has survived at least one summer melt season. The Arctic Ocean is covered by a mix of multi-year sea ice. More southerly regions, such as the Bering Sea, Barents Sea, Baffin Bay, Hudson Bay, and the Sea of Okhotsk are known as seasonal ice zones, where first year sea ice is renewed every winter. Both the observed and the projected effects of a warming global climate are most extreme in northern high-latitude regions, in large part due to the ice-albedo feedback mechanism in which melting of snow and sea ice lowers reflectivity and thereby further increases surface warming by absorption of solar radiation.

Sea ice extent at the end of summer (September) 2007 in the Arctic Ocean was a record low (4.3 million sq km), nearly 40 percent below the long-term average and 23 percent below the previous record set in 2005 (5.6 million sq km) (Stroeve *et al.,* 2008). Sea ice extent in September 2010 was the third lowest in the satellite record for the month, behind 2007 and 2008 (second lowest). Most of the loss of sea ice was on the Pacific side of the Arctic. Of even greater long-term significance was the loss of over 40 percent of Arctic multi-year sea ice over the last 5 years (Kwok *et al.,* 2009). While the annual minimum of sea ice extent is often taken as an index of the state of Arctic sea ice, the recent reductions of the area of multi-year sea ice and the reduction of sea ice thickness is of greater physical importance. It would take many years to restore the ice thickness through annual growth, and the loss of multi-year sea ice makes it unlikely that the Arctic will return to previous climatological conditions. Continued loss of sea ice will be a major driver of changes across the Arctic over the next decades, especially in late summer and autumn.

Sea ice and other climatic conditions that influence bearded seal habitats are quite different between the Arctic and seasonal ice zones. In the Arctic, sea ice loss is a summer feature with a delay in freeze up occurring into the following fall. Sea ice persists in the Arctic from late fall through mid-summer due to cold and dark winter conditions. Sea ice variability is primarily determined by radiation and melting processes during the summer season. In contrast, the seasonal ice zones are free of sea ice during summer. The variability in extent, thickness, and other sea ice characteristics important to marine mammals is determined primarily by changes in the number, intensity, and track of winter and spring storms in the sub-Arctic. Although there are connections between sea ice conditions in the Arctic and the seasonal ice zones, the early loss of summer sea ice in the Arctic cannot be extrapolated to the seasonal ice zones, which are behaving differently than the Arctic. For example, the Bering Sea has had 4 years of colder than normal winter and spring conditions from 2007 to 2010, with near record sea ice extents, rivaling the sea ice maximum in the mid-1970s, despite record retreats in summer.

IPCC Model Projections

The analysis and synthesis of information presented by the IPCC in its *Fourth Assessment Report* (AR4) represents the scientific consensus view on the causes and future of climate change. The IPCC AR4 used a range of future greenhouse gas (GHG) emissions produced under six "marker" scenarios from the *Special Report on Emissions Scenarios* (SRES) (IPCC, 2000) to project plausible outcomes under clearly-stated assumptions about socio-economic factors that will influence the emissions. Conditional on each scenario, the best estimate and likely range of emissions were projected through the end of the 21st century. It is important to note that the SRES scenarios do not contain explicit assumptions about implementation of agreements or protocols on emission limits beyond current mitigation policies and related sustainable development practices.

Conditions such as surface air temperature and sea ice area are linked in the IPCC climate models to GHG emissions by the physics of radiation processes. When CO_2 is added to the atmosphere, it has a long residence time and is only slowly removed by ocean absorption and other processes. Based on IPCC AR4 climate models, expected global warming—defined as the change in global mean surface air temperature (SAT)—by the year 2100 depends strongly on the assumed emissions of CO_2 and other GHGs. By contrast, warming out to about 2040–2050 will be primarily due to emissions that have already occurred and those that will occur over the next decade. Thus, conditions projected to mid-century are less sensitive to assumed future emission scenarios. Uncertainty in the amount of warming out to mid-century is primarily a function of model-to-model differences in the way that the physical processes are incorporated, and this uncertainty can be addressed in predicting ecological responses by incorporating the range in projections from different models.

Comprehensive Atmosphere-Ocean General Circulation Models (AOGCMs) are the major objective tools that scientists use to understand the complex interaction of processes that determine future climate change. The IPCC used the simulations from about two dozen AOGCMs developed by 17 international modeling centers as the basis for the AR4 (IPCC, 2007). The AOGCM results are archived as part of the Coupled Model Intercomparison Project-Phase 3 (CMIP3) at the Program for Climate Model Diagnosis and Intercomparison (PCMDI). The CMIP3 AOGCMs provide reliable projections, because they are built on well-known dynamical and physical principles, and they simulate quite well many large scale aspects of present-day conditions. However, the coarse resolution of most current climate models dictates careful application on small scales in heterogeneous regions.

There are three main contributors to divergence in AOGCM climate projections: Large natural variations, the range in emissions scenarios, and across-model differences. The first of these, variability from natural variation, can be incorporated by averaging the projections over decades, or, preferably, by forming ensemble averages from several runs of the same model. The second source of variation arises from the range in plausible emissions scenarios. As discussed above, the impacts of the scenarios are rather similar before mid-21st century. For the second half of the 21st century, however, and especially by 2100, the choice of the emission scenario becomes the major source of variation among climate projections and dominates over natural variability and model-to-model differences (IPCC, 2007). Because the current consensus is to treat all SRES emissions scenarios as equally likely, one option for representing the full range of variability in potential outcomes would be to project from any model under all of the six "marker" scenarios. This can be impractical in many situations, so the typical procedure for projecting impacts is to use an intermediate scenario, such as A1B or B2 to predict trends, or one intermediate and one extreme scenario (*e.g.,* A1B and A2) to represent a significant range of variability. The third primary source of variability results from differences among models in factors such as spatial resolution. This variation can be addressed and mitigated in part by using the ensemble means from multiple models.

There is no universal method for combining AOGCMs for climate projections, and there is no one best model. The approach taken by the BRT for selecting the models used to project future sea ice conditions is summarized below.

Data and Analytical Methods

NMFS scientists have recognized that the physical basis for some of the primary threats faced by the species had been projected, under certain assumptions, through the end of the 21st century, and that these projections currently form the most widely accepted version of the best available data about future conditions. In our risk assessment for bearded seals, we therefore considered the full 21st century projections to analyze the threats stemming from climate change.

The CMIP3 (IPCC) model simulations used in the BRT analyses were obtained from PCMDI on-line (PCMDI, 2010). The six IPCC models previously identified by Wang and Overland (2009) as performing satisfactorily at reproducing the magnitude of the observed seasonal cycle of sea ice extent in the Arctic under the A1B ("medium") and A2 ("high") emissions scenarios were used to project monthly sea ice concentrations in the Northern Hemisphere in March–July for each of the decadal periods 2025–2035, 2045–2055, and 2085–2095.

Climate models generally perform better on continental or larger scales, but because habitat changes are not uniform throughout the hemisphere, the six IPCC models used to project sea ice conditions in the Northern Hemisphere were further evaluated independently on their performance at reproducing the magnitude of the observed seasonal cycle of sea ice extent in 12 different regions throughout the bearded seal's range, including five regions for the Beringia DPS, one region for the Okhotsk DPS, and six regions for *E. b. barbatus.* Models that met the performance criteria were used to project sea ice extent for the months of November and April–July through 2100. For the Beringia DPS, in two regions (Chukchi and east Siberian Seas) six of the models simulated sea ice conditions in reasonable agreement with observations, in two regions (Beaufort and eastern Bering Seas) four models met the performance criteria, and in the western Bering Sea a single model met the performance criteria. For *E. b. barbatus,* none of the models performed satisfactorily in six of the seven regions (a single model was retained in the Barents Sea). The models also did not meet the performance criteria for the Sea of Okhotsk. Other less direct means of predicting regional ice cover, such as comparison of surface air temperature predictions with past climatology (Sea of Okhotsk), evaluation of other existing analyses (Hudson Bay) or results from the hemispheric predictions (the Canadian Arctic Archipelago, Baffin Bay, Greenland Sea, and the Kara and Laptev Seas), were used for regions where ice projections could not be obtained. For Hudson Bay we referred to the analysis of Joly *et al.* (2010). They used a regional sea ice-ocean model to investigate the response of sea ice and oceanic heat storage in the Hudson Bay system to a climate-warming scenario. These predicted regional sea ice conditions are summarized below in assessing the potential impacts of changes in sea ice on bearded seals.

While our inferences about future regional ice conditions are based upon the best available scientific and commercial data, we recognize that there are uncertainties associated with predictions based on hemispheric projections or indirect means. We also note that judging the timing of onset of potential impacts to bearded seals is complicated by the coarse resolution of the IPCC models.

Northern Hemisphere Predictions

Projections of Northern Hemisphere sea ice extent for November indicate a major delay in fall freeze-up by 2050 north of Alaska and in the Barents Sea. By 2090, the average sea ice concentration is below 50 percent in the Russian Arctic and some models show a nearly ice free Arctic, except for the region of the Canadian Arctic Archipelago. In March and April, winter type conditions persist out to 2090. There is some reduction of sea ice by 2050 in the outer portions of the seasonal ice zones, but the sea ice south of Bering Strait, eastern Barents Sea, Baffin Bay, and the Kara and Laptev Seas remains substantial. May shows diminishing sea ice cover at 2050 and 2090 in the Barents and Bering Seas and Sea of Okhotsk. The month of June begins to show substantial changes as the century progresses. Current conditions occasionally exhibit a lack of sea ice near the Bering Strait by June. By 2050, however, this sea ice loss becomes a major feature, with open water continuing along the northern Alaskan coast in most models. Open water in June spreads to the East Siberian Shelf by 2090. The eastern Barents Sea experiences a reduction in sea ice between 2030 and 2050. The models indicate that sea ice in Baffin Bay will be affected very little until the end of the century.

In July, the Arctic Ocean shows a marked effect of global warming, with the sea ice retreating to a central core as the century progresses. The loss of multi-year sea ice over the last 5 years has provided independent evidence for this conclusion. By 2050, the continental shelves of the Beaufort, Chukchi, and East Siberian Seas are nearly ice free in July, with ice concentrations less than 20 percent in the ensemble mean projections. The Kara and Laptev Seas also show a reduction of sea ice in coastal regions by mid-century in most but not all models. The Canadian Arctic Archipelago and the adjacent Arctic Ocean north of Canada and Greenland, however, are predicted to become a refuge for sea ice through the end of the century. This conclusion is supported by typical Arctic wind patterns, which tend to blow onshore in this region. Indeed, this refuge region is why sea ice scientists use the phrase: A nearly sea ice free summer Arctic by mid-century.

Potential Impacts of Changes in Sea Ice on Bearded Seals

In order to feed on the seafloor, bearded seals are known to nearly always occupy shallow waters (Fedoseev, 2000; Kovacs, 2002). The preferred depth range is often described as less than 200 m (Kosygin, 1971; Heptner *et al.,* 1976; Burns and Frost, 1979; Burns, 1981; Fedoseev, 1984; Nelson *et al.,* 1984; Kingsley *et al.,* 1985; Fedoseev, 2000; Kovacs, 2002), though adults have been known to dive to around 300 m (Kovacs, 2002; Cameron and Boveng, 2009), and six of seven pups instrumented near Svalbard have been recorded at depths greater than 488 m (Kovacs, 2002). The BRT defined the core distribution of bearded seals (*e.g.,* whelping, nursing, breeding, molting, and most feeding) as those areas of known extent that are in water less than 500 m deep.

An assessment of the risks to bearded seals posed by climate change must consider the species' life-history functions, how they are linked with sea ice, and how altering that link will affect the vital rates of reproduction and survival. The main functions of sea ice relating to the species' life-history are: (1) A dry and stable platform for whelping and nursing of pups in April and May (Kovacs *et al.,* 1996; Atkinson, 1997); (2) a rearing habitat that allows mothers to feed and replenish energy reserves lost while nursing; (3) a habitat that allows a pup to gain experience diving, swimming, and hunting with its mother, and that provides a platform for resting, relatively isolated from most terrestrial and marine predators; (4) a habitat for rutting males to hold territories and attract post-lactating females; and (5) a platform suitable for extended periods of hauling out during molting.

Whelping and nursing: Pregnant females are considered to require sea ice as a dry birthing platform (Kovacs *et al.,* 1996; Atkinson, 1997). Similarly, pups are thought to nurse only while on ice. If suitable ice cover is absent from shallow feeding areas during whelping and nursing, bearded seals would be forced to seek either sea ice habitat over deeper water or coastal regions in the vicinity of haul-out sites on shore. A shift to whelping and nursing on land would represent a major behavioral change that could compromise the ability of bearded seals, particularly pups, to escape predators, as this is a highly developed response on ice versus land. Further, predators abound on continental shorelines, in contrast with sea ice habitat where predators are sparse; and small islands where predators are relatively absent offer limited areas for whelping and nursing as compared to the more extensive substrate currently provided by suitable sea ice.

Bearded seal mothers feed throughout the lactation period, continuously replenishing fat reserves lost while nursing pups (Holsvik, 1998; Krafft *et al.,* 2000). Therefore, the presence of a sufficient food resource near the nursing location is also important. Rearing young in poorer foraging grounds would require mothers to forage for longer periods and (or) compromise their own body condition, both of which could impact the transfer of energy to offspring and affect survival of pups, mothers, or both.

Pup maturation: When not on the ice, there is a close association between mothers and pups, which travel together at the surface and during diving (Lydersen *et al,* 1994; Gjertz *et al.,* 2000; Krafft *et al.,* 2000). Pups develop diving, swimming, and foraging skills over the nursing period, and perhaps beyond (Watanabe *et al.,* 2009). Learning to forage in a sub-optimal habitat could impair a pup's ability to learn effective foraging skills, potentially impacting its long-term survival. Further, hauling out reduces thermoregulatory demands which, in Arctic climates, may be critical for maintaining energy balance. Hauling out is especially important for growing pups, which have a disproportionately large skin surface and rate of heat loss in the water (Harding *et al.,* 2005; Jansen *et al.,* 2010).

Mating: Male bearded seals are believed to establish territories under the sea ice and exhibit complex acoustic and diving displays to attract females. Breeding behaviors are exhibited by males up to several weeks in advance of females' arrival at locations to give birth. Mating takes place soon after females wean their pups. The stability of ice cover is believed to have influenced the evolution of this mating system.

Molting: There is a peak in the molt during May–June, when most bearded seals (except young of the year) tend to haul out on ice to warm their skin. Molting in the water during this period could incur energetic costs which might reduce survival rates.

For any of these life history events, a greater tendency of bearded seals to aggregate while hauled out on land or in reduced ice could increase intra- and inter-specific competition for resources, the potential for disease transmission, and predation; all of which could affect annual survival rates. In particular, a reduction in suitable sea ice habitat would likely increase the overlap in the distribution of bearded seals and walrus (*Odobenus rosmarus*), another ice-associated benthic feeder with similar habitat preferences and diet. The walrus is also a predator of bearded seal, though seemingly infrequent. Hauling out closer to shore or on land could also increase the risks of predation from polar bears, terrestrial carnivores, and humans.

For a long-lived and abundant animal with a large range, the mechanisms identified above (*i.e.,* low ice extent or absence of sea ice over shallow feeding areas) are not likely to be significant to an entire population in any one year. Rather, the overall strength of the impacts is likely a function of the frequency of years in which they occur, and the proportion of the population's range over which they occur. The low ice years, which will occur more frequently than in the past, may have impacts on recruitment via reduced pup survival if, for example, pregnant females are ineffective or slow at adjusting their breeding locales for variability of the position of the sea ice front.

Potential mechanisms for resilience on relatively short time scales include adjustments to the timing of breeding in response to shorter periods of ice cover, and adjustments of the breeding range in response to reduced ice extent. The extent to which bearded seals might adapt to more frequent years with early ice melt by shifting the timing of reproduction is uncertain. There are many examples of shifts in timing of reproduction by pinnipeds and terrestrial mammals in response to body condition and food availability. In most of these cases, sub-optimal conditions led to reproduction later in the season, a response that would not likely be beneficial to bearded seals. A shift to an earlier melt date may, however, over the longer term provide selection pressure for an evolutionary response over many generations toward earlier reproduction.

It is impossible to predict whether bearded seals would be more likely to occupy ice habitats over the deep waters of the Arctic Ocean basin or more terrestrial habitats if sea ice failed to extend over the shelf. Outside the critical life history periods related to reproduction and molting there is evidence that bearded seals might not require the presence of sea ice for hauling out, and instead remain in the water for weeks or months at a time. Even during the spring and summer bearded seals also appear to possess some plasticity in their ability to occupy different habitats at the extremes of their range. For example, throughout most of their range, adult bearded seals are seldom found on land; however, in the Sea of Okhotsk, bearded seals are known to use haul-out sites ashore regularly and predictably during the ice free periods in late summer and early autumn. Also, western and central Baffin Bay are unique among whelping areas as mothers with dependent pups have been observed on pack ice over deep water (greater than 500 m). These behaviors are extremely rare in the core distributions of bearded seals; therefore, the habitats that necessitate them should be considered sub-optimal. Consequently, predicted reductions in sea ice extent, particularly when such reductions separate ice from shallow water feeding habitats, can be reasonably used as a proxy for predicting years of reduced survival and recruitment, though not the magnitude of the impact. In addition, the frequency of predicted low ice years can serve as a useful tool for assessing the cumulative risks posed by climate change.

Assessing the potential impacts of the predicted changes in sea ice cover and the frequency of low ice years on the conservation status of bearded seals requires knowledge or assumptions about the relationships between sea ice and bearded seal vital rates. Because no quantitative studies of these relationships have been conducted, we relied upon two studies in the Bering Sea that estimated bearded seal preference for ice concentrations based on aerial survey observations of seal densities. Simpkins *et al.* (2003) found that bearded seals near St. Lawrence Island in March preferred 70–90 percent ice coverage, as compared with 0–70 percent and 90–100 percent. Preliminary results from another study in the Bering Sea (Ver Hoef *et al., In review*) found substantially lower probability of bearded seal occurrence in areas of 0–25 percent ice coverage during April–May. Lacking a more direct measure of the relationship between bearded seal vital rates and ice coverage, we considered areas within the current core distribution of bearded seals where the decadal averages and minimums of ice projections (centered on the years 2050 and 2090) were below 25 percent concentrations as inadequate for whelping and nursing. We also assumed that the sea ice requirements for molting in May–June are less stringent than those for whelping and rearing pups, and that 15 percent ice concentration in June would be minimally sufficient for molting.

Beringia DPS: In the Bering Sea, early springtime sea ice habitat for bearded seal whelping should be sufficient in most years through 2050 and out to the second half of the 21st century, when the average ice extent in April is forecasted to be approximately 50 percent of the present-day extent. The general trend in projections of sea ice for May (nursing, rearing and some molting) through June (molting) in the Bering Sea is toward a longer ice-free period resulting from more rapid spring melt. Until at least the middle of the 21st century, projections show some years with near-maximum ice extent; however, less ice is forecasted on average, manifested as more frequent years in which the spring retreat occurs earlier and the peak ice extent is lower. By the end of the 21st century, projections for the Bering Sea indicate that there will commonly be years with little or no ice in May, and that sea ice in June is expected to be non-existent in most years.

Projections of sea ice concentration indicate that there will typically be 25 percent or greater ice concentration in April–May over a substantial portion of the shelf zone in the Bering Sea through 2055. By 2095 ice concentrations of 25 percent or greater are projected only in small zones of the Gulf of Anadyr and in the area between St. Lawrence Island and Bering Strait by May. In the minimal ice years the projections indicate there will be little or no ice of 25 percent or greater concentration over the shelf zone in the Bering Sea during April and May, perhaps commencing as early as the next decade. Conditions will be particularly poor for the molt in June when typical ice predictions suggest less than 15 percent ice by mid-century. Projections suggest that the spring and summer ice edge could retreat to deep waters of the Arctic Ocean basin, potentially separating sea ice suitable for pup maturation and molting from benthic feedings areas.

In the East Siberian, Chukchi, and Beaufort Seas, the average ice extents during April and May (*i.e.,* the period of whelping, nursing, mating and some molting) are all predicted to be very close to historical averages out to the end of the 21st century. However, the annual variability of this extent is forecasted to continue to increase, and single model runs indicate the possibility of a few years in which April and May sea ice would cover only half (or in the case of the Chukchi Sea, none) of the Arctic shelf in these regions by the end of the century. In June, also a time of molting, the average sea ice extent is predicted to cover no more than half of the shelf in the Chukchi and Beaufort Seas by the end of the century. By the end of the century, the East Siberian Sea is not projected to experience losses in ice extent of these magnitudes until July.

The projections indicate that there will typically be 25 percent or greater ice concentration in April–June over the entire shelf zones in the Beaufort, Chukchi, and East Siberian Seas through the end of the century. In the minimal ice years 25 percent or greater ice concentration is projected over the shelf zones in April and May in these regions through the end of the century, except in the eastern Chukchi and central Beaufort Seas. By June 2095, ice suitable for molting (i.e., 15 percent or more concentration) is projected to be mostly absent in these regions in minimal years, except in the western Chukchi Sea and northern East Siberian Sea.

A reduction in spring and summer sea ice concentrations could conceivably result in the development of new areas containing suitable habitat or enhancement of existing suboptimal habitat. For example, the East Siberian Sea has been said to be relatively low in bearded seal numbers and has historically had very high ice concentrations and long seasonal ice coverage. Ice concentrations projected for May–June near the end of the century in this region include substantial areas with 20–80 percent ice, potentially suitable for bearded seal reproduction, molting, and foraging. However, it is prudent to assume that the net difference between sea ice related habitat creation and loss will be negative, especially because other factors like ocean warming and acidification (discussed below) are likely to impact habitat.

A substantial portion of the Beringia DPS currently whelps in the Bering Sea, where a longer ice-free period is forecasted in May and June. To adapt to this sea ice regime, bearded seals would likely have to shift their nursing, rearing, and molting areas to the ice covered seas north of the Bering Strait, potentially with poor access to food, or to coastal haul-out sites on shore, potentially with increased risks of disturbance, predation, and competition. Both of these scenarios would require bearded seals to adapt to novel (i.e., suboptimal) conditions, and to exploit habitats to which they may not be well adapted, likely compromising their reproduction and survival rates. Further, the spring and summer ice edge may retreat to deep waters of the Arctic Ocean basin, which could separate sea ice suitable for pup maturation and molting from benthic feeding areas. Accordingly, we conclude that the projected changes in sea ice habitat pose significant threats to the persistence of the Beringia DPS, and it is likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range.

Okhotsk DPS: As noted above, none of the IPCC models performed satisfactorily at projecting sea ice for the Sea of Okhotsk, and so projected surface air temperatures were examined relative to current climate conditions as a proxy to predict sea ice extent and duration. The Sea of Okhotsk is located southwest of the Bering Sea, and thus can be expected to have earlier radiative heating in the spring. The region is dominated in winter and spring, however, by cold continental air masses and offshore flow. Sea ice is formed rapidly and is generally advected southward. As this region is dominated by cold air masses for much of the winter and spring, we would expect that the present seasonal cycle of first year sea ice will continue to dominate the future habitat of the Sea of Okhotsk.

Based on the temperature proxies, a continuation of sea ice formation or presence is expected for March (some whelping and nursing) in the Sea of Okhotsk through the end of this century, though the ice may be limited to the northern region in most years after mid-century. However, little to no sea ice is expected in May by 2050, and in April by the end of the century, months critical for whelping, nursing, pup maturation, breeding, and molting. Hence, the most significant threats posed to the Okhotsk DPS were judged to be decreases in sea ice habitat suitable for these important life history events.

Over the long term, bearded seals in the Sea of Okhotsk do not have the prospect of following a shift in the average position of the ice front northward. Therefore, the question of whether a future lack of sea ice will cause the Okhotsk DPS of bearded seals to go extinct depends in part on how successful the populations are at moving their reproductive activities from ice to haul-out sites on shore. Although some bearded seals in this area are known to use land for hauling out, this only occurs in late summer and early autumn. We are not aware of any occurrence of bearded seals whelping or nursing young on land, so this predicted loss of sea ice is expected to be significantly detrimental to the long term viability of the population. We conclude that the expected changes in sea ice habitat pose a significant threat to the Okhotsk DPS and it is likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range.

E. b. barbatus: The models predict that ice in April–June will continue to persist in the Canadian Arctic Archipelago throughout this century. Even in the low ice years at the end of the century, the many channels throughout the archipelago are still expected to contain ice. Predictions for Baffin Bay were similar, showing April–June ice concentrations near historical levels out to 2050. Sea ice cover and extent is predicted to diminish somewhat during the last half of the century, but average conditions should still provide sufficient ice for the life history needs of bearded seals. At least until the end of the 21st century, some ice is always predicted along eastern Greenland in April and May. In June, however, the low ice concentrations in minimum years will not be sufficient for molting.

Joly *et al.* (2010) used a regional sea ice-ocean model and air temperature projections to predict sea ice conditions in Hudson Bay out to 2070. Compared to present averages, the extent of sea ice in April is expected to change very little by 2070, though reductions of 20 percent in June ice and 60 percent in July ice are expected by 2070. The authors also predict that sea ice in Hudson Bay would become up to 50 percent thinner over this time, though this would still likely provide enough buoyancy for bearded seals.

Projections of sea ice extent for the Barents Sea indicate that ice in April will continue to decline in a relatively constant linear trend throughout the 21st century. The trend for May declines faster, predicting half as much ice by 2050, and less than a quarter as much ice by 2090. The White Sea (a southern inlet of the Barents Sea) is forecast to be ice-free in May by 2050. The trend in ice loss for June is faster still, predicting that ice will all but disappear in the Barents Sea region in the next few decades. Whelping is believed to occur in the drifting pack ice throughout the Barents Sea. Concentrations of mothers with pups have been observed in loose pack ice along several hundred kilometers of the seasonal ice edge from southern Svalbard to the north-central Barents Sea. Observations also suggest whelping occurs in the White Sea, with lower densities of pups reported in the central and southern White Sea and in the western Kara Sea. Bearded seals in the Barents Sea are believed to conduct seasonal migrations following the ice edge. The impacts of an ice-free Barents Sea would depend largely on the ability of bearded seals to relocate to more ice covered waters. However, there is little or no basis to determine the likelihood of this occurring.

Although sea ice has covered the Kara and Laptev Seas throughout most of the year in the past, a west-to-east reduction in the concentration of springtime sea ice is predicted over the next century. By the end of the century, in some years half of the Kara Sea could be ice free in May, and in June by mid-century. In most years however, ice (albeit in low concentrations) is forecasted to cover the Kara Sea shelf. Similarly, out to the end of the century, the Laptev Sea is predicted to always have springtime ice. In July, by century's end, significant portions of both seas are predicted to be ice free in most years. Unlike most regions, the peak of molting in these seas is reportedly well into July (Chapskii, 1938; Heptner *et al.,* 1976), so bearded seals in these areas would need to modify the location or timing of their molt to avoid the consequences of increased metabolism by molting in the water and/or incomplete molting. Bearded seals in the White and Laptev Seas are known to occasionally haul out on shore during late-summer and early-autumn (Heptner *et al.,* 1976). This behavior could mitigate the impacts of an ice-free July.

Bearded seals are considered rare in the Laptev Sea (Heptner *et al.,* 1976), which currently has extremely high concentrations of ice throughout most of the year. As such, an effect of global warming may well be to increase suitable haul-out habitat for bearded seals in the Kara and Laptev Seas, potentially offsetting to some extent a decrease of habitat further west. It is prudent to assume, though, that the net difference between sea ice related habitat creation and loss will be negative, especially because other factors like ocean warming and acidification (discussed below) are likely to impact habitat and there is no information about the quality of feeding habitat that may underlie the haul-out habitat in the future.

Given the projected reductions in spring and summer sea ice, the threat posed to *E. b. barbatus* by potential spatial separation of sea ice resting areas from benthic feeding habitat appears to be moderate to high (but lower than for the Beringia DPS). A decline in sea ice suitable for molting also appears to pose a moderate threat. If suitable sea ice is absent during molting, bearded seals would have to relocate to other ice-covered waters, potentially with poorer access to food, or to coastal regions in the vicinity of haul-out sites on shore. Further, these behavioral changes could increase the risks of disturbance, predation, and competition. Both scenarios would require bearded seals to adapt to novel (i.e., suboptimal) conditions, and to exploit habitats to which they may not be well adapted, likely compromising their survival rates.

Nevertheless, conditions during April–June should still provide sufficient ice for the life history needs of bearded seals within major portions of the range of *E. b. barbatus* through the end of this century, including in the Canadian Arctic Archipelago, Baffin Bay, and Hudson Bay. The BRT estimated that 188,000 bearded seals occur in these areas. We therefore conclude the threats posed by the projected changes in sea ice habitat are not likely to place *E. b. barbatus* in danger of extinction within the foreseeable future throughout all of its range.

We also analyzed whether *E. b. barbatus* is threatened or endangered within a significant portion of its range. To address this issue, we first considered whether the subspecies is threatened in any portion of its range and then whether that portion is significant. We find that the greatest threats posed by the projected changes in sea ice habitat are in the Barents, White, and Kara Seas. As discussed above, by 2090 the Barents Sea is predicted to show a loss in sea ice of more than 75 percent in May, and to be virtually ice-free in June and July. The White Sea, a southern inlet of the Barents Sea, is forecast to be ice-free in May by 2050. In addition, half of the Kara Sea is expected to be ice-free in May by 2090, and in June by 2050. We noted above that the BRT considered all regional estimates of abundance for *E. b. barbatus* to be unreliable, except those in Canadian waters. We similarly have no information on the relative significance of these regions to bearded seals. We do not, however, have any information indicating that these areas are significant to the subspecies' biology, ecology, or general conservation needs. These areas do not appear to contain particularly high-quality habitat for bearded seals, or to have characteristics that would make bearded seals less susceptible to the threats posed by climate change (i.e., contribute significantly to the resilience of the subspecies). By contrast, the large habitat areas in Hudson Bay, the Canadian Arctic Archipelago, and Baffin Bay, which support an estimated 188,000 bearded seals, are expected to persist through the end of the century. Accordingly, we conclude that *E. b. barbatus* is not likely to become endangered in the foreseeable future in a significant portion of its range.

Impacts on Bearded Seals Related to Changes in Ocean Conditions

Ocean acidification is an ongoing process whereby chemical reactions occur that reduce both seawater pH and the concentration of carbonate ions when CO_2 is absorbed by seawater. Results from global ocean CO_2 surveys over the past 2 decades have shown that ocean acidification is a predictable consequence of rising atmospheric CO_2 levels. The process of ocean acidification has long been recognized, but the ecological implications of such chemical changes have only recently begun to be appreciated. The waters of the Arctic and adjacent seas are among the most vulnerable to ocean acidification. The most likely impact of ocean acidification on bearded seals will be through the loss of benthic calcifiers and lower trophic levels on which the species' prey depends. Cascading effects are likely both in the marine and freshwater environments. Our limited understanding of planktonic and benthic calcifiers in the Arctic (*e.g.*, even their baseline geographical distributions) means that future changes will be difficult to detect and evaluate.

Warming of the oceans is predicted to drive species ranges toward higher latitudes. Additionally, climate change can strongly influence fish distribution and abundance. What can be predicted with some certainty is that further shifts in spatial distribution and northward range extensions are inevitable, and that the species composition of the plankton and fish communities will continue to change under a warming climate.

Bearded seals of different age classes are thought to feed at different trophic levels, so any ecosystem change could be expected to impact bearded seals in a variety of ways. Changes in bearded seal prey, anticipated in response to ocean warming and loss of sea ice and, potentially, ocean acidification, have the potential for negative impacts, but the possibilities are complex. These ecosystem responses may have very long lags as they propagate through trophic webs. Because of bearded seals' apparent dietary flexibility, these threats are of less concern than the direct effects of potential sea ice degradation.

B. Overutilization for Commercial, Subsistence, Recreational, Scientific, or Educational Purposes

Recreational, scientific, and educational utilization of bearded seals is currently at low levels and is not expected to increase to significant threat levels in the foreseeable future. The solitary nature of bearded seals has made them less suitable for commercial exploitation than many other seal species. Still, they may have been depleted by commercial harvests in some areas of the Sea of Okhotsk and the Bering, Barents, and White Seas during the mid-20th century. There is currently no significant commercial harvest of bearded seals and significant harvests seem unlikely in the foreseeable future.

Bearded seals have been a very important species for subsistence of indigenous people in the Arctic for thousands of years. The current subsistence harvest is substantial in some areas, but there is little or no evidence that subsistence harvests have or are likely to pose serious risks to the species. Climate change is likely to alter patterns of subsistence harvest of marine mammals by changing their densities or distributions in relation to hunting communities. Predictions of the impacts of climate change on subsistence hunting pressure are constrained by the complexity of the interacting variables and imprecision of climate and sea models at small scales. Accurate information on both harvest levels and species' abundance and trends will be needed in order to assess the impacts of hunting as well as to respond appropriately to potential climate-induced changes in populations. We conclude that overutilization does not currently threaten the Beringia DPS, the Okhotsk DPS, or *E. b. barbatus.*

C. Diseases, Parasites, and Predation

A variety of diseases and parasites have been documented to occur in bearded seals. The seals have likely co-evolved with many of these and the observed prevalence is typical and similar to other species of seals. The transmission of many known diseases of pinnipeds is often facilitated by animals crowding together and by the continuous or repeated occupation of a site. The pack ice habitat and the more solitary behavior of bearded seals may therefore limit disease transmission. Other than at shore-based haul-out sites in the Sea of Okhotsk in summer and fall, bearded seals do not crowd together and rarely share small ice floes with more than a few other seals, so conditions that would favor disease transmission do not exist for most of the year. Abiotic and biotic changes to bearded seal habitat potentially could lead to exposure to new pathogens or new levels of virulence, but we consider the potential threats to bearded seals as low.

Polar bears are the primary predators of bearded seals. Other predators include brown bears (*Ursus arctos*), killer whales (*Orcinus orca*), sharks, and walruses. Predation under the future scenario of reduced sea ice is difficult to assess. Polar bear predation may decrease, but predation by killer whales, sharks, and walrus may increase. The range of plausible scenarios is large, making it impossible to predict the direction or magnitude of the net impact on bearded seal mortality.

D. Inadequacy of Existing Regulatory Mechanisms

A primary concern about the conservation status of the bearded seal stems from the likelihood that its sea ice habitat has been modified by the warming climate and, more so, that the scientific consensus projections are for continued and perhaps accelerated warming in the foreseeable future. A second major concern, related by the common driver of CO_2 emissions, is the modification of habitat by ocean acidification, which may alter prey populations and other important aspects of the marine ecosystem. There are currently no effective mechanisms to regulate GHG emissions, which are contributing to global climate change and associated modifications to bearded seal habitat. The risk posed to bearded seals due to the lack of mechanisms to regulate GHG emissions is directly correlated to the risk posed by the effects of these emissions. The projections we used to assess risks from GHG emissions were based on the assumption that no regulation will take place (the underlying IPPC emissions scenarios were all "non-mitigated" scenarios). Therefore, the lack of mechanisms to regulate GHG emissions is already included in our risk assessment. We recognize that the lack of effective mechanisms to regulate global GHG emissions is contributing to the risks posed to bearded seals by these emissions.

E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

Pollution and Contaminants

Research on contaminants and bearded seals is limited compared to the extensive information available for ringed seals. Pollutants such as organochlorine compounds (OC) and heavy metals have been found in most bearded seal populations. The variety, sources, and transport mechanisms of the contaminants vary across the bearded seal's range, but these compounds appear to be ubiquitous in the Arctic marine food chain. Statistical analysis of OCs in marine mammals has shown that, for most OCs, the European Arctic is more contaminated than the Canadian and U.S. Arctic. Present and future impacts of contaminants on bearded seal populations should remain a high priority issue. Climate change has the potential to increase the transport of pollutants from lower latitudes to the Arctic, highlighting the importance of continued monitoring of bearded seal contaminant levels.

Oil and Gas Activities

Extensive oil and gas reserves coupled with rising global demand make it very likely that oil and gas activity will increase throughout the U.S. Arctic and internationally in the future. Climate change is expected to enhance marine access to offshore oil and gas reserves by reducing sea ice extent, thickness, and seasonal duration, thereby improving ship access to these resources around the margins of the Arctic Basin. Oil and gas exploration, development, and production activities include, but are not limited to: seismic surveys; exploratory, delineation, and production drilling operations; construction of artificial islands, causeways, ice roads, shore-based facilities, and pipelines; and vessel and aircraft operations. These activities have the potential to impact bearded seals, primarily through noise, physical disturbance, and pollution, particularly in the event of a large oil spill or blowout.

Within the range of the bearded seal, offshore oil and gas exploration and production activities are currently underway in the United States, Canada, Greenland, Norway, and Russia. In the United States, oil and gas activities have been conducted off the coast of Alaska since the 1970s, with most of the activity occurring in the Beaufort Sea. Although five exploratory wells have been drilled in the past, no oil fields have been developed or brought into production in the Chukchi Sea to date. In December 2009, an exploration plan was approved by the Bureau of Ocean Energy Management, Regulation, and Enforcement (formerly the Minerals Management Service) for drilling at five potential sites within three prospects in the Chukchi Sea in 2010. These plans have been put on hold until at least 2011 pending further review following the Deepwater Horizon blowout in the Gulf of Mexico. There are no offshore oil or gas fields currently in development or production in the Bering Sea.

Of all the oil and gas produced in the Arctic today, about 80 percent of the oil and 99 percent of the gas comes from the Russian Arctic (AMAP, 2007). With over 75 percent of known Arctic oil, over 90 percent of known Arctic gas, and vast estimates of undiscovered oil and gas reserves, Russia will continue to be the dominant producer of Arctic oil and gas in the future (AMAP, 2007). Oil and gas developments in the Kara and Barents Seas began in 1992, and large-scale production activities were initiated during 1998–2000. Oil and gas production activities are expected to grow in the western Siberian provinces and Kara and Barents Seas in the future. Recently there has also been renewed interest in the Russian Chukchi Sea, as new evidence emerges to support the notion that the region may contain world-class oil and gas reserves. In the Sea of Okhotsk, oil and natural gas operations are active off the northeastern coast of Sakhalin Island, and future developments are planned in the western Kamchatka and Magadan regions.

Large oil spills or blowouts are considered to be the greatest threat of oil and gas exploration activities in the marine environment. In contrast to spills on land, large spills at sea are difficult to contain and may spread over hundreds or thousands of kilometers. Responding to a spill in the Arctic environment would be particularly challenging. Reaching a spill site and responding effectively would be especially difficult, if not impossible, in winter when weather can be severe and daylight extremely limited. Oil spills under ice or in ice-covered waters are the most challenging to deal with, simply because they cannot be contained or recovered effectively with current technology. The difficulties experienced in stopping and containing the oil blowout at the Deepwater Horizon well in the Gulf of Mexico, where environmental conditions and response preparedness are comparatively good, point toward even greater challenges of attempting a similar feat in a much more environmentally severe and geographically remote location.

Although planning, management, and use of best practices can help reduce risks and impacts, the history of oil and gas activities, including recent events, indicates that accidents cannot be eliminated. Tanker spills, pipeline leaks, and oil blowouts are likely to occur in the future, even under the most stringent regulatory and safety systems. In the Sea of Okhotsk, an accident at an oil production complex resulted in a large (3.5 ton) spill in 1999, and in winter 2009, an unknown quantity of oil associated with a tanker fouled 3 km of coastline and hundreds of birds in Aniva Bay. To date, there have been no large spills in the Arctic marine environment from oil and gas activities.

Researchers have suggested that pups of ice-associated seals may be particularly vulnerable to fouling of their dense lanugo coat. Though bearded seal pups exhibit some prenatal molting, they are generally not fully molted at birth, and thus would be particularly prone to physical impacts of contacting oil. Adults, juveniles, and weaned young of the year rely on blubber for insulation, so effects on their thermoregulation are expected to be minimal. Other acute effects of oil exposure which have been shown to reduce seal's health and possibly survival include skin irritation, disorientation, lethargy, conjunctivitis, corneal ulcers, and liver lesions. Direct ingestion of oil, ingestion of contaminated prey, or inhalation of hydrocarbon vapors can cause serious health effects including death.

It is important to evaluate the effects of anthropogenic perturbations, such as oil spills, in the context of historical data. Without historical data on distribution and abundance, it is difficult to predict the impacts of an oil spill on bearded seals. Population monitoring studies implemented in areas where significant industrial activities are likely to occur would allow for comparison of future impacts with historical patterns, and thus to determine the magnitude of potential effects.

In summary, the threats to bearded seals from oil and gas activities are greatest where these activities converge with breeding aggregations or in migration corridors such as in the Bering Strait. In particular, bearded seals in ice-covered remote regions are most vulnerable to oil and gas activities, primarily due to potential oil spill impacts.

Commercial Fisheries Interactions and Bycatch

Commercial fisheries may impact bearded seals through direct interactions (i.e., incidental take or bycatch) and indirectly through competition for prey resources and other impacts on prey populations. Estimates of bearded seal bycatch could only be found for commercial fisheries that operate in Alaska waters. Based on data from 2002–2006, there has been an annual average of 1.0 mortalities of bearded seals incidental to commercial fishing operations. Although no information could be found regarding bearded seal bycatch in the Sea of Okhotsk, given the intensive levels of commercial fishing that occur in this sea, bycatch of bearded seals likely occurs there as well.

For indirect impacts, we note that commercial fisheries target a number of known bearded seal prey species, such as walleye pollock (*Theragra chalcogramma*) and cod. These fisheries may affect bearded seals indirectly through reduction in prey biomass and through other fishing mediated changes in their prey species. Bottom trawl fisheries also have the potential to indirectly affect bearded seals through destruction or modification of benthic prey and/or their habitat.

Shipping

The extraordinary reduction in Arctic sea ice that has occurred in recent years has renewed interest in using the Arctic Ocean as a potential waterway for coastal, regional, and trans-Arctic marine operations. Climate models predict that the warming trend in the Arctic will accelerate, causing the ice to begin melting earlier in the spring and resume freezing later in the fall, resulting in an expansion of potential shipping routes and lengthening the potential navigation season.

The most significant risk posed by shipping activities to bearded seals in the Arctic is the accidental or illegal discharge of oil or other toxic substances carried by ships, due to their immediate and potentially long-term effects on individual animals, populations, food webs, and the environment. Shipping activities can also affect bearded seals directly through noise and physical disturbance (*e.g.,* icebreaking vessels), as well as indirectly through ship emissions and possible effects of introduction of exotic species on the lower trophic levels of bearded seal food webs.

Current and future shipping activities in the Arctic pose varying levels of threats to bearded seals depending on the type and intensity of the shipping activity and its degree of spatial and temporal overlap with bearded seal habitats. These factors are inherently difficult to know or predict, making threat assessment highly uncertain. Most ships in the Arctic purposefully avoid areas of ice and thus prefer periods and areas which minimize the chance of encountering ice. This necessarily mitigates many of the risks of shipping to populations of bearded seals, since they are closely associated with ice throughout the year. Icebreakers pose special risks to bearded seals because they are capable of operating year-round in all but the heaviest ice conditions and are often used to escort other types of vessels (*e.g.,* tankers and bulk carriers) through ice-covered areas. If icebreaking activities increase in the Arctic in the future as expected, the likelihood of negative impacts (*e.g.,* oil spills, pollution, noise, disturbance, and habitat alteration) occurring in ice-covered areas where bearded seals occur will likely also increase.

The potential threats and general threat assessment in the Sea of Okhotsk are largely the same as they are in the Arctic, though with less detail available regarding the spatial and temporal correspondence of ships and bearded seals, save one notable exception. Though noise and oil pollution from vessels are expected to have the same general relevance in the Sea of Okhotsk, oil and gas activities near Sakhalin Island are currently at high levels and poised for another major expansion of the offshore oil fields that would require an increasing number of tankers. About 25 percent of the Okhotsk bearded seal population uses this area during whelping and molting, and as a migration corridor (Fedoseev, 2000).

The main aggregations of bearded seals in the northern Sea of Okhotsk are likely within the commercial shipping routes, but vessel frequency and timing relative to periods when seals are hauled out on ice are presently unknown. Some ports are kept open year-round by icebreakers, largely to support year-round fishing, so there is greater probability here of spatial and temporal overlaps with bearded seals hauled out on ice. In a year with reduced ice, bearded seals were more concentrated close to shore (Fedoseev, 2000), suggesting that seals could become increasingly prone to shipping impacts as ice diminishes.

As is the case with the Arctic, a quantitative assessment of actual threats and impacts in the Sea of Okhotsk is unrealistic due to a general lack of published information on shipping patterns. Modifications to shipping routes, and possible choke points (where increases in vessel traffic are focused at sensitive places and times for bearded seals) due to diminishing ice are likely, but there is little data on which to base even qualitative predictions. However, the predictions regarding shipping impacts in the Arctic are generally applicable, and because of significant increases in predicted shipping, it appears that bearded seals inhabiting the Sea of Okhotsk, in particular the shelf area off central and northern Sakhalin Island, are at increased risk of impacts. Winter shipping activities in the southern Sea of Okhotsk are expected to increase considerably as oil and gas production pushes the development and use of new classes of icebreaking ships, thereby increasing the potential for shipping accidents and oil spills in the ice-covered regions of this sea.

Summary for Factor E

We find that the threats posed by pollutants, oil and gas industry activities, fisheries, and shipping do not individually or cumulatively raise concern about them placing bearded seals at risk of becoming endangered. We recognize, however, that the significance of these threats would increase for populations diminished by the effects of climate change or other threats. This is of particular note for bearded seals in the Sea of Okhotsk, where oil and gas related activities are expected to increase, and are judged to pose a moderate threat.

Analysis of Demographic Risks

Threats to a species' long-term persistence are manifested demographically as risks to its abundance; productivity; spatial structure and connectivity; and genetic and ecological diversity. These demographic risks provide the most direct indices or proxies of extinction risk. A species at very low levels of abundance and with few populations will be less tolerant to environmental variation, catastrophic events, genetic processes, demographic stochasticity, ecological interactions, and other processes. A rate of productivity that is unstable or declining over a long period of time can indicate poor resiliency to future environmental change. A species that is not widely distributed across a variety of well-connected habitats is at increased risk of extinction due to environmental perturbations, including catastrophic events. A species that has lost locally adapted genetic and ecological diversity may lack the raw resources necessary to exploit a wide array of environments and endure short- and long-term environmental changes.

The degree of risk posed by the threats associated with the impacts of global climate change on bearded seal habitat is uncertain due to a lack of quantitative information linking environmental conditions to bearded seal vital rates, and a lack of information about how resilient bearded seals will be to these changes. The BRT considered the current risks (in terms of abundance, productivity, spatial structure, and diversity) to the persistence of the Beringia DPS, the Okhotsk DPS, and *E. b. barbatus* as low or very low. The BRT judged the risks to the persistence of the Beringia DPS within the foreseeable future to be moderate (abundance and diversity) to high (productivity and spatial structure), and to the Okhotsk DPS to be high for abundance, productivity, and spatial structure, and moderate for diversity. The risks to persistence of *E. b. barbatus* within the foreseeable future were judged to be moderate.

Conservation Efforts

When considering the listing of a species, section 4(b)(1)(A) of the ESA requires us to consider efforts by any State, foreign nation, or political subdivision of a State or foreign nation to protect the species. Such efforts would include measures by Native American tribes and organizations, local governments, and private organizations. Also, Federal, tribal, state, and foreign recovery actions (16 U.S.C. 1533(f)), and Federal consultation requirements (16 U.S.C. 1536) constitute conservation measures. In addition to identifying these efforts, under the ESA and our Policy on the Evaluation of Conservation Efforts (PECE) (68 FR 15100; March 28, 2003), we must evaluate the certainty of implementing the conservation efforts and the certainty that the conservation efforts will be effective on the basis of whether the effort or plan establishes specific conservation objectives, identifies the necessary steps to reduce threats or factors for decline, includes quantifiable performance measures for the monitoring of compliance and effectiveness, incorporates the principles of adaptive management, and is likely to improve the species' viability at the time of the listing determination.

International Agreements

The International Union for the Conservation of Nature and Natural Resources (IUCN) Red List identifies and documents those species believed by its reviewers to be most in need of conservation attention if global extinction rates are to be reduced, and is widely recognized as the most comprehensive, apolitical global approach for evaluating the conservation status of plant and animal species. In order to produce Red Lists of threatened species worldwide, the IUCN Species Survival Commission draws on a network of scientists and partner organizations, which uses a standardized assessment process to determine species' risks of extinction. However, it should be noted that the IUCN Red List assessment criteria differ from the listing criteria provided by the ESA. The bearded seal is currently classified as a species of "Least Concern" on the IUCN Red List. These listings highlight the conservation status of listed species and can inform conservation planning and prioritization.

The Agreement on Cooperation in Research, Conservation, and Management of Marine Mammals in the North Atlantic (North Atlantic Marine Mammal Commission [NAMMCO]) was established in 1992 by a regional agreement among the governments of Greenland, Iceland, Norway, and the Faroe Islands to cooperatively conserve and manage marine mammals in the North Atlantic. NAMMCO has provided a forum for the exchange of information and coordination among member countries on bearded seal research and management.

There are no known regulatory mechanisms that effectively address the factors believed to be contributing to reductions in bearded seal sea ice habitat at this time. The primary international regulatory mechanisms addressing GHG emissions and global warming are the United Nations Framework Convention on Climate Change and the Kyoto Protocol. However, the Kyoto Protocol's first commitment period only sets targets for action through 2012. There is no regulatory mechanism governing GHG emissions in the years beyond 2012. The United States, although a signatory to the Kyoto Protocol, has not ratified it; therefore, the Kyoto Protocol is non-binding on the United States.

Domestic U.S. Regulatory Mechanisms

Several laws exist that directly or indirectly promote the conservation and protection of bearded seals. These include the Marine Mammal Protection Act of 1972, as Amended, the National Environmental Policy Act, the Outer Continental Shelf Lands Act, the Coastal Zone Management Act, and the Marine Protection, Research and Sanctuaries Act. Although there are some existing domestic regulatory mechanisms directed at reducing GHG emissions, these mechanisms are not expected to be effective in counteracting the growth in global GHG emissions within the foreseeable future.

At this time, we are not aware of any formalized conservation efforts for bearded seals that have yet to be implemented, or which have recently been implemented, but have yet to show their effectiveness in removing threats to the species. Therefore, we do not need to evaluate any conservation efforts under the PECE.

NMFS has established a co-management agreement with the Ice Seal Committee (ISC) to conserve and provide co-management of subsistence use of ice seals by Alaska Natives. The ISC is an Alaska Native Organization dedicated to conserving seal populations, habitat, and hunting in order to help preserve native cultures and traditions. The ISC co-manages ice seals with NMFS by monitoring subsistence harvest and cooperating on needed research and education programs pertaining to ice seals. NMFS' National Marine Mammal Laboratory is engaged in an active research program for bearded seals. The new information from research will be used to enhance our understanding of the risk factors affecting bearded seals, thereby improving our ability to develop effective management measures for the species.

Proposed Determinations

We have reviewed the status of the bearded seal, fully considering the best scientific and commercial data available, including the status review report. We have reviewed threats to the Beringia DPS, the Okhotsk DPS, and *E. b. barbatus,* as well as other relevant factors, and given consideration to conservation efforts and special designations for bearded seals by states and foreign nations. In consideration of all of the threats and potential threats to bearded seals identified above, the assessment of the risks posed by those threats, the possible cumulative impacts, and the uncertainty associated with all of these, we draw the following conclusions:

Beringia DPS: (1) The present population size of the Beringia DPS is very uncertain, but is estimated to be about 155,000 individuals. (2) It is highly likely that reductions will occur in both the extent and timing of sea ice in the range of the Beringia DPS, in particular in the Bering Sea. To adapt to this ice regime, bearded seals would likely have to shift their nursing, rearing, and molting areas to ice-covered seas north of the Bering Strait, where projections suggest there is potential for the ice edge to retreat to deep waters of the Arctic basin. (3) There appears to be a moderate to high threat that reductions in spring and summer sea ice could result in spatial separation of sea ice resting areas from benthic feeding habitat. Reductions in sea ice suitable for molting and pup maturation also appear to pose moderate to high threats. (4) Within the foreseeable future, the risks to the persistence of the Beringia DPS appear to be moderate (abundance and diversity) to high (productivity and spatial structure). We conclude that the Beringia DPS is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, and we propose to list this DPS as threatened under the ESA.

Okhotsk DPS: (1) The present population size of the Okhotsk DPS is very uncertain, but is estimated to be about 95,000 individuals. (2) Decreases in sea ice habitat suitable for whelping, nursing, pup maturation, and molting pose the greatest threats to the persistence of the Okhotsk DPS. As ice conditions deteriorate, Okhotsk bearded seals will be limited in their ability to shift their range northward because the Sea of Okhotsk is bounded to the north by land. (3) Although some bearded seals in the Sea of Okhotsk are known to use land for hauling out, this only occurs in late summer and early autumn. We are not aware of any occurrence of bearded seals whelping or nursing young on land, so the predicted loss of sea ice is expected to be significantly detrimental to the long term viability of the population. (4) Within the foreseeable future the risks to the persistence of the Okhotsk DPS due to demographic problems associated with abundance, productivity, and spatial structure are expected to be high. We conclude that the Okhotsk DPS of bearded seals is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, and we propose to list this DPS as threatened under the ESA.

E. b. barbatus: (1) The present population size of *E. b. barbatus* is very uncertain, but is estimated to be about 188,000 individuals in Canadian waters. (2) Although significant loss of sea ice habitat is projected in the range of *E. b. barbatus* in this century, major portions of the current range are predicted to be at the core of future ice distributions. (3) Within the foreseeable future, the risks to the persistence of *E. b. barbatus* in terms of abundance, productivity, spatial structure, and diversity appear to be moderate, reflecting the expected persistence of favorable sea ice habitat in major portions of the subspecies' range. We find that *E. b. barbatus* is not in danger of extinction nor likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. We therefore conclude that listing *E. b. barbatus* as threatened or endangered under the ESA is not warranted.

Prohibitions and Protective Measures

Section 9 of the ESA prohibits certain activities that directly or indirectly affect endangered species. These prohibitions apply to all individuals, organizations and agencies subject to U.S. jurisdiction. Section 4(d) of the ESA directs the Secretary of Commerce (Secretary) to implement regulations "to provide for the conservation of [threatened] species" that may include extending any or all of the prohibitions of section 9 to threatened species. Section 9(a)(1)(g) also prohibits violations of protective regulations for threatened species implemented under section 4(d). Based on the status of the Beringia DPS and the Okhotsk DPS of the bearded seal and their conservation needs, we conclude that the ESA section 9 prohibitions are necessary and advisable to provide for their conservation. We are therefore proposing protective regulations pursuant to section 4(d) for the Okhotsk DPS and the Beringia DPS of the bearded seal to include all of the prohibitions in section 9(a)(1).

Sections 7(a)(2) and (4) of the ESA require Federal agencies to consult with us to ensure that activities they authorize, fund, or conduct are not likely to jeopardize the continued existence of a listed species or a species proposed for listing, or to adversely modify critical habitat or proposed critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with us. Examples of Federal actions that may affect the Beringia DPS of bearded seals include permits and authorizations relating to coastal development and habitat alteration, oil and gas development (including seismic exploration), toxic waste and other pollutant discharges, and cooperative agreements for subsistence harvest.

Sections 10(a)(1)(A) and (B) of the ESA provide us with authority to grant exceptions to the ESA's section 9 "take" prohibitions. Section 10(a)(1)(A) scientific research and enhancement permits may be issued to entities (Federal and non-Federal) for scientific purposes or to enhance the propagation or survival of a listed species. The type of activities potentially requiring a section 10(a)(1)(A) research/enhancement permit include scientific research that targets bearded seals. Section 10(a)(1)(B) incidental take permits are required for non-Federal activities that may incidentally take a listed species in the course of otherwise lawful activity.

Our Policies on Endangered and Threatened Wildlife

On July 1, 1994, we and FWS published a series of policies regarding listings under the ESA, including a policy for peer review of scientific data (59 FR 34270) and a policy to identify, to the maximum extent possible, those activities that would or would not constitute a violation of section 9 of the ESA (59 FR 34272). We must also follow the Office of Management and Budget policy for peer review as described below.

Role of Peer Review

In December 2004, the Office of Management and Budget (OMB) issued a Final Information Quality Bulletin for Peer Review establishing minimum peer review standards, a transparent process for public disclosure of peer review planning, and opportunities for public participation. The OMB Bulletin, implemented under the Information Quality Act (Pub. L. 106–554), is intended to enhance the quality and credibility of the Federal Government's scientific information, and applies to influential or highly influential scientific information disseminated on or after June 16, 2005. The scientific information contained in the bearded seal status review report (Cameron *et al.,* 2010) that supports this proposal to list the Beringia DPS and the Okhotsk DPS as threatened species under the ESA received independent peer review.

The intent of the peer review policy is to ensure that listings are based on the best scientific and commercial data available. Prior to a final listing, we will solicit the expert opinions of three qualified specialists, concurrent with the public comment period. Independent specialists will be selected from the academic and scientific community, Federal and state agencies, and the private sector.

Identification of Those Activities That Would Constitute a Violation of Section 9 of the ESA

The intent of this policy is to increase public awareness of the effect of our ESA listing on proposed and ongoing activities within the species' range. We will identify, to the extent known at the time of the final rule, specific activities that will be considered likely to result in violation of section 9, as well as activities that will not be considered likely to result in violation. Because the Okhotsk DPS occurs outside of the jurisdiction of the United States, we are presently unaware of any activities that could result in violation of section 9 of the ESA for that DPS; however, because the possibility for violations exists (for example, import into the United States), we have proposed maintaining the section 9 protection. Activities that we believe could result in violation of section 9 prohibitions against "take" of the Beringia DPS of bearded seals include: (1) Unauthorized harvest or lethal takes of bearded seals in the Beringia DPS; (2) in-water activities that produce high levels of underwater noise, which may harass or injure bearded seals in the Beringia DPS; and (3) discharging or dumping toxic chemicals or other pollutants into areas used by the Beringia DPS of bearded seals.

We believe, based on the best available information, the following actions will not result in a violation of section 9: (1) federally funded or approved projects for which ESA section 7 consultation has been completed and mitigated as necessary, and that are conducted in accordance with any terms and conditions we provide in an incidental take statement accompanying a biological opinion; and (2) takes of bearded seals in the Beringia DPS that have been authorized by NMFS pursuant to section 10 of the ESA. These lists are not exhaustive. They are intended to provide some examples of the types of activities that we might or might not consider as constituting a take of bearded seals in the Beringia DPS.

Critical Habitat

Section 3 of the ESA (16 U.S.C. 1532(5A)) defines critical habitat as "(i) the specific areas within the geographical area occupied by the species, at the time it is listed * * * on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed * * * upon a determination by the Secretary that such areas are essential for the conservation of the species." Section 3 of the ESA also defines the terms "conserve," "conserving," and "conservation" to mean "to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary." (16 U.S.C. 1532(3)).

Section 4(a)(3) of the ESA requires that, to the extent practicable and determinable, critical habitat be designated concurrently with the listing of a species. Designation of critical habitat must be based on the best scientific data available, and must take into consideration the economic, national security, and other relevant impacts of specifying any particular area as critical habitat. Once critical habitat is designated, section 7 of the ESA requires Federal agencies to ensure that they do not fund, authorize, or carry out any actions that are likely to destroy or adversely modify that habitat. This requirement is in addition to the section 7 requirement that Federal agencies ensure their actions do not jeopardize the continued existence of the species.

In determining what areas qualify as critical habitat, 50 CFR 424.12(b) requires that NMFS "consider those physical or biological features that are essential to the conservation of a given species including space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, and rearing of offspring; and habitats that are protected from disturbance or are representative of the historical geographical and ecological distribution of a species." The regulations further direct NMFS to "focus on the principal biological or physical constituent elements * * * that are essential to the conservation of the species," and specify that the "known primary constituent elements shall be listed with the critical habitat description." The regulations identify primary constituent elements (PCEs) as including, but not limited to: "roost sites, nesting grounds, spawning sites, feeding sites, seasonal wetland or dryland, water quality or quantity, host species or plant pollinator, geological formation, vegetation type, tide, and specific soil types."

The ESA directs the Secretary of Commerce to consider the economic impact, the national security impacts, and any other relevant impacts from designating critical habitat, and under section 4(b)(2), the Secretary may exclude any area from such designation if the benefits of exclusion outweigh those of inclusion, provided that the exclusion will not result in the extinction of the species. At this time, the Beringia DPS's critical habitat is not determinable. We will propose critical habitat for the Beringia DPS of the bearded seal in a separate rulemaking. To assist us with that rulemaking, we specifically request information to help us identify the PCEs or "essential features" of this habitat, and to what extent those features may require special management considerations or protection, as well as the economic attributes within the range of the Beringia DPS that could be impacted by critical habitat designation. 50 CFR 424.12(h) specifies that critical habitat shall not be designated within foreign countries or in other areas outside U.S. jurisdiction. Therefore, we request information only on potential areas of critical habitat within the United States or waters within U.S. jurisdiction.

Because the known distribution of the Okhotsk DPS of the bearded seal occurs in areas outside the jurisdiction of the United States, no critical habitat will be designated as part of the proposed listing action for this DPS.

Public Comments Solicited

Relying on the best scientific and commercial information available, we exercised our best professional judgment in developing this proposal to list the Beringia DPS and the Okhotsk DPS of the bearded seal. To ensure that the final action resulting from this proposal will be as accurate and effective as possible, we are soliciting comments and suggestions concerning this proposed rule from the public, other concerned governments and agencies, Alaska Natives, the scientific community, industry, and any other interested parties. Comments are encouraged on this proposal as well as on the status review report (*See* **DATES** and **ADDRESSES**).

Comments are particularly sought concerning:

(1) The current population status of bearded seals;

(2) Biological or other information regarding the threats to bearded seals;

(3) Information on the effectiveness of ongoing and planned bearded seal conservation efforts by states or local entities;

(4) Activities that could result in a violation of section 9(a)(1) of the ESA if such prohibitions applied to the Beringia DPS of the bearded seal;

(5) Information related to the designation of critical habitat, including identification of those physical or biological features which are essential to the conservation of the Beringia DPS of the bearded seal and which may require special management consideration or protection; and

(6) Economic, national security, and other relevant impacts from the designation of critical habitat for the Beringia DPS of the bearded seal.

You may submit your comments and materials concerning this proposal by any one of several methods (*see* **ADDRESSES**). We will review all public comments and any additional information regarding the status of the Beringia DPS and the Okhotsk DPS and will complete a final determination within 1 year of publication of this proposed rule, as required under the ESA. Final promulgation of the regulation(s) will consider the comments and any additional information we receive, and such communications may lead to a final regulation that differs from this proposal.

Public Hearings

50 CFR 424.16(c)(3) requires the Secretary to promptly hold at least one public hearing if any person requests one within 45 days of publication of a proposed rule to list a species. Such hearings provide the opportunity for interested individuals and parties to give opinions, exchange information, and engage in a constructive dialogue concerning this proposed rule. We encourage the public's involvement in this matter. If hearings are requested, details regarding the location(s), date(s), and time(s) will be published in a forthcoming **Federal Register** notice.

Classification

National Environmental Policy Act (NEPA)

The 1982 amendments to the ESA, in section 4(b)(1)(A), restrict the information that may be considered when assessing species for listing. Based on this limitation of criteria for a listing decision and the opinion in *Pacific Legal Foundation* v. *Andrus,* 657 F.2d 829 (6th Cir. 1981), we have concluded that NEPA does not apply to ESA listing actions. (*See* NOAA Administrative Order 216–6.)

Executive Order (E.O.) 12866, Regulatory Flexibility Act, and Paperwork Reduction Act

As noted in the Conference Report on the 1982 amendments to the ESA, economic impacts cannot be considered when assessing the status of a species. Therefore, the economic analyses required by the Regulatory Flexibility Act are not applicable to the listing process. In addition, this rule is exempt from review under E.O. 12866. This rule does not contain a collection of information requirement for the purposes of the Paperwork Reduction Act.

E.O. 13132, Federalism

E.O. 13132 requires agencies to take into account any federalism impacts of regulations under development. It includes specific directives for consultation in situations where a regulation will preempt state law or impose substantial direct compliance costs on state and local governments (unless required by statute). Neither of those circumstances is applicable to this rule.

E.O. 13175, Consultation and Coordination With Indian Tribal Governments

The longstanding and distinctive relationship between the Federal and tribal governments is defined by treaties, statutes, executive orders, judicial decisions, and co-management agreements, which differentiate tribal governments from the other entities that deal with, or are affected by, the Federal government. This relationship has given rise to a special Federal trust responsibility involving the legal responsibilities and obligations of the United States toward Indian Tribes and the application of fiduciary standards of due care with respect to Indian lands, tribal trust resources, and the exercise of tribal rights. E.O. 13175—Consultation and Coordination with Indian Tribal Governments—outlines the responsibilities of the Federal Government in matters affecting tribal interests. Section 161 of Public Law 108–199 (188 Stat. 452), as amended by section 518 of Public Law 108–447 (118 Stat. 3267), directs all Federal agencies to consult with Alaska Native corporations on the same basis as Indian tribes under E.O. 13175.

We intend to coordinate with tribal governments and native corporations which may be affected by the proposed action. We will provide them with a copy of this proposed rule for review and comment, and offer the opportunity to consult on the proposed action.

References Cited

A complete list of all references cited in this rulemaking can be found on our Web site at *http://alaskafisheries.noaa.gov/* and is available upon request from the NMFS office in Juneau, Alaska (*see* ADDRESSES).

List of Subjects in 50 CFR Part 223

Endangered and threatened species, Exports, Imports, Transportation.

Dated: December 3, 2010.

Eric C. Schwaab,

Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set out in the preamble, 50 CFR part 223 is proposed to be amended as follows:

PART 223—THREATENED MARINE AND ANADROMOUS SPECIES

1. The authority citation for part 223 continues to read as follows:

Authority: 16 U.S.C. 1531 1543; subpart B, § 223.201–202 also issued under 16 U.S.C. 1361 *et seq.;* 16 U.S.C. 5503(d) for § 223.206(d)(9).

2. In § 223.102, in the table, amend paragraph (a) by adding paragraphs (a)(8) and (a)(9) to read as follows:

§ 223.102 Enumeration of threatened marine and anadromous species.

* * * * *

Species[1]		Where listed	Citation(s) for listing determination(s)	Citation(s) for critical habitat designation(s)
Common name	Scientific name			
(a) * * *				
(8) Bearded seal, Beringia DPS.	*Erignathus barbatus nauticus*.	The Beringia DPS includes all breeding populations of bearded seals east of 157 degrees east longitude, and east of the Kamchatka Peninsula, in the Pacific Ocean.	[INSERT FR CITATION & DATE WHEN PUBLISHED AS A FINAL RULE].	NA.
(9) Bearded seal, Okhotsk DPS.	*Erignathus barbatus nauticus*.	The Okhotsk DPS includes all breeding populations of bearded seals west of 157 degrees east longitude, or west of the Kamchatka Peninsula, in the Pacific Ocean.	[INSERT FR CITATION & DATE WHEN PUBLISHED AS A FINAL RULE].	NA.
*	*	*	*	*

[1] Species includes taxonomic species, subspecies, distinct population segments (DPSs) (for a policy statement; see 61 FR 4722, February 7, 1996), and evolutionarily significant units (ESUs) (for a policy statement; see 56 FR 58612, November 20, 1991).

* * * * *

3. In Subpart B of part 223, add § 223.216 to read as follows:

§ 223.216 Beringia DPS of Bearded Seal.

The prohibitions of section 9(a)(1)(A) through 9(a)(1)(G) of the ESA (16 U.S.C. 1538) relating to endangered species shall apply to the Beringia DPS of bearded seal listed in § 223.102(a)(8).

4. In Subpart B of part 223, add § 223.217 to read as follows:

§ 223.217 Okhotsk DPS of Bearded Seal.

The prohibitions of section 9(a)(1)(A) through 9(a)(1)(G) of the ESA (16 U.S.C. 1538) relating to endangered species shall apply to the Okhotsk DPS of bearded seal listed in § 223.102(a)(9).

[FR Doc. 2010–30931 Filed 12–9–10; 8:45 am]

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