MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver DO for
Executive Director

DATE: January 25, 2011

SUBJECT: Protected Resources Report

ESTIMATED TIME
6 HOURS
(all B reports)

ACTION REQUIRED

Receive report on Protected Resources issues and take action as necessary.

BACKGROUND

A. Pacific Walrus

The U.S. Fish & Wildlife Service (USFWS) is expected to release a 12-month finding on whether to recommend listing Pacific walrus as threatened or endangered under the Endangered Species Act (ESA) on January 31, 2011. The finding was not available at the time this report was printed, but is expected to be released before the Council meets in February. The USFWS finding would be followed by a public comment period, after which the agency would make a final determination on listing. If the Pacific walrus is listed, USFWS would likely begin the process of designating critical habitat, and NMFS would initiate a Section 7 consultation on the effects of the groundfish fisheries on walrus.

B. Ice Seals

There are four species of ice seals in the North Pacific: ribbon, spotted, ringed, and bearded seals. All four species of seals have been petitioned for listing under the ESA within the past several years, primarily due to concerns about threats to their habitat from climate warming and loss of sea ice. The National Marine Fisheries Service (NMFS) completed its status review of the ribbon seal in December 2008, and determined that listing under the ESA was not warranted. NMFS announced in October 2010 that it has listed the southern distinct population segment (DPS) of the spotted seal as threatened under the ESA. Because this population only occurs in China and Russia, no critical habitat will be designated as part of this action. A year ago, NMFS determined that listing the two other spotted seal populations that occur in the U.S., Russia, and Japan was not warranted.

NMFS completed its status reviews of ringed and bearded seals on December 10, 2010. The agency proposed listing four subspecies of ringed seals, found in the Arctic Basin (including the Bering Sea) and the North Atlantic, and two distinct population segments of bearded seals as threatened under the Endangered Species Act (see Item B-8(a)). The populations of bearded seal proposed for listing occur in the Bering Sea and Okhotsk Sea. There is a 60 day public comment period on these findings, which closes on February 8, 2011. The proposed rules for these actions include maps showing the distribution of the species and a summary of the status review reports (see Items B-8(b) and B-8(c)).

The full status reviews and other materials relating to these proposals can be found on the Alaska Region website at: http://alaskafisheries.noaa.gov/protectedresources/seals/ice.htm.

C. ESA listed Chinook Salmon

The Alaska Region of the National Marine Fisheries Service has requested that the Northwest Region of NMFS reinitiate consultation pursuant to Section 7 of the Endangered Species Act on the effects of the GOA groundfish fisheries on ESA listed Chinook salmon. The request was made because the estimated incidental take of Chinook in the GOA in 2010 exceeded amount authorized in the incidental take statement (40,000 Chinook salmon). The Alaska Region will finalize the 2010 estimates of Chinook bycatch in the GOA groundfish fisheries and provide the new estimates to the Northwest Region in February 2011. The Northwest Region has accepted the request to reinitiate consultation, and will proceed with consultation upon receiving the report containing the final bycatch estimates (see Item B-8(d)).

D. Western DPS Steller Sea Lions

In December, the Council was informed of the final Reasonable and Prudent Alternative (RPA) contained in the Steller Sea Lion Biological Opinion. The Council has numerous questions regarding the BiOp, possible scientific review processes, and potential, subsequent processes for development of alternative management processes based on new information (see December letter to NMFS attached as Item B-8(e)). Specifically, the Council asked how the 2010 groundfish biomass information, which showed substantial increases in the pollock, Pacific cod, and Atka mackerel stocks, would be considered as part of the current consultation process or any future processes. The Council also asked why the action was not considered 'controversial' under NEPA. Several potential scientific review processes were discussed in December. The Council indicated that it is not interested in a scientific review of the BiOp by the Center for Independent Experts (CIE) at this time, because the Terms of Reference have not been modified in response to Council comments and have not been provided to the Council. Finally, the Council asked NMFS to clarify the regulatory process going forward, including the potential role of the Council and its Steller Sea Lion Mitigation Committee in revising the management measures. Answers to these questions are necessary in order for the Council to determine its potential involvement in any future processes in this regard. At this time, the Council has not received a response from the Agency.

The National Marine Fisheries Service published an interim final rule on December 13, 2010 which implements the new Steller sea lion protection measures delineated in the RPA (see Item B-8(f)). Maps illustrating the management measures are attached as Item B-8(g). The interim final rule is effective as of January 1, 2011. Several minor editorial corrections to the text and tables in the interim rule were published on December 29, 2010. In addition, NMFS extended the original 30-day public comment period by 45 days. The public comment period now closes on February 28, 2011.

To date, there have been three legal challenges to the new management measures, including lawsuits filed by the State of Alaska, Alaska Seafood Cooperative, and Freezer Longline Coalition. In addition, on January 19, 2011, the Alaska Board of Fisheries adopted an emergency regulation to open the A season Pacific cod parallel water fishery near Adak. The emergency regulation specified that in the Bering Sea-Aleutian Islands management area, State waters between 175° W. and 178° W. longitude shall be open to fishing with trawl, pot, jig, and hand troll gear by vessels no more than 60 feet in length, and to fishing with longline gear by vessels no more than 58 feet in length. The Board's intent was for the emergency regulation to be effective immediately, and to remain effective for up to 120 days. The Board will consider a proposal for the Adak area A and B season parallel waters Pacific cod fishery at its March 22-26, 2011 meeting in Anchorage. The proposal could extend the emergency regulation beyond 120 days. NMFS has indicated that it will consider the effects of the action taken by the Board of Fisheries on Steller sea lions in the context of the current Biological Opinion.

AGENDA B-8(a)
FEBRUARY 2011

National Oceanic and Atmospheric Administration

**National Marine Fisheries Service, Alaska Regional Office**

## NOAA Fisheries News Releases

NEWS RELEASE
December 3, 2010
Julie Speegle, 907-586-7032

### NOAA PROPOSES LISTING RINGED AND BEARDED SEALS AS THREATENED UNDER ENDANGERED SPECIES ACT

NOAA's Fisheries Service is proposing to list four subspecies of ringed seals, found in the Arctic Basin and the North Atlantic, and two distinct population segments of bearded seals in the Pacific Ocean, as threatened under the Endangered Species Act.

The proposed listings cite threats posed by diminishing sea ice, and additionally, for ringed seals, reduced snow cover. NOAA climate models were used to predict future sea ice conditions.

One of the five recognized subspecies of ringed seals, the Saimaa in Finland, is already listed as endangered under the ESA. Under the proposed rules published today in the Federal Register, the remaining four subspecies of ringed seals - Arctic, Okhotsk, Baltic and Ladoga - would all be listed as threatened.

Ringed seals are found in the Arctic Basin (including the Bering Sea), western North Pacific (Sea of Okhotsk and Sea of Japan), and in the North Atlantic in the Baltic Sea and Lakes Ladoga and Saimaa east of the Baltic Sea.

Throughout most of its range, the Arctic ringed seal does not come ashore and uses sea ice for whelping, nursing, molting, and resting. Ringed seal pups are normally born in snow caves in the spring, and are vulnerable to freezing and predation without them. Timing of spring ice break-up, snow depths on sea ice, and late-winter rain can adversely affect snow cave formation and occupation. That the species produces only a single pup each year may limit the ringed seal's ability to respond to environmental challenges such as the diminishing ice and snow cover.

Because of these factors, NOAA's Fisheries Service has found that these four sub-species of ringed seal are at risk of becoming endangered within the foreseeable future throughout all or a significant portion of their ranges, warranting a listing as threatened.

The bearded seal has two subspecies, one in the Pacific Ocean and the other in the Atlantic Ocean. Within the Pacific subspecies, there are two distinct population segments (DPS): the Okhotsk DPS, found in the Sea of Okhotsk; and the Beringia DPS, found in the Bering, east Siberian, Chukchi, and Beaufort seas. NOAA's Fisheries Service is proposing to list both Pacific DPSs of bearded seal as threatened.

Both Pacific bearded seal DPSs are closely associated with sea ice, particularly during the reproduction and molting stages. They primarily feed on shallow-water organisms, making their range generally areas where seasonal sea ice occurs over relatively shallow waters. Forecasts predict that this ice will be substantially reduced within this century, particularly in the Sea of Okhotsk, and there is potential for the spring and summer ice edge to retreat to deep waters of the Arctic Ocean basin.

Because of these factors, NOAA's Fisheries Service has found that the two DPSs within the Pacific subpopulation of bearded seals are at risk of becoming endangered species within the foreseeable future throughout all or a significant portion of their ranges, warranting a listing as threatened.

NOAA's Fisheries Service previously determined listing was not needed for another ice seal, the ribbon seal, which is less dependent on sea ice than bearded and ringed seals.

NOAA's Fisheries Service is seeking comments from the public on the proposed listing of ringed and bearded ice seals for 60 days from date of publication in the Federal Register, which should occur the middle of next week. The proposed rules, maps, status review reports and other materials relating to this proposal can be found on the Alaska Region website at http://alaskafisheries.noaa.gov/protectedresources/seals/ice.htm.

As soon as the proposed rule is accessible online on the Federal Register website— likely December 7 or 8—comments may be submitted by any one of the following methods:

Submit comments online via the Federal eRulemaking Portal at http://www.regulations.gov/. Follow the instructions for submitting comments;

Fax comments to the attention of Kaja Brix at 907-586-7557;

Mail written comments to Kaja Brix, Assistant Regional Administrator, Protected Resources Division, Alaska Region, NMFS, Attn: Ellen Sebastian, P.O. Box 21668, Juneau, AK 99802

Hand-deliver written comments to Kaja Brix, Assistant Regional Administrator, Protected Resources Division, Alaska Region, NMFS, Attn: Ellen Sebastian, Juneau Federal Building, 709 West 9th Street, Room 420A, Juneau, AK

NOAA's mission is to understand and predict changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and to conserve and manage our coastal and marine resources. Visit us at NOAA's Fisheries Service is seeking comments from the public on the proposed listing of ringed and bearded ice seals for 60 days from date of publication in the Federal Register, which should occur the middle of next week. The proposed rules, maps, status review reports and other materials relating to this proposal can be found on the Alaska Region website at http://alaskafisheries.noaa.gov. or on Facebook at http://www.facebook.com/usnoaagov. To learn more about NOAA Fisheries in Alaska, visit alaskafisheries.noaa.gov or: http://www.afsc.noaa.gov/.

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77476 Federal Register / Vol. 75, No. 237 / Friday, December 10, 2010 / Proposed Rules

**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**50 CFR Part 223**

**[Docket No. 101126590–0589–01]**

**RIN 0648–XZ59**

## Endangered and Threatened Species; Proposed Threatened Status for Subspecies of the Ringed Seal

**AGENCY:** National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Commerce.

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

**SUMMARY:** We, NMFS, have completed a comprehensive status review of the ringed seal (*Phoca hispida*) under the Endangered Species Act (ESA) and announce a 12-month finding on a petition to list the ringed seal as a threatened or endangered species. Based on consideration of information presented in the status review report, an assessment of the factors in the ESA, and efforts being made to protect the species, we have determined the Arctic (*Phoca hispida hispida*), Okhotsk (*Phoca hispida ochotensis*), Baltic (*Phoca hispida botnica*), and Ladoga (*Phoca hispida ladogensis*) subspecies of the ringed seal are likely to become endangered throughout all or a significant portion of their range in the foreseeable future. Accordingly, we issue a proposed rule to list these subspecies of the ringed seal as threatened species, and we solicit comments on this proposed action. At this time, we do not propose to designate critical habitat for the Arctic ringed seal because it is not currently determinable. In order to complete the critical habitat designation process, we also solicit information on essential physical and biological features of Arctic ringed seal habitat.

**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–XZ59, 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 ringed, bearded (*Erignathus barbatus*), 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 ringed, bearded, 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 ringed seal (and the bearded seal) and submit this 12-month finding to the Office of the **Federal Register** by December 3, 2010. Our 12-month petition finding for bearded 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 ringed 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's 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 ringed 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 time frame. 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 ringed seal is presented in the status review report (Kelly *et al.*, 2010a; available at *http://alaskafisheries.noaa.gov/*).

The ringed seal is the smallest of the northern seals, with typical adult body sizes of 1.5 m in length and 70 kg in weight. The average life span of ringed seals is about 15–28 years. As the common name of this species suggests, its coat is characterized by ring-shaped markings. Ringed seals are adapted to remaining in heavily ice-covered areas throughout the fall, winter, and spring by using the stout claws on their fore flippers to maintain breathing holes in the ice.

### *Seasonal Distribution, Habitat Use, and Movements*

Ringed seals are circumpolar and are found in all seasonally ice covered seas of the Northern Hemisphere as well as in certain freshwater lakes. They range throughout the Arctic Basin and southward into adjacent seas, including the southern Bering Sea and Newfoundland. Ringed seals are also found in the Sea of Okhotsk and Sea of Japan in the western North Pacific, the Baltic Sea in the North Atlantic, and landlocked populations inhabit lakes Ladoga and Saimaa east of the Baltic Sea (Figure 1).

Throughout most of its range, the Arctic subspecies does not come ashore and uses sea ice as a substrate for resting, pupping, and molting. During the ice-free season in more southerly regions including the White Sea, the Sea of Okhotsk, and the Baltic Sea, ringed seals occasionally rest on island shores or offshore reefs. In lakes Ladoga and Saimaa, ringed seals typically rest on rocks and island shores when ice is absent. In all subspecies except the Okhotsk, pups normally are born in subnivean lairs (snow caves) on the sea ice (Arctic and Baltic ringed seals) or in subnivean lairs along shorelines (Saimaa and Ladoga ringed seals) in late winter to early spring. Although use of subnivean lairs has been reported for Okhotsk ringed seals, this subspecies apparently depends primarily on sheltering in the lee of ice hummocks.

The seasonality of ice cover strongly influences ringed seal movements, foraging, reproductive behavior, and vulnerability to predation. Born *et al.* (2004) recognized three "ecological seasons" as important to ringed seals off northwestern Greenland: The "open-water season," the ice-covered "winter," and "spring," when the seals breed and after the breeding season haul out on the ice to molt. Tracking seals in Alaska and the western Canadian Arctic, Kelly *et al.* (2010b) used different terms to refer to these ecological seasons. Kelly *et al.* (2010b) referred to the open-water period when ringed seals forage most intensively as the "foraging period," early winter through spring when seals rest primarily in subnivean lairs on the ice as the "subnivean period," and the period between abandonment of the lairs and ice break-up as the "basking period."

*Open-water (foraging) period:* Short and long distance movements by ringed seals have been documented during the open-water period. Overall, the record from satellite tracking indicates that ringed seals breeding in shorefast ice practice one of two strategies during the open-water foraging period. Some seals forage within 100 km of their shorefast ice breeding habitat while others make extensive movements of hundreds or thousands of kilometers to forage in highly productive areas and along the pack ice edge. Movements during the open-water period by ringed seals that breed in the pack ice are unknown. Tracking and observational records indicate that adult Arctic ringed seals breeding in the shorefast ice show inter-annual fidelity to breeding sites. Saimaa and Ladoga ringed seals show similar site fidelity. High quality, abundant food is important to the annual energy budgets of ringed seals. Fall and early winter periods, prior to the occupation of breeding sites, are important in allowing ringed seals to accumulate enough fat stores to support estrus and lactation.

*Winter (subnivean period):* At freeze-up in fall, ringed seals surface to breathe in the remaining open water of cracks and leads. As these openings freeze over, the seals push through the ice to breathe until it is too thick. They then open breathing holes by abrading the ice with the claws on their fore flippers. As the ice thickens, the seals continue to maintain the breathing holes by scratching at the walls. The breathing holes can be maintained in ice 2 m or greater in thickness but often are concentrated in the thinner ice of refrozen cracks.

As snow accumulates and buries the breathing hole, the seals breathe through the snow layer. Ringed seals excavate lairs in the snow above breathing holes where snow depth is sufficient. These subnivean lairs are occupied for resting, pupping, and nursing young in annual shorefast and pack ice. Snow accumulation on sea ice is typically sufficient for lair formation only where pressure ridges or ice hummocks cause the snow to form drifts at least 45 cm deep (at least 50–65 cm for birth lairs). Such drifts typically occur only where average snow depths (on flat ice) are 20–30 cm or more. A general lack of such ridges or hummocks in lakes Ladoga and Saimaa limits suitable snow drifts to island shorelines, where most lairs in Lake Ladoga and virtually all lairs in Lake Saimaa are found.

Subnivean lairs provide refuge from air temperatures too low for survival of ringed seal pups. Lairs also conceal ringed seals from predators, an advantage especially important to the small pups that start life with minimal tolerance for immersion in cold water. When forced to flee into the water to avoid predators, the pups that survive depend on the subnivean lairs to subsequently warm themselves. Ringed seal movements during the subnivean period typically are quite limited, especially where ice cover is extensive.

*Spring (basking period):* Numbers of ringed seals hauled out on the surface of the ice typically begin to increase during spring as the temperatures warm and the snow covering the seals' lairs melts. Although the snow cover can melt rapidly, the ice remains largely intact and serves as a substrate for the molting seals that spend many hours basking in the sun. Adults generally molt from mid-May to mid-July, although there is regional variation. The relatively long periods of time that ringed seals spend out of the water during the molt has been ascribed to the need to maintain elevated skin temperatures. Feeding is reduced and the seal's metabolism declines during the molt. As seals complete this phase of the annual pelage cycle, they spend increasing amounts of time in the water.

*Food Habits*

Ringed seals eat a wide variety of prey in the marine environment. Most ringed seal prey is small, and preferred fishes tend to be schooling species that form dense aggregations. Ringed seals rarely prey upon more than 10–15 species in any one area, and not more than 2–4 of those species are considered important prey. Despite regional and seasonal variations in the diet of ringed seals, fishes of the cod family tend to dominate the diet of ringed seals from late autumn through early spring in many areas. Arctic cod (*Boreogadus saida*) is often reported to be among the most important prey species, especially during the ice-covered periods of the year. Other members of the cod family, including polar cod (*Arctogadus glacialis*), saffron cod (*Eleginus gracilis*), and navaga (*Eleginus navaga*), are also seasonally important to ringed seals in some areas. Arctic cod is not found in the Sea of Okhotsk, but capelin (*Mallotus villosus*) are abundant in the region. Other fishes reported to be locally important to ringed seals include smelt (*Osmerus* sp.) and herring (*Clupea* sp.). Invertebrates appear to become more important to ringed seals in many areas during the open-water season, and are often found to dominate the diets of young seals. In the brackish water of the Baltic Sea, the prey community includes a mixture of marine and freshwater fish species, as well as invertebrates. In the freshwater environment of Lake Saimaa, several schooling fishes were reported to be the most important prey species; and in Lake Ladoga, a variety of fish species were found in the diet of ringed seals.

*Reproduction*

Sexual maturity in ringed seals varies with population status and can be as late as 7 years for males and 9 years for females and as early as 3 years for both sexes. Ringed seals breed annually, with timing varying regionally. Mating takes place while mature females are still nursing their pups and is thought to occur under the ice in the vicinity of birth lairs. Little is known about the breeding system of ringed seals; however, males are often reported to be territorial during the breeding season.

A single pup is born in a subnivean lair on either the shorefast ice or pack ice. In much of the Arctic, pupping occurs in late March through April, but the timing varies with latitude. Pupping in the Sea of Okhotsk takes place in March and April. In the Baltic Sea, Lake Saimaa, and Lake Ladoga, pups are born in February through March. At birth, ringed seal pups are approximately 60–65 cm in length and weigh 4.5–5.0 kg with regional variation. The pups are born with a white natal coat (lanugo) that provides insulation, particularly when dry, until it is shed after 4–6 weeks. Pups nurse for as long as 2 months in stable shorefast ice and for as little as 3–6 weeks in moving ice. Pups normally are weaned before break-up of spring ice. At weaning, pups are four times their birth weights, and they lose weight for several months after weaning.

**Species Delineation**

The BRT reviewed the best scientific and commercial data available on the ringed seal's taxonomy and concluded that there are five currently recognized subspecies of the ringed seal: Arctic ringed seal; Baltic ringed seal; Okhotsk ringed seal; Ladoga ringed seal; and Saimaa ringed seal (*Phoca hispida saimensis*). The BRT noted, however, that further investigation would be required to discern whether there are additional distinct units, especially within the Arctic subspecies, whose genetic structuring has yet to be thoroughly investigated. We agree with the BRT's conclusions that these five subspecies of the ringed seal qualify as "species" under the ESA. Our DPS analysis follows, and the geographic distributions of the five subspecies are shown in Figure 1.

Under our DPS policy (61 FR 4722; February 7, 1996), two elements are considered in a decision regarding the potential identification of a DPS: (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).

With respect to discreteness criterion 1 above, we concluded that resolution of ringed seal population segments beyond the subspecies level is not currently possible using the best available scientific and commercial data. We also did not find sufficient differences in the conservation status or management within any of the ringed seal subspecies among their respective range countries to justify the use of international boundaries to satisfy the discreteness criterion of our DPS Policy. We therefore conclude that there are no population segments within any of the subspecies that satisfy the discreteness criteria of our DPS Policy. Since there are no discrete population segments within any of the subspecies, we cannot take the next step of determining whether any discrete population segment is significant to the taxon to which it belongs.

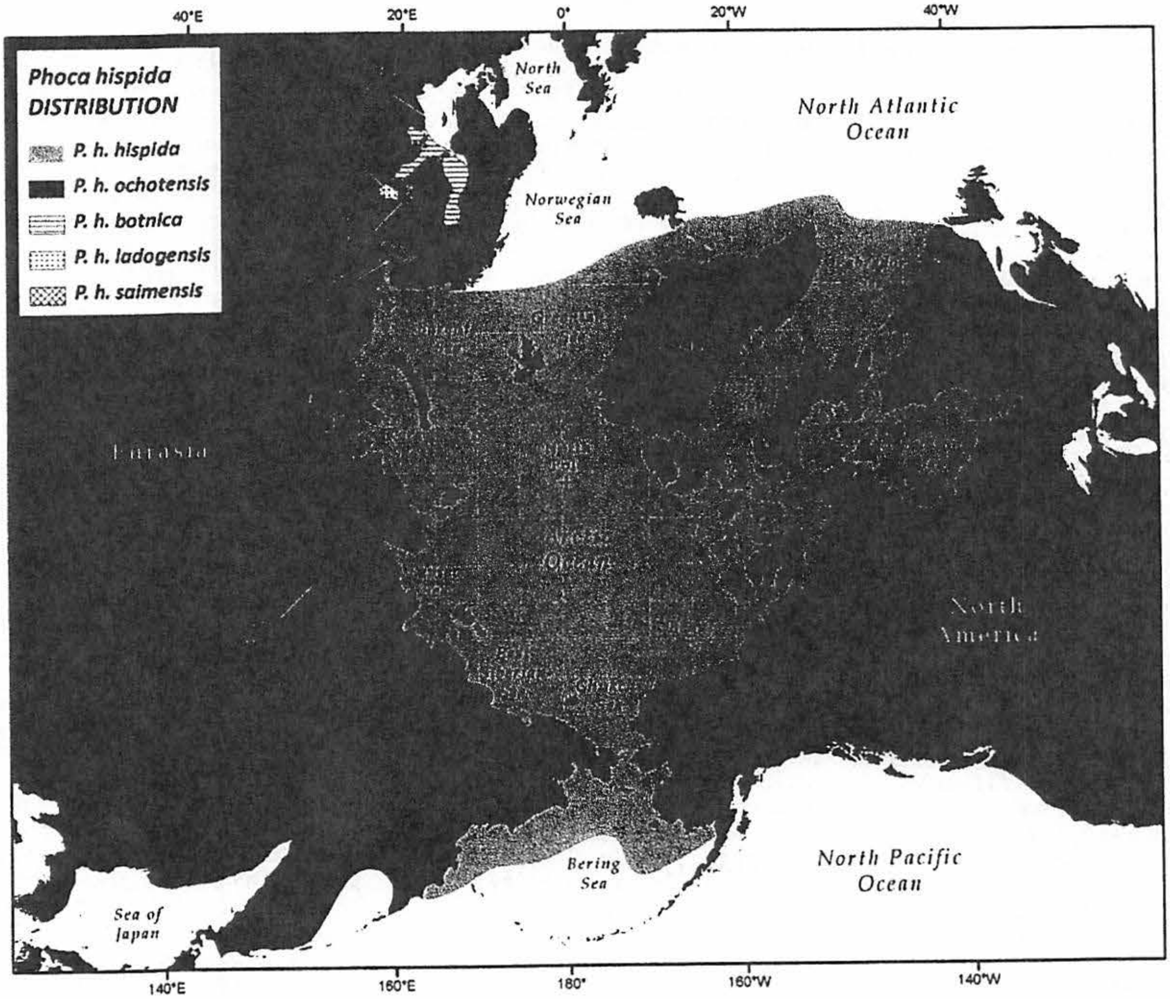


Figure 1. Distributions of the five subspecies of the ringed seal (Phoca hispida), from Kelly et al. (2010a).

## Abundance and Trends

Several factors make it difficult to accurately assess ringed seals' 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 ringed 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. Some studies have relied on surveys of seal holes and then estimated the number of seals based on various assumptions of the ratio of seals to holes. Most surveys are conducted during the basking period and the numbers of seals on ice is multiplied by some factor to estimate population size or determine a population index. While a few, recent studies have used data recorders and haul-out models to develop correction factors for seals submerged and unseen, many studies present only estimates for seals visible on ice (i.e., "basking population"). The timing of annual snow and ice melts also varies widely from year to year and, unless surveys are conducted to coincide with similar ice and weather conditions, comparisons between years (even if conducted during the same time of year) can be erroneous. With these limitations in mind, the best scientific and commercial data on abundance and trends are summarized below for each of the ringed seal subspecies.

*Arctic Ringed Seal*

The Arctic ringed seal is the most abundant of the ringed seal subspecies and has a circumpolar distribution. The BRT divided the distribution of Arctic ringed seals into five regions: Greenland Sea and Baffin Bay, Hudson Bay, Beaufort Sea, Chukchi Sea, and the White, Barents and Kara Seas. These regions were largely chosen to reflect the geographical groupings of published studies and not to imply any actual population structure. These areas also do not represent the full distribution of Arctic ringed seals as estimates are not available in some areas (*e.g.*, areas of the Russian Arctic coast and the Canadian Arctic Archipelago).

The only available comprehensive estimate for the Greenland Sea and Baffin Bay region is 787,000, based on surveys conducted in 1979. Consistency in harvest records over time lends some confidence that the population has not changed significantly.

The Hudson Bay ringed seal population was estimated at 53,346 based on the mid-point of estimates from aerial surveys conducted in 2007 and 2008. Prior surveys conducted in western Hudson Bay in the 1970s produced an estimate of 455,000 seals, which was much larger than the 218,300 reported in the 1950s. The earlier studies did not account for seals using pack ice habitats which might account for the difference. A more recent survey in 1995 provided an estimate of approximately 280,000 seals when missed seals were accounted for.

Population assessments of ringed seals in the Beaufort and Chukchi Seas have been mostly confined to U.S. and Canadian waters. Based on the available abundance estimates for study areas within this region and extrapolations for pack ice areas without survey data, a reasonable estimate for the Chukchi and Beaufort Seas is 1 million seals. Estimates derived for all Alaskan shorefast ice habitats in both the Chukchi and Beaufort Seas based on aerial surveys conducted in the mid 1980s were 250,000 ringed seals in the shorefast ice and 1–1.5 million including seals in the pack-ice habitat.

The White, Barents, Kara, and East Siberian Seas encompass at least half of the worldwide distribution of Arctic ringed seals. The total population across these seas may be as many as 220,000 seals based on available survey data, primarily from 1975–1993.

*Okhotsk Ringed Seal*

Based on aerial surveys, ringed seal abundance in the Sea of Okhotsk from 1968–1990 was estimated at between 676,000 and 855,000 seals. These estimates include a general (not species-specific) 30 percent adjustment to account for seals in the water. Fluctuations in population estimates since catch limits were initiated in 1968 were suspected to be natural (Fedoseev, 2000). Based on these surveys, a conservative estimate of the current total population of ringed seals in the Sea of Okhotsk would be 676,000 seals. Aerial surveys conducted in the Sea of Okhotsk from 1968–1969 provided a population estimate of 800,000. This was the same as the estimate previously back-calculated from catch data in 1966 when a population decline due to hunting was identified. These calculations also suggested that ringed seal abundance in the Sea of Okhotsk had been in a state of steady decline since 1955 when estimates suggested the population exceeded 1 million seals.

*Baltic Ringed Seal*

The Baltic ringed seal population was estimated at 10,000 seals based on comprehensive surveys conducted in 1996. Historical estimates of population size for the Baltic ringed seal range from 50,000 to 450,000 seals in 1900 (Kokko *et al.*, 1999). These estimates were derived as back calculations from historical bounty records. The large range in the estimates reflects uncertainty in the hunting dynamics and whether the populations were historically subject to density dependence. By the 1940s, the population had been reduced to 25,000 seals in large part due to Swedish and Finnish removal efforts. Ringed seals in the Baltic are found in three general regions, the Bothnian Bay, Gulf of Finland, and Gulf of Riga plus the Estonian west coast. Low numbers of ringed seals are also present in the Bothnian Sea and the southwestern region of Finland. The greatest concentration of Baltic ringed seals is found in the Bothnian Bay.

*Ladoga Ringed Seal*

The population size of ringed seals in Lake Ladoga is currently suggested to range between 3,000 and 5,000 seals based on an aerial survey in 2001. This represents a decline from estimates of 20,000 and 5,000–10,000 seals reported for the 1930s and the 1960s, respectively (Chapskii, 1974). Results from a Russian aerial survey in the 1970s estimated the population of ringed seals in Lake Ladoga to be 3,500–4,700 seals.

*Saimaa Ringed Seal*

The current population estimate of ringed seals in Lake Saimaa is less than 300, and the mean population growth rate from 1990–2004 was 1.026. Lake Saimaa is a complex body of water, and the population trends and abundance for Saimaa ringed seals have differed across the various regions. It has been projected that the population of Saimaa ringed seals may reach 400 by 2015, but with the caveat that seals may no longer be present in some regions of the lake. Historical abundance of ringed seals in Lake Saimaa is estimated to have been between 4,000 and 6,000 animals approximately 5,000 years ago (Sipilä and Hyvärinen, 1998; Sipilä, 2006). However, using a back-casting process based on reported bounty statistics, the population was estimated in 1893 to be between 100 and 1,300 seals. In 1993, the Saimaa seal was listed as endangered under the ESA (58 FR 26920; May 6, 1993) and as depleted under the U.S. Marine Mammal Protection Act of 1972, as amended. At that time, the population was estimated at 160–180 seals (57 FR 60162; December 18, 1992).

**Summary of Factors Affecting the Ringed 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 each subspecies of the ringed seal 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 the five subspecies of the ringed seal (*see* **ADDRESSES**). As discussed above, the data on ringed seal abundance and trends of most populations are unavailable or imprecise, especially in the Arctic and Okhotsk subspecies, and there is little basis for quantitatively linking projected environmental conditions or other factors to ringed 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 ringed 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 each of the subspecies of the ringed seal therefore requires a focus on the observed and projected changes in sea ice, snow cover, ocean temperature, ocean pH (acidity), and associated changes in ringed seal prey species.

The threats (analyzed below) associated with impacts of the warming climate on the habitat of ringed seals, to the extent that they may pose risks to these seals, are expected to manifest throughout the current breeding and molting range (for snow and ice related threats) or throughout the entire range (for ocean warming and acidification) of each of the subspecies, 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 Ringed 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, the Baltic Sea, Hudson Bay, and the Sea of Okhotsk are known as seasonal ice zones, where first year sea ice is renewed every winter. Similarly, freshwater ice in lakes Ladoga and Saimaa forms and melts annually. 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 ringed 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 the 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 increases in 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, global warming projected 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 2 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 and snow 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 ringed seals, we therefore considered all the projections through the end of the 21st century 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. Snow cover on sea ice in the Northern Hemisphere was forecasted using one of the six models, the Community Climate System Model, version 3 (CCSM3, National Center for Atmospheric Research) (under the A1B scenario), a model that is known for incorporating advanced sea ice physics, and for which snow data were available. To incorporate natural variability, this model was run seven times.

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 14 different regions throughout the ringed seal's range, including 12 regions for the Arctic ringed seal, one region for the Okhotsk ringed seal, and one region for the Baltic, Ladoga, and Saimaa ringed seals. For Arctic ringed seals, in three regions (Chukchi Sea, east Siberian Sea, and the central Arctic) 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, in two regions (western Bering and the Barents Seas) a single model (CCSM3) met the performance criteria, and in five regions (Baffin Bay, Hudson Bay, the Canadian Arctic Archipelago, east Greenland, and the Kara and Laptev Seas) none of the models performed satisfactorily. The models also did not meet the performance criteria for the Baltic region and 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), other existing analyses (Baltic Sea and Hudson Bay), and results from the hemispheric predictions (Baffin Bay, the Canadian Arctic Archipelago, and the East Greenland, Kara, and Laptev Seas), were used for regions where ice projections could not be obtained. For the Baltic Sea we reviewed the analysis of Jylha *et al.* (2008). They used seven regional climate models and found good agreement with observations for the 1902–2000 comparison period. 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.

Regional predictions of snow cover were based on results from the hemispheric projections for Arctic and Okhotsk ringed seals, and on other existing analyses for Baltic, Ladoga, and Saimaa ringed seals. For the Baltic Sea we referred to the analysis of Jylha *et al.* (2008) noted above. For lakes Ladoga and Saimaa we considered the analysis of Saelthun *et al.* (1998; cited in Kuusisto, 2005). They used a modified hydrological model to analyze the effects of climate change on hydrological conditions and runoff in Finland and the Scandinavian Peninsula.

While our inferences about future regional ice and snow 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 the onset of potential impacts to ringed seals is complicated by the coarse resolution of the IPCC models.

Northern Hemisphere Sea Ice and Snow Cover Predictions

Projections of Northern Hemisphere sea ice concentrations 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 in November 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. The month of May shows diminishing sea ice cover at 2050 and 2090 in the Barents and Bering Seas and the Sea of Okhotsk. By the month of June, projections begin to show substantial changes as the century progresses. Current conditions occasionally exhibit a lack of sea ice near the Bering Strait during 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 in the Arctic by mid-century.

As the Arctic Ocean warms and is covered by less ice, precipitation is expected to increase overall including during the winter months. Five climate models used by the *Arctic Climate Impact Assessment* forecasted an average increase in precipitation over the Arctic Ocean of 14 percent by the end of the century (Walsh *et al.*, 2005). The impact of increased winter precipitation on the depth of snow on sea ice, however, will be counteracted by delays in the formation of sea ice. Over most of the Arctic Ocean, snow cover reaches its maximal depth in May, but most of that accumulation takes place in the autumn (Sturm *et al.*, 2002). Snow depths reach 50 percent of the annual maximum by the end of October and 67 percent of their maximum by the end of November (Radionov et *al.*, 1997). Thus, delays of 1–2 months in the date of ice formation would result in substantial decreases in spring snow depths despite the potential for increased winter precipitation. Thinner ice will be more susceptible to deforming and producing pressure ridges and ice hummocks favoring snow drifts where depths exceed those on flat ice (Iacozaa and Barber, 1999; Strum *et al.*, 2006). However, as noted above, average snow depths of 20–30 cm or more are typically necessary to form drifts that are deep enough for ringed seal lair formation. As spring air temperatures continue to warm, snow melt will continue to come earlier in the year. The CCSM3 model forecasted that the accumulation of snow on sea ice will decrease by almost 50 percent by the end of this century, with more than half of that decline projected to occur by 2050. Although the forecasted snow accumulations in the seven integrations of the model varied, all predicted substantial declines over the century.

Regional Sea Ice and Snow Cover Predictions by Subspecies

*Arctic ringed seal:* In the East Siberian, Chukchi, Beaufort, Kara-Laptev, and Greenland Seas, as well as in Baffin Bay, and the Canadian Arctic Archipelago, little or no decline in ice extent is expected in April and May during the remainder of this century. In most of these areas, a moderate decline in sea ice is predicted during June within this century, while substantial declines in sea ice are projected in July and November after mid-century. The central Arctic (defined as regions north of 80° N. latitude) also shows declines in sea ice cover that are most apparent in July and November after 2050. For Hudson Bay, under a warmer climate scenario (for the years 2041–2070) Joly *et al.* (2010) projected a reduction in the sea ice season of 7–9 weeks, with substantial reductions in sea ice cover most apparent in July and during the first months of winter.

In the Bering Sea, April and May ice cover is projected to decline throughout this century, with substantial inter-annual variability forecasted in the eastern Bering Sea. The projection for May indicates that there will commonly be years with little or no ice in the western Bering Sea beyond mid-century. Very little ice has remained in the eastern Bering Sea in June since the mid-1970s. Sea ice cover in the Barents Sea in April and May is also projected to decline throughout this century, and in the months of June and July, ice is expected to disappear rapidly in the coming decades.

Based on model projections, April snow depths over much of the range of the Arctic ringed seal averaged 25–35 cm in the first decade of this century, consistent with on-ice measurements by Russian scientists (Weeks, 2010). By mid-century, a substantial decrease in areas with April snow depths of 25–35 cm is projected (much of it reduced to 20–15 cm). The deepest snow (25–30 cm) is forecasted to be found just north of Greenland, in the Canadian Arctic Archipelago, and in an area tapering north from there into the central Arctic Basin. Southerly regions, such as the Bering Sea and Barents Sea, are forecasted to have snow depths of 10 cm or less my mid-century. By the end of the century, April snow depths of 20–25 cm are forecasted only for a portion of the central Arctic, most of the Canadian Arctic Archipelago, and a few small, isolated areas in a few other regions. Areas with 25–30 cm of snow are projected to be limited to a few small isolated pockets in the Canadian Arctic by 2090–2099.

*Okhotsk ringed seal:* 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. Based on that analysis, ice is expected to persist in the Sea of Okhotsk in March during the remainder of this century, although ice may be limited to the northern region in most years after mid-century. Conditions for sea ice in April are likely to be limited to the far northern reaches of the Sea of Okhotsk or non-existent by 2100. Little to no sea ice is expected in May by mid-century. Average snow depth projections for April show depths of 15–20 cm only in the northern portions of the Sea of Okhotsk in the past 10 years and nowhere in that sea by mid-century. By the end of the century average snow depths are projected to be 10 cm or less even in the northern Sea of Okhotsk.

*Baltic, Ladoga, and Saimaa ringed seals:* For the Baltic Sea, the analysis of regional climate models by Jylhä *et al.* (2008) was considered. They used seven regional climate models and found good agreement with observations for the 1902–2000 comparison period. For the forecast period 2071–2100, one model predicted a change to mostly mild conditions, while the remaining models predicted unprecedentedly mild conditions. They noted that their estimates for a warming climate were in agreement with other studies that found unprecedentedly mild ice extent conditions in the majority of years after about 2030. The model we used to project snow depths (CCSM3) did not provide adequate resolution for the Baltic Sea. The climate models analyzed by Jylhä *et al.* (2008), however, forecasted decreases of 45–60 days in duration of snow cover by the end of the century in the northern Baltic Sea region. The shortened seasonal snow cover would result primarily from earlier spring melts, but also from delayed onset of snow cover. Depth of snow is forecasted to decrease 50–70 percent in the region over the same period. The depth of snow also will be decreased by mid-winter thaws and rain events. Simulations of the snow cover indicated that an increasing proportion of the snow pack will consist of icy or wet snow.

Ice cover has diminished about 12 percent over the past 50 years in Lake Ladoga. Although we are not aware of any ice forecasts specific to lakes Ladoga and Saimaa, the simulations of future climate reported by Jylhä *et al.* (2008) suggest warming winters with reduced ice and snow cover. Snow cover in Finland and the Scandinavian Peninsula is projected to decrease 10–30 percent before mid-century and 50–90 percent by 2100 (Saelthun *et al.*, 1998, *cited in* Kuusisto, 2005).

### Effects of Changes in Ice and Snow Cover on Ringed Seals

Ringed seals are vulnerable to habitat loss from changes in the extent or concentration of sea ice because they depend on this habitat for pupping, nursing, molting, and resting. The ringed seal's broad distribution, ability to undertake long movements, diverse diet, and association with widely varying ice conditions suggest resilience in the face of environmental variability. However, the ringed seal's long generation time and ability to produce only a single pup each year may limit its ability to respond to environmental challenges such as the diminishing ice and snow cover projected in a matter of decades. Ringed seals apparently thrived during glacial maxima and survived warm interglacial periods. How they survived the latter periods or in what numbers is not known. Declines in sea ice cover in recent decades are more extensive and rapid than any known for at least the last few thousand years (Polyak *et al.*, 2010).

Ringed seals create birth lairs in areas of accumulated snow on stable ice including the shore-fast ice over continental shelves along Arctic coasts, bays, and inter-island channels. While some authors suggest that shorefast ice is the preferred pupping habitat of ringed seals due to its stability throughout the pupping and nursing period, others have documented ringed seal pupping on drifting pack ice both nearshore and offshore. Both of these habitats can be affected by earlier warming and break-up in the spring, which shortens the length of time pups have to grow and mature in a protected setting. Harwood *et al.* (2000) reported that an early spring break-up negatively impacted the growth, condition, and apparent survival of unweaned ringed seal pups. Early break-up was believed to have interrupted lactation in adult females, which in turn, negatively affected the condition and growth of pups.

Unusually heavy ice has also been implicated in shifting distribution, high winter mortality, and reduced productivity of ringed seals. It has been suggested that reduced ice thickness associated with warming in some areas could lead to increased biological productivity that might benefit ringed seals, at least in the short-term. However, any transitory and localized benefits of reduced ice thickness are expected to be outweighed by the negative effects of increased thermoregulatory costs and vulnerability of seal pups to predation associated with earlier ice break-up and reduced snow cover.

Ringed seals, especially the newborn, depend on snow cover for protection from cold temperatures and predators. Occupation of subnivean lairs is especially critical when pups are nursed in late March–June. Ferguson *et al.* (2005) attributed low ringed seal recruitment in western Hudson Bay to decreased snow depth in April and May. Reduced snowfall results in less snow drift accumulation next to pressure ridges, and pups in lairs with thin snow cover are more vulnerable to predation than pups in lairs with thick snow cover (Hammill and Smith, 1989; Ferguson *et al.*, 2005). When snow cover is insufficient, pups can also freeze in their lairs as documented in 1974 when roofs of lairs in the White Sea were only 5–10 cm thick (Lukin and Potelov, 1978). Similarly, pup mortality from freezing and polar bear (*Ursus maritimus*) predation increased when unusually warm spring temperatures caused early melting near Baffin Island in the late 1970s (Smith and Hammill, 1980; Stirling and Smith, 2004). Prematurely exposed pups also are vulnerable to predation by wolves (*Canis lupus*) and foxes (*Alopex lagopus* and *Vulpes vulpes*)—as documented during an early snow melt in the White Sea in 1977 (Lukin, 1980)—and by gulls (Laridae) and ravens (*Corvus corax*) as documented in the Barents Sea (Gjertz and Lydersen, 1983; Lydersen and Gjertz, 1987; Lydersen *et al.*, 1987; Lydersen and Smith, 1989; Lydersen and Rig, 1990; Lydersen, 1998). When lack of snow cover has forced birthing to occur in the open, some studies have reported that nearly 100 percent of pups died from predation (Kumlien, 1879; Lydersen *et al.*, 1987; Lydersen and Smith, 1989; Smith *et al.*, 1991; Smith and Lydersen, 1991). The high fidelity to birthing sites exhibited by ringed seals also makes them more susceptible to localized degradation of snow cover (Kelly *et al.*, 2010).

Increased rain-on-snow events during the late winter also negatively impact ringed seal recruitment by damaging or eliminating snow-covered birth lairs, increasing exposure and the risk of hypothermia, and facilitating predation by polar bears and other predators. Stirling and Smith (2004) documented the collapse of subnivean lairs during unseasonal rains near southeastern Baffin Island and the subsequent exposure of ringed seals to hypothermia. They surmised that most of the pups that survived exposure to cold were eventually killed by polar bears, Arctic foxes, or possibly gulls. Stirling and Smith (2004) postulated that, should early season rain become regular and widespread in the future, mortality of ringed seal pups will increase, especially in more southerly parts of their range.

### Potential Impacts of Projected Ice and Snow Cover Changes on Ringed Seals

As discussed above, ringed seals divide their time between foraging in the water, and reproducing and molting out of the water, where they are especially vulnerable to predation. Females must nurse their pups for 1–2 months, and the small pups are vulnerable to cold temperatures and avian and mammalian predators on the ice, especially during the nursing period. Thus, a specific habitat requirement for ringed seals is adequate snow for the occupation of subnivean lairs, especially in spring when pups are born and nursed.

Northern Hemisphere snow cover has declined in recent decades and spring melt times have become earlier (ACIA, 2005). In most areas of the Arctic Ocean, snow melt advanced 1–6 weeks from 1979–2007. Throughout most of the ringed seal's range, snow melt occurred within a couple of weeks of weaning. Thus, in the past 3 decades, snow melts in many areas have been pre-dating weaning. Shifts in the timing of reproduction by other pinnipeds in response to changes in food availability have been documented. However, the ability of ringed seals to adapt to earlier snow melts by advancing the timing of reproduction will be limited by snow depths. As discussed above, over most of the Arctic Ocean, snow cover reaches its maximal depth in May, but most of that accumulation takes place in autumn. It is therefore unlikely that snow depths for birth lair formation would be improved earlier in the spring. In addition, the pace at which snow melts are advancing is rapid relative to the generation time of ringed seals, further challenging the potential for an adaptive response.

Snow drifted to 45 cm or more is needed for excavation and maintenance of simple lairs, and birth lairs require depths of 50 to 65 cm or more (Smith and Stirling, 1975; Lydersen and Gjertz, 1986; Kelly, 1988; Furgal *et al.*, 1996; Lydersen, 1998; Lukin *et al.*, 2006). Such drifts typically only occur where average snow depths are at least 20–30 cm (on flat ice) and where drifting has taken place along pressure ridges or ice hummocks (Hammill and Smith, 1991; Lydersen and Ryg, 1991; Smith and Lydersen, 1991; Ferguson *et al.*, 2005). We therefore considered areas forecasted to have less than 20 cm average snow depth in April to be inadequate for the formation of ringed seal birth lairs.

*Arctic ringed seal:* The depth and duration of snow cover is projected to decrease throughout the range of Arctic ringed seals within this century. Whether ringed seals will continue to move north with retreating ice over the deeper, less productive Arctic Basin waters and whether forage species that they prey on will also move north is uncertain (see additional discussion below). Initially, impacts may be somewhat ameliorated if the subspecies' range retracts northward with its sea ice habitats. By 2100, however, April snow cover is forecasted to become inadequate for the formation and occupation of ringed seal birth lairs over much of the subspecies' range. The projected decreases in ice and, especially, snow cover are expected to lead to increased pup mortality from premature weaning, hypothermia, and predation.

*Okhotsk ringed seal:* Based on temperature proxies, ice is expected to persist in the Sea of Okhotsk through the onset of pupping in March through the end of this century. Ice suitable for pupping and nursing likely will be limited to the northernmost portions of the sea, as ice is likely to be limited to that region in April by the end of the century. The snow cover projections suggest that snow depths may already be inadequate for lairs in the Sea of Okhotsk, and most Okhotsk ringed seals apparently now give birth on pack ice in the lee of ice hummocks. However, it appears unlikely that this behavior could mitigate the threats posed by the expected decreases in sea ice. The Sea of Okhotsk is bounded to the north by land, which will limit the ability of Okhotsk ringed seals to respond to deteriorating sea ice and snow conditions by shifting their range northward. Some Okhotsk ringed seals have been reported on terrestrial resting sites during the ice-free season, but these sites provide inferior pupping and nursing habitat. Within the foreseeable future, the projected decreases in sea ice habitat suitable for pupping, nursing, and molting in the Sea of Okhotsk are expected to lead to reduced abundance and productivity.

*Baltic, Ladoga, and Saimaa ringed seals:* The considerable reductions in ice extent forecasted by mid-century, coupled with deteriorating snow conditions, are expected to substantially alter the habitats of Baltic ringed seals. Climate forecasts for northern Europe also suggest reduced ice and snow cover for lakes Ladoga and Saimaa within this century. These habitat changes are expected to lead to decreased survival of pups (due to hypothermia, predation, and premature weaning) and considerable declines in the abundance of these subspecies in the foreseeable future. Recent (2005–2007) high rates of pup mortality in Saimaa ringed seals (more than double those in 1980–2000) have been attributed to insufficient snow for lair formation and occupation. Given the small population size of the Saimaa ringed seal, this subspecies is at particular risk from the projected habitat changes. Although Baltic, Ladoga, and Saimaa ringed seals have been reported using terrestrial resting sites when ice is absent, these sites provide inferior pupping and nursing habitat. As sea ice and snow conditions deteriorate, Baltic ringed seals will be limited in their ability to respond by shifting their range northward because the Baltic Sea is bounded to the north by land; and the landlocked seal populations in lakes Ladoga and Saimaa will be unable to shift their ranges.

## Impacts on Ringed 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 two 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. Seawater chemistry measurements in the Baltic Sea suggest that this sea is equally vulnerable to acidification as the Arctic. We are not aware of specific acidification studies in lakes Ladoga and Saimaa. Fresh water systems, however, are much less buffered than ocean waters and are likely to experience even larger changes in acidification levels than marine systems. The most likely impact of ocean acidification on ringed seals will be at lower tropic 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 water temperatures and decreasing ice likely will result in a contraction in the range of Arctic cod, a primary prey of ringed seals. The same changes will lead to colonization of the Arctic Ocean by more southerly species, including potential prey, predators, and competitors. The outcome of new competitive interactions cannot be specified, but as sea ice specialists, ringed seals may be at a disadvantage in competition with generalists in an ice-diminished Arctic. Prey biomass may be reduced as a consequence of increased freshwater input and loss of sea ice habitat for amphipods and copepods. On the other hand, overall pelagic productivity may increase.

## Summary of Factor A

Climate models consistently project overall diminishing sea ice and snow cover at least through the current century, with regional variation in the timing and severity of those losses.

Increasing atmospheric concentrations of greenhouse gases, including $CO_2$, will drive climate warming and increase acidification of the ringed seal's ocean and lake habitats. The impact of ocean warming and acidification on ringed seals is expected to be primarily through changes in community composition. However, the nature and timing of these changes is uncertain.

Diminishing ice and snow cover are the greatest challenges to persistence of all of the ringed seal subspecies. While winter precipitation is forecasted to increase in a warming Arctic, the duration of ice cover is projected to be substantially reduced, and the net effect will be lower snow accumulation on the ice. Within the century, snow cover adequate for the formation and occupation of birth lairs is forecasted only for parts of the Canadian Arctic Archipelago, a portion of the central Arctic, and a few small isolated areas in a few other regions. Without the protection of lairs, ringed seals, especially newborn, are vulnerable to freezing and predation. We conclude that the ongoing and projected changes in sea ice habitat pose significant threats to the persistence of each of the five subspecies of the ringed seal.

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

Ringed seals have been hunted by humans for millennia and remain a fundamental subsistence resource for many northern coastal communities today. Ringed seals were also harvested commercially in large numbers during the 20th century, which led to the depletion of their stocks in many parts of their range. Commercial harvests in the Sea of Okhotsk and predator-control harvests in the Baltic Sea, Lake Ladoga, and Lake Saimaa caused population declines in the past, but have since been restricted. Although subsistence harvest of the Arctic subspecies is currently substantial in some regions, harvest levels appear to be sustainable. Climate change is likely to alter patterns of subsistence harvest of marine mammals by changing their local 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 interacting variables and imprecision of climate and sea ice 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.

Recreational, scientific, and educational uses of ringed seals are minimal and are not expected to increase significantly in the foreseeable future. We conclude that overutilization does not currently threaten any of the five subspecies of the ringed seal.

*C. Diseases, Parasites, and Predation*

Ringed seals have co-evolved with numerous parasites and diseases, and those relationships are presumed to be stable. Evidence of distemper virus, for example, has been reported in Arctic ringed seals, but there is no evidence of impacts to ringed seal abundance or productivity. Abiotic and biotic changes to ringed seal habitat potentially could lead to exposure to new pathogens or new levels of virulence, but we consider the potential threats to ringed seals as low.

Ringed seals are most commonly preyed upon by Arctic foxes and polar bears, and less commonly by other terrestrial carnivores, sharks, and killer whales (*Orcinus orca*). When ringed seal pups are forced out of subnivean lairs prematurely because of low snow accumulation and/or early melts, gulls and ravens also successfully prey on them. Avian predation is facilitated not only by lack of sufficient snow cover but also by conditions favoring influxes of birds. Lydersen and Smith (1989) pointed out that the small size of newborn ringed seals, coupled with their prolonged nursing period, make them vulnerable to predation by birds and likely sets a southern limit to their distribution.

Ringed seals and bearded seals are the primary prey of polar bears. Polar bear predation on ringed seals is most successful in moving offshore ice, often along floe edges and rarely in ice-free waters. Polar bears also successfully hunt ringed seals on stable shorefast ice by catching animals when they surface to breathe and when they occupy lairs. Hammill and Smith (1991) further noted that polar bear predation on ringed seal pups increased 4-fold in a year when average snow depths in their study area decreased from 23 to 10 cm. They concluded that while a high proportion of pups born each year are lost to predation, "without the protection provided by the subnivean lair, pup mortality would be much higher."

The distribution of Arctic foxes broadly overlaps with that of Arctic ringed seals. Arctic foxes prey on newborn seals by tunneling into the birth lairs. The range of the red fox overlaps with that of the Okhotsk, Baltic, Saimaa, and Ladoga subspecies, and on rare occasion red foxes also prey on newborn ringed seals in lairs.

High rates of predation on ringed seal pups have been associated with anomalous weather events that caused subnivean lairs to collapse or melt before pups were weaned. Thus, declining snow depths and duration of snow cover during the period when ringed seal pups are born and nursed can be expected to lead to increased predation on ringed seal pups. We conclude that the threat posed to ringed seals by predation is currently moderate, but predation risk is expected to increase as snow and sea ice conditions change with a warming climate.

*D. Inadequacy of Existing Regulatory Mechanisms*

A primary concern about the conservation status of the ringed 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 ringed seal habitat. The risk posed to ringed 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 thus recognize that the lack of effective mechanisms to regulate global GHG emissions is contributing to the risks posed to ringed seals by these emissions.

Drowning in fishing gear has been reported as the most common cause of death reported for Saimaa ringed seals. Although there have been seasonal fishing restrictions instituted in some parts of Lake Saimaa, these are apparently insufficient, as annual loss of seals has continued. We therefore conclude that the inadequacy of existing mechanisms to regulate bycatch of Saimma ringed seals is contributing to its endangered status.

*E. Other Natural or Manmade Factors Affecting the Species' Continued Existence Pollution and Contaminants*

Contaminants research on ringed seals is very extensive and has been conducted in most parts of the species' range (with the exception of the Sea of Okhotsk), particularly throughout the Arctic environment where ringed seals are an important diet item in coastal human communities. Pollutants such as organochlorine (OC) compounds and heavy metals have been found in all of the subspecies of ringed seal (with the exception of the Okhotsk ringed seal). The variety, sources, and transport mechanisms of contaminants vary across ringed seal ecosystems. Statistical analysis of OC compounds in marine mammals has shown that, for most OCs, the European Arctic is more contaminated than the Canadian and U.S. Arctic.

Reduced productivity in the Baltic ringed seal in recent decades resulted from impaired fertility that was associated with pollutants. High levels of DDT (dichloro-diphenyl-trichloroethane) and PCBs (polychlorinated biphenyls) were found in Baltic (Bothnian Bay) ringed seals in the 1960s and 1970s, and PCB levels were correlated with reproductive failure. More recently, PFOSs (perfluorooctane sulfonate; a perfluorinated contaminant or PFC) were reported as 15 times greater in Baltic ringed seals than in Arctic ringed seals.

Mercury levels detected in Saimaa ringed seals were higher than those reported for the Baltic Sea and Arctic Ocean. It has been suggested that high mercury levels may have contributed to the Saimaa ringed seal's population decline in the 1960s and 1970s. The high level of mercury in the seal's prey and shortage of selenium would reduce the seal's capacity for metabolic detoxification. The major source of mercury in Lake Saimaa has been noted as the pulp industry.

Present and future impacts of contaminants on ringed 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 ringed 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 ringed seals primarily through noise, physical disturbance, and pollution, particularly in the event of a large oil spill or blowout.

Within the range of the Arctic ringed 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.

A major project underway in the Baltic Sea is the Nord Stream 1,200-km gas line, which will be the longest subsea natural gas pipeline in the world. Concerns have been expressed about the potential disturbance of World War II landmines and chemical toxins in the sediment during construction. There are also concerns about potential leaks and spills from the pipeline and impacts on the Baltic Sea marine environment once the pipeline is operational. Circulation of waters in the Baltic Sea is limited and any contaminants may not be flushed efficiently.

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 coats. Adults, juveniles, and weaned young of the year rely on blubber for insulation, so effects on their thermoregulation are expected to be minimal. A variety of other acute effects of oil exposure have been shown to reduce seals' health and possibly survival. 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 ringed 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.

Commercial Fisheries Interactions and Bycatch

Commercial fisheries may impact ringed 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 Arctic ringed seal bycatch could only be found for commercial fisheries that operate in Alaskan waters. Based on data from 2002–2006, there has been an annual average of 0.46 mortalities of Arctic ringed seals incidental to commercial fishing operations. NAMMCO (2002) stated that in the North Atlantic region Arctic ringed seals are seldom caught in fishing gear because their distribution does not coincide with intensive fisheries in most areas. No information could be found regarding ringed seal bycatch levels in the Sea of Okhotsk; however, given the intensive levels of commercial fishing that occur in this sea, bycatch of ringed seals likely occurs on some level there.

Drowning in fishing gear has been reported as one of the most significant mortality factors for seals in the Baltic Sea, especially for young seals, which are prone to getting trapped in fishing nets. There are no reliable estimates of seal bycatch in this sea, and existing estimates are known to be low in many areas, making risk assessment difficult. Based on monitoring of 5 percent of the commercial fishing effort in the Swedish coastal fisheries, bycatch of Baltic ringed seals was estimated at 50 seals in 2004. In Finland, it was estimated that about 70 Baltic ringed seals were caught by fishing gear annually during the period 1997–1999. There are no estimates of seal bycatch from Lithuanian, Estonian, or Russian waters of the Baltic. It has been suggested that decreases in the use of the most harmful types of nets (*i.e.*, gillnets and unprotected trap nets), along with the development of seal-proof fishing gear, may have resulted in a decline in Baltic ringed seal bycatch (Ministry of Agriculture and Forestry, 2007).

It has been estimated that 200–400 Ladoga ringed seals died annually in fishing gear during the late 1980s and early 1990s. Fishing patterns have reportedly changed since then due to changes in the economic market. As of the late 1990s, fishing was not regarded to be a threat to Ladoga ringed seal populations, but it was suggested that it could become so should market conditions improve (Sipilä and Hyvärinen, 1998). Based on interviews with fishermen in Lake Ladoga, Verevkin *et al.* (2006) reported that at least 483 Ladoga ringed seals were killed in fishing gear in 2003, even though official records only recorded 60 cases of bycatch. These figures from 2003 suggest that bycatch mortality is likely to be a continuing conservation concern for Ladoga ringed seals.

Small-scale fishing was thought to be the most serious threat to ringed seals in Lake Saimaa (Sipilä and Hyvärinen, 1998). More than half of the Saimaa seal carcasses that were examined for the period 1977–2000 were determined to have died from drowning in fishing gear, making this the most common cause of death for Saimaa ringed seals. Season and gear restrictions have been implemented in some parts of the lake to reduce bycatch. However, during the late 1990s, 1–3 adult ringed seals were lost annually from drowning in fishing gear (Sipilä and Hyvärinen, 1998), and bycatch mortalities have been reported since then, indicating that bycatch mortality remains a significant conservation concern.

For indirect interactions, we note that commercial fisheries target a number of known ringed seal prey species such as walleye pollock (*Theragra chalcogramma*), Pacific cod, herring (*Clupea* sp.), and capelin. These fisheries may affect ringed seals indirectly through reductions in prey biomass and through other fishing mediated changes in ringed seal prey species.

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 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 ringed 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 ringed seal food webs.

Current and future shipping activities in the Arctic pose varying levels of threats to ringed seals depending on the type and intensity of the shipping activity and its degree of spatial and temporal overlap with ringed seal habitats. These factors are inherently difficult to know or predict, making threat assessment highly uncertain. However, given what is currently known about ringed seal populations and shipping activity in the Arctic, some general assessments can be made. Arctic ringed seal densities are variable and depend on many factors; however, they are often reported to be widely distributed in relatively low densities and rarely congregate in large numbers. This may help mitigate the risks of more localized shipping threats (*e.g.*, oil spills or physical disturbance), since the impacts from such events would be less likely to affect large numbers of seals. The fact that nearly all shipping activity in the Arctic (with the exception of icebreaking) purposefully avoids areas of ice and primarily occurs during the ice-free or low-ice seasons also helps to mitigate the risks associated with shipping to ringed seals, since they are closely associated with ice at nearly all times of the year. Icebreakers pose special risks to ringed 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 ringed seals occur will likely also increase.

Though few details are available regarding actual shipping levels in the Sea of Okhotsk, resource development over the last decade stands out as a likely significant contributor. It is clear that relatively high levels of shipping are needed to support present oil and gas operations. In addition, large-scale commercial fishing occurs in many parts of the sea. 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.

The Baltic Sea is one of the most heavily trafficked shipping areas in the world, with more than 2,000 large ships (including about 200 oil tankers) sailing on its waters on an average day. Additionally, ferry lines, fishing boats, and cruise ships frequent the Baltic Sea. Both the number and size of ships (especially oil tankers) have grown in recent years, and the amount of oil transported in the Baltic (especially from the Gulf of Finland) has increased significantly since 2000. The risk of oil exposure for seals living in the Baltic Sea is considered to be greatest in the Gulf of Finland, where oil shipping routes pass through ringed seal pupping areas as well as close to rocks and islets where seals sometimes haul out. Icebreaking during the winter is considered to be the most significant marine traffic factor for seals in the Baltic Sea, especially in the Bothnian Bay.

Lakes Ladoga and Saimaa are connected to the Baltic Sea and other bodies of water via a network of rivers and canals and are used as waterways to transport people, resources, and cargo throughout the Baltic region. However, reviews of the biology and conservation of Ladoga and Samiaa ringed seals have not identified shipping-related activities (other than accidental bycatch in fishing gear) as being important risks to the conservation status of these subspecies.

The threats posed from shipping activity in the Sea of Okhotsk, Baltic Sea, and lakes Ladoga and Saimaa are largely the same as they are for the Arctic. Two obvious but important distinctions between these regions and the Arctic are that these bodies of water are geographically smaller and more confined than many areas where the Arctic subspecies lives, and they contain much smaller populations of ringed seals. Therefore, shipping impacts and ringed seals are more likely to overlap spatially in these regions, and a single accident (e.g., a large oil spill) could potentially impact these smaller populations severely. However, the lack of specific information on actual threats and impacts (now and in the future) makes threat assessment in these regions similarly uncertain. More information is needed in order to adequately assess the risks of shipping to ringed seals.

Summary of Factor E

We find that the threats posed by pollutants, oil and gas activities, fisheries, and shipping, do not individually or cumulatively raise concern about them placing the Arctic or Okhotsk subspecies of ringed 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.

Reduced productivity in the Baltic Sea ringed seal in recent decades resulted from impaired fertility that was associated with pollutants. We do not have any information to conclude that there are currently population-level effects on Baltic ringed seals from contaminant exposure. We find that the threats posed by pollutants, petroleum development, commercial fisheries, and increased ship traffic do not individually or cumulatively pose a significant risk to the persistence of the Baltic ringed seal throughout all or a significant portion of this subspecies' range. We recognize, however, that the significance of these threats would increase for populations diminished by the effects of climate change or other threats. We also note that, particularly given the elevated contaminant load in the Baltic Sea, continued efforts are necessary to ensure that population-level effects from contaminant exposure do not recur in Baltic ringed seals in the future.

Drowning of seals in fishing gear and disturbance by human activities are conservation concerns for ringed seals in lakes Ladoga and Saimaa and could exacerbate the effects of climate change on these seal populations. Drowning in fishing gear is also one of the most significant sources of mortality for ringed seals in the Baltic Sea. We currently do not have any data to conclude that these threats are having population-level effects on Ladoga or Baltic ringed seals. However, bycatch mortality in Lake Ladoga particularly warrants additional investigation, as does consideration of ways to minimize seal entanglement in fishing gear. Given the very low numbers of the Saimaa ringed seal, we consider the risk posed to this subspecies from mortality incidental to fishing activities to be a significant factor in our classification of the Saimaa ringed seal as endangered.

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 key factors limiting the viability of all five ringed seal subspecies are the forecasted reductions in ice extent and, in particular, depths and duration of snow cover on ice. Early snow melts already are evident in much of the species' range. Increasingly late ice formation in autumn is forecasted, contributing to expectations of substantial decreases in snow accumulation. The ringed seal's specific requirement for habitats with adequate spring snow cover is manifested in the pups' low tolerance for exposure to wet, cold conditions and their vulnerability to predation. Premature failure of the snow cover has caused high mortality due to freezing and predation. Climate warming will result in increasingly early snow melts, exposing vulnerable ringed seal pups to predators and hypothermia.

The BRT considered the current risks to the persistence of Arctic, Okhotsk, Baltic, and Ladoga ringed seals as low to moderate. Given the low population size (less than 300 seals) of the Saimaa ringed seal, the present risk to population persistence was judged by the BRT to be high for all of the demographic attributes.

Within the foreseeable future, the BRT judged the risks to Arctic ringed seal persistence to be moderate (diversity and abundance) to high (productivity and spatial structure). As noted above, the impacts to Arctic ringed seals may be somewhat ameliorated initially if the subspecies's range retracts northward with sea ice habitats, but by the end of the century snow depths are projected to be insufficient for lair formation and maintenance throughout much of the subspecies' range. The BRT also judged the risks to persistence of the Okhotsk ringed seal in the foreseeable future to be moderate (diversity) to high (abundance, productivity, and spatial structure). Okhotsk ringed seals will have limited opportunity to shift their range northward because the sea ice will retract toward land.

Risks to ringed seal persistence within the foreseeable future were judged by the BRT to be highest for the Baltic, Ladoga, and, in particular, Saimaa ringed seal. Risks were judged as moderate (diversity) to high (abundance productivity, and spatial structure) for Baltic ringed seals; moderate (diversity), or high to very high (abundance, productivity, and spatial structure) for Ladoga ringed seals; and high to very high (abundance, productivity, spatial structure, and diversity) for Saimaa ringed seals. As noted above, Ladoga and Saimaa ringed seals are landlocked populations that will be unable to respond to the pronounced degradation of ice and snow habitats forecasted to occur by shifting their range. In addition, the range of the Baltic ringed seal is bounded to the north by land, and so there is limited opportunity for this subspecies to shift its range. The low density of the Saimaa ringed seal population coupled with limited dispersal opportunities and depensatory effects continue to put this subspecies at risk of extinction. An estimate of the demographic effective population size of Saimaa ringed seals indicated that low population size is exacerbated by habitat fragmentation and that the subspecies is "vulnerable to extinction due to demographic stochasticity alone" (Kokko *et al.*, 1998).

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 Conservation Efforts Specifically To Protect Ringed Seals*

*Baltic ringed seals:* (1) Some protected areas in Sweden, Finland, the Russian Federation, and Estonia include Baltic ringed seal habitat; (2) The Baltic ringed seal is included in the Red Book of the Russian Federation as "Category 2" (decreasing abundance), is classified as "Endangered" in the Red Data Book of Estonia, and is listed as "Near Threatened" on the Finnish and Swedish Red Lists; (3) Hunting of Baltic ringed seals has been suspended in Baltic Sea region countries, although Finland is permitting the harvest of small numbers of ringed seals in Bothnia Bay beginning in 2010; and (4) Helsinki Commission (HELCOM) recommendation 27–28/2 (2006) on conservation of seals in the Baltic Sea established a seal expert group to address and coordinate seal conservation and management across the Baltic Sea region. This expert group has made progress toward completing a set of related tasks identified in the HELCOM recommendation, including coordinating development of national management plans and developing monitoring programs. The national red lists and red data books noted above highlight the conservation status of listed species and can inform conservation planning and prioritization.

*Ladoga ringed seals:* (1) Hunting of ringed seals in Lake Ladoga has been prohibited since 1980; (2) In May 2009, Ladoga Skerries National Park, which will encompass northern and northwest Lake Ladoga, was added to the Russian Federation's list of protected areas to be established; and (3) The Ladoga ringed seal is included in the Red Data Books of the Russian Federation, the Leningrad Region, and Karelia.

*Saimaa ringed seals:* (1) The Saimaa ringed seal is classified as a non-game species, and has been protected from hunting under Finnish law since 1955; (2) The Saimaa ringed seal is designated as an "Endangered" species on the Finnish Red List; (3) To conserve seal breeding areas, new construction on Lake Saimaa is not permitted within designated shoreline conservation areas (water bodies excluded), some of which are located within two national parks; (4) New construction on Lake Saimaa outside of designated shoreline conservation areas has been regulated since 1999 to limit the density of new buildings; however, it has been reported that lakeshore development has still increased substantially; (5) To reduce mortalities due to fishery interactions, restrictions have been placed on certain types of fishing gear within the breeding areas of the Saimaa ringed seal, and seasonal closure agreements have been signed with numerous fishing associations. However, continuing loss of seals, in particular juveniles, due to drowning in fishing gear has been reported. A working group for reconciliation of fishing and conservation of Saimaa ringed seals has recommended establishing a single contiguous protected area by December 2010 within which a mandatory seasonal net fishing closure and other fishing restrictions would be implemented. The Finnish Ministry of Agriculture and Forestry recently reported that the Finnish government has signed agreements with most of the Saimaa Lake fishing associations and that it is continuing to negotiate agreements with a few associations. However, in May 2010 the European Commission sent formal notice to Finland that it had not implemented adequate measures to protect the Saimaa ringed seal and that better targeted measures are still needed.

*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 ringed seal is currently classified as a species of "Least Concern" on the IUCN Red List. The Red List assessment notes that, given the risks posed to the ringed seal by climate change, the conservation status of all ringed seal subspecies should be reassessed within a decade. The European Red List compiles assessments of the conservation status of European species according to IUCN red listing guidelines. The assessment for the ringed seal currently classifies the Saimaa ringed seal as "Endangered" and the Ladoga ringed seal as "Vulnerable." The Baltic ringed seal is classified as a species of "Least Concern" on the European Red List, with the caveats that population numbers remain low and that there are significant conservation concerns in some part of the Baltic Sea. Similar to inclusion in national red lists and red data books, these listings highlight the conservation status of listed species and can inform conservation planning and prioritization.

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) is a regional treaty on conservation. Current parties to the Bern Convention within the range of the ringed seal include Norway, Sweden, Finland, Estonia, and Latvia. The agreement calls for signatories to provide special protection for fauna species listed in Appendix II (species to be strictly protected) and Appendix III to the convention (species for which any exploitation is to be regulated). The Saimaa and Ladoga ringed seals are listed under Appendix II, and other ringed seals fall under Appendix III. As discussed above, the Saimaa ringed seal has been protected from hunting since 1955, hunting of Ladoga ringed seals has been prohibited since 1980, and hunting of Baltic ringed seals has also been suspended (but with the recent exception noted above).

The provisions of the Council of the European Union's Directive 92/43/EEC on the Conservation of Natural Habitats of Wild Fauna and Flora (Habitats Directive) are intended to promote the conservation of biodiversity in European Union (EU) member countries. EU members meet the habitat conservation requirements of the directive by designating qualified sites for inclusion in a special conservation areas network known as Natura 2000. Current members of the EU within the range of the ringed seal include Sweden, Finland, and Estonia. Annex II to the Habitats Directive lists species whose conservation is to be specifically considered in designating special conservation areas, Annex IV identifies species determined to be in need of strict protection, and Annex V identifies species whose exploitation may require specific management measures to maintain favorable conservation status. The Saimaa ringed seal is listed in Annex II (as a priority species) and IV, the Baltic ringed seal is listed in Annex II and V, and the Arctic ringed seal is listed in Annex V. Some designated Natura 2000 sites include Baltic or Saimaa ringed seal habitat. Although Finland has implemented specific management measures and designated conservation areas for Saimaa ringed seals, as discussed above, the European Commission has sent its first formal notice to Finland that better targeted measures are urgently needed.

In 2005 the International Maritime Organization (IMO) designated the Baltic Sea Area outside of Russian territorial waters as a Particularly Sensitive Sea Area (PSSA), which provides a framework under IMOS's International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) for developing internationally agreed upon measures to reduce risks posed from maritime shipping activities. To date, a maritime traffic separation scheme is the sole protective measure associated with the Baltic PSSA. Expansion of Russian oil terminals is contributing to a marked increase in oil transport in the Baltic Sea; however, the Russian Federation has declined to support the Baltic Sea PSSA designation.

HELCOM's main goal since the Helsinki convention first entered force in 1980 has been to address Baltic Sea pollution caused by hazardous substances and to restore and safeguard the ecology of the Baltic. HELCOM acts as a coordinating body among the nine countries with coasts along the Baltic Sea. Activities of HELCOM have led to significant reductions in a number of monitored hazardous substances in the Baltic Sea. However, pollution caused by hazardous substances continues to pose risks.

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 ringed seal research and management.

There are no known regulatory mechanisms that effectively address the factors believed to be contributing to reductions in ringed 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 sets targets for action only 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 ringed 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 increase in global GHG emissions within the foreseeable future.

At this time, we are not aware of any formalized conservation efforts for ringed 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's National Marine Mammal Laboratory is engaged in an active research program for ringed seals. The new information from research will be used to enhance our understanding of the risk factors affecting ringed seals, thereby improving our ability to develop effective management measures for the species.

**Proposed Determinations**

We have reviewed the status of the ringed seal, fully considering the best scientific and commercial data available, including the status review report. We have reviewed threats to the five subspecies of the ringed seal, as well as other relevant factors, and given consideration to conservation efforts and special designations for ringed seals by states and foreign nations. In consideration of all of the threats and potential threats to ringed 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:

*Arctic subspecies:* (1) There are no specific estimates of population size available for the Arctic subspecies, but most experts would postulate that the population numbers in the millions. (2) The depth and duration of snow cover are forecasted to decrease substantially throughout the range of the Arctic ringed seal. Within this century, snow cover is forecasted to be inadequate for the formation and occupation of birth lairs over most of the subspecies' range. (3) Because ringed seals stay with the ice as it annually advances and retreats, the southern edge of the ringed seal's range may initially shift northward. Whether ringed seals will continue to move north with retreating ice over the deeper, less productive Arctic Basin waters and whether the species that they prey on will also move north is uncertain. (4) The Arctic ringed seal's pupping and nursing seasons are adapted to the phenology of ice and snow. The projected decreases in sea ice, and especially snow cover, will likely lead to decreased pup survival and a substantial decline in the abundance of the Arctic subspecies. We conclude that the Arctic subspecies of the ringed seal is not in danger of extinction throughout all or a significant portion of its range, but is likely to become so within the foreseeable future. Therefore, we propose to list the Arctic subspecies of the ringed seal as threatened under the ESA.

*Okhotsk subspecies:* (1) The best available scientific data suggest a conservative estimate of 676,000 ringed seals in the Sea of Okhotsk, apparently reduced from historical numbers. (2) Before the end of the current century, ice suitable for pupping and nursing is forecasted to be limited to the northernmost regions of the Sea of Okhotsk, and projections suggest that snow cover may already be inadequate for birth lairs. The Sea of Okhotsk is bounded to the north by land, which will limit the ability of Okhotsk ringed seals to respond to deteriorating sea ice and snow conditions by shifting their range northward. (3) Although some Okhotsk ringed seals have been reported resting on island shores during the ice-free season, these sites provide inferior pupping and nursing habitat. (4) The Okhotsk ringed seal's pupping and nursing seasons are adapted to the phenology of ice and snow. Decreases in sea ice habitat suitable for pupping, nursing, and molting will likely lead to declines in abundance and productivity of the Okhotsk subspecies. We conclude that the Okhotsk subspecies of the ringed seal is not in danger of extinction throughout all or a significant portion of its range, but is likely to become so within the foreseeable future. Therefore, we propose to list the Okhotsk subspecies of the ringed seal as threatened under the ESA.

*Baltic subspecies:* (1) Current estimates of 10,000 Baltic ringed seals suggest that the population has been significantly reduced from historical numbers. (2) Reduced productivity in the Baltic subspecies in recent decades resulted from impaired fertility associated with pollutants. (3) Dramatic reductions in sea ice extent are projected by mid-century and beyond in the Baltic Sea, coupled with declining depth and insulating properties of snow cover on Baltic Sea ice. The Baltic Sea is bounded to the north by land, which will limit the ability of Baltic ringed seals to respond to deteriorating sea ice and snow conditions by shifting their range northward. (4) Although Baltic ringed seals have been reported resting on island shores or offshore reefs during the ice-free season, these sites provide inferior pupping and nursing habitat. (5) The Baltic ringed seal's pupping and nursing seasons are adapted to the phenology of ice and snow. The projected substantial reductions in sea ice extent and deteriorating snow conditions are expected to lead to decreased survival of pups and a substantial decline in the abundance of the Baltic subspecies. We conclude that the Baltic subspecies of the ringed seal is not in danger of extinction throughout all or a significant portion of its range, but is likely to become so within the foreseeable future. Therefore, we propose to list the Baltic subspecies of the ringed seal as threatened under the ESA.

*Ladoga subspecies:* (1) The population size of the ringed seal in Lake Ladoga is currently estimated at 3,000 to 5,000 seals. (2) Reduced ice and snow cover are expected in Lake Ladoga within this century based on regional projections. As ice and snow conditions deteriorate, the landlocked population of Ladoga ringed seals will be unable to respond by shifting its range. (3) Although Ladoga ringed seals have been reported resting on rocks and island shores during the ice-free season, these sites provide inferior pupping and nursing habitat. (4) The Ladoga ringed seal's pupping and nursing seasons are adapted to the phenology of ice and snow. Reductions in ice and snow are expected to lead to decreased survival of pups and a substantial decline in the abundance of this subspecies. We conclude that the Ladoga subspecies of the ringed seal is not in danger of extinction throughout all or a significant portion of its range, but is likely to become so within the foreseeable future. Therefore, we propose to list the Ladoga subspecies of the ringed seal as threatened under the ESA.

*Saimaa subspecies:* (1) The Saimaa ringed seal population currently numbers less than 300 animals, and has been significantly reduced from historical numbers. (2) Although the population has slowly grown under active management, it currently exists at levels where it is at risk of extinction from demographic stochasticity and small population effects. (3) Reduced ice and snow cover are expected in Lake Saimaa within this century. As ice and snow conditions deteriorate, the landlocked population of Saimaa ringed seal will be unable to respond by shifting its range. (4) Although Saimaa ringed seals have been reported resting on rocks and island shores during the ice-free season, these sites provide inferior pupping and nursing habitat. (5) The Saimaa ringed seal's pupping and nursing seasons are adapted to the phenology of ice and snow. Reductions in ice and snow cover are expected to lead to decreased survival of pups and a substantial decline in the abundance of this subspecies. (6) Ongoing mortality incidental to fishing activities is also a significant conservation concern. We conclude that the Saimaa subspecies of the ringed seal is in danger of extinction throughout its range, consistent with its current listing as endangered under the ESA.

**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 each of the ringed seal subspecies 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 Arctic, Okhotsk, Baltic, and Ladoga subspecies of ringed 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 Arctic ringed 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 ringed 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*

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.

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 ringed seal status review report (Kelly *et al.*, 2010) that supports this proposal to list the Arctic, Okhotsk, Baltic, and Ladoga subspecies of the ringed seal 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, Baltic, and Ladoga ringed seal occur outside 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 these subspecies; 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 Arctic ringed seal include: (1) Unauthorized harvest or lethal takes of Arctic ringed seals; (2) in-water activities that produce high levels of underwater noise, which may harass or injure Arctic ringed seals; and (3) discharging or dumping toxic chemicals or other pollutants into areas used by Arctic ringed 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 Arctic ringed seals 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 Arctic ringed seals.

**Critical Habitat**

Section 3 of the ESA (16 U.S.C. 1532(3)) 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."

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

AGENDA B-8
FEBRUARY 2011

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver DO for
Executive Director

DATE: January 25, 2011

SUBJECT: Protected Resources Report

| ESTIMATED TIME 6 HOURS (all B reports) |
|---|

ACTION REQUIRED

Receive report on Protected Resources issues and take action as necessary.

BACKGROUND

A. Pacific Walrus

The U.S. Fish & Wildlife Service (USFWS) is expected to release a 12-month finding on whether to recommend listing Pacific walrus as threatened or endangered under the Endangered Species Act (ESA) on January 31, 2011. The finding was not available at the time this report was printed, but is expected to be released before the Council meets in February. The USFWS finding would be followed by a public comment period, after which the agency would make a final determination on listing. If the Pacific walrus is listed, USFWS would likely begin the process of designating critical habitat, and NMFS would initiate a Section 7 consultation on the effects of the groundfish fisheries on walrus.

B. Ice Seals

There are four species of ice seals in the North Pacific: ribbon, spotted, ringed, and bearded seals. All four species of seals have been petitioned for listing under the ESA within the past several years, primarily due to concerns about threats to their habitat from climate warming and loss of sea ice. The National Marine Fisheries Service (NMFS) completed its status review of the ribbon seal in December 2008, and determined that listing under the ESA was not warranted. NMFS announced in October 2010 that it has listed the southern distinct population segment (DPS) of the spotted seal as threatened under the ESA. Because this population only occurs in China and Russia, no critical habitat will be designated as part of this action. A year ago, NMFS determined that listing the two other spotted seal populations that occur in the U.S., Russia, and Japan was not warranted.

NMFS completed its status reviews of ringed and bearded seals on December 10, 2010. The agency proposed listing four subspecies of ringed seals, found in the Arctic Basin (including the Bering Sea) and the North Atlantic, and two distinct population segments of bearded seals as threatened under the Endangered Species Act (see Item B-8(a)). The populations of bearded seal proposed for listing occur in the Bering Sea and Okhotsk Sea. There is a 60 day public comment period on these findings, which closes on February 8, 2011. The proposed rules for these actions include maps showing the distribution of the species and a summary of the status review reports (see Items B-8(b) and B-8(c)).

The full status reviews and other materials relating to these proposals can be found on the Alaska Region website at: http://alaskafisheries.noaa.gov/protectedresources/seals/ice.htm.

C. ESA listed Chinook Salmon

The Alaska Region of the National Marine Fisheries Service has requested that the Northwest Region of NMFS reinitiate consultation pursuant to Section 7 of the Endangered Species Act on the effects of the GOA groundfish fisheries on ESA listed Chinook salmon. The request was made because the estimated incidental take of Chinook in the GOA in 2010 exceeded amount authorized in the incidental take statement (40,000 Chinook salmon). The Alaska Region will finalize the 2010 estimates of Chinook bycatch in the GOA groundfish fisheries and provide the new estimates to the Northwest Region in February 2011. The Northwest Region has accepted the request to reinitiate consultation, and will proceed with consultation upon receiving the report containing the final bycatch estimates (see Item B-8(d)).

D. Western DPS Steller Sea Lions

In December, the Council was informed of the final Reasonable and Prudent Alternative (RPA) contained in the Steller Sea Lion Biological Opinion. The Council has numerous questions regarding the BiOp, possible scientific review processes, and potential, subsequent processes for development of alternative management processes based on new information (see December letter to NMFS attached as Item B-8(e)). Specifically, the Council asked how the 2010 groundfish biomass information, which showed substantial increases in the pollock, Pacific cod, and Atka mackerel stocks, would be considered as part of the current consultation process or any future processes. The Council also asked why the action was not considered 'controversial' under NEPA. Several potential scientific review processes were discussed in December. The Council indicated that it is not interested in a scientific review of the BiOp by the Center for Independent Experts (CIE) at this time, because the Terms of Reference have not been modified in response to Council comments and have not been provided to the Council. Finally, the Council asked NMFS to clarify the regulatory process going forward, including the potential role of the Council and its Steller Sea Lion Mitigation Committee in revising the management measures. Answers to these questions are necessary in order for the Council to determine its potential involvement in any future processes in this regard. At this time, the Council has not received a response from the Agency.

The National Marine Fisheries Service published an interim final rule on December 13, 2010 which implements the new Steller sea lion protection measures delineated in the RPA (see Item B-8(f)). Maps illustrating the management measures are attached as Item B-8(g). The interim final rule is effective as of January 1, 2011. Several minor editorial corrections to the text and tables in the interim rule were published on December 29, 2010. In addition, NMFS extended the original 30-day public comment period by 45 days. The public comment period now closes on February 28, 2011.

To date, there have been three legal challenges to the new management measures, including lawsuits filed by the State of Alaska, Alaska Seafood Cooperative, and Freezer Longline Coalition. In addition, on January 19, 2011, the Alaska Board of Fisheries adopted an emergency regulation to open the A season Pacific cod parallel water fishery near Adak. The emergency regulation specified that in the Bering Sea-Aleutian Islands management area, State waters between 175° W. and 178° W. longitude shall be open to fishing with trawl, pot, jig, and hand troll gear by vessels no more than 60 feet in length, and to fishing with longline gear by vessels no more than 58 feet in length. The Board's intent was for the emergency regulation to be effective immediately, and to remain effective for up to 120 days. The Board will consider a proposal for the Adak area A and B season parallel waters Pacific cod fishery at its March 22-26, 2011 meeting in Anchorage. The proposal could extend the emergency regulation beyond 120 days. NMFS has indicated that it will consider the effects of the action taken by the Board of Fisheries on Steller sea lions in the context of the current Biological Opinion.

AGENDA B-8(a)
FEBRUARY 2011

National Oceanic and Atmospheric Administration

**National Marine Fisheries Service, Alaska Regional Office**

## NOAA Fisheries News Releases

NEWS RELEASE
December 3, 2010
Julie Speegle, 907-586-7032

### NOAA PROPOSES LISTING RINGED AND BEARDED SEALS AS THREATENED UNDER ENDANGERED SPECIES ACT

NOAA's Fisheries Service is proposing to list four subspecies of ringed seals, found in the Arctic Basin and the North Atlantic, and two distinct population segments of bearded seals in the Pacific Ocean, as threatened under the Endangered Species Act.

The proposed listings cite threats posed by diminishing sea ice, and additionally, for ringed seals, reduced snow cover. NOAA climate models were used to predict future sea ice conditions.

One of the five recognized subspecies of ringed seals, the Saimaa in Finland, is already listed as endangered under the ESA. Under the proposed rules published today in the Federal Register, the remaining four subspecies of ringed seals - Arctic, Okhotsk, Baltic and Ladoga - would all be listed as threatened.

Ringed seals are found in the Arctic Basin (including the Bering Sea), western North Pacific (Sea of Okhotsk and Sea of Japan), and in the North Atlantic in the Baltic Sea and Lakes Ladoga and Saimaa east of the Baltic Sea.

Throughout most of its range, the Arctic ringed seal does not come ashore and uses sea ice for whelping, nursing, molting, and resting. Ringed seal pups are normally born in snow caves in the spring, and are vulnerable to freezing and predation without them. Timing of spring ice break-up, snow depths on sea ice, and late-winter rain can adversely affect snow cave formation and occupation. That the species produces only a single pup each year may limit the ringed seal's ability to respond to environmental challenges such as the diminishing ice and snow cover.

Because of these factors, NOAA's Fisheries Service has found that these four sub-species of ringed seal are at risk of becoming endangered within the foreseeable future throughout all or a significant portion of their ranges, warranting a listing as threatened.

The bearded seal has two subspecies, one in the Pacific Ocean and the other in the Atlantic Ocean. Within the Pacific subspecies, there are two distinct population segments (DPS): the Okhotsk DPS, found in the Sea of Okhotsk; and the Beringia DPS, found in the Bering, east Siberian, Chukchi, and Beaufort seas. NOAA's Fisheries Service is proposing to list both Pacific DPSs of bearded seal as threatened.

Both Pacific bearded seal DPSs are closely associated with sea ice, particularly during the reproduction and molting stages. They primarily feed on shallow-water organisms, making their range generally areas where seasonal sea ice occurs over relatively shallow waters. Forecasts predict that this ice will be substantially reduced within this century, particularly in the Sea of Okhotsk, and there is potential for the spring and summer ice edge to retreat to deep waters of the Arctic Ocean basin.

Because of these factors, NOAA's Fisheries Service has found that the two DPSs within the Pacific subpopulation of bearded seals are at risk of becoming endangered species within the foreseeable future throughout all or a significant portion of their ranges, warranting a listing as threatened.

NOAA's Fisheries Service previously determined listing was not needed for another ice seal, the ribbon seal, which is less dependent on sea ice than bearded and ringed seals.

NOAA's Fisheries Service is seeking comments from the public on the proposed listing of ringed and bearded ice seals for 60 days from date of publication in the Federal Register, which should occur the middle of next week. The proposed rules, maps, status review reports and other materials relating to this proposal can be found on the Alaska Region website at http://alaskafisheries.noaa.gov/protectedresources/seals/ice.htm.

As soon as the proposed rule is accessible online on the Federal Register website— likely December 7 or 8—comments may be submitted by any one of the following methods:

Submit comments online via the Federal eRulemaking Portal at http://www.regulations.gov/. Follow the instructions for submitting comments;

Fax comments to the attention of Kaja Brix at 907-586-7557;

Mail written comments to Kaja Brix, Assistant Regional Administrator, Protected Resources Division, Alaska Region, NMFS, Attn: Ellen Sebastian, P.O. Box 21668, Juneau, AK 99802

Hand-deliver written comments to Kaja Brix, Assistant Regional Administrator, Protected Resources Division, Alaska Region, NMFS, Attn: Ellen Sebastian, Juneau Federal Building, 709 West 9th Street, Room 420A, Juneau, AK

NOAA's mission is to understand and predict changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and to conserve and manage our coastal and marine resources. Visit us at NOAA's Fisheries Service is seeking comments from the public on the proposed listing of ringed and bearded ice seals for 60 days from date of publication in the Federal Register, which should occur the middle of next week. The proposed rules, maps, status review reports and other materials relating to this proposal can be found on the Alaska Region website at http://alaskafisheries.noaa.gov. or on Facebook at http://www.facebook.com/usnoaagov. To learn more about NOAA Fisheries in Alaska, visit alaskafisheries.noaa.gov or: http://www.afsc.noaa.gov/.

**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**50 CFR Part 223**

**[Docket No. 101126590–0589–01]**

**RIN 0648–XZ59**

# Endangered and Threatened Species; Proposed Threatened Status for Subspecies of the Ringed Seal

**AGENCY:** National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Commerce.

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

**SUMMARY:** We, NMFS, have completed a comprehensive status review of the ringed seal (*Phoca hispida*) under the Endangered Species Act (ESA) and announce a 12-month finding on a petition to list the ringed seal as a threatened or endangered species. Based on consideration of information presented in the status review report, an assessment of the factors in the ESA, and efforts being made to protect the species, we have determined the Arctic (*Phoca hispida hispida*), Okhotsk (*Phoca hispida ochotensis*), Baltic (*Phoca hispida botnica*), and Ladoga (*Phoca hispida ladogensis*) subspecies of the ringed seal are likely to become endangered throughout all or a significant portion of their range in the foreseeable future. Accordingly, we issue a proposed rule to list these subspecies of the ringed seal as threatened species, and we solicit comments on this proposed action. At this time, we do not propose to designate critical habitat for the Arctic ringed seal because it is not currently determinable. In order to complete the critical habitat designation process, we also solicit information on essential physical and biological features of Arctic ringed seal habitat.

**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–XZ59, 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 ringed, bearded (*Erignathus barbatus*), 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 ringed, bearded, 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 ringed seal (and the bearded seal) and submit this 12-month finding to the Office of the **Federal Register** by December 3, 2010. Our 12-month petition finding for bearded 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 ringed 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's 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 ringed 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 time frame. 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 ringed seal is presented in the status review report (Kelly *et al.*, 2010a; available at *http://alaskafisheries.noaa.gov/*).

The ringed seal is the smallest of the northern seals, with typical adult body sizes of 1.5 m in length and 70 kg in weight. The average life span of ringed seals is about 15–28 years. As the common name of this species suggests, its coat is characterized by ring-shaped markings. Ringed seals are adapted to remaining in heavily ice-covered areas throughout the fall, winter, and spring by using the stout claws on their fore flippers to maintain breathing holes in the ice.

### *Seasonal Distribution, Habitat Use, and Movements*

Ringed seals are circumpolar and are found in all seasonally ice covered seas of the Northern Hemisphere as well as in certain freshwater lakes. They range throughout the Arctic Basin and southward into adjacent seas, including the southern Bering Sea and Newfoundland. Ringed seals are also found in the Sea of Okhotsk and Sea of Japan in the western North Pacific, the Baltic Sea in the North Atlantic, and landlocked populations inhabit lakes Ladoga and Saimaa east of the Baltic Sea (Figure 1).

Throughout most of its range, the Arctic subspecies does not come ashore and uses sea ice as a substrate for resting, pupping, and molting. During the ice-free season in more southerly regions including the White Sea, the Sea of Okhotsk, and the Baltic Sea, ringed seals occasionally rest on island shores or offshore reefs. In lakes Ladoga and Saimaa, ringed seals typically rest on rocks and island shores when ice is absent. In all subspecies except the Okhotsk, pups normally are born in subnivean lairs (snow caves) on the sea ice (Arctic and Baltic ringed seals) or in subnivean lairs along shorelines (Saimaa and Ladoga ringed seals) in late winter to early spring. Although use of subnivean lairs has been reported for Okhotsk ringed seals, this subspecies apparently depends primarily on sheltering in the lee of ice hummocks.

The seasonality of ice cover strongly influences ringed seal movements, foraging, reproductive behavior, and vulnerability to predation. Born *et al.* (2004) recognized three "ecological seasons" as important to ringed seals off northwestern Greenland: The "open-water season," the ice-covered "winter," and "spring," when the seals breed and after the breeding season haul out on the ice to molt. Tracking seals in Alaska and the western Canadian Arctic, Kelly *et al.* (2010b) used different terms to refer to these ecological seasons. Kelly *et al.* (2010b) referred to the open-water period when ringed seals forage most intensively as the "foraging period," early winter through spring when seals rest primarily in subnivean lairs on the ice as the "subnivean period," and the period between abandonment of the lairs and ice break-up as the "basking period."

*Open-water (foraging) period:* Short and long distance movements by ringed seals have been documented during the open-water period. Overall, the record from satellite tracking indicates that ringed seals breeding in shorefast ice practice one of two strategies during the open-water foraging period. Some seals forage within 100 km of their shorefast ice breeding habitat while others make extensive movements of hundreds or thousands of kilometers to forage in highly productive areas and along the pack ice edge. Movements during the open-water period by ringed seals that breed in the pack ice are unknown. Tracking and observational records indicate that adult Arctic ringed seals breeding in the shorefast ice show inter-annual fidelity to breeding sites. Saimaa and Ladoga ringed seals show similar site fidelity. High quality, abundant food is important to the annual energy budgets of ringed seals. Fall and early winter periods, prior to the occupation of breeding sites, are important in allowing ringed seals to accumulate enough fat stores to support estrus and lactation.

*Winter (subnivean period):* At freeze-up in fall, ringed seals surface to breathe in the remaining open water of cracks and leads. As these openings freeze over, the seals push through the ice to breathe until it is too thick. They then open breathing holes by abrading the ice with the claws on their fore flippers. As the ice thickens, the seals continue to maintain the breathing holes by scratching at the walls. The breathing holes can be maintained in ice 2 m or greater in thickness but often are concentrated in the thinner ice of refrozen cracks.

As snow accumulates and buries the breathing hole, the seals breathe through the snow layer. Ringed seals excavate lairs in the snow above breathing holes where snow depth is sufficient. These subnivean lairs are occupied for resting, pupping, and nursing young in annual shorefast and pack ice. Snow accumulation on sea ice is typically sufficient for lair formation only where pressure ridges or ice hummocks cause the snow to form drifts at least 45 cm deep (at least 50–65 cm for birth lairs). Such drifts typically occur only where average snow depths (on flat ice) are 20–30 cm or more. A general lack of such ridges or hummocks in lakes Ladoga and Saimaa limits suitable snow drifts to island shorelines, where most lairs in Lake Ladoga and virtually all lairs in Lake Saimaa are found.

Subnivean lairs provide refuge from air temperatures too low for survival of ringed seal pups. Lairs also conceal ringed seals from predators, an advantage especially important to the small pups that start life with minimal tolerance for immersion in cold water. When forced to flee into the water to avoid predators, the pups that survive depend on the subnivean lairs to subsequently warm themselves. Ringed seal movements during the subnivean period typically are quite limited, especially where ice cover is extensive.

*Spring (basking period):* Numbers of ringed seals hauled out on the surface of the ice typically begin to increase during spring as the temperatures warm and the snow covering the seals' lairs melts. Although the snow cover can melt rapidly, the ice remains largely intact and serves as a substrate for the molting seals that spend many hours basking in the sun. Adults generally molt from mid-May to mid-July, although there is regional variation. The relatively long periods of time that ringed seals spend out of the water during the molt has been ascribed to the need to maintain elevated skin temperatures. Feeding is reduced and the seal's metabolism declines during the molt. As seals complete this phase of the annual pelage cycle, they spend increasing amounts of time in the water.

*Food Habits*

Ringed seals eat a wide variety of prey in the marine environment. Most ringed seal prey is small, and preferred fishes tend to be schooling species that form dense aggregations. Ringed seals rarely prey upon more than 10–15 species in any one area, and not more than 2–4 of those species are considered important prey. Despite regional and seasonal variations in the diet of ringed seals, fishes of the cod family tend to dominate the diet of ringed seals from late autumn through early spring in many areas. Arctic cod (*Boreogadus saida*) is often reported to be among the most important prey species, especially during the ice-covered periods of the year. Other members of the cod family, including polar cod (*Arctogadus glacialis*), saffron cod (*Eleginus gracilis*), and navaga (*Eleginus navaga*), are also seasonally important to ringed seals in some areas. Arctic cod is not found in the Sea of Okhotsk, but capelin (*Mallotus villosus*) are abundant in the region. Other fishes reported to be locally important to ringed seals include smelt (*Osmerus* sp.) and herring (*Clupea* sp.). Invertebrates appear to become more important to ringed seals in many areas during the open-water season, and are often found to dominate the diets of young seals. In the brackish water of the Baltic Sea, the prey community includes a mixture of marine and freshwater fish species, as well as invertebrates. In the freshwater environment of Lake Saimaa, several schooling fishes were reported to be the most important prey species; and in Lake Ladoga, a variety of fish species were found in the diet of ringed seals.

*Reproduction*

Sexual maturity in ringed seals varies with population status and can be as late as 7 years for males and 9 years for females and as early as 3 years for both sexes. Ringed seals breed annually, with timing varying regionally. Mating takes place while mature females are still nursing their pups and is thought to occur under the ice in the vicinity of birth lairs. Little is known about the breeding system of ringed seals; however, males are often reported to be territorial during the breeding season.

A single pup is born in a subnivean lair on either the shorefast ice or pack ice. In much of the Arctic, pupping occurs in late March through April, but the timing varies with latitude. Pupping in the Sea of Okhotsk takes place in March and April. In the Baltic Sea, Lake Saimaa, and Lake Ladoga, pups are born in February through March. At birth, ringed seal pups are approximately 60–65 cm in length and weigh 4.5–5.0 kg with regional variation. The pups are born with a white natal coat (lanugo) that provides insulation, particularly when dry, until it is shed after 4–6 weeks. Pups nurse for as long as 2 months in stable shorefast ice and for as little as 3–6 weeks in moving ice. Pups normally are weaned before break-up of spring ice. At weaning, pups are four times their birth weights, and they lose weight for several months after weaning.

**Species Delineation**

The BRT reviewed the best scientific and commercial data available on the ringed seal's taxonomy and concluded that there are five currently recognized subspecies of the ringed seal: Arctic ringed seal; Baltic ringed seal; Okhotsk ringed seal; Ladoga ringed seal; and Saimaa ringed seal (*Phoca hispida saimensis*). The BRT noted, however, that further investigation would be required to discern whether there are additional distinct units, especially within the Arctic subspecies, whose genetic structuring has yet to be thoroughly investigated. We agree with the BRT's conclusions that these five subspecies of the ringed seal qualify as "species" under the ESA. Our DPS analysis follows, and the geographic distributions of the five subspecies are shown in Figure 1.

Under our DPS policy (61 FR 4722; February 7, 1996), two elements are considered in a decision regarding the potential identification of a DPS: (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).

With respect to discreteness criterion 1 above, we concluded that resolution of ringed seal population segments beyond the subspecies level is not currently possible using the best available scientific and commercial data. We also did not find sufficient differences in the conservation status or management within any of the ringed seal subspecies among their respective range countries to justify the use of international boundaries to satisfy the discreteness criterion of our DPS Policy. We therefore conclude that there are no population segments within any of the subspecies that satisfy the discreteness criteria of our DPS Policy. Since there are no discrete population segments within any of the subspecies, we cannot take the next step of determining whether any discrete population segment is significant to the taxon to which it belongs.

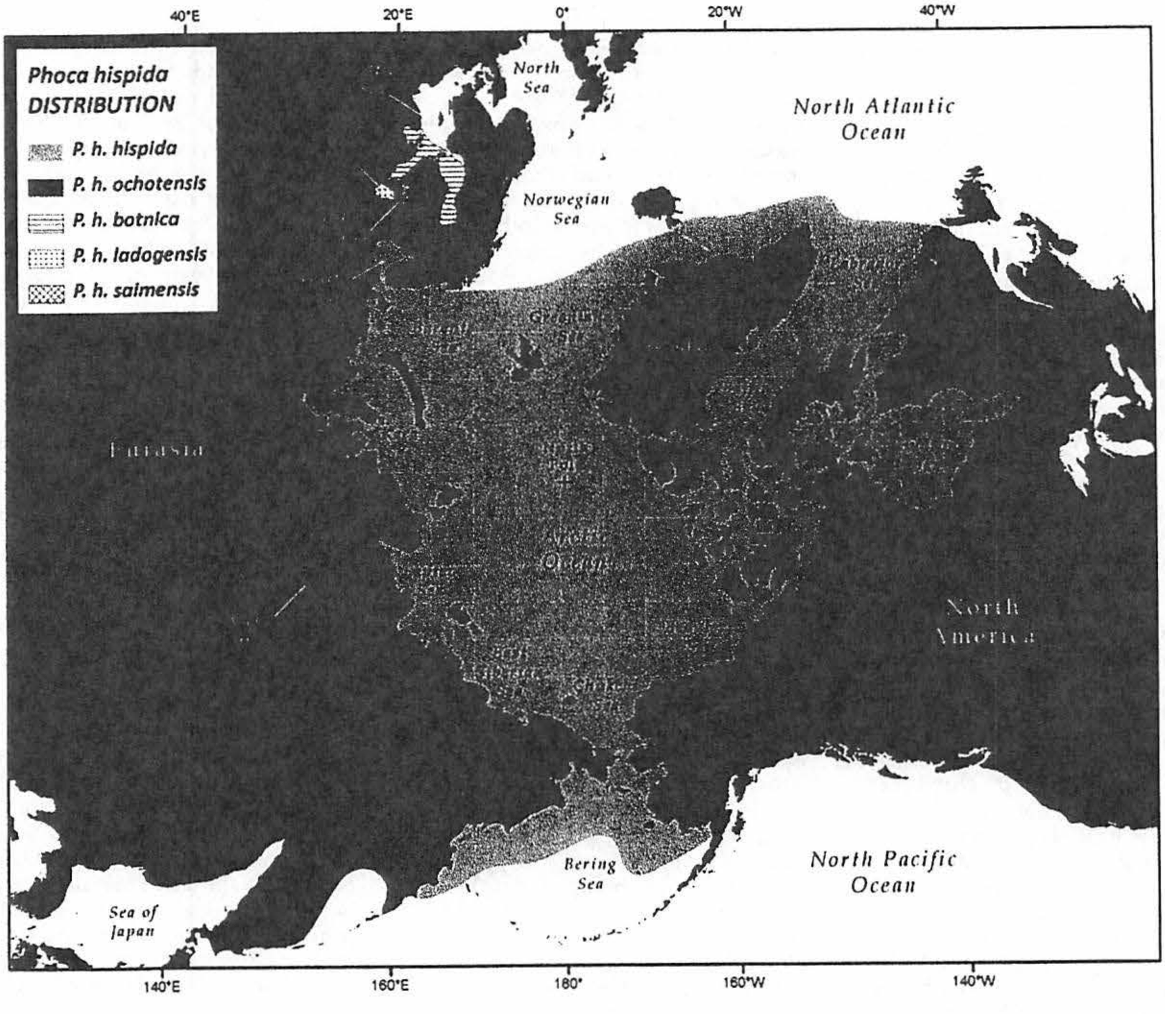


Figure 1. Distributions of the five subspecies of the ringed seal (Phoca hispida), from Kelly et al. (2010a).

## Abundance and Trends

Several factors make it difficult to accurately assess ringed seals' 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 ringed 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. Some studies have relied on surveys of seal holes and then estimated the number of seals based on various assumptions of the ratio of seals to holes. Most surveys are conducted during the basking period and the numbers of seals on ice is multiplied by some factor to estimate population size or determine a population index. While a few, recent studies have used data recorders and haul-out models to develop correction factors for seals submerged and unseen, many studies present only estimates for seals visible on ice (i.e., "basking population"). The timing of annual snow and ice melts also varies widely from year to year and, unless surveys are conducted to coincide with similar ice and weather conditions, comparisons between years (even if conducted during the same time of year) can be erroneous. With these limitations in mind, the best scientific and commercial data on abundance and trends are summarized below for each of the ringed seal subspecies.

*Arctic Ringed Seal*

The Arctic ringed seal is the most abundant of the ringed seal subspecies and has a circumpolar distribution. The BRT divided the distribution of Arctic ringed seals into five regions: Greenland Sea and Baffin Bay, Hudson Bay, Beaufort Sea, Chukchi Sea, and the White, Barents and Kara Seas. These regions were largely chosen to reflect the geographical groupings of published studies and not to imply any actual population structure. These areas also do not represent the full distribution of Arctic ringed seals as estimates are not available in some areas (*e.g.*, areas of the Russian Arctic coast and the Canadian Arctic Archipelago).

The only available comprehensive estimate for the Greenland Sea and Baffin Bay region is 787,000, based on surveys conducted in 1979. Consistency in harvest records over time lends some confidence that the population has not changed significantly.

The Hudson Bay ringed seal population was estimated at 53,346 based on the mid-point of estimates from aerial surveys conducted in 2007 and 2008. Prior surveys conducted in western Hudson Bay in the 1970s produced an estimate of 455,000 seals, which was much larger than the 218,300 reported in the 1950s. The earlier studies did not account for seals using pack ice habitats which might account for the difference. A more recent survey in 1995 provided an estimate of approximately 280,000 seals when missed seals were accounted for.

Population assessments of ringed seals in the Beaufort and Chukchi Seas have been mostly confined to U.S. and Canadian waters. Based on the available abundance estimates for study areas within this region and extrapolations for pack ice areas without survey data, a reasonable estimate for the Chukchi and Beaufort Seas is 1 million seals. Estimates derived for all Alaskan shorefast ice habitats in both the Chukchi and Beaufort Seas based on aerial surveys conducted in the mid 1980s were 250,000 ringed seals in the shorefast ice and 1–1.5 million including seals in the pack-ice habitat.

The White, Barents, Kara, and East Siberian Seas encompass at least half of the worldwide distribution of Arctic ringed seals. The total population across these seas may be as many as 220,000 seals based on available survey data, primarily from 1975–1993.

*Okhotsk Ringed Seal*

Based on aerial surveys, ringed seal abundance in the Sea of Okhotsk from 1968–1990 was estimated at between 676,000 and 855,000 seals. These estimates include a general (not species-specific) 30 percent adjustment to account for seals in the water. Fluctuations in population estimates since catch limits were initiated in 1968 were suspected to be natural (Fedoseev, 2000). Based on these surveys, a conservative estimate of the current total population of ringed seals in the Sea of Okhotsk would be 676,000 seals. Aerial surveys conducted in the Sea of Okhotsk from 1968–1969 provided a population estimate of 800,000. This was the same as the estimate previously back-calculated from catch data in 1966 when a population decline due to hunting was identified. These calculations also suggested that ringed seal abundance in the Sea of Okhotsk had been in a state of steady decline since 1955 when estimates suggested the population exceeded 1 million seals.

*Baltic Ringed Seal*

The Baltic ringed seal population was estimated at 10,000 seals based on comprehensive surveys conducted in 1996. Historical estimates of population size for the Baltic ringed seal range from 50,000 to 450,000 seals in 1900 (Kokko *et al.*, 1999). These estimates were derived as back calculations from historical bounty records. The large range in the estimates reflects uncertainty in the hunting dynamics and whether the populations were historically subject to density dependence. By the 1940s, the population had been reduced to 25,000 seals in large part due to Swedish and Finnish removal efforts. Ringed seals in the Baltic are found in three general regions, the Bothnian Bay, Gulf of Finland, and Gulf of Riga plus the Estonian west coast. Low numbers of ringed seals are also present in the Bothnian Sea and the southwestern region of Finland. The greatest concentration of Baltic ringed seals is found in the Bothnian Bay.

*Ladoga Ringed Seal*

The population size of ringed seals in Lake Ladoga is currently suggested to range between 3,000 and 5,000 seals based on an aerial survey in 2001. This represents a decline from estimates of 20,000 and 5,000–10,000 seals reported for the 1930s and the 1960s, respectively (Chapskii, 1974). Results from a Russian aerial survey in the 1970s estimated the population of ringed seals in Lake Ladoga to be 3,500–4,700 seals.

*Saimaa Ringed Seal*

The current population estimate of ringed seals in Lake Saimaa is less than 300, and the mean population growth rate from 1990–2004 was 1.026. Lake Saimaa is a complex body of water, and the population trends and abundance for Saimaa ringed seals have differed across the various regions. It has been projected that the population of Saimaa ringed seals may reach 400 by 2015, but with the caveat that seals may no longer be present in some regions of the lake. Historical abundance of ringed seals in Lake Saimaa is estimated to have been between 4,000 and 6,000 animals approximately 5,000 years ago (Sipilä and Hyvärinen, 1998; Sipilä, 2006). However, using a back-casting process based on reported bounty statistics, the population was estimated in 1893 to be between 100 and 1,300 seals. In 1993, the Saimaa seal was listed as endangered under the ESA (58 FR 26920; May 6, 1993) and as depleted under the U.S. Marine Mammal Protection Act of 1972, as amended. At that time, the population was estimated at 160–180 seals (57 FR 60162; December 18, 1992).

**Summary of Factors Affecting the Ringed 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 each subspecies of the ringed seal 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 the five subspecies of the ringed seal (*see* **ADDRESSES**). As discussed above, the data on ringed seal abundance and trends of most populations are unavailable or imprecise, especially in the Arctic and Okhotsk subspecies, and there is little basis for quantitatively linking projected environmental conditions or other factors to ringed 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 ringed 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 each of the subspecies of the ringed seal therefore requires a focus on the observed and projected changes in sea ice, snow cover, ocean temperature, ocean pH (acidity), and associated changes in ringed seal prey species.

The threats (analyzed below) associated with impacts of the warming climate on the habitat of ringed seals, to the extent that they may pose risks to these seals, are expected to manifest throughout the current breeding and molting range (for snow and ice related threats) or throughout the entire range (for ocean warming and acidification) of each of the subspecies, 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 Ringed 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, the Baltic Sea, Hudson Bay, and the Sea of Okhotsk are known as seasonal ice zones, where first year sea ice is renewed every winter. Similarly, freshwater ice in lakes Ladoga and Saimaa forms and melts annually. 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 ringed 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 the 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 increases in 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, global warming projected 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 2 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 and snow 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 ringed seals, we therefore considered all the projections through the end of the 21st century 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. Snow cover on sea ice in the Northern Hemisphere was forecasted using one of the six models, the Community Climate System Model, version 3 (CCSM3, National Center for Atmospheric Research) (under the A1B scenario), a model that is known for incorporating advanced sea ice physics, and for which snow data were available. To incorporate natural variability, this model was run seven times.

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 14 different regions throughout the ringed seal's range, including 12 regions for the Arctic ringed seal, one region for the Okhotsk ringed seal, and one region for the Baltic, Ladoga, and Saimaa ringed seals. For Arctic ringed seals, in three regions (Chukchi Sea, east Siberian Sea, and the central Arctic) 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, in two regions (western Bering and the Barents Seas) a single model (CCSM3) met the performance criteria, and in five regions (Baffin Bay, Hudson Bay, the Canadian Arctic Archipelago, east Greenland, and the Kara and Laptev Seas) none of the models performed satisfactorily. The models also did not meet the performance criteria for the Baltic region and 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), other existing analyses (Baltic Sea and Hudson Bay), and results from the hemispheric predictions (Baffin Bay, the Canadian Arctic Archipelago, and the East Greenland, Kara, and Laptev Seas), were used for regions where ice projections could not be obtained. For the Baltic Sea we reviewed the analysis of Jylha *et al.* (2008). They used seven regional climate models and found good agreement with observations for the 1902–2000 comparison period. 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.

Regional predictions of snow cover were based on results from the hemispheric projections for Arctic and Okhotsk ringed seals, and on other existing analyses for Baltic, Ladoga, and Saimaa ringed seals. For the Baltic Sea we referred to the analysis of Jylha *et al.* (2008) noted above. For lakes Ladoga and Saimaa we considered the analysis of Saelthun *et al.* (1998; cited in Kuusisto, 2005). They used a modified hydrological model to analyze the effects of climate change on hydrological conditions and runoff in Finland and the Scandinavian Peninsula.

While our inferences about future regional ice and snow 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 the onset of potential impacts to ringed seals is complicated by the coarse resolution of the IPCC models.

Northern Hemisphere Sea Ice and Snow Cover Predictions

Projections of Northern Hemisphere sea ice concentrations 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 in November 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. The month of May shows diminishing sea ice cover at 2050 and 2090 in the Barents and Bering Seas and the Sea of Okhotsk. By the month of June, projections begin to show substantial changes as the century progresses. Current conditions occasionally exhibit a lack of sea ice near the Bering Strait during 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 in the Arctic by mid-century.

As the Arctic Ocean warms and is covered by less ice, precipitation is expected to increase overall including during the winter months. Five climate models used by the *Arctic Climate Impact Assessment* forecasted an average increase in precipitation over the Arctic Ocean of 14 percent by the end of the century (Walsh *et al.*, 2005). The impact of increased winter precipitation on the depth of snow on sea ice, however, will be counteracted by delays in the formation of sea ice. Over most of the Arctic Ocean, snow cover reaches its maximal depth in May, but most of that accumulation takes place in the autumn (Sturm *et al.*, 2002). Snow depths reach 50 percent of the annual maximum by the end of October and 67 percent of their maximum by the end of November (Radionov et *al.*, 1997). Thus, delays of 1–2 months in the date of ice formation would result in substantial decreases in spring snow depths despite the potential for increased winter precipitation. Thinner ice will be more susceptible to deforming and producing pressure ridges and ice hummocks favoring snow drifts where depths exceed those on flat ice (Iacozaa and Barber, 1999; Strum *et al.*, 2006). However, as noted above, average snow depths of 20–30 cm or more are typically necessary to form drifts that are deep enough for ringed seal lair formation. As spring air temperatures continue to warm, snow melt will continue to come earlier in the year. The CCSM3 model forecasted that the accumulation of snow on sea ice will decrease by almost 50 percent by the end of this century, with more than half of that decline projected to occur by 2050. Although the forecasted snow accumulations in the seven integrations of the model varied, all predicted substantial declines over the century.

Regional Sea Ice and Snow Cover Predictions by Subspecies

*Arctic ringed seal:* In the East Siberian, Chukchi, Beaufort, Kara-Laptev, and Greenland Seas, as well as in Baffin Bay, and the Canadian Arctic Archipelago, little or no decline in ice extent is expected in April and May during the remainder of this century. In most of these areas, a moderate decline in sea ice is predicted during June within this century, while substantial declines in sea ice are projected in July and November after mid-century. The central Arctic (defined as regions north of 80° N. latitude) also shows declines in sea ice cover that are most apparent in July and November after 2050. For Hudson Bay, under a warmer climate scenario (for the years 2041–2070) Joly *et al.* (2010) projected a reduction in the sea ice season of 7–9 weeks, with substantial reductions in sea ice cover most apparent in July and during the first months of winter.

In the Bering Sea, April and May ice cover is projected to decline throughout this century, with substantial inter-annual variability forecasted in the eastern Bering Sea. The projection for May indicates that there will commonly be years with little or no ice in the western Bering Sea beyond mid-century. Very little ice has remained in the eastern Bering Sea in June since the mid-1970s. Sea ice cover in the Barents Sea in April and May is also projected to decline throughout this century, and in the months of June and July, ice is expected to disappear rapidly in the coming decades.

Based on model projections, April snow depths over much of the range of the Arctic ringed seal averaged 25–35 cm in the first decade of this century, consistent with on-ice measurements by Russian scientists (Weeks, 2010). By mid-century, a substantial decrease in areas with April snow depths of 25–35 cm is projected (much of it reduced to 20–15 cm). The deepest snow (25–30 cm) is forecasted to be found just north of Greenland, in the Canadian Arctic Archipelago, and in an area tapering north from there into the central Arctic Basin. Southerly regions, such as the Bering Sea and Barents Sea, are forecasted to have snow depths of 10 cm or less my mid-century. By the end of the century, April snow depths of 20–25 cm are forecasted only for a portion of the central Arctic, most of the Canadian Arctic Archipelago, and a few small, isolated areas in a few other regions. Areas with 25–30 cm of snow are projected to be limited to a few small isolated pockets in the Canadian Arctic by 2090–2099.

*Okhotsk ringed seal:* 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. Based on that analysis, ice is expected to persist in the Sea of Okhotsk in March during the remainder of this century, although ice may be limited to the northern region in most years after mid-century. Conditions for sea ice in April are likely to be limited to the far northern reaches of the Sea of Okhotsk or non-existent by 2100. Little to no sea ice is expected in May by mid-century. Average snow depth projections for April show depths of 15–20 cm only in the northern portions of the Sea of Okhotsk in the past 10 years and nowhere in that sea by mid-century. By the end of the century average snow depths are projected to be 10 cm or less even in the northern Sea of Okhotsk.

*Baltic, Ladoga, and Saimaa ringed seals:* For the Baltic Sea, the analysis of regional climate models by Jylhä *et al.* (2008) was considered. They used seven regional climate models and found good agreement with observations for the 1902–2000 comparison period. For the forecast period 2071–2100, one model predicted a change to mostly mild conditions, while the remaining models predicted unprecedentedly mild conditions. They noted that their estimates for a warming climate were in agreement with other studies that found unprecedentedly mild ice extent conditions in the majority of years after about 2030. The model we used to project snow depths (CCSM3) did not provide adequate resolution for the Baltic Sea. The climate models analyzed by Jylhä *et al.* (2008), however, forecasted decreases of 45–60 days in duration of snow cover by the end of the century in the northern Baltic Sea region. The shortened seasonal snow cover would result primarily from earlier spring melts, but also from delayed onset of snow cover. Depth of snow is forecasted to decrease 50–70 percent in the region over the same period. The depth of snow also will be decreased by mid-winter thaws and rain events. Simulations of the snow cover indicated that an increasing proportion of the snow pack will consist of icy or wet snow.

Ice cover has diminished about 12 percent over the past 50 years in Lake Ladoga. Although we are not aware of any ice forecasts specific to lakes Ladoga and Saimaa, the simulations of future climate reported by Jylhä *et al.* (2008) suggest warming winters with reduced ice and snow cover. Snow cover in Finland and the Scandinavian Peninsula is projected to decrease 10–30 percent before mid-century and 50–90 percent by 2100 (Saelthun *et al.*, 1998, *cited in* Kuusisto, 2005).

## Effects of Changes in Ice and Snow Cover on Ringed Seals

Ringed seals are vulnerable to habitat loss from changes in the extent or concentration of sea ice because they depend on this habitat for pupping, nursing, molting, and resting. The ringed seal's broad distribution, ability to undertake long movements, diverse diet, and association with widely varying ice conditions suggest resilience in the face of environmental variability. However, the ringed seal's long generation time and ability to produce only a single pup each year may limit its ability to respond to environmental challenges such as the diminishing ice and snow cover projected in a matter of decades. Ringed seals apparently thrived during glacial maxima and survived warm interglacial periods. How they survived the latter periods or in what numbers is not known. Declines in sea ice cover in recent decades are more extensive and rapid than any known for at least the last few thousand years (Polyak *et al.*, 2010).

Ringed seals create birth lairs in areas of accumulated snow on stable ice including the shore-fast ice over continental shelves along Arctic coasts, bays, and inter-island channels. While some authors suggest that shorefast ice is the preferred pupping habitat of ringed seals due to its stability throughout the pupping and nursing period, others have documented ringed seal pupping on drifting pack ice both nearshore and offshore. Both of these habitats can be affected by earlier warming and break-up in the spring, which shortens the length of time pups have to grow and mature in a protected setting. Harwood *et al.* (2000) reported that an early spring break-up negatively impacted the growth, condition, and apparent survival of unweaned ringed seal pups. Early break-up was believed to have interrupted lactation in adult females, which in turn, negatively affected the condition and growth of pups.

Unusually heavy ice has also been implicated in shifting distribution, high winter mortality, and reduced productivity of ringed seals. It has been suggested that reduced ice thickness associated with warming in some areas could lead to increased biological productivity that might benefit ringed seals, at least in the short-term. However, any transitory and localized benefits of reduced ice thickness are expected to be outweighed by the negative effects of increased thermoregulatory costs and vulnerability of seal pups to predation associated with earlier ice break-up and reduced snow cover.

Ringed seals, especially the newborn, depend on snow cover for protection from cold temperatures and predators. Occupation of subnivean lairs is especially critical when pups are nursed in late March–June. Ferguson *et al.* (2005) attributed low ringed seal recruitment in western Hudson Bay to decreased snow depth in April and May. Reduced snowfall results in less snow drift accumulation next to pressure ridges, and pups in lairs with thin snow cover are more vulnerable to predation than pups in lairs with thick snow cover (Hammill and Smith, 1989; Ferguson *et al.*, 2005). When snow cover is insufficient, pups can also freeze in their lairs as documented in 1974 when roofs of lairs in the White Sea were only 5–10 cm thick (Lukin and Potelov, 1978). Similarly, pup mortality from freezing and polar bear (*Ursus maritimus*) predation increased when unusually warm spring temperatures caused early melting near Baffin Island in the late 1970s (Smith and Hammill, 1980; Stirling and Smith, 2004). Prematurely exposed pups also are vulnerable to predation by wolves (*Canis lupus*) and foxes (*Alopex lagopus* and *Vulpes vulpes*)—as documented during an early snow melt in the White Sea in 1977 (Lukin, 1980)—and by gulls (Laridae) and ravens (*Corvus corax*) as documented in the Barents Sea (Gjertz and Lydersen, 1983; Lydersen and Gjertz, 1987; Lydersen *et al.*, 1987; Lydersen and Smith, 1989; Lydersen and Rig, 1990; Lydersen, 1998). When lack of snow cover has forced birthing to occur in the open, some studies have reported that nearly 100 percent of pups died from predation (Kumlien, 1879; Lydersen *et al.*, 1987; Lydersen and Smith, 1989; Smith *et al.*, 1991; Smith and Lydersen, 1991). The high fidelity to birthing sites exhibited by ringed seals also makes them more susceptible to localized degradation of snow cover (Kelly *et al.*, 2010).

Increased rain-on-snow events during the late winter also negatively impact ringed seal recruitment by damaging or eliminating snow-covered birth lairs, increasing exposure and the risk of hypothermia, and facilitating predation by polar bears and other predators. Stirling and Smith (2004) documented the collapse of subnivean lairs during unseasonal rains near southeastern Baffin Island and the subsequent exposure of ringed seals to hypothermia. They surmised that most of the pups that survived exposure to cold were eventually killed by polar bears, Arctic foxes, or possibly gulls. Stirling and Smith (2004) postulated that, should early season rain become regular and widespread in the future, mortality of ringed seal pups will increase, especially in more southerly parts of their range.

## Potential Impacts of Projected Ice and Snow Cover Changes on Ringed Seals

As discussed above, ringed seals divide their time between foraging in the water, and reproducing and molting out of the water, where they are especially vulnerable to predation. Females must nurse their pups for 1–2 months, and the small pups are vulnerable to cold temperatures and avian and mammalian predators on the ice, especially during the nursing period. Thus, a specific habitat requirement for ringed seals is adequate snow for the occupation of subnivean lairs, especially in spring when pups are born and nursed.

Northern Hemisphere snow cover has declined in recent decades and spring melt times have become earlier (ACIA, 2005). In most areas of the Arctic Ocean, snow melt advanced 1–6 weeks from 1979–2007. Throughout most of the ringed seal's range, snow melt occurred within a couple of weeks of weaning. Thus, in the past 3 decades, snow melts in many areas have been pre-dating weaning. Shifts in the timing of reproduction by other pinnipeds in response to changes in food availability have been documented. However, the ability of ringed seals to adapt to earlier snow melts by advancing the timing of reproduction will be limited by snow depths. As discussed above, over most of the Arctic Ocean, snow cover reaches its maximal depth in May, but most of that accumulation takes place in autumn. It is therefore unlikely that snow depths for birth lair formation would be improved earlier in the spring. In addition, the pace at which snow melts are advancing is rapid relative to the generation time of ringed seals, further challenging the potential for an adaptive response.

Snow drifted to 45 cm or more is needed for excavation and maintenance of simple lairs, and birth lairs require depths of 50 to 65 cm or more (Smith and Stirling, 1975; Lydersen and Gjertz, 1986; Kelly, 1988; Furgal *et al.*, 1996; Lydersen, 1998; Lukin *et al.*, 2006). Such drifts typically only occur where average snow depths are at least 20–30 cm (on flat ice) and where drifting has taken place along pressure ridges or ice hummocks (Hammill and Smith, 1991; Lydersen and Ryg, 1991; Smith and Lydersen, 1991; Ferguson *et al.*, 2005). We therefore considered areas forecasted to have less than 20 cm average snow depth in April to be inadequate for the formation of ringed seal birth lairs.

*Arctic ringed seal:* The depth and duration of snow cover is projected to decrease throughout the range of Arctic ringed seals within this century. Whether ringed seals will continue to move north with retreating ice over the deeper, less productive Arctic Basin waters and whether forage species that they prey on will also move north is uncertain (see additional discussion below). Initially, impacts may be somewhat ameliorated if the subspecies' range retracts northward with its sea ice habitats. By 2100, however, April snow cover is forecasted to become inadequate for the formation and occupation of ringed seal birth lairs over much of the subspecies' range. The projected decreases in ice and, especially, snow cover are expected to lead to increased pup mortality from premature weaning, hypothermia, and predation.

*Okhotsk ringed seal:* Based on temperature proxies, ice is expected to persist in the Sea of Okhotsk through the onset of pupping in March through the end of this century. Ice suitable for pupping and nursing likely will be limited to the northernmost portions of the sea, as ice is likely to be limited to that region in April by the end of the century. The snow cover projections suggest that snow depths may already be inadequate for lairs in the Sea of Okhotsk, and most Okhotsk ringed seals apparently now give birth on pack ice in the lee of ice hummocks. However, it appears unlikely that this behavior could mitigate the threats posed by the expected decreases in sea ice. The Sea of Okhotsk is bounded to the north by land, which will limit the ability of Okhotsk ringed seals to respond to deteriorating sea ice and snow conditions by shifting their range northward. Some Okhotsk ringed seals have been reported on terrestrial resting sites during the ice-free season, but these sites provide inferior pupping and nursing habitat. Within the foreseeable future, the projected decreases in sea ice habitat suitable for pupping, nursing, and molting in the Sea of Okhotsk are expected to lead to reduced abundance and productivity.

*Baltic, Ladoga, and Saimaa ringed seals:* The considerable reductions in ice extent forecasted by mid-century, coupled with deteriorating snow conditions, are expected to substantially alter the habitats of Baltic ringed seals. Climate forecasts for northern Europe also suggest reduced ice and snow cover for lakes Ladoga and Saimaa within this century. These habitat changes are expected to lead to decreased survival of pups (due to hypothermia, predation, and premature weaning) and considerable declines in the abundance of these subspecies in the foreseeable future. Recent (2005–2007) high rates of pup mortality in Saimaa ringed seals (more than double those in 1980–2000) have been attributed to insufficient snow for lair formation and occupation. Given the small population size of the Saimaa ringed seal, this subspecies is at particular risk from the projected habitat changes. Although Baltic, Ladoga, and Saimaa ringed seals have been reported using terrestrial resting sites when ice is absent, these sites provide inferior pupping and nursing habitat. As sea ice and snow conditions deteriorate, Baltic ringed seals will be limited in their ability to respond by shifting their range northward because the Baltic Sea is bounded to the north by land; and the landlocked seal populations in lakes Ladoga and Saimaa will be unable to shift their ranges.

### Impacts on Ringed 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 two 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. Seawater chemistry measurements in the Baltic Sea suggest that this sea is equally vulnerable to acidification as the Arctic. We are not aware of specific acidification studies in lakes Ladoga and Saimaa. Fresh water systems, however, are much less buffered than ocean waters and are likely to experience even larger changes in acidification levels than marine systems. The most likely impact of ocean acidification on ringed seals will be at lower tropic 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 water temperatures and decreasing ice likely will result in a contraction in the range of Arctic cod, a primary prey of ringed seals. The same changes will lead to colonization of the Arctic Ocean by more southerly species, including potential prey, predators, and competitors. The outcome of new competitive interactions cannot be specified, but as sea ice specialists, ringed seals may be at a disadvantage in competition with generalists in an ice-diminished Arctic. Prey biomass may be reduced as a consequence of increased freshwater input and loss of sea ice habitat for amphipods and copepods. On the other hand, overall pelagic productivity may increase.

### Summary of Factor A

Climate models consistently project overall diminishing sea ice and snow cover at least through the current century, with regional variation in the timing and severity of those losses.

Increasing atmospheric concentrations of greenhouse gases, including $CO_2$, will drive climate warming and increase acidification of the ringed seal's ocean and lake habitats. The impact of ocean warming and acidification on ringed seals is expected to be primarily through changes in community composition. However, the nature and timing of these changes is uncertain.

Diminishing ice and snow cover are the greatest challenges to persistence of all of the ringed seal subspecies. While winter precipitation is forecasted to increase in a warming Arctic, the duration of ice cover is projected to be substantially reduced, and the net effect will be lower snow accumulation on the ice. Within the century, snow cover adequate for the formation and occupation of birth lairs is forecasted only for parts of the Canadian Arctic Archipelago, a portion of the central Arctic, and a few small isolated areas in a few other regions. Without the protection of lairs, ringed seals, especially newborn, are vulnerable to freezing and predation. We conclude that the ongoing and projected changes in sea ice habitat pose significant threats to the persistence of each of the five subspecies of the ringed seal.

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

Ringed seals have been hunted by humans for millennia and remain a fundamental subsistence resource for many northern coastal communities today. Ringed seals were also harvested commercially in large numbers during the 20th century, which led to the depletion of their stocks in many parts of their range. Commercial harvests in the Sea of Okhotsk and predator-control harvests in the Baltic Sea, Lake Ladoga, and Lake Saimaa caused population declines in the past, but have since been restricted. Although subsistence harvest of the Arctic subspecies is currently substantial in some regions, harvest levels appear to be sustainable. Climate change is likely to alter patterns of subsistence harvest of marine mammals by changing their local 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 interacting variables and imprecision of climate and sea ice 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.

Recreational, scientific, and educational uses of ringed seals are minimal and are not expected to increase significantly in the foreseeable future. We conclude that overutilization does not currently threaten any of the five subspecies of the ringed seal.

*C. Diseases, Parasites, and Predation*

Ringed seals have co-evolved with numerous parasites and diseases, and those relationships are presumed to be stable. Evidence of distemper virus, for example, has been reported in Arctic ringed seals, but there is no evidence of impacts to ringed seal abundance or productivity. Abiotic and biotic changes to ringed seal habitat potentially could lead to exposure to new pathogens or new levels of virulence, but we consider the potential threats to ringed seals as low.

Ringed seals are most commonly preyed upon by Arctic foxes and polar bears, and less commonly by other terrestrial carnivores, sharks, and killer whales (*Orcinus orca*). When ringed seal pups are forced out of subnivean lairs prematurely because of low snow accumulation and/or early melts, gulls and ravens also successfully prey on them. Avian predation is facilitated not only by lack of sufficient snow cover but also by conditions favoring influxes of birds. Lydersen and Smith (1989) pointed out that the small size of newborn ringed seals, coupled with their prolonged nursing period, make them vulnerable to predation by birds and likely sets a southern limit to their distribution.

Ringed seals and bearded seals are the primary prey of polar bears. Polar bear predation on ringed seals is most successful in moving offshore ice, often along floe edges and rarely in ice-free waters. Polar bears also successfully hunt ringed seals on stable shorefast ice by catching animals when they surface to breathe and when they occupy lairs. Hammill and Smith (1991) further noted that polar bear predation on ringed seal pups increased 4-fold in a year when average snow depths in their study area decreased from 23 to 10 cm. They concluded that while a high proportion of pups born each year are lost to predation, "without the protection provided by the subnivean lair, pup mortality would be much higher."

The distribution of Arctic foxes broadly overlaps with that of Arctic ringed seals. Arctic foxes prey on newborn seals by tunneling into the birth lairs. The range of the red fox overlaps with that of the Okhotsk, Baltic, Saimaa, and Ladoga subspecies, and on rare occasion red foxes also prey on newborn ringed seals in lairs.

High rates of predation on ringed seal pups have been associated with anomalous weather events that caused subnivean lairs to collapse or melt before pups were weaned. Thus, declining snow depths and duration of snow cover during the period when ringed seal pups are born and nursed can be expected to lead to increased predation on ringed seal pups. We conclude that the threat posed to ringed seals by predation is currently moderate, but predation risk is expected to increase as snow and sea ice conditions change with a warming climate.

*D. Inadequacy of Existing Regulatory Mechanisms*

A primary concern about the conservation status of the ringed 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 ringed seal habitat. The risk posed to ringed 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 thus recognize that the lack of effective mechanisms to regulate global GHG emissions is contributing to the risks posed to ringed seals by these emissions.

Drowning in fishing gear has been reported as the most common cause of death reported for Saimaa ringed seals. Although there have been seasonal fishing restrictions instituted in some parts of Lake Saimaa, these are apparently insufficient, as annual loss of seals has continued. We therefore conclude that the inadequacy of existing mechanisms to regulate bycatch of Saimma ringed seals is contributing to its endangered status.

*E. Other Natural or Manmade Factors Affecting the Species' Continued Existence Pollution and Contaminants*

Contaminants research on ringed seals is very extensive and has been conducted in most parts of the species' range (with the exception of the Sea of Okhotsk), particularly throughout the Arctic environment where ringed seals are an important diet item in coastal human communities. Pollutants such as organochlorine (OC) compounds and heavy metals have been found in all of the subspecies of ringed seal (with the exception of the Okhotsk ringed seal). The variety, sources, and transport mechanisms of contaminants vary across ringed seal ecosystems. Statistical analysis of OC compounds in marine mammals has shown that, for most OCs, the European Arctic is more contaminated than the Canadian and U.S. Arctic.

Reduced productivity in the Baltic ringed seal in recent decades resulted from impaired fertility that was associated with pollutants. High levels of DDT (dichloro-diphenyl-trichloroethane) and PCBs (polychlorinated biphenyls) were found in Baltic (Bothnian Bay) ringed seals in the 1960s and 1970s, and PCB levels were correlated with reproductive failure. More recently, PFOSs (perfluorooctane sulfonate; a perfluorinated contaminant or PFC) were reported as 15 times greater in Baltic ringed seals than in Arctic ringed seals.

Mercury levels detected in Saimaa ringed seals were higher than those reported for the Baltic Sea and Arctic Ocean. It has been suggested that high mercury levels may have contributed to the Saimaa ringed seal's population decline in the 1960s and 1970s. The high level of mercury in the seal's prey and shortage of selenium would reduce the seal's capacity for metabolic detoxification. The major source of mercury in Lake Saimaa has been noted as the pulp industry.

Present and future impacts of contaminants on ringed 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 ringed 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 ringed seals primarily through noise, physical disturbance, and pollution, particularly in the event of a large oil spill or blowout.

Within the range of the Arctic ringed 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.

A major project underway in the Baltic Sea is the Nord Stream 1,200-km gas line, which will be the longest subsea natural gas pipeline in the world. Concerns have been expressed about the potential disturbance of World War II landmines and chemical toxins in the sediment during construction. There are also concerns about potential leaks and spills from the pipeline and impacts on the Baltic Sea marine environment once the pipeline is operational. Circulation of waters in the Baltic Sea is limited and any contaminants may not be flushed efficiently.

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 coats. Adults, juveniles, and weaned young of the year rely on blubber for insulation, so effects on their thermoregulation are expected to be minimal. A variety of other acute effects of oil exposure have been shown to reduce seals' health and possibly survival. 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 ringed 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.

Commercial Fisheries Interactions and Bycatch

Commercial fisheries may impact ringed 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 Arctic ringed seal bycatch could only be found for commercial fisheries that operate in Alaskan waters. Based on data from 2002–2006, there has been an annual average of 0.46 mortalities of Arctic ringed seals incidental to commercial fishing operations. NAMMCO (2002) stated that in the North Atlantic region Arctic ringed seals are seldom caught in fishing gear because their distribution does not coincide with intensive fisheries in most areas. No information could be found regarding ringed seal bycatch levels in the Sea of Okhotsk; however, given the intensive levels of commercial fishing that occur in this sea, bycatch of ringed seals likely occurs on some level there.

Drowning in fishing gear has been reported as one of the most significant mortality factors for seals in the Baltic Sea, especially for young seals, which are prone to getting trapped in fishing nets. There are no reliable estimates of seal bycatch in this sea, and existing estimates are known to be low in many areas, making risk assessment difficult. Based on monitoring of 5 percent of the commercial fishing effort in the Swedish coastal fisheries, bycatch of Baltic ringed seals was estimated at 50 seals in 2004. In Finland, it was estimated that about 70 Baltic ringed seals were caught by fishing gear annually during the period 1997–1999. There are no estimates of seal bycatch from Lithuanian, Estonian, or Russian waters of the Baltic. It has been suggested that decreases in the use of the most harmful types of nets (*i.e.*, gillnets and unprotected trap nets), along with the development of seal-proof fishing gear, may have resulted in a decline in Baltic ringed seal bycatch (Ministry of Agriculture and Forestry, 2007).

It has been estimated that 200–400 Ladoga ringed seals died annually in fishing gear during the late 1980s and early 1990s. Fishing patterns have reportedly changed since then due to changes in the economic market. As of the late 1990s, fishing was not regarded to be a threat to Ladoga ringed seal populations, but it was suggested that it could become so should market conditions improve (Sipilä and Hyvärinen, 1998). Based on interviews with fishermen in Lake Ladoga, Verevkin *et al.* (2006) reported that at least 483 Ladoga ringed seals were killed in fishing gear in 2003, even though official records only recorded 60 cases of bycatch. These figures from 2003 suggest that bycatch mortality is likely to be a continuing conservation concern for Ladoga ringed seals.

Small-scale fishing was thought to be the most serious threat to ringed seals in Lake Saimaa (Sipilä and Hyvärinen, 1998). More than half of the Saimaa seal carcasses that were examined for the period 1977–2000 were determined to have died from drowning in fishing gear, making this the most common cause of death for Saimaa ringed seals. Season and gear restrictions have been implemented in some parts of the lake to reduce bycatch. However, during the late 1990s, 1–3 adult ringed seals were lost annually from drowning in fishing gear (Sipilä and Hyvärinen, 1998), and bycatch mortalities have been reported since then, indicating that bycatch mortality remains a significant conservation concern.

For indirect interactions, we note that commercial fisheries target a number of known ringed seal prey species such as walleye pollock (*Theragra chalcogramma*), Pacific cod, herring (*Clupea* sp.), and capelin. These fisheries may affect ringed seals indirectly through reductions in prey biomass and through other fishing mediated changes in ringed seal prey species.

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 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 ringed 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 ringed seal food webs.

Current and future shipping activities in the Arctic pose varying levels of threats to ringed seals depending on the type and intensity of the shipping activity and its degree of spatial and temporal overlap with ringed seal habitats. These factors are inherently difficult to know or predict, making threat assessment highly uncertain. However, given what is currently known about ringed seal populations and shipping activity in the Arctic, some general assessments can be made. Arctic ringed seal densities are variable and depend on many factors; however, they are often reported to be widely distributed in relatively low densities and rarely congregate in large numbers. This may help mitigate the risks of more localized shipping threats (*e.g.*, oil spills or physical disturbance), since the impacts from such events would be less likely to affect large numbers of seals. The fact that nearly all shipping activity in the Arctic (with the exception of icebreaking) purposefully avoids areas of ice and primarily occurs during the ice-free or low-ice seasons also helps to mitigate the risks associated with shipping to ringed seals, since they are closely associated with ice at nearly all times of the year. Icebreakers pose special risks to ringed 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 ringed seals occur will likely also increase.

Though few details are available regarding actual shipping levels in the Sea of Okhotsk, resource development over the last decade stands out as a likely significant contributor. It is clear that relatively high levels of shipping are needed to support present oil and gas operations. In addition, large-scale commercial fishing occurs in many parts of the sea. 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.

The Baltic Sea is one of the most heavily trafficked shipping areas in the world, with more than 2,000 large ships (including about 200 oil tankers) sailing on its waters on an average day. Additionally, ferry lines, fishing boats, and cruise ships frequent the Baltic Sea. Both the number and size of ships (especially oil tankers) have grown in recent years, and the amount of oil transported in the Baltic (especially from the Gulf of Finland) has increased significantly since 2000. The risk of oil exposure for seals living in the Baltic Sea is considered to be greatest in the Gulf of Finland, where oil shipping routes pass through ringed seal pupping areas as well as close to rocks and islets where seals sometimes haul out. Icebreaking during the winter is considered to be the most significant marine traffic factor for seals in the Baltic Sea, especially in the Bothnian Bay.

Lakes Ladoga and Saimaa are connected to the Baltic Sea and other bodies of water via a network of rivers and canals and are used as waterways to transport people, resources, and cargo throughout the Baltic region. However, reviews of the biology and conservation of Ladoga and Samiaa ringed seals have not identified shipping-related activities (other than accidental bycatch in fishing gear) as being important risks to the conservation status of these subspecies.

The threats posed from shipping activity in the Sea of Okhotsk, Baltic Sea, and lakes Ladoga and Saimaa are largely the same as they are for the Arctic. Two obvious but important distinctions between these regions and the Arctic are that these bodies of water are geographically smaller and more confined than many areas where the Arctic subspecies lives, and they contain much smaller populations of ringed seals. Therefore, shipping impacts and ringed seals are more likely to overlap spatially in these regions, and a single accident (e.g., a large oil spill) could potentially impact these smaller populations severely. However, the lack of specific information on actual threats and impacts (now and in the future) makes threat assessment in these regions similarly uncertain. More information is needed in order to adequately assess the risks of shipping to ringed seals.

Summary of Factor E

We find that the threats posed by pollutants, oil and gas activities, fisheries, and shipping, do not individually or cumulatively raise concern about them placing the Arctic or Okhotsk subspecies of ringed 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.

Reduced productivity in the Baltic Sea ringed seal in recent decades resulted from impaired fertility that was associated with pollutants. We do not have any information to conclude that there are currently population-level effects on Baltic ringed seals from contaminant exposure. We find that the threats posed by pollutants, petroleum development, commercial fisheries, and increased ship traffic do not individually or cumulatively pose a significant risk to the persistence of the Baltic ringed seal throughout all or a significant portion of this subspecies' range. We recognize, however, that the significance of these threats would increase for populations diminished by the effects of climate change or other threats. We also note that, particularly given the elevated contaminant load in the Baltic Sea, continued efforts are necessary to ensure that population-level effects from contaminant exposure do not recur in Baltic ringed seals in the future.

Drowning of seals in fishing gear and disturbance by human activities are conservation concerns for ringed seals in lakes Ladoga and Saimaa and could exacerbate the effects of climate change on these seal populations. Drowning in fishing gear is also one of the most significant sources of mortality for ringed seals in the Baltic Sea. We currently do not have any data to conclude that these threats are having population-level effects on Ladoga or Baltic ringed seals. However, bycatch mortality in Lake Ladoga particularly warrants additional investigation, as does consideration of ways to minimize seal entanglement in fishing gear. Given the very low numbers of the Saimaa ringed seal, we consider the risk posed to this subspecies from mortality incidental to fishing activities to be a significant factor in our classification of the Saimaa ringed seal as endangered.

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 key factors limiting the viability of all five ringed seal subspecies are the forecasted reductions in ice extent and, in particular, depths and duration of snow cover on ice. Early snow melts already are evident in much of the species' range. Increasingly late ice formation in autumn is forecasted, contributing to expectations of substantial decreases in snow accumulation. The ringed seal's specific requirement for habitats with adequate spring snow cover is manifested in the pups' low tolerance for exposure to wet, cold conditions and their vulnerability to predation. Premature failure of the snow cover has caused high mortality due to freezing and predation. Climate warming will result in increasingly early snow melts, exposing vulnerable ringed seal pups to predators and hypothermia.

The BRT considered the current risks to the persistence of Arctic, Okhotsk, Baltic, and Ladoga ringed seals as low to moderate. Given the low population size (less than 300 seals) of the Saimaa ringed seal, the present risk to population persistence was judged by the BRT to be high for all of the demographic attributes.

Within the foreseeable future, the BRT judged the risks to Arctic ringed seal persistence to be moderate (diversity and abundance) to high (productivity and spatial structure). As noted above, the impacts to Arctic ringed seals may be somewhat ameliorated initially if the subspecies's range retracts northward with sea ice habitats, but by the end of the century snow depths are projected to be insufficient for lair formation and maintenance throughout much of the subspecies' range. The BRT also judged the risks to persistence of the Okhotsk ringed seal in the foreseeable future to be moderate (diversity) to high (abundance, productivity, and spatial structure). Okhotsk ringed seals will have limited opportunity to shift their range northward because the sea ice will retract toward land.

Risks to ringed seal persistence within the foreseeable future were judged by the BRT to be highest for the Baltic, Ladoga, and, in particular, Saimaa ringed seal. Risks were judged as moderate (diversity) to high (abundance productivity, and spatial structure) for Baltic ringed seals; moderate (diversity), or high to very high (abundance, productivity, and spatial structure) for Ladoga ringed seals; and high to very high (abundance, productivity, spatial structure, and diversity) for Saimaa ringed seals. As noted above, Ladoga and Saimaa ringed seals are landlocked populations that will be unable to respond to the pronounced degradation of ice and snow habitats forecasted to occur by shifting their range. In addition, the range of the Baltic ringed seal is bounded to the north by land, and so there is limited opportunity for this subspecies to shift its range. The low density of the Saimaa ringed seal population coupled with limited dispersal opportunities and depensatory effects continue to put this subspecies at risk of extinction. An estimate of the demographic effective population size of Saimaa ringed seals indicated that low population size is exacerbated by habitat fragmentation and that the subspecies is "vulnerable to extinction due to demographic stochasticity alone" (Kokko *et al.*, 1998).

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 Conservation Efforts Specifically To Protect Ringed Seals*

*Baltic ringed seals:* (1) Some protected areas in Sweden, Finland, the Russian Federation, and Estonia include Baltic ringed seal habitat; (2) The Baltic ringed seal is included in the Red Book of the Russian Federation as "Category 2" (decreasing abundance), is classified as "Endangered" in the Red Data Book of Estonia, and is listed as "Near Threatened" on the Finnish and Swedish Red Lists; (3) Hunting of Baltic ringed seals has been suspended in Baltic Sea region countries, although Finland is permitting the harvest of small numbers of ringed seals in Bothnia Bay beginning in 2010; and (4) Helsinki Commission (HELCOM) recommendation 27–28/2 (2006) on conservation of seals in the Baltic Sea established a seal expert group to address and coordinate seal conservation and management across the Baltic Sea region. This expert group has made progress toward completing a set of related tasks identified in the HELCOM recommendation, including coordinating development of national management plans and developing monitoring programs. The national red lists and red data books noted above highlight the conservation status of listed species and can inform conservation planning and prioritization.

*Ladoga ringed seals:* (1) Hunting of ringed seals in Lake Ladoga has been prohibited since 1980; (2) In May 2009, Ladoga Skerries National Park, which will encompass northern and northwest Lake Ladoga, was added to the Russian Federation's list of protected areas to be established; and (3) The Ladoga ringed seal is included in the Red Data Books of the Russian Federation, the Leningrad Region, and Karelia.

*Saimaa ringed seals:* (1) The Saimaa ringed seal is classified as a non-game species, and has been protected from hunting under Finnish law since 1955; (2) The Saimaa ringed seal is designated as an "Endangered" species on the Finnish Red List; (3) To conserve seal breeding areas, new construction on Lake Saimaa is not permitted within designated shoreline conservation areas (water bodies excluded), some of which are located within two national parks; (4) New construction on Lake Saimaa outside of designated shoreline conservation areas has been regulated since 1999 to limit the density of new buildings; however, it has been reported that lakeshore development has still increased substantially; (5) To reduce mortalities due to fishery interactions, restrictions have been placed on certain types of fishing gear within the breeding areas of the Saimaa ringed seal, and seasonal closure agreements have been signed with numerous fishing associations. However, continuing loss of seals, in particular juveniles, due to drowning in fishing gear has been reported. A working group for reconciliation of fishing and conservation of Saimaa ringed seals has recommended establishing a single contiguous protected area by December 2010 within which a mandatory seasonal net fishing closure and other fishing restrictions would be implemented. The Finnish Ministry of Agriculture and Forestry recently reported that the Finnish government has signed agreements with most of the Saimaa Lake fishing associations and that it is continuing to negotiate agreements with a few associations. However, in May 2010 the European Commission sent formal notice to Finland that it had not implemented adequate measures to protect the Saimaa ringed seal and that better targeted measures are still needed.

*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 ringed seal is currently classified as a species of "Least Concern" on the IUCN Red List. The Red List assessment notes that, given the risks posed to the ringed seal by climate change, the conservation status of all ringed seal subspecies should be reassessed within a decade. The European Red List compiles assessments of the conservation status of European species according to IUCN red listing guidelines. The assessment for the ringed seal currently classifies the Saimaa ringed seal as "Endangered" and the Ladoga ringed seal as "Vulnerable." The Baltic ringed seal is classified as a species of "Least Concern" on the European Red List, with the caveats that population numbers remain low and that there are significant conservation concerns in some part of the Baltic Sea. Similar to inclusion in national red lists and red data books, these listings highlight the conservation status of listed species and can inform conservation planning and prioritization.

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) is a regional treaty on conservation. Current parties to the Bern Convention within the range of the ringed seal include Norway, Sweden, Finland, Estonia, and Latvia. The agreement calls for signatories to provide special protection for fauna species listed in Appendix II (species to be strictly protected) and Appendix III to the convention (species for which any exploitation is to be regulated). The Saimaa and Ladoga ringed seals are listed under Appendix II, and other ringed seals fall under Appendix III. As discussed above, the Saimaa ringed seal has been protected from hunting since 1955, hunting of Ladoga ringed seals has been prohibited since 1980, and hunting of Baltic ringed seals has also been suspended (but with the recent exception noted above).

The provisions of the Council of the European Union's Directive 92/43/EEC on the Conservation of Natural Habitats of Wild Fauna and Flora (Habitats Directive) are intended to promote the conservation of biodiversity in European Union (EU) member countries. EU members meet the habitat conservation requirements of the directive by designating qualified sites for inclusion in a special conservation areas network known as Natura 2000. Current members of the EU within the range of the ringed seal include Sweden, Finland, and Estonia. Annex II to the Habitats Directive lists species whose conservation is to be specifically considered in designating special conservation areas, Annex IV identifies species determined to be in need of strict protection, and Annex V identifies species whose exploitation may require specific management measures to maintain favorable conservation status. The Saimaa ringed seal is listed in Annex II (as a priority species) and IV, the Baltic ringed seal is listed in Annex II and V, and the Arctic ringed seal is listed in Annex V. Some designated Natura 2000 sites include Baltic or Saimaa ringed seal habitat. Although Finland has implemented specific management measures and designated conservation areas for Saimaa ringed seals, as discussed above, the European Commission has sent its first formal notice to Finland that better targeted measures are urgently needed.

In 2005 the International Maritime Organization (IMO) designated the Baltic Sea Area outside of Russian territorial waters as a Particularly Sensitive Sea Area (PSSA), which provides a framework under IMOS's International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) for developing internationally agreed upon measures to reduce risks posed from maritime shipping activities. To date, a maritime traffic separation scheme is the sole protective measure associated with the Baltic PSSA. Expansion of Russian oil terminals is contributing to a marked increase in oil transport in the Baltic Sea; however, the Russian Federation has declined to support the Baltic Sea PSSA designation.

HELCOM's main goal since the Helsinki convention first entered force in 1980 has been to address Baltic Sea pollution caused by hazardous substances and to restore and safeguard the ecology of the Baltic. HELCOM acts as a coordinating body among the nine countries with coasts along the Baltic Sea. Activities of HELCOM have led to significant reductions in a number of monitored hazardous substances in the Baltic Sea. However, pollution caused by hazardous substances continues to pose risks.

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 ringed seal research and management.

There are no known regulatory mechanisms that effectively address the factors believed to be contributing to reductions in ringed 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 sets targets for action only 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 ringed 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 increase in global GHG emissions within the foreseeable future.

At this time, we are not aware of any formalized conservation efforts for ringed 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's National Marine Mammal Laboratory is engaged in an active research program for ringed seals. The new information from research will be used to enhance our understanding of the risk factors affecting ringed seals, thereby improving our ability to develop effective management measures for the species.

**Proposed Determinations**

We have reviewed the status of the ringed seal, fully considering the best scientific and commercial data available, including the status review report. We have reviewed threats to the five subspecies of the ringed seal, as well as other relevant factors, and given consideration to conservation efforts and special designations for ringed seals by states and foreign nations. In consideration of all of the threats and potential threats to ringed 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:

*Arctic subspecies:* (1) There are no specific estimates of population size available for the Arctic subspecies, but most experts would postulate that the population numbers in the millions. (2) The depth and duration of snow cover are forecasted to decrease substantially throughout the range of the Arctic ringed seal. Within this century, snow cover is forecasted to be inadequate for the formation and occupation of birth lairs over most of the subspecies' range. (3) Because ringed seals stay with the ice as it annually advances and retreats, the southern edge of the ringed seal's range may initially shift northward. Whether ringed seals will continue to move north with retreating ice over the deeper, less productive Arctic Basin waters and whether the species that they prey on will also move north is uncertain. (4) The Arctic ringed seal's pupping and nursing seasons are adapted to the phenology of ice and snow. The projected decreases in sea ice, and especially snow cover, will likely lead to decreased pup survival and a substantial decline in the abundance of the Arctic subspecies. We conclude that the Arctic subspecies of the ringed seal is not in danger of extinction throughout all or a significant portion of its range, but is likely to become so within the foreseeable future. Therefore, we propose to list the Arctic subspecies of the ringed seal as threatened under the ESA.

*Okhotsk subspecies:* (1) The best available scientific data suggest a conservative estimate of 676,000 ringed seals in the Sea of Okhotsk, apparently reduced from historical numbers. (2) Before the end of the current century, ice suitable for pupping and nursing is forecasted to be limited to the northernmost regions of the Sea of Okhotsk, and projections suggest that snow cover may already be inadequate for birth lairs. The Sea of Okhotsk is bounded to the north by land, which will limit the ability of Okhotsk ringed seals to respond to deteriorating sea ice and snow conditions by shifting their range northward. (3) Although some Okhotsk ringed seals have been reported resting on island shores during the ice-free season, these sites provide inferior pupping and nursing habitat. (4) The Okhotsk ringed seal's pupping and nursing seasons are adapted to the phenology of ice and snow. Decreases in sea ice habitat suitable for pupping, nursing, and molting will likely lead to declines in abundance and productivity of the Okhotsk subspecies. We conclude that the Okhotsk subspecies of the ringed seal is not in danger of extinction throughout all or a significant portion of its range, but is likely to become so within the foreseeable future. Therefore, we propose to list the Okhotsk subspecies of the ringed seal as threatened under the ESA.

*Baltic subspecies:* (1) Current estimates of 10,000 Baltic ringed seals suggest that the population has been significantly reduced from historical numbers. (2) Reduced productivity in the Baltic subspecies in recent decades resulted from impaired fertility associated with pollutants. (3) Dramatic reductions in sea ice extent are projected by mid-century and beyond in the Baltic Sea, coupled with declining depth and insulating properties of snow cover on Baltic Sea ice. The Baltic Sea is bounded to the north by land, which will limit the ability of Baltic ringed seals to respond to deteriorating sea ice and snow conditions by shifting their range northward. (4) Although Baltic ringed seals have been reported resting on island shores or offshore reefs during the ice-free season, these sites provide inferior pupping and nursing habitat. (5) The Baltic ringed seal's pupping and nursing seasons are adapted to the phenology of ice and snow. The projected substantial reductions in sea ice extent and deteriorating snow conditions are expected to lead to decreased survival of pups and a substantial decline in the abundance of the Baltic subspecies. We conclude that the Baltic subspecies of the ringed seal is not in danger of extinction throughout all or a significant portion of its range, but is likely to become so within the foreseeable future. Therefore, we propose to list the Baltic subspecies of the ringed seal as threatened under the ESA.

*Ladoga subspecies:* (1) The population size of the ringed seal in Lake Ladoga is currently estimated at 3,000 to 5,000 seals. (2) Reduced ice and snow cover are expected in Lake Ladoga within this century based on regional projections. As ice and snow conditions deteriorate, the landlocked population of Ladoga ringed seals will be unable to respond by shifting its range. (3) Although Ladoga ringed seals have been reported resting on rocks and island shores during the ice-free season, these sites provide inferior pupping and nursing habitat. (4) The Ladoga ringed seal's pupping and nursing seasons are adapted to the phenology of ice and snow. Reductions in ice and snow are expected to lead to decreased survival of pups and a substantial decline in the abundance of this subspecies. We conclude that the Ladoga subspecies of the ringed seal is not in danger of extinction throughout all or a significant portion of its range, but is likely to become so within the foreseeable future. Therefore, we propose to list the Ladoga subspecies of the ringed seal as threatened under the ESA.

*Saimaa subspecies:* (1) The Saimaa ringed seal population currently numbers less than 300 animals, and has been significantly reduced from historical numbers. (2) Although the population has slowly grown under active management, it currently exists at levels where it is at risk of extinction from demographic stochasticity and small population effects. (3) Reduced ice and snow cover are expected in Lake Saimaa within this century. As ice and snow conditions deteriorate, the landlocked population of Saimaa ringed seal will be unable to respond by shifting its range. (4) Although Saimaa ringed seals have been reported resting on rocks and island shores during the ice-free season, these sites provide inferior pupping and nursing habitat. (5) The Saimaa ringed seal's pupping and nursing seasons are adapted to the phenology of ice and snow. Reductions in ice and snow cover are expected to lead to decreased survival of pups and a substantial decline in the abundance of this subspecies. (6) Ongoing mortality incidental to fishing activities is also a significant conservation concern. We conclude that the Saimaa subspecies of the ringed seal is in danger of extinction throughout its range, consistent with its current listing as endangered under the ESA.

**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 each of the ringed seal subspecies 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 Arctic, Okhotsk, Baltic, and Ladoga subspecies of ringed 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 Arctic ringed 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 ringed 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*

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.

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 ringed seal status review report (Kelly *et al.*, 2010) that supports this proposal to list the Arctic, Okhotsk, Baltic, and Ladoga subspecies of the ringed seal 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, Baltic, and Ladoga ringed seal occur outside 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 these subspecies; 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 Arctic ringed seal include: (1) Unauthorized harvest or lethal takes of Arctic ringed seals; (2) in-water activities that produce high levels of underwater noise, which may harass or injure Arctic ringed seals; and (3) discharging or dumping toxic chemicals or other pollutants into areas used by Arctic ringed 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 Arctic ringed seals 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 Arctic ringed seals.

## Critical Habitat

Section 3 of the ESA (16 U.S.C. 1532(3)) 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."

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 Arctic ringed seal's critical habitat is not determinable. We will propose critical habitat for the Arctic ringed 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 the Arctic ringed seal's 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 Arctic ringed seal that could be impacted by critical habitat designation. Although the range of the Arctic ringed seal is circumpolar, 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.

**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 Arctic, Okhotsk, Baltic, and Ladoga ringed seals. 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 ringed seals;

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

(3) Information on the effectiveness of ongoing and planned ringed 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 Arctic ringed 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 Arctic ringed seal and which may require special management considerations or protection; and

(6) Economic, national security, and other relevant impacts from the designation of critical habitat for the Arctic ringed 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 these subspecies 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 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)(4), (a)(5), (a)(6), and (a)(7) 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) * * * | | | | |
| (4) Ringed seal, Arctic subspecies. | *Phoca hispida hispida.* | The Arctic subspecies of ringed seal includes all breeding populations of ringed 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. |
| (5) Ringed seal, Baltic subspecies. | *Phoca hispida botnica.* | The Baltic subspecies of ringed seal includes all breeding populations of ringed seals within the Baltic Sea. | [INSERT FR CITATION & DATE WHEN PUBLISHED AS A FINAL RULE]. | NA. |
| (6) Ringed seal, Ladoga subspecies. | *Phoca hispida ladogensis.* | The Ladoga subspecies of ringed seal includes all breeding populations of ringed seals within Lake Ladoga. | [INSERT FR CITATION & DATE WHEN PUBLISHED AS A FINAL RULE]. | NA. |
| (7) Ringed seal, Okhotsk subspecies. | *Phoca hispida ochotensis.* | The Okhotsk subspecies of ringed seal includes all breeding populations of ringed 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 FR4722, 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 § 223.212 to read as follows:

**§ 223.212 Arctic subspecies of ringed 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 Arctic subspecies of ringed seal listed in § 223.102(a)(4).

4. In Subpart B of part 223, add § 223.213 to read as follows:

**§ 223.213 Baltic subspecies of ringed 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 Baltic subspecies of ringed seal listed in § 223.102(a)(5).

5. In Subpart B of part 223, add § 223.214 to read as follows:

**§ 223.214 Ladoga subspecies of ringed 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 Ladoga subspecies of ringed seal listed in § 223.102(a)(6).

6. In Subpart B of part 223, add § 223.215 to read as follows:

**§ 223.215 Okhotsk subspecies of ringed 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 subspecies of ringed seal listed in § 223.102(a)(7).

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**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).

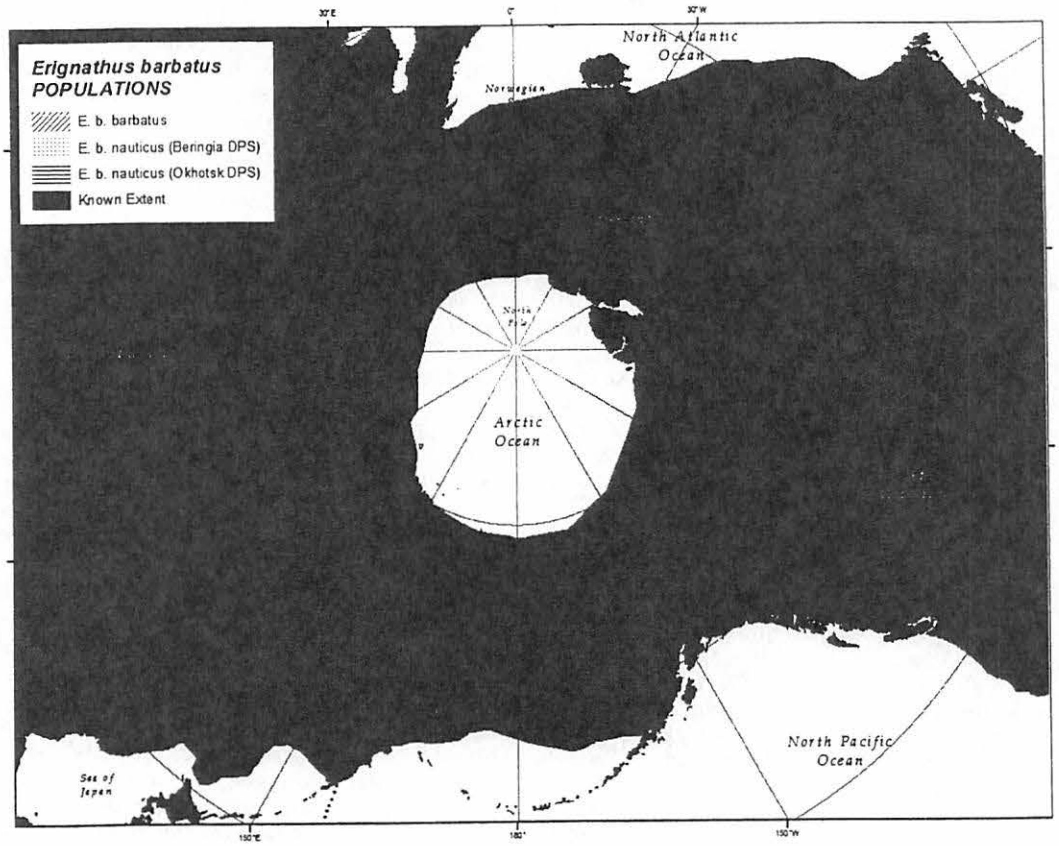


Figure 1. The global distribution of bearded seals as adapted by Cameron et al. (2010) from maps of known extent in Burns (1981) and Kovacs (2002). Two bearded seal subspecies are currently recognized: E. b. nauticus, which is sub-divided into the Beringia DPS and the Okhotsk DPS, and E. b. barbatus. 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]
BILLING CODE 3510–22–P

**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
7600 Sand Point Way N. E., Bldg. 1
Seattle, WA 98115



MEMORANDUM FOR: James W. Balsiger, Ph.D.
Administrator, Alaska Region

FROM: William W. Stelle, Jr.
Administrator, Northwest Region

SUBJECT: Reinititiation of Endangered Species Act (ESA) Section 7 Consultation on Incidental Catches of Chinook Salmon in the Gulf of Alaska (GOA) Groundfish Fisheries

We received your memorandum of November 17, 2010 requesting reinititation consultation for our biological opinion that considered the effects of the Gulf of Alaska (GOA) groundfish fisheries on Chinook salmon listed under the Endangered Species Act (ESA). We understand from your report that the amount of incidental take in the 2010 GOA fishery has exceeded the level of take specified in the incidental take statement of the January 11, 2007, supplement to the November 20, 2000 biological opinion. We also understand that the estimates of Chinook bycatch in 2010 are preliminary at this time, and that your estimates will be finalized by February 2011. We accept your request to reinitiate consultation, but propose to proceed with our review after you provide a subsequent report containing the final Chinook bycatch estimates for 2010 and other relevant information that may be developed in the meantime. We are aware that the North Pacific Fishery Management Council is considering salmon bycatch reduction measures in the GOA fisheries. It would also be useful for you to summarize any actions that have been taken or are under consideration to reduce bycatch in the fisheries as these may represent a change in the proposed action.

We appreciate your initiative on this matter and look forward to working with you.

# North Pacific Fishery Management Council

Eric A. Olson, Chairman
Chris Oliver, Executive Director

605 W. 4th Avenue, Suite 306
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Visit our website: http://www.alaskafisheries.noaa.gov/npfmc

December 23, 2010

Dr. James Balsiger
NMFS/NOAA
P.O. Box 21668
Juneau, AK 99802

Dear Dr. Balsiger:

As you know, at its December 2010 meeting, the North Pacific Fishery Management Council (Council) received a report from NMFS on the final Steller Sea Lion Biological Opinion (BiOp) and Reasonable and Prudent Alternative (RPA) which will be implemented in January 2011. We also discussed the schedule and process for implementation of an interim final rule, public comment period on that rule, subsequent publication of a final rule, and process for potential Council involvement in revising the proposed management measures. Based on those discussions, the Council would like to express its extreme disappointment with the lack of clarity in this process, and reiterate several overarching concerns with the current Biological Opinion.

A fundamental flaw with the current BiOp is the disconnect between the concerns it expresses over the adequacy of the prey field in the Aleutian Islands and the 2010 biomass surveys of the three key Steller sea lion prey species (walleye pollock, Pacific cod, and Atka mackerel). We are very concerned that the management measures in the final RPA are not consistent with the most recent biomass estimates, which indicate a level as desired in the BiOp itself, and that the 2010 Aleutian Islands biomass trawl surveys were not considered in the BiOp and RPA analysis. The survey was available before the final BiOp was signed. We are perplexed that NMFS did not appear to consider the 2010 survey in making its final decision, given the implications of that survey information relative to the management measures for Areas 542 and 543.

We are also concerned that the NEPA document (EA/RIR) that evaluates the effects of the action is fundamentally flawed. In Section 9.0, NMFS concludes that the final RPA is 'not controversial' because NMFS made changes to the August 2010 draft RPA in response to public comment. We find this conclusion to be inexplicable. The modifications to the final RPA do not satisfy the Council's concerns regarding the need and rationale for the final RPA, and do not make this action any less than highly controversial. We believe that there continues to be substantial dispute as to the size, nature, and effect of this major Federal action, which in a NEPA context, should define this action as 'controversial'.

We also discussed the possibility of an independent scientific review of the BiOp by the Center for Independent Experts (CIE), or other review panel. The Council reviewed the CIE Statement of Work and Terms of Reference in February 2010, and appreciated the opportunity to provide written comments to NMFS. The Council's comments incorporated comments from its SSC, and were intended to improve the CIE process by enhancing the scope and transparency of the review process. We are disappointed that we have not received a response from NMFS to our comments. At its December meeting the Council determined that it does not support a CIE review at this time, because the Terms of Reference have not been modified in response to Council comments and continue to remain unavailable to the Council. We believe that there is a very strong role for independent scientific review in this process, but the scope of the review needs to include all available science, not just the scientific information considered in the BiOp.

Finally, the Council has been frustrated by the unpredictable and undefined public process, which has provided the Council with little or no time to prepare, much less participate in the process, and has ultimately minimized the role of the Council. The agency has provided a 30-day comment period that begins on December 13th and extends over the holidays. This ill-timed and truncated comment period does not provide the public or Council with meaningful opportunity to provide substantial comments on the revised RPA. We ask that the agency extend the public comment period, for at least an additional 45 days (i.e. through February), and provide the Council with a clear indication that its recommendations, and comments received from the public, will be seriously considered. Our questions regarding the process and timing of transitioning from the interim final rule to a final rule remain unanswered. For example, it appears that involvement by the Council, and/or its Steller Sea Lion Mitigation Committee, and consideration of 'new' information, could impact the form of the final rule. However, it is not clear that such involvement would take the form of a Council action, versus simple comment on the interim final rule. It also appears that the very same 'new' information could as easily be considered by NMFS in determining the form of the final rule. We are reluctant to engage further in the process until the Council's role, and the process for interim final rule/final rule, are clarified. We welcome clarification of these questions, hopefully prior to our February 2011 Council meeting.

The Council does express its appreciation for the work conducted by NMFS to complete the final BiOp and EA/RIR. We believe that our requests for a more open and transparent process that fully involves the Council would result in a meaningful scientific review of the BiOp and improve the efficacy of the proposed mitigation measures. Please contact me or the Council's Executive Director, Chris Oliver, if you have any questions regarding these comments.

Sincerely,

Eric A. Olson
Chairman

cc: Secretary Gary Locke
Undersecretary Dr. Jane Lubchenco
Governor Sean Parnell
Governor Christine Gregoire
Commissioner Cora Campbell
Senator Lisa Murkowski
Senator Mark Begich
Congressman Don Young
Senator Patty Murray
Senator Maria Cantwell
Dr. Douglas DeMaster

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| Latitude | Longitude |
|---|---|
| 36°55.88′ N | 75°52.40′ W. |
| 36°55.88′ N | 75°54.95′ W. |

■ 16. Revise § 167.203 to read as follows:

**§ 167.203 In the approaches to Chesapeake Bay: Southern approach.**

(a) A separation line connects the following geographical positions:

| Latitude | Longitude |
|---|---|
| 36°50.33′ N | 75°46.29′ W. |
| 36°52.90′ N | 75°51.52′ W. |
| 36°55.96′ N | 75°54.97′ W. |

(b) A separation line connects the following geographical positions:

| Latitude | Longitude |
|---|---|
| 36°55.11′ N | 75°55.23′ W. |
| 36°52.35′ N | 75°52.12′ W. |
| 36°49.70′ N | 75°46.80′ W. |

(c) A separation line connects the following geographical positions:

| Latitude | Longitude |
|---|---|
| 36°49.52′ N | 75°46.94′ W. |
| 36°52.18′ N | 75°52.29′ W. |
| 36°54.97′ N | 75°55.43′ W. |

(d) A separation line connects the following geographical positions:

| Latitude | Longitude |
|---|---|
| 36°54.44′ N | 75°56.09′ W. |
| 36°51.59′ N | 75°52.92′ W. |
| 36°48.87′ N | 75°47.42′ W. |

(e) A traffic lane for inbound traffic is established between the separation lines described in paragraphs (a) and (b) of this section.

(f) A traffic lane for outbound traffic is established between the separation lines described in paragraphs (c) and (d) of this section.

(g) A deep-water route is established between the separation lines described in paragraphs (b) and (c) of this section. The following vessels should use the deep-water route established in paragraph (g) of this section when bound for Chesapeake Bay from sea or to sea from Chesapeake Bay:

(1) Deep draft vessels (drafts greater than 13.5 meters/45 feet in fresh water); and

(2) Naval aircraft carriers.

(h) It is recommended that a vessel using the deep-water route established in paragraph (g) of this section—

(1) Announce its intention on VHF-FM Channel 16 as it approaches Chesapeake Bay Southern Approach Lighted Whistle Buoy CB on the south end, or Chesapeake Bay Junction Lighted Buoy CBJ on the north end of the route;

(2) Avoid, as far as practicable, overtaking other vessels operating in the deep-water route; and

(3) Keep as near to the outer limit of the route which lies on the vessel's starboard side as is safe and practicable.

(i) Vessels other than those listed in paragraph (d) of this section should not use the deep-water route.

■ 17. Add § 167.250 to read as follows:

**§ 167.250 In the approaches to the Cape Fear River: General.**

The traffic separation scheme (TSS) in the approaches to the Cape Fear River consists of two parts: A precautionary area and a TSS. The specific areas in the approaches to Narragansett Bay, RI, and Buzzards Bay, MA, are described in §§ 167.251 and 167.252. The geographic coordinates in §§ 167.251 and 167.252 are defined using North American Datum 1983 (NAD 83), which is equivalent to WGS 1984 datum.

■ 18. Add § 167.251 to read as follows:

**§ 167.251 In the approaches to the Cape Fear River: Precautionary area.**

A precautionary area is established bounded by a line connecting the following geographical positions: from 33°47.65′ N, 78°04.78′ W; to 33°48.50′ N, 78°04.27′ W; to 33°49.53′ N, 78°03.10′ W; to 33°48.00′ N, 78°01.00′ W; to 33°41.00′ N, 78°01.00′ W; to 33°41.00′ N, 78°04.00′ W; to 33°44.28′ N, 78°03.02′ W; then by an arc of 2 nautical miles radius, centered at 33°46.03′ N, 78°05.41′ W; then to the point of origin at 33°47.65′ N, 78°04.78′ W.

■ 19. Add § 167.252 to read as follows:

**§ 167.252 In the approaches to the Cape Fear River: Traffic Separation Scheme.**

(a) A traffic separation zone is established bounded by a line connecting the following geographical positions:

| Latitude | Longitude |
|---|---|
| 33°44.94′ N | 78°04.81′ W. |
| 33°32.75′ N | 78°09.66′ W. |
| 33°34.50′ N | 78°14.70′ W. |
| 33°45.11′ N | 78°04.98′ W. |

(b) A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographic positions:

| Latitude | Longitude |
|---|---|
| 33°32.75′ N | 78°05.99′ W. |
| 33°44.38′ N | 78°03.77′ W. |

(c) A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographic positions:

| Latitude | Longitude |
|---|---|
| 33°36.22′ N | 78°18.00′ W. |
| 33°46.03′ N | 78°05.41′ W. |

Note to § 167.252: A pilot boarding area is located inside the precautionary area. Due to heavy ship traffic, mariners are advised not to anchor or linger in the precautionary area except to pick up or disembark a pilot.

Dated: December 7, 2010.

**P.F. Cook,**

*Captain, U.S. Coast Guard, Acting Director of Marine Transportation Systems Management.*

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**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**50 CFR Part 679**

**[Docket No. 101006495–0498–01]**

**RIN 0648–BA31**

## Fisheries of the Exclusive Economic Zone Off Alaska; Steller Sea Lion Protection Measures for the Bering Sea and Aleutian Islands Groundfish Fisheries Off Alaska

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

**ACTION:** Interim final rule; request for comments.

**SUMMARY:** NMFS issues an interim final rule to implement Steller sea lion protection measures to insure that the Bering Sea and Aleutian Islands management area (BSAI) groundfish fisheries off Alaska are not likely to jeopardize the continued existence of the western distinct population segment (DPS) of Steller sea lions or adversely modify its designated critical habitat. These management measures will disperse fishing effort over time and area to provide protection from potential competition for important Steller sea lion prey species in waters adjacent to rookeries and important haulouts in the BSAI. The intended effect of this interim final rule is to

protect the endangered western DPS of Steller sea lions, as required under the Endangered Species Act, and to conserve and manage the groundfish resources in the BSAI in accordance with the Magnuson-Stevens Fishery Conservation and Management Act.

**DATES:** Effective January 1, 2011. Comments must be received by January 12, 2011.

**ADDRESSES:** Send comment to Sue Salveson, Assistant Regional Administrator, Sustainable Fisheries Division, Alaska Region, NMFS, *Attn:* Ellen Sebastian. You may submit comments, identified by RIN 0648–BA31, by any one of the following methods:

- *Electronic Submissions:* Submit all electronic public comments via the Federal eRulemaking Portal at *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) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

NMFS 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.

Electronic copies of the Environmental Assessment/Regulatory Impact Review (EA/RIR) prepared for this action, the 2010 Biological Opinion on the Authorization of Groundfish Fisheries under the Fishery Management Plans for the Bering Sea and Aleutian Islands Management Area and the Gulf of Alaska, the 2008 Revised Recovery Plan for the Steller Sea Lion, the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area, and the 2006 Alaska Groundfish Fisheries Biological Assessment are available from NMFS Alaska Region, P.O. Box 21668, Juneau, AK 99802 or from the Alaska Region NMFS Web site at *http://alaskafisheries.noaa.gov.*

Written comments regarding the burden-hour estimates or other aspects of the collection-of-information requirements contained in this interim final rule may be submitted to NMFS and by e-mail to *OIRA_Submission@omb.eop.gov,* or fax to 202–395–7285.

**FOR FURTHER INFORMATION CONTACT:** Melanie Brown, 907–586–7228.

**SUPPLEMENTARY INFORMATION:** NMFS manages the groundfish fisheries in the exclusive economic zone off Alaska under the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI) and the Fishery Management Plan for Groundfish of the Gulf of Alaska (FMPs). The North Pacific Fishery Management Council (Council) prepared the FMPs under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), 16 U.S.C. 1801, *et seq.* Regulations governing U.S. fisheries and implementing the FMPs appear at 50 CFR parts 600 and 679. NMFS also has management responsibility for certain threatened and endangered species, including Steller sea lions, under the Endangered Species Act (ESA) of 1973, 16 U.S.C. 1531, *et seq.*, and the authority to promulgate regulations to enforce provisions of the ESA to protect such species. As the action agency, NMFS is responsible to insure that the Federal action of authorizing the Alaska groundfish fisheries is not likely to jeopardize the continued existence or modify or destroy designated critical habitat for ESA-listed species. The action implemented by this interim final rule is the result of an ESA section 7 formal consultation biological opinion, which requires the implementation of a reasonable and prudent alternative to the current Alaska groundfish fisheries management.

## Background

The Endangered Species Act of 1973 (ESA) requires Federal agencies to "insure that any action authorized, funded, or carried out by such agency * * * is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species which is determined * * * to be critical." 16 U.S.C. sec. 1536(a)(2). This provision further requires Federal agencies to consult with the Secretary of Commerce on Federal actions that might affect species under the Secretary's jurisdiction that are listed as endangered or threatened ("listed species"). The annual authorization of the Alaska groundfish fisheries under the Magnuson-Stevens Act is an "action authorized, funded, or carried out" by a Federal agency that could affect listed species under the jurisdiction of the Secretary of Commerce, and therefore requires consultation.

In October 2005, the Council recommended that NMFS reinitiate an FMP-level formal section 7 consultation on the effects of the Federal groundfish fisheries on ESA-listed species under U.S. Department of Commerce jurisdiction. This jurisdiction has been formally delegated to NMFS. On April 19, 2006, the Protected Resources Division of NMFS Alaska Region (PRD), as the consulting agency, received a written request from the NMFS Alaska Region Sustainable Fisheries Division (SFD), as the action agency, to re-initiate section 7 consultation on the Federal groundfish fisheries in waters 3 miles to 200 miles off Alaska, as well as several groundfish fisheries that are conducted in waters of the State of Alaska (collectively, the "Alaska groundfish fisheries"), to evaluate the effects of current Federal fisheries management on listed species because of information gained and management actions taken since previous consultations. That request was accompanied by a biological assessment that reviewed the likely effects of the Alaska groundfish fisheries on all twelve of the listed marine species found in waters off Alaska and under NMFS's jurisdiction (*see* **ADDRESSES**). In June 2006, PRD concluded that the information provided by SFD's biological assessment showed that the Steller sea lion (both the western and the eastern DPSs), the North Pacific humpback whale, and the North Pacific sperm whale were likely to be adversely affected by the Alaska groundfish fisheries. This determination required the initiation of formal section 7 consultation under the ESA on these species and Steller sea lion designated critical habitat, resulting in the issuance of a biological opinion. Subsequent to reinitiating consultation, a fin whale was taken incidentally in the BSAI pollock trawl fishery. Therefore, fin whales also were included in this consultation. Critical habitat is not designated for humpback, fin, and sperm whales.

Under the ESA and its implementing regulations, if the consulting agency (here, PRD) finds that the proposed action is likely to either jeopardize the continued existence of the species or result in the adverse modification of critical habitat, the consulting agency is required to identify a reasonable and prudent alternative (RPA), if any, that would not violate the ESA. While an action agency (here, SFD) has limited discretion to adopt different measures than those contained in the RPA, it does so at its peril and must still demonstrate why the alternative measures comply with the ESA's mandate to avoid the likelihood of jeopardizing the continued existence of the species or adversely modifying critical habitat.

As explained in detail below, NMFS issued a biological opinion (2010 BiOp, *see* **ADDRESSES**) that concluded that the proposed fishery management action was not likely to jeopardize the continued existence or adversely modify the critical habitat of North Pacific humpback whales, North Pacific sperm whales, fin whales, or the eastern distinct population segment of Steller sea lions, but was likely to jeopardize the continued existence and adversely modify the critical habitat of the western DPS of Steller sea lions.

Section 3.5.3 of the FMP for Groundfish of the BSAI, approved by the Secretary of Commerce under the Magnuson-Stevens Act, specifically authorizes implementation by regulation of special fishery management measures to protect marine mammals, without requiring amendment of the fishery management plan itself (*see* **ADDRESSES**). Therefore, NMFS has chosen to implement fishery management measures responding to the biological opinion issued under the ESA via regulations promulgated under the Magnuson-Stevens Act.

In order to provide as transparent a process as possible, on August 3, 2010, NMFS released a draft of the 2010 BiOp, including the RPA, as well as analyses of alternatives to the proposed action (*see* **ADDRESSES**). These analyses were a draft environmental assessment (EA) prepared pursuant to the National Environmental Policy Act (NEPA), reviewing the potential impact on the human environment of the proposed action and alternatives; and a Regulatory Impact Review (RIR) pursuant to Executive Order 12866, which analyzes the cost and benefits of the proposed action and alternatives. The draft 2010 BiOp and draft EA/RIR were presented to the Council at a special meeting in August 2010. The Council and the public were provided a comment period to submit suggested changes to the RPA. PRD reviewed the comments from the Council and the public and made revisions to the RPA consistent with principles and objectives in the draft biological opinion. The final 2010 BiOp was signed on November 24, 2010. Both the final 2010 BiOp and EA/RIR are available to the public (*see* **ADDRESSES**). This interim final rule adopts the RPA in the final 2010 BiOp. Therefore, NMFS takes this action under the Magnuson-Stevens Act to comply with its responsibilities under the ESA to insure that its action, *i.e.*, the authorization of the Alaska groundfish fisheries, is not likely to jeopardize the continued existence of the western DPS of Steller sea lions or result in the destruction or adverse modification of its designated critical habitat.

In this rulemaking, NMFS adopted the 2010 BiOp's RPA because it was modified based on public comment on the draft RPA to reduce impacts on the fisheries while insuring that the groundfish fisheries are not likely to jeopardize the continued existence of Steller sea lions or adversely modify their designated critical habitat. While NMFS considered public comments that would have allowed greater fishing opportunities, including the Council's proposed alternative, none of those measures as a whole would have met the performance standards of the RPA to insure the groundfish fisheries are not likely to jeopardize the continued existence of Steller sea lions or adversely modify their designated critical habitat.

Because the 2010 BiOp, including the RPA, was not signed until November 24, 2010, and the Alaska groundfish fisheries open on January 1, 2011, it is necessary for these regulations to be issued on an expedited basis, without the usual notice and opportunity for public comment before the regulations go into effect. *See* the Classification section of this rule for further information on waiver of prior notice and comment.

## Findings of the 2010 Biological Opinion

The jeopardy and adverse modification finding for the western DPS of Steller sea lions is based on the continued decline of Steller sea lions in the Aleutian Islands subarea and the potential effects of the harvest of Atka mackerel and Pacific cod in this subarea. Over the last eight years, the numbers of sea lions in the western most district of the Aleutian Islands subarea (Area 543) have declined by approximately 45 percent. Because of the current population decline in Area 543, as well as the slow population decline observed in the central and eastern districts of the Aleutian Islands subarea (Areas 542 and 541, respectively), the recovery of the western DPS of Steller sea lions is not meeting the criteria in the 2008 Recovery Plan (*see* **ADDRESSES**). If population trends in the Aleutian Islands subarea continue at current rates, Steller sea lions may be extirpated from this portion of their range.

Atka mackerel and Pacific cod are principal prey species of Steller sea lions. The harvest of these species may impact the foraging success of Steller sea lions. Atka mackerel and Pacific cod harvest have been managed in the Aleutian Islands under the temporal and spatial dispersion requirements implemented by the Steller sea lion protection measures. These protection measures were implemented in 2002 by emergency interim rule (67 FR 956, January 8, 2002; amended 67 FR 21600, May 1, 2002; corrected 67 FR 45671, July 10, 2002, 67 FR 47472, July 19, 2002, and 67 FR 64315, October 18, 2002; and extended 67 FR 34860, May 16, 2002) and by final rule in 2003 (68 FR 204, January 2, 2003; corrected 68 FR 24615, May 8, 2003). Detailed analysis of the environmental baseline; Steller sea lions population trends, foraging behavior, and biology; and effects of the groundfish fisheries on Steller sea lions is presented in the 2010 BiOp (*see* **ADDRESSES**).

### *Reasonable and Prudent Alternative*

Based on the continued population decline of Steller sea lions in portions of the Aleutian Islands subarea and the potential effects of groundfish harvests on Steller sea lions and their critical habitat, an RPA to the current management of the BSAI groundfish fisheries must be implemented to insure the Alaska groundfish fisheries are not likely to jeopardize the continued existence of the western DPS of Steller sea lions and adversely modify its designated critical habitat. These protection measures are necessary to comply with section 7(a)(2) of the ESA. Details on the specific protection measures in the RPA and their effects on Steller sea lions and their critical habitat are in chapter 8 of the 2010 BiOp (*see* **ADDRESSES**).

The RPA was structured to mitigate effects of the fishery in locations where Steller sea lion abundance continues to decline (Areas 543, 542, and 541) and where available information indicates that reproduction may be reduced to a level that cannot support population growth. The 2010 BiOp determined that the weight of evidence indicates that fisheries for Steller sea lion prey may be appreciably reducing the reproduction and thus numbers of Steller sea lions and adversely modifying the conservation value of their critical habitat in Areas 543, 542, and 541 by removing large quantities of prey species important to Steller sea lions for basic nutrition and reproductive capacity. Competition with fisheries for prey is likely one component of an intricate suite of natural and anthropogenic factors affecting Steller sea lion numbers and reproduction. While natural factors may be contributing, NMFS must insure that actions authorized by NMFS are not likely to appreciably reduce the likelihood of survival and recovery of the western DPS of Steller sea lions.

The RPA was developed based on performance standards that address the effects of the groundfish fisheries and the population status and foraging behavior of Steller sea lions in the Aleutian Islands subarea. The details of these standards are in the 2010 BiOp (*see* ADDRESSES). One of the performance standards requires that the protection measures be commensurate with the rate of Steller sea lion population declines, with more stringent measures in those locations with greater population declines. The RPA meets this standard by applying more fisheries restrictions in Area 543 where Steller sea lions have the highest population decline and applying fewer fisheries restrictions in Areas 542 and 541, where Steller sea lion population decline is less. The implementation of the RPA is expected to eliminate local competition between Steller sea lions and the Atka mackerel and Pacific cod fisheries in Area 543. This is intended to improve foraging success and prey availability for juvenile and adult Steller sea lions, which is expected to lead to higher survival and natality rates. The RPA also reduces the competitive overlap between Steller sea lions and fisheries for Atka mackerel and Pacific cod in Areas 542 and 541. This is intended to improve foraging success and prey availability for Steller sea lions, particularly adult females with dependent young in winter, which is expected to lead to higher natality rates and survival.

In addition to maintaining the status quo, NOAA considered three different alternatives for analysis under NEPA and under Executive Order 12866 to inform its decisions as to how best to manage the fishery in compliance with the ESA (*see* ADDRESSES for the EA/RIR). The status quo was rejected because it would not avoid jeopardy or adverse modification. One alternative was an alternative that complied with ESA's statutory mandates regarding jeopardy and adverse modification but had a greater impact on the fishing industry than the RPA. The second alternative was the draft RPA in the draft 2010 BiOp released for public review in August 2010. The second alternative was not implemented as NMFS reviewed the Council and public comments regarding the draft RPA and further refined the RPA to provide additional opportunity for fishing while meeting the RPA performance standards. The third and preferred alternative is the RPA from the final 2010 BiOp. While the RPA may result in substantial impacts on the fishing industry, NMFS determined that the RPA is the least costly alternative among the options that is likely to avoid jeopardy and adverse modification.

### *Protection Measures Requiring Regulatory Amendments*

The following are the revisions to the Steller sea lion protection measures implemented by this interim final rule.

#### Application of the Revised Protection Measures

The protection measures that are implemented by this rule, and which are further described below, apply to vessels that catch groundfish that is required to be deducted from the Federal total allowable catch (TAC) under § 679.20 and that are required to be named on a Federal Fisheries Permit issued under § 679.4(b) in the BSAI reporting areas, including the State of Alaska (State) waters within those reporting areas. Federally permitted vessels that participate in the State Pacific cod fishery authorized by 5 AAC 28.647, Aleutian Islands District Pacific Cod Management Plan (AI State-managed Pacific cod fishery) and that deduct this Pacific cod from the State Pacific cod guideline harvest level and not the Federal TAC, would not be subject to the Pacific cod retention and directed fishing restrictions specified in this interim final rule. The State has adopted the same Steller sea lion protection measures for the AI State-managed Pacific cod fishery as NMFS implemented for the Federal groundfish fisheries in 2003 (68 FR 204, January 2, 2003). The 2010 BiOp included the cumulative impact of the AI State-managed Pacific cod fishery. Based on the findings in the 2010 BiOp, which considered the combination of effects of the AI State-managed Pacific cod fishery and the Federal groundfish fisheries, NMFS has determined that the modifications made by this interim final rule are sufficient to insure that NMFS's authorization of Federal fisheries is not likely to jeopardize the continued existence of the western DPS of Steller sea lions or destroy or adversely modify its designated critical habitat.

#### Area 543 Atka Mackerel and Pacific Cod Fishing Prohibitions

The RPA requires a protection measure prohibiting the retention of Pacific cod and Atka mackerel in Area 543. Because Area 543 has experienced the most severe decline in Steller sea lion abundance and because Atka mackerel and Pacific cod are important prey items, it is necessary to reduce fishery removals of these prey species. Pacific cod and Atka mackerel may not be targeted or retained when incidentally caught in other groundfish fisheries. If only a directed fishing closure were used to limit Atka mackerel and Pacific cod harvest, these species could be retained up to the maximum retainable amount (MRA) of the basis species specified in Table 11 to 50 CFR part 679. For example, if retention were not prohibited, a vessel targeting Pacific ocean perch could retain Atka mackerel and Pacific cod in amounts up to 20 percent of the amount of Pacific ocean perch retained.

As described in the 2010 BiOp, NMFS model results indicate that allowing fishing to occur, even at substantially reduced levels, would inhibit a significant increase in biomass of Atka mackerel and Pacific cod. NMFS believes a significant increase in biomass of Atka mackerel and Pacific cod will contribute to both the continued survival and recovery of Steller sea lions in Area 543. The biomass of these prey species is expected to increase if all retention of Atka mackerel and Pacific cod is prohibited. Given the potential for Atka mackerel and Pacific cod fisheries to compete with Steller sea lions in a manner that limits their reproduction or survival, as evidenced in population responses observed to date in Area 543, NMFS has determined that it must eliminate this potential competition to comply with the ESA.

#### Atka Mackerel Harvest Limit Area (HLA) Fishery

Under the 2003 Steller sea lion protection measures, the harvest of Atka mackerel inside Steller sea lion critical habitat in Area 543 and the western portion of Area 542 was dispersed by controlling the number of vessels that could harvest Atka mackerel inside the HLA. The HLA included designated critical habitat and waters 0 nm to 20 nm around other locations identified as important to Steller sea lions (Steller sea lion sites). A lottery system assigned vessels to platoons that were allowed to fish inside the HLA in specific locations and at specific times. The details of the HLA fishery are in the 2003 final rule for the Steller sea lion protection measures (68 FR 204, January 2, 2003). Because the RPA would prohibit all retention of Atka mackerel in Area 543 and nearly all directed fishing for Atka mackerel in waters 0 nm to 20 nm around Steller sea lion sites in Area 542, the platoon management of Atka mackerel harvest inside the HLA is no longer needed.

**Kanaga Island/Ship Rock Groundfish Closure**

Recent Steller sea lion count information indicates that this site is now functioning as a rookery. The rookeries listed in Table 12 to 50 CFR part 679 are surrounded by groundfish fishery closures that extend 0 nm to 3 nm from the site. The RPA requires the Kanaga Island/Ship Rock rookery to be treated the same as other rookeries. Therefore, this action includes a protection measure to close directed fishing for groundfish in waters 0 nm to 3 nm of this site. This closure is necessary to protect animals using this location from potential disturbance by fishing vessels and to protect near shore prey resources. Very little groundfish catch has historically occurred in waters 0 nm to 3 nm from this site. According to the 2010 BiOp, this site is important to the population of the western DPS of Steller sea lions because it is one of the few locations in the Aleutian Islands where Steller sea lion reproduction is occurring.

**Pacific Cod Nontrawl Fisheries Winter Closure in Areas 542 and 541**

The RPA includes a closure of the Pacific cod hook-and-line, pot, and jig gear (nontrawl) fisheries in Areas 542 and 541 from November 1, 1200 hours, Alaska local time (A.l.t.), to December 31, 2400 hours, A.l.t. This closure of nontrawl fisheries is consistent with the trawl fishery closure during this time period. This closure allows for two months in the winter when Steller sea lions would not compete with vessels for Pacific cod prey. This closure is necessary to prevent expansion of fishing into time periods not previously fished as other time periods and areas historically fished are restricted under these protection measures. This measure is intended to protect prey availability in the winter when Steller sea lion energetic needs are high and when Pacific cod compose a larger proportion of their diet relative to the summer.

**Pacific Cod Nontrawl Fisheries Closures in Area 542**

The RPA includes two revisions to Area 542 protection measures for the nontrawl Pacific cod fisheries. The first revision closes waters 0 nm to 6 nm of Steller sea lion sites in Area 542 to nontrawl vessels directed fishing for Pacific cod year round. Telemetry data show the relative importance of different portions of critical habitat for foraging Steller sea lions. Steller sea lion at-sea locations from satellite-tagged animals summarized by 2 nm areas show high use by adult female Steller sea lions of waters from 0 nm to 6 nm, especially in summer, and higher use in this area by juveniles relative to other areas within critical habitat in both summer and winter.

Because of the need for extensive shallow-water locations and the relatively narrow continental shelf throughout the Aleutian Islands subarea, hook-and-line gear vessels generally fish for Pacific cod in the Aleutian Islands within 10 nm of Steller sea lion sites (EA/RIR, *see* ADDRESSES). The closure of waters from 0 nm to 6 nm provides protection to Steller sea lions while providing opportunity for fishing by the hook-and-line vessels. Prohibiting pot and jig gear vessels in this closed area allows for consistent management of all nontrawl gear types and further reduces potential competition for Pacific cod prey in critical habitat.

The second revision prohibits vessels 60 feet (18.3 m) or greater in length overall (LOA) using nontrawl gear from directed fishing for Pacific cod in waters 6 nm to 20 nm from Steller sea lion sites in Area 542 from January 1, 0001 hours, to March 1, 1200 hours, A.l.t. This revision does not apply to nontrawl vessels less than 60 feet (18.3 m) LOA because these vessels account for approximately two percent of historic Pacific cod Area 542 catch, a small proportion of the overall Pacific cod catch. NMFS determined that this small amount of catch would not be detrimental to the western DPS of Steller sea lions. This revised protection measure benefits Steller sea lion prey resources in the winter, an important time to protect prey resources, and provides the fishing industry with access to higher value fish in the later portion of the A season (March 1 to June 10).

**Pacific Cod Trawl Vessel Closures in Area 542**

The RPA includes revised protection measures for the trawl gear Pacific cod fisheries in Area 542. This interim final rule closes waters 0 nm to 20 nm from Steller sea lion sites to directed fishing for Pacific cod with trawl gear year round in most of Area 542. However, for Steller sea lion sites between 178° W longitude and 177° W longitude, this rule applies the year round closure only to waters from 0 nm to 10 nm. Waters that are 10 nm to 20 nm from Steller sea lion sites and that occur in this one degree longitude area are closed to directed fishing for Pacific cod with trawl gear in the B season (June 10, 1200 hours, A.l.t., to November 1, 1200 hours, A.l.t.), but are open during the A season.

The trawl fishery in Area 542 typically occurs in the A season when Pacific cod are aggregated, which coincides with the time of year in which Steller sea lion energetic needs are high. The 10 nm to 20 nm zone of critical habitat would be closed to trawl gear in the B season to prevent the trawl fishery from expanding into a season they have not traditionally fished in Area 542. Therefore, a year-round closure of 0 nm to 20 nm to trawl gear in most of Area 542 (177° E longitude to 178° W longitude) is intended to conserve the value of critical habitat and prevent an intensification of harvest, especially in the 10 nm to 20 nm zone of critical habitat.

**Atka Mackerel Closures in Area 542**

The RPA includes a closure to directed fishing for Atka mackerel in most of the critical habitat in Area 542. This interim final rule prohibits directed fishing for Atka mackerel in waters 0 nm to 20 nm from Steller sea lion sites in Area 542 located between 177° E longitude and 179° W longitude and between 178° W longitude and 177° W longitude. Directed fishing for Atka mackerel is prohibited in waters 0 nm to 10 nm from Steller sea lion sites located between 178° W longitude and 179° W longitude. These closures would provide protection to most of the critical habitat in Area 542, which is currently open to directed fishing for Atka mackerel, from the potential effects of Atka mackerel fishing while allowing a limited Atka mackerel fishery in a portion of critical habitat where the Steller sea lion population trends show less decline. NMFS determined that providing some fishing opportunities in the one degree longitude area within the 10 nm to 20 nm zone of critical habitat reduces the potential for impacting Atka mackerel occurring on Petrel Bank, the primary remaining productive Atka mackerel fishing grounds outside of critical habitat in Area 542.

**Atka Mackerel Area 542 Critical Habitat Harvest Restrictions**

The RPA includes a limitation on the participation in, and the amount and seasonal apportionment of, the Atka mackerel fishery in critical habitat in Area 542. This interim final rule limits the directed fishery for Atka mackerel in critical habitat between 178° W longitude and 179° W longitude to participants in the Western Alaska Community Development Quota (CDQ) Program or to vessels fishing under the authority of an Amendment 80 cooperative quota permit (72 FR 52668, September 14, 2007, corrected 73 FR 27768, May 14, 2008). The interim final rule also limits the amount of Atka mackerel catch from critical habitat to 10 percent of an Amendment 80 cooperative's Area 542 Atka mackerel allocation, and to 10 percent of a CDQ group's Area 542 Atka mackerel allocation. This 10 percent limit is seasonally apportioned evenly between the A and B seasons.

Limiting access to 10 nm to 20 nm of critical habitat only to operations with a specific allocation, *i.e.*, operations fishing in harvest cooperatives or operations fishing CDQ, prevents a race for Atka mackerel in the open area of critical habitat and insures that allowable harvests in critical habitat is not exceeded. Vessels fishing under a CDQ allocation or an Amendment 80 cooperative allocation are constrained by their allocations and do not have an incentive to engage in a competitive "race for fish" with other participants. Vessels not participating in the CDQ Program or an Amendment 80 cooperative are not held individually accountable to a specific allocation and could have an incentive to "race for fish" in a manner that could cause a catch limit to be exceeded. In 2011, two Amendment 80 cooperatives will be formed. Each Amendment 80 cooperative may catch up to 10 percent of its Area 542 Atka mackerel allocation between 178° W longitude and 179° W longitude. Similarly, each CDQ group receiving an Area 542 allocation may catch up to 10 percent of its Area 542 Atka mackerel allocation within this specified area. Catch is temporally dispersed under either of these allocative programs.

The 10 percent harvest limit prevents catch that may exceed historical amounts taken from this area of critical habitat (2010 BiOp, *see* ADDRESSES). This 10 percent harvest limit also prevents excessive concentration of Atka mackerel catch inside critical habitat but provides the industry some opportunity to catch Atka mackerel in a location in Area 542 other than the Petrel Banks, where Atka mackerel fishing effort is likely to shift with the implementation of closures under this interim final rule. The seasonal apportionment of the critical habitat catch provides temporal dispersion of catch in critical habitat, reducing potential impacts on Steller sea lion prey availability.

**Atka Mackerel Area 542 TAC Limit**

The RPA includes a limit of the total catch of Atka mackerel to the historical amount caught in this area, but that is outside of critical habitat. Based on historical harvests, this interim final rule limits the Area 542 Atka mackerel TAC to no more than 47 percent of the Area 542 acceptable biological catch (ABC). The average annual Atka mackerel catch outside of critical habitat from 2003 through 2009 was 47 percent of the total catch in Area 542 (the lowest and the highest years were eliminated in the calculation). Setting the TAC at 47 percent of the ABC preserves historical access to Atka mackerel amounts that had been taken outside of critical habitat while preventing an increase of that amount of catch that could occur if the harvest displaced from the 10 nm to 20 nm zone of critical habitat west of 178° W longitude was allowed to be taken in the open area of Area 542. This limitation on Atka mackerel catch is less stringent than that which is imposed in Area 543 based on the determination by NMFS that measures should be commensurate with the population trends of Steller sea lions in particular areas.

**Pacific Cod Nontrawl Vessel Closures in Area 541**

The RPA includes a closure to nontrawl directed fishing for Pacific cod in Area 541. This interim final rule closes waters 0 nm to 20 nm from Steller sea lion sites to directed fishing for Pacific cod with nontrawl gear from January 1, 0001 hours, A.l.t., to March 1, 1200 hours, A.l.t., for all Federally permitted vessels in Area 541. After March 1, 1200 hours, A.l.t., nontrawl vessels are prohibited from directed fishing for Pacific cod in waters 0 nm to 10 nm from Steller sea lion sites in Area 541. These closures provide protection to Steller sea lion prey in critical habitat, particularly in the winter, while providing fishing opportunity inside critical habitat in the later portion of the A season and in the B season. This closure provides access to the limited amount of area in Area 541 that can be effectively fished with hook-and-line gear for Pacific cod while preventing fishing in marine critical habitat that is used more frequently by foraging Steller sea lions, based on telemetry data (2010 BiOp, *see* ADDRESSES). Prohibiting pot and jig gear vessels in this closed area allows for consistent management of these gear types with hook-and-line gear vessels and avoids incentives to use alternative fishing gear to circumvent Steller sea lion protection measures.

**Pacific Cod Trawl Vessel Closures in Area 541**

The RPA includes a closure of portions of critical habitat to directed fishing by Federally permitted vessels for Pacific cod with trawl gear. This interim final rule prohibits directed fishing for Pacific cod with trawl gear in waters 0 nm to 10 nm from Steller sea lion sites in Area 541 year round. The interim final rule also prohibits directed fishing for Pacific cod with trawl gear within 10 nm to 20 nm from Steller sea lion sites in Area 541 from June 10, 1200 hours, A.l.t., to November 1, 1200 hours, A.l.t. These closures protect most of the critical habitat in Area 541 from the potential effects of Pacific cod trawl harvest on Steller sea lion prey availability. Because Steller sea lion population trends are better in Area 541 than Areas 542 and 543, more critical habitat is made available for the Pacific cod fishery in Area 541 compared to Areas 542 and 543. This is consistent with the 2010 BiOp performance standard that protection measures be commensurate with the rate of Steller sea lion population decline.

**Atka Mackerel Closure in the Bering Sea Subarea**

The RPA includes a closure of the Bering Sea subarea to directed fishing for Atka mackerel. This interim final rule closes the Bering Sea subarea to directed fishing for Atka mackerel to allow for a limited harvest of Atka mackerel in areas of commercial abundance consistent with the MRAs established for Atka mackerel relative to other retained groundfish species open to directed fishing (Table 11 to 50 CFR part 679). These areas of commercial abundance generally occur in critical habitat areas of the Bering Sea subarea, where Atka mackerel has been historically caught up to the MRAs. Under the regulations implementing MRA provisions, codified at § 679.20 (e) and (f), closure of the Bering Sea subarea to directed fishing for Atka mackerel is necessary to allow for continued harvest of Atka mackerel in a manner similar to historical practices. Because Steller sea lion population trends are not a concern in the Bering Sea subarea, the continued location, amounts, and methods of harvest of Bering Sea Atka mackerel is not likely to result in population level effects on Steller sea lions.

**Atka Mackerel Seasons in Areas 542 and 541 and in the Bering Sea Subarea**

The RPA includes an extension of the Atka mackerel A and B seasons. This interim final rule extends the A and B seasons by ending the A season and starting the B season on June 10, 1200 hours, A.l.t. This season revision applies to the Bering Sea subarea because the Atka mackerel TAC is established for the combined harvest in

Area 541 and the Bering Sea subarea. Seasonal harvests also apply to the CDQ program so that all harvests of Atka mackerel in the BSAI are temporally dispersed.

The increased season lengths provide for Atka mackerel fishing in the summer, a time period for which data show that Steller sea lions have less dependence on Atka mackerel. Extending the Area 542 and Area 541/Bering Sea Atka mackerel seasons insure Atka mackerel harvest inside and outside critical habitat is temporally dispersed, reducing potential effects on Steller sea lion prey availability and providing additional time for fishing for the Atka mackerel vessels.

**Protection Measures Not Requiring Regulatory Amendments**

The RPA also contains three measures that do not require changes to regulations at 50 CFR part 679. These measures address management of the Atka mackerel catch in Area 543 and the amounts of Pacific cod harvests that, if exceeded, would require reinitiation of ESA formal consultation. These measures are listed below and further explained in the 2010 BiOp (*see* ADDRESSES).

1. NMFS must establish a TAC for Atka mackerel in Area 543 sufficient to support the incidental discarded catch that may occur in other targeted groundfish fisheries.

This measure is necessary to provide for the discarded incidental catch of Atka mackerel that may occur in other groundfish fisheries in Area 543. The Area 543 Atka mackerel TAC is established in the annual harvest specification as required by § 679.20. Because retention of Atka mackerel will be prohibited in Area 543, the Atka mackerel TAC should not be set higher than what is needed to support the discarded incidental catch.

2. For Pacific cod in Area 542, NMFS must reinitiate ESA consultation if the nontrawl gear harvest exceeds 1.5 percent of the BSAI Pacific cod ABC or if the trawl harvest exceeds two percent of the BSAI Pacific cod ABC. These percentages are equivalent to the Area 542 maximum annual trawl and nontrawl gear harvest amounts from 2007 through 2009.

3. For Pacific cod in Area 541, NMFS must reinitiate ESA consultation if the nontrawl gear harvest exceeds 1.5 percent of the BSAI Pacific cod ABC or if the trawl harvest exceeds 11.25 percent of the BSAI Pacific cod ABC. These percentages are equivalent to the Area 541 maximum annual trawl and nontrawl harvest amounts from 2007 through 2009.

The RPA allows Pacific cod fishery removals in Area 542 and 541 that do not exceed recent historical amounts. With the closure of Area 543 to Pacific cod fishing, Pacific cod harvests in Areas 542 and 541 may increase as vessels shift into areas open to Pacific cod directed fishing. If the amount of Pacific cod fishing increases beyond historical amounts in Areas 542 and 541, NMFS will need to consider the potential effects of this increased harvest on Steller sea lions and determine if any additional protection measures are needed to protect the western DPS of Steller sea lions and its designated critical habitat.

**Regulatory Amendments**

*Definitions*

Two definitions for the HLA Atka mackerel fisheries are removed from § 679.2. Neither of these definitions is needed with the elimination of the HLA and platooning method of managing Atka mackerel harvest in Areas 543 and 542.

*Permits*

Section 679.4(b)(5) is revised to remove references to the HLA Atka mackerel fishery. Permit applicants will no longer need to indicate participation in the HLA fishery as this type of harvest management is eliminated by this interim final rule.

*Prohibitions*

Section 679.7(a) is revised to remove references to the HLA fishery and to add prohibitions for the Atka mackerel and Pacific cod fisheries. Paragraph (a)(19) is revised to remove reference to the HLA fishery and to add the retention prohibition for Atka mackerel and Pacific cod in Area 543. Paragraph (a)(23) is added to prohibit directed fishing for Pacific cod with hook-and-line, pot, and jig gear in Areas 542 and 541 from November 1, 1200 hours, A.l.t., through December 31, 2400 hours, A.l.t. Paragraphs (a)(19) and (a)(23) are specific to vessels harvesting Pacific cod that is required to be deducted from the Federal TAC and that are required to be Federally permitted.

Paragraph (a)(24) is added to prohibit directed fishing for Atka mackerel in the Bering Sea subarea with a vessel required to be Federally permitted. Paragraph (a)(25) is added to prohibit directed fishing for Atka mackerel inside of critical habitat of Gramp Rock and Tag Island unless the participant is fishing under an Amendment 80 cooperative quota permit or under authority of a CDQ allocation. Paragraph (d)(10) is added to require CDQ Atka mackerel fishing to be seasonally apportioned in the same manner as non-CDQ fishing.

*General Limitations*

Section 679.20 is revised to remove provisions for the HLA Atka mackerel fishery under paragraph (a)(8)(iii) and to change provisions for Atka mackerel harvest in the BSAI. Paragraph (a)(8)(ii)(A) is revised to remove the exception for CDQ reserves in establishing seasonal allowances. This will insure CDQ Atka mackerel fishing is seasonally apportioned in the same manner as non-CDQ fishing. Paragraph (a)(8)(ii)(C) is revised to remove the HLA provisions and to add three subparagraphs to describe the harvest limitations for Atka mackerel in Area 542. These limitations are the 10 percent CDQ or Amendment 80 cooperatives Atka mackerel allocation inside critical habitat at Gramp Rock and Tag Island, the seasonal apportionment of the critical habitat harvest, and the setting of TAC at no more than 47 percent of Area 542 ABC. Paragraph (c)(6) also is revised to remove reference to the HLA fishery for purposes of the harvest specifications.

*Closures*

Section 679.22 is revised to describe the Pacific cod and Atka mackerel closures implemented by this rule and to remove references to the HLA Atka mackerel fishery. Paragraph (a)(8)(vi) is revised to remove reference to Table 6 and to establish the closure to directed fishing for Atka mackerel in the entire Bering Sea subarea. Reference to Table 6 for Atka mackerel closures is no longer necessary as the entire Bering Sea subarea is closed to directed fishing by this rule.

The Pacific cod directed fishing restriction during the HLA Atka mackerel fishery under paragraph (a)(8)(iv)(A) is removed because of the elimination of the HLA fishery. Paragraph (a)(8)(iv) is modified to include jig gear and to specify that the closures apply to vessels required to be Federally permitted and that harvest Pacific cod that is deducted from the Federal TAC. This revision is necessary to insure the closure areas apply to all Pacific cod gear types and the vessels to which the closures apply are clearly described.

Paragraph (b)(6) is removed from the regulations as this provision for the Chiniak Gully Research Area has expired.

*Seasons*

Section 679.23 is revised to change the BSAI Atka mackerel seasons and to insure these seasons apply to the CDQ Atka mackerel fishery. Paragraph (e)(3) is revised to remove reference to non-CDQ fisheries for the Atka mackerel seasons and to extend the A and B seasons as described in the RPA. Paragraph (e)(4) is revised to insure the CDQ Atka mackerel fishery is seasonally apportioned. Paragraphs (e)(4)(iv) and (e)(4)(v) are removed from the regulations as these provisions have expired. These revisions are necessary to insure the Atka mackerel seasons apply to CDQ fishing and to implement these seasons as described in the RPA.

*Observer Program*

Section 679.50(c)(1)(x) is removed because it applied to observer coverage requirements for the HLA Atka mackerel fishery. The HLA fishery is eliminated by this interim final rule so this paragraph is no longer needed.

*Tables*

Tables 5, 6, and 12 to 50 CFR part 679 are revised by this interim final rule. Because this interim final rule prohibits retention of Atka mackerel and Pacific cod in Area 543, the Steller sea lion sites located in Area 543 are removed from Tables 5 and 6. This revision is needed to clarify the application of closure areas around Steller sea lions sites in the Aleutian Islands subarea.

In Table 5 to 50 CFR part 679, columns 7, 8, and 9 and the footnotes are revised to reflect the closures for Pacific cod by gear type in the Aleutian Islands subarea and elimination of the HLA Atka mackerel fishery implemented by this interim final rule. Footnote 11 is removed to eliminate HLA fishery restrictions for the Pacific cod trawl fishery. Footnote 14 is added to describe the closures for Gramp Rock and Tanaga Island/Bumpy Point, which differ west and east of 178°0′ 00″ W longitude. This footnote also describes the area closures for the footnoted sites during two time periods of the year. Footnote 15 describes the vessel size specific closures for the Pacific cod hook-and-line, jig, and pot vessels in Area 542. Even though jig is not identified in the gear columns of the Table 5, the same restrictions apply to jig vessels, which are separately described in footnote 15. Footnote 16 describes the Pacific cod pot, hook-and-line, and jig closures in Area 541, and jig restrictions are also separately referred to in the footnote. Footnote 17 is added to clarify the closure areas around Kiska Island sites that may overlap into Area 543. These revisions are necessary to insure the closures as described by the RPA are implemented.

Table 6 to 50 CFR part 679 is revised to remove Steller sea lion sites that occur in the Area 543 and in the Bering Sea subarea, to remove reference to the HLA Atka mackerel fishery, and to describe the closures implemented by this interim final rule. The Steller sea lion sites for the Area 543 and for the Bering Sea subarea no longer have closures specific to each site because this interim final rule closes the entire Area 543 to Atka mackerel retention and closes the entire Bering Sea subarea to directed fishing for Atka mackerel. For this reason, these sites are removed from Table 6. Column 7 of Table 6 is revised to show the closures in Area 542. These closures are designed to allow limited fishing inside critical habitat, as provided by the RPA. Footnotes 2 and 3 are revised and Footnote 6 is removed to remove reference to the Bering Sea subarea because directed fishing for Atka mackerel is closed in the entire subarea. Footnote 7 is renumbered to Footnote 4 and revised to describe the closure around Tanaga Island/Bumpy Point implemented by this interim final rule. A new Footnote 6 is added to describe the closure around Gramp Rock implemented by this interim final rule. A new Footnote 7 is added to describe the closures around Amatignak Island, Nitrof Point, Unalga & Dinkum Rocks, Ulak Island/Hasgox Point, and Kavalga Island implemented by this interim final rule. These revisions are necessary to insure that the protection measures described by the RPA are implemented.

Table 12 to 50 CFR part 679 is revised to be consistent with the regulations at 50 CFR 223.202(a)(2) and (a)(3) and to add the Kanaga Island/Ship Rock rookery. Section 223.202(a)(2) and (a)(3) specify the 3-nm no-transit areas around rookeries in the Aleutian Islands subarea and Gulf of Alaska. The Walrus Island rookery has the wrong designation for no-transit areas in column 7 of Table 12 to 50 CFR part 679. Walrus Island is located in the Bering Sea subarea and does not have a 3-nm no-transit area, and this interim final rule corrects this error in Table 12 to 50 CFR part 679. This interim final rule also adds Kanaga Island/Ship Rock rookery to Table 12, applying a 3-nm no groundfish fishing area around this site. Kanaga Island/Ship Rock is not included in the § 223.202(a)(2) and (a)(3) regulations and does not have a 3-nm no-transit area. Column 7 of Table 12 to 50 CFR part 679 is revised for each of these sites to indicate the presence or absence of the 3-nm no-transit areas.

**Classification**

The Administrator, Alaska Region, NMFS, determined that this interim final rule is necessary for the conservation and management of the BSAI groundfish fishery and that it is consistent with the Magnuson-Stevens Act and other applicable laws. Also, this action is directly responding to a reasonable and prudent alternative recommended in a biological opinion, and fulfills NMFS's responsibility under the ESA.

This interim final rule has been determined to be significant for purposes of Executive Order 12866.

Formal section 7 consultation under the ESA was completed for this interim final rule under the FMPs for the groundfish fisheries of the BSAI and the GOA. In the 2010 BiOp, the NMFS Alaska Region Administrator determined that as currently managed, NMFS could not insure that the Alaska groundfish fisheries are not likely to jeopardize the continued existence of the western DPS of Steller sea lions or adversely modify its designated critical habitat. This interim final rule, developed in response to that finding and based on the RPA in the 2010 BiOp, has been determined by NMFS to insure that the Alaska groundfish fisheries are not likely to jeopardize the continued existence of the western DPS of Steller sea lions or adversely modify its designated critical habitat.

Pursuant to 5 U.S.C. 553(b)(B), there is good cause to waive prior notice and an opportunity for public comment on this action, as notice and comment would be impracticable and contrary to the public interest. NMFS provided a 30-day public review and comment period on the draft 2010 BiOp and on the draft EA/RIR supporting this action. NMFS reviewed and addressed all comments received before completion of the 2010 BiOp and adjusted the proposed RPA in response to public comment. The 2010 BiOp, with the final RPA, was signed November 24, 2010. Because of the timing of the start of the fisheries, which begins on January 1, 2011, in relation to the completion of the 2010 BiOp, it is impracticable to complete rulemaking before the start of the fisheries with a public review and comment period. This interim final rule implements the final RPA based on consideration of public comments on the draft RPA. NMFS must insure the prosecution of a fishery is compliant with the ESA, which would not be possible if additional time was used to provide for a public review and comment period and agency processing of additional public comments on this action, as the fishery commences on January 1. These protection measures are necessary to prevent the likelihood that these fisheries will jeopardize the continued existence of endangered Steller sea lions and adversely modify their critical habitat.

There also is good cause under 5 U.S.C. 553(d)(3) to waive the 30-day delay in effectiveness. The Steller sea lion protection measures must be effective by January 1, 2011, when the Pacific cod hook-and-line, pot, and jig fisheries are scheduled to open by regulation. These protection measures are necessary to prevent the likelihood that these fisheries will jeopardize the continued existence of endangered Steller sea lions and adversely modify their critical habitat. Accordingly, it is impracticable to delay for 30 days the effective date of this rule. Therefore, good cause exists to waive the 30-day delay in effectiveness pursuant to 5 U.S.C. 553(b)(3), and to make the rule effective January 1, 2011.

Although we are waiving prior notice and opportunity for public comment, we are requesting post promulgation comments until January 12, 2011. *Please see* ADDRESSES for more information on the ways to submit comments.

Because prior notice and opportunity for public comment are not required for this rule by 5 U.S.C. 553, or any other law, the analytical requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, are inapplicable.

This rule contains a collection-of-information requirement subject to the Paperwork Reduction Act (PRA) and which has been approved by OMB under control number 0648–0206. Public reporting burden for Federal Fisheries Permit Application is estimated to average 21 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate, or any other aspect of this data collection, including suggestions for reducing the burden, to NMFS (*see* ADDRESSES) and by e-mail to *OIRA_Submission@omb.eop.gov*, or fax to 202–395–7285.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

**List of Subjects in 50 CFR Part 679**

Alaska, Fisheries, Recordkeeping and reporting requirements.

Dated: December 8, 2010.

**John Oliver,**

*Deputy Assistant Administrator For Operations, National Marine Fisheries Service.*

■ For reasons set out in the preamble, 50 CFR part 679 is amended as follows:

## PART 679—FISHERIES OF THE EXCLUSIVE ECONOMIC ZONE OFF ALASKA

■ 1. The authority citation for part 679 continues to read as follows:

**Authority:** 16 U.S.C. 773 *et seq.*; 1801 *et seq.*; 3631 *et seq.*; Pub. L. 108–447.

■ 2. In § 679.2, remove the definitions for "Harvest limit area for platoon managed Atka mackerel directed fishing" and "Harvest limit area (HLA) for Atka mackerel directed fishing."

■ 3. In § 679.4, remove paragraph (b)(5)(vii) and revise paragraph (b)(5)(vi) to read as follows:

**§ 679.4 Permits.**

* * * * *

(b) * * *

(5) * * *

(vi) *Atka mackerel, pollock, and Pacific cod directed fisheries.*

(A) Indicate use of pot, hook-and-line, or trawl gear in the directed fisheries for pollock, Atka mackerel, or Pacific cod.

(B) Selections for species endorsements will remain valid until an FFP is amended to remove those endorsements or the permit with these endorsements is surrendered or revoked.

* * * * *

■ 4. In § 679.7, revise paragraph (a)(19) and add paragraphs (a)(23), (a)(24), (a)(25), and (d)(10) to read as follows:

**679.7 Prohibitions.**

* * * * *

(a) * * *

(19) *Atka mackerel and Pacific cod prohibition in Area 543.* Retain in Area 543 or in adjacent State waters Pacific cod or Atka mackerel required to be deducted from the Federal TAC specified under § 679.20 on a vessel required to be Federally permitted.

* * * * *

(23) *Pacific cod directed fishing prohibition by hook-and-line, pot, or jig vessels in the Aleutian Islands subarea.* Conduct directed fishing for Pacific cod required to be deducted from the Federal TAC specified under § 679.20 in the Aleutian Islands subarea and adjacent State waters with a vessel required to be Federally permitted using hook-and-line, pot, or jig gear November 1, 1200 hours, A.l.t., to December 31, 2400 hours, A.l.t.

(24) *Atka mackerel directed fishing in the Bering Sea subarea.* Conduct directed fishing for Atka mackerel in the Bering Sea subarea and adjacent State waters with a vessel required to be Federally permitted.

(25) *Atka mackerel directed fishing inside Steller sea lion critical habitat in Area 542.* Conduct directed fishing for Atka mackerel inside waters 10 nm to 20 nm of Gramp Rock and Tag Island rookeries, as described on Table 12 to this part, unless fishing under the authority of a CDQ allocation or an Amendment 80 cooperative quota permit.

* * * * *

(d) * * *

(10) For a CDQ group, exceed a seasonal allowance of Atka mackerel under § 679.20(a)(8)(ii).

* * * * *

■ 5. In § 79.20, remove and reserve paragraph (a)(8)(iii), and revise paragraphs (a)(8)(ii)(A), (a)(8)(ii)(C), and (c)(6) to read as follows:

**§ 679.20 General limitations.**

* * * * *

(a) * * *

(8) * * *

(ii) * * *

(A) *Seasonal allowances.* The Atka mackerel TAC specified for each subarea or district will be divided equally, after subtraction of the jig gear allocation, into two seasonal allowances corresponding to the A and B seasons defined at § 679.23(e)(3).

* * * * *

(C) *Area 542 Atka mackerel harvest limitations*—(*1*) Atka mackerel catch within waters 10 nm to 20 nm of Gramp Rock and Tag Island, as described on Table 12 to this part, is limited to:

(*i*) No more than 10 percent of an Amendment 80 cooperative's Area 542 Atka mackerel allocation, and

(*ii*) No more than 10 percent of a CDQ group's Area 542 Atka mackerel allocation.

(*2*) Atka mackerel harvest within waters 10 nm to 20 nm of Gramp Rock and Tag Island, as described on Table 12 to this part, is equally divided between the A and B seasons defined at § 679.23(e)(3).

(*3*) The annual TAC will be no greater than 47 percent of the ABC.

* * * * *

(c) * * *

(6) *BSAI Atka mackerel allocations.* The proposed and final harvest specifications will specify the allocation of BSAI Atka mackerel among gear types as authorized under paragraph (a)(8) of this section.

* * * * *

■ 6. In § 679.22, revise paragraphs (a)(7)(vi) and (a)(8)(iv), and remove and reserve paragraph (b)(6) to read as follows:

**§ 679.22 Closures.**

(a) * * *

(7) * * *

(vi) *Atka mackerel closures.* Directed fishing for Atka mackerel by vessels named on a Federal Fisheries Permit under § 679.4(b) and using trawl gear is prohibited within the Bering Sea subarea.

* * * * *

(8) * * *

(iv) *Pacific cod closures.* Directed fishing for Pacific cod required to be deducted from the Federal TAC specified at § 679.20 by vessels named on a Federal Fisheries Permit under § 679.4(b) using trawl, hook-and-line, jig, or pot gear is prohibited within the Pacific cod no-fishing zones around selected sites. These sites and gear types are described in Table 5 of this part and its footnotes and are identified by "AI" in column 2.

* * * * *

■ 7. In § 679.23, remove paragraphs (e)(4)(iv) and (e)(4)(v) and revise paragraphs (e)(3) and (e)(4)(iii) to read as follows:

**§ 679.23 Seasons.**

* * * * *

(e) * * *

(3) *Directed fishing for Atka mackerel with trawl gear.* Subject to other provisions of this part, directed fishing for Atka mackerel with trawl gear in the BSAI is authorized only during the following two seasons:

(i) *A season.* From 1200 hours, A.l.t., January 20 through 1200 hours, A.l.t., June 10; and

(ii) *B season.* From 1200 hours, A.l.t., June 10 through 1200 hours, A.l.t., November 1.

(4) * * *

(iii) *Groundfish CDQ.* Fishing for groundfish CDQ species, other than CDQ pollock; hook-and-line, pot, jig, or trawl CDQ Pacific cod; trawl CDQ Atka mackerel; and fixed gear CDQ sablefish under subpart C of this part, is authorized from 0001 hours, A.l.t., January 1 through the end of each fishing year, except as provided under paragraph (c) of this section.

* * * * *

**679.50 [Amended]**

■ 8. In § 679.50, remove paragraph (c)(1)(x).

■ 9. In 50 CFR part 679, revise Tables 5, 6, and 12 to read as follows:

BILLING CODE 3510–22–P

## Table 5 to Part 679 -- Steller Sea Lion Protection Areas Pacific Cod Fisheries Restrictions

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm) |
| | | Latitude | Longitude | Latitude | Longitude | | | |
| St. Lawrence I./S Punuk I. | BS | 63 04.00 N | 168 51.00 W | | | 20 | 20 | 20 |
| St. Lawrence I./SW Cape | BS | 63 18.00 N | 171 26.00 W | | | 20 | 20 | 20 |
| Hall I. | BS | 60 37.00 N | 173 00.00 W | | | 20 | 20 | 20 |
| St. Paul I./Sea Lion Rock | BS | 57 06.00 N | 170 17.50 W | | | 3 | 3 | 3 |
| St. Paul I./NE Pt. | BS | 57 15.00 N | 170 06.50 W | | | 3 | 3 | 3 |
| Walrus I. (Pribilofs) | BS | 57 11.00 N | 169 56.00 W | | | 10 | 3 | 3 |
| St. George I./Dalnoi Pt. | BS | 56 36.00 N | 169 46.00 W | | | 3 | 3 | 3 |
| St. George I./S. Rookery | BS | 56 33.50 N | 169 40.00 W | | | 3 | 3 | 3 |
| Cape Newenham | BS | 58 39.00 N | 162 10.50 W | | | 20 | 20 | 20 |
| Round (Walrus Islands) | BS | 58 36.00 N | 159 58.00 W | | | 20 | 20 | 20 |
| Kiska I./Cape St. Stephen[15,17] | AI | 51 52.50 N | 177 12.70 E | 51 53.50 N | 177 12.00 E | 20 | 6, 20 | 6, 20 |
| Kiska I. Sobaka & Vega[15,17] | AI | 51 49.50 N | 177 19.00 E | 51 48.50 N | 177 20.50 E | 20 | 6, 20 | 6, 20 |
| Kiska I./Lief Cove[15,17] | AI | 51 57.16 N | 177 20.41 E | 51 57.24 N | 177 20.53 E | 20 | 6. 20 | 6. 20 |
| Kiska I./Sirius Pt.[15] | AI | 52 08.50 N | 177 36.50 E | | | 20 | 6. 20 | 6. 20 |
| Tanadak I. (Kiska)[15] | AI | 51 56.80 N | 177 46.80 E | | | 20 | 6. 20 | 6. 20 |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm) |
| | | Latitude | Longitude | Latitude | Longitude | | | |
| Segula I.[15] | AI | 51 59.90 N | 178 05.80 E | 52 03.06 N | 178 08.80 E | 20 | 6, 20 | 6, 20 |
| Ayugadak Point[15] | AI | 51 45.36 N | 178 24.30 E | | | 20 | 6, 20 | 6, 20 |
| Rat I./Krysi Pt.[15] | AI | 51 49.98 N | 178 12.35 E | | | 20 | 6, 20 | 6, 20 |
| Little Sitkin I.[15] | AI | 51 59.30 N | 178 29.80 E | | | 20 | 6. 20 | 6. 20 |
| Amchitka I./Column[15] | AI | 51 32.32 N | 178 49.28 E | | | 20 | 6. 20 | 6. 20 |
| Amchitka I./East Cape[15] | AI | 51 22.26 N | 179 27.93 E | 51 22.00 N | 179 27.00 E | 20 | 6, 20 | 6, 20 |
| Amchitka I./Cape Ivakin[15] | AI | 51 24.46 N | 179 24.21 E | | | 20 | 6, 20 | 6, 20 |
| Semisopochnoi/Petrel Pt.[15] | AI | 52 01.40 N | 179 36.90 E | 52 01.50 N | 179 39.00 E | 20 | 6, 20 | 6, 20 |
| Semisopochnoi I./Pochnoi Pt.[15] | AI | 51 57.30 N | 179 46.00 E | | | 20 | 6, 20 | 6, 20 |
| Amatignak I./Nitrof Pt.[15] | AI | 51 13.00 N | 179 07.80 W | | | 20 | 6, 20 | 6, 20 |
| Unalga & Dinkum Rocks[15] | AI | 51 33.67 N | 179 04.25 W | 51 35.09 N | 179 03.66 W | 20 | 6, 20 | 6, 20 |
| Ulak I./Hasgox Pt.[15] | AI | 51 18.90 N | 178 58.90 W | 51 18.70 N | 178 59.60 W | 20 | 6, 20 | 6, 20 |
| Kavalga I.[15] | AI | 51 34.50 N | 178 51.73 W | 51 34.50 N | 178 49.50 W | 20 | 6, 20 | 6, 20 |
| Tag I.[15] | AI | 51 33.50 N | 178 34.50 W | | | 20 | 6, 20 | 6, 20 |
| Ugidak I.[14,15] | AI | 51 34.95 N | 178 30.45 W | | | 20 | 6, 20 | 6, 20 |
| Gramp Rock[14,15] | AI | 51 28.87 N | 178 20.58 W | | | 20 | 6, 20 | 6, 20 |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm) |
| | | Latitude | Longitude | Latitude | Longitude | | | |
| Tanaga I./Bumpy Pt.[14,15] | AI | 51 55.00 N | 177 58.50 W | 51 55.00 N | 177 57.10 W | 20, 10 | 6, 20 | 6, 20 |
| Bobrof I.[14,15] | AI | 51 54.00 N | 177 27.00 W | | | 20, 10 | 6, 20 | 6, 20 |
| Kanaga I./Ship Rock[14,15] | AI | 51 46.70 N | 177 20.72 W | | | 20, 10 | 6, 20 | 6, 20 |
| Kanaga I./North Cape[14,15,16] | AI | 51 56.50 N | 177 09.00 W | | | 20, 10 | 6, 20 | 6, 20 |
| Adak I.[14,15,16] | AI | 51 35.50 N | 176 57.10 W | 51 37.40 N | 176 59.60 W | 20. 10 | 20. 10 | 20. 10 |
| Little Tanaga Strait[14,16] | AI | 51 49.09 N | 176 13.90 W | | | 20, 10 | 20, 10 | 20, 10 |
| Great Sitkin I.[14,16] | AI | 52 06.00 N | 176 10.50 W | 52 06.60 N | 176 07.00 W | 20. 10 | 20. 10 | 20. 10 |
| Anagaksik I.[14,16] | AI | 51 50.86 N | 175 53.00 W | | | 20, 10 | 20, 10 | 20, 10 |
| Kasatochi I.[14,16] | AI | 52 11.11 N | 175 31.00 W | | | 20. 10 | 20. 10 | 20. 10 |
| Atka I./N. Cape[14,16] | AI | 52 24.20 N | 174 17.80 W | | | 20, 10 | 20, 10 | 20, 10 |
| Amlia I./Sviech. Harbor[4,14,16] | AI | 52 01.80 N | 173 23.90 W | | | 20, 10 | 20, 10 | 20, 10 |
| Sagigik I.[4,14,16] | AI | 52 00.50 N | 173 09.30 W | | | 20, 10 | 20, 10 | 20, 10 |
| Amlia I./East[4,14,16] | AI | 52 05.70 N | 172 59.00 W | 52 05.75 N | 172 57.50 W | 20. 10 | 20. 10 | 20. 10 |
| Tanadak I. (Amlia)[4,14,16] | AI | 52 04.20 N | 172 57.60 W | | | 20. 10 | 20. 10 | 20. 10 |
| Agligadak I.[4,14,16] | AI | 52 06.09 N | 172 54.23 W | | | 20, 10 | 20, 10 | 20, 10 |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm) |
| | | Latitude | Longitude | Latitude | Longitude | | | |
| Seguam I./Saddleridge Pt.[4, 14,16] | AI | 52 21.05 N | 172 34.40 W | 52 21.02 N | 172 33.60 W | 20, 10 | 20, 10 | 20, 10 |
| Seguam I./Finch Pt.[14,16] | AI | 52 23.40 N | 172 27.70 W | 52 23.25 N | 172 24.30 W | 20, 10 | 20, 10 | 20, 10 |
| Seguam I./South Side[14,16] | AI | 52 21.60 N | 172 19.30 W | 52 15.55 N | 172 31.22 W | 20, 10 | 20, 10 | 20, 10 |
| Amukta I. & Rocks[14,16] | AI | 52 27.25 N | 171 17.90 W | | | 20. 10 | 20. 10 | 20. 10 |
| Chagulak I.[14,16] | AI | 52 34.00 N | 171 10.50 W | | | 20, 10 | 20, 10 | 20, 10 |
| Yunaska I.[14,16] | AI | 52 41.40 N | 170 36.35 W | | | 20, 10 | 20, 10 | 20, 10 |
| Uliaga[5, 13] | BS | 53 04.00 N | 169 47.00 W | 53 05.00 N | 169 46.00 W | 10 | 20 | 20 |
| Chuginadak[13] | GOA | 52 46.70 N | 169 41.90 W | | | 20 | 10 | 20 |
| Kagamil[5, 13] | BS | 53 02.10 N | 169 41.00 W | | | 10 | 20 | 20 |
| Samalga | GOA | 52 46.00 N | 169 15.00 W | | | 20 | 10 | 20 |
| Adugak I.[5] | BS | 52 54.70 N | 169 10.50 W | | | 10 | BA | BA |
| Umnak I./Cape Aslik[5] | BS | 53 25.00 N | 168 24.50 W | | | BA | BA | BA |
| Ogchul I. | GOA | 52 59.71 N | 168 24.24 W | | | 20 | 10 | 20 |
| Bogoslof I./Fire I.[5] | BS | 53 55.69 N | 168 02.05 W | | | BA | BA | BA |
| Polivnoi Rock[9] | GOA | 53 15.96 N | 167 57.99 W | | | 20 | 10 | 20 |
| Emerald I.[12, 9] | GOA | 53 17.50 N | 167 51.50 W | | | 20 | 10 | 20 |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm) |
| | | Latitude | Longitude | Latitude | Longitude | | | |
| Unalaska/Cape Izigan[9] | GOA | 53 13.64 N | 167 39.37 W | | | 20 | 10 | 20 |
| Unalaska/Bishop Pt.[6, 12] | BS | 53 58.40 N | 166 57.50 W | | | 10 | 10 | 3 |
| Akutan I./Reef-lava[6] | BS | 54 08.10 N | 166 06.19 W | 54 09.10 N | 166 05.50 W | 10 | 10 | 3 |
| Unalaska I./Cape Sedanka[9] | GOA | 53 50.50 N | 166 05.00 W | | | 20 | 10 | 20 |
| Old Man Rocks[9] | GOA | 53 52.20 N | 166 04.90 W | | | 20 | 10 | 20 |
| Akutan I./Cape Morgan[9] | GOA | 54 03.39 N | 165 59.65 W | 54 03.70 N | 166 03.68 W | 20 | 10 | 20 |
| Akun I./Billings Head | BS | 54 17.62 N | 165 32.06 W | 54 17.57 N | 165 31.71 W | 10 | 3 | 3 |
| Rootok[9] | GOA | 54 03.90 N | 165 31.90 W | 54 02.90 N | 165 29.50 W | 20 | 10 | 20 |
| Tanginak I.[9] | GOA | 54 12.00 N | 165 19.40 W | | | 20 | 10 | 20 |
| Tigalda/Rocks NE[9] | GOA | 54 09.60 N | 164 59.00 W | 54 09.12 N | 164 57.18 W | 20 | 10 | 20 |
| Unimak/Cape Sarichef | BS | 54 34.30 N | 164 56.80 W | | | 10 | 3 | 3 |
| Aiktak[9] | GOA | 54 10.99 N | 164 51.15 W | | | 20 | 10 | 20 |
| Ugamak I.[9] | GOA | 54 13.50 N | 164 47.50 W | 54 12.80 N | 164 47.50 W | 20 | 10 | 20 |
| Round (GOA)[9] | GOA | 54 12.05 N | 164 46.60 W | | | 20 | 10 | 20 |
| Sea Lion Rock (Amak) | BS | 55 27.82 N | 163 12.10 W | | | 10 | 7 | 7 |
| Amak I. And rocks | BS | 55 24.20 N | 163 09.60 W | 55 26.15 N | 163 08.50 W | 10 | 3 | 3 |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm) |
| | | Latitude | Longitude | Latitude | Longitude | | | |
| Bird I. | GOA | 54 40.00 N | 163 17.2 W | | | 10 | | |
| Caton I. | GOA | 54 22.70 N | 162 21.30 W | | | 3 | 3 | |
| South Rocks | GOA | 54 18.14 N | 162 41.3 W | | | 10 | | |
| Clubbing Rocks (S) | GOA | 54 41.98 N | 162 26.7 W | | | 10 | 3 | 3 |
| Clubbing Rocks (N) | GOA | 54 42.75 N | 162 26.7 W | | | 10 | 3 | 3 |
| Pinnacle Rock | GOA | 54 46.06 N | 161 45.85 W | | | 3 | 3 | 3 |
| Sushilnoi Rocks | GOA | 54 49.30 N | 161 42.73 W | | | 10 | | |
| Olga Rocks | GOA | 55 00.45 N | 161 29.81 W | 54 59.09 N | 161 30.89 W | 10 | | |
| Jude I. | GOA | 55 15.75 N | 161 06.27 W | | | 20 | | |
| Sea Lion Rocks (Shumagins) | GOA | 55 04.70 N | 160 31.04 W | | | 3 | 3 | 3 |
| Nagai I./Mountain Pt. | GOA | 54 54.20 N | 160 15.40 W | 54.56.00 N | 160.15.00 W | 3 | 3 | 3 |
| The Whaleback | GOA | 55 16.82 N | 160 05.04 W | | | 3 | 3 | 3 |
| Chernabura I. | GOA | 54 45.18 N | 159 32.99 W | 54 45.87 N | 159 35.74 W | 20 | 3 | 3 |
| Castle Rock | GOA | 55 16.47 N | 159 29.77 W | | | 3 | 3 | |
| Atkins I. | GOA | 55 03.20 N | 159 17.40 W | | | 20 | 3 | 3 |
| Spitz I. | GOA | 55 46.60 N | 158 53.90 W | | | 3 | 3 | 3 |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm) |
| | | Latitude | Longitude | Latitude | Longitude | | | |
| Mitrofania | GOA | 55 50.20 N | 158 41.90 W | | | 3 | 3 | 3 |
| Kak | GOA | 56 17.30 N | 157 50.10 W | | | 20 | 20 | 3 |
| Lighthouse Rocks | GOA | 55 46.79 N | 157 24.89 W | | | 20 | 20 | 20 |
| Sutwik I. | GOA | 56 31.05 N | 157 20.47 W | 56 32.00 N | 157 21.00 W | 20 | 20 | 20 |
| Chowiet I. | GOA | 56 00.54 N | 156 41.42 W | 56 00.30 N | 156 41.60 W | 20 | 20 | 20 |
| Nagai Rocks | GOA | 55 49.80 N | 155 47.50 W | | | 20 | 20 | 20 |
| Chirikof I. | GOA | 55 46.50 N | 155 39.50 W | 55 46.44 N | 155 43.46 W | 20 | 20 | 20 |
| Puale Bay | GOA | 57 40.60 N | 155 23.10 W | | | 10 | | |
| Kodiak/Cape Ikolik | GOA | 57 17.20 N | 154 47.50 W | | | 3 | 3 | 3 |
| Takli I. | GOA | 58 01.75 N | 154 31.25 W | | | 10 | | |
| Cape Kuliak | GOA | 58 08.00 N | 154 12.50 W | | | 10 | | |
| Cape Gull | GOA | 58 11.50 N | 154 09.60 W | 58 12.50 N | 154 10.50 W | 10 | | |
| Kodiak/Cape Ugat | GOA | 57 52.41 N | 153 50.97 W | | | 10 | | |
| Sitkinak/Cape Sitkinak | GOA | 56 34.30 N | 153 50.96 W | | | 10 | | |
| Shakun Rock | GOA | 58 32.80 N | 153 41.50 W | | | 10 | | |
| Twoheaded I. | GOA | 56 54.50 N | 153 32.75 W | 56 53.90 N | 153 33.74 W | 10 | | |
| Cape Douglas (Shaw I.) | GOA | 59 00.00 N | 153 22.50 W | | | 10 | | |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm) |
| | | Latitude | Longitude | Latitude | Longitude | | | |
| Kodiak/Cape Barnabas | GOA | 57 10.20 N | 152 53.05 W | | | 3 | 3 | |
| Kodiak/Gull Point[7] | GOA | 57 21.45 N | 152 36.30 W | | | 10. 3 | | |
| Latax Rocks | GOA | 58 40.10 N | 152 31.30 W | | | 10 | | |
| Ushagat I./SW | GOA | 58 54.75 | 152 22.20 W | | | 10 | | |
| Ugak I.[7] | GOA | 57 23.60 N | 152 17.50 W | 57 21.90 N | 152 17.40 W | 10, 3 | | |
| Sea Otter I. | GOA | 58 31.15 N | 152 13.30 W | | | 10 | | |
| Long I. | GOA | 57 46.82 N | 152 12.90 W | | | 10 | | |
| Sud I. | GOA | 58 54.00 N | 152 12.50 W | | | 10 | | |
| Kodiak/Cape Chiniak | GOA | 57 37.90 N | 152 08.25 W | | | 10 | | |
| Sugarloaf I. | GOA | 58 53.25 N | 152 02.40 W | | | 20 | 10 | 10 |
| Sea Lion Rocks (Marmot) | GOA | 58 20.53 N | 151 48.83 W | | | 10 | | |
| Marmot I.[8] | GOA | 58 13.65 N | 151 47.75 W | 58 09.90 N | 151 52.06 W | 15. 20 | 10 | 10 |
| Nagahut Rocks | GOA | 59 06.00 N | 151 46.30 W | | | 10 | | |
| Perl | GOA | 59 05.75 N | 151 39.75 W | | | 10 | | |
| Gore Point | GOA | 59 12.00 N | 150 58.00 W | | | 10 | | |
| Outer (Pye) I. | GOA | 59 20.50 N | 150 23.00 W | 59 21.00 N | 150 24.50 W | 20 | 10 | 10 |
| Steep Point | GOA | 59 29.05 N | 150 15.40 W | | | 10 | | |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm) | Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm) |
| | | Latitude | Longitude | Latitude | Longitude | | | |
| Seal Rocks (Kenai) | GOA | 59 31.20 N | 149 37.50 W | | | 10 | | |
| Chiswell Islands | GOA | 59 36.00 N | 149 34.00 W | | | 10 | | |
| Rugged Island | GOA | 59 50.00 N | 149 23.10 W | | | 10 | | |
| Point Elrington[10, 11] | GOA | 59 56.00 N | 148 15.20 W | | | 20 | | |
| Perry I.[10] | GOA | 60 44.00 N | 147 54.60 W | | | | | |
| The Needle[10] | GOA | 60 06.64 N | 147 36.17 W | | | | | |
| Point Eleanor[10] | GOA | 60 35.00 N | 147 34.00 W | | | | | |
| Wooded I. (Fish I.) | GOA | 59 52.90 N | 147 20.65 W | | | 20 | 3 | 3 |
| Glacier Island[10] | GOA | 60 51.30 N | 147 14.50 W | | | | | |
| Seal Rocks (Cordova)[11] | GOA | 60 09.78 N | 146 50.30 W | | | 20 | 3 | 3 |
| Cape Hinchinbrook[11] | GOA | 60 14.00 N | 146 38.50 W | | | 20 | | |
| Middleton I. | GOA | 59 28.30 N | 146 18.80 W | | | 10 | | |
| Hook Point[11] | GOA | 60 20.00 N | 146 15.60 W | | | 20 | | |
| Cape St. Elias | GOA | 59 47.50 N | 144 36.20 W | | | 20 | | |

BS = Bering Sea, AI = Aleutian Islands, GOA = Gulf of Alaska

[1] Where two sets of coordinates are given, the baseline extends in a clock-wise direction from the first set of geographic coordinates along the shoreline at mean lower-low water to the second set of coordinates. Where only one set of coordinates is listed, that location is the base point.

[2] Closures as stated in 50 CFR 679.22(a)(7)(v), (a)(8)(iv) and (b)(2)(iii).

[3] No-fishing zones are the waters between 0 nm and the nm specified in columns 7, 8, and 9 around each site and within the Bogoslof area (BA) and the Seguam Foraging Area (SFA).

[4] Some or all of the restricted area is located in the SFA which is closed to all gears types. The SFA is established as all waters within the area between 52°N lat. and 53°N lat. and between 173°30' W long. and 172°30' W long.
[5]This site lies within the BA which is closed to all gear types. The BA consists of all waters of area 518 as described in Figure 1 of this part south of a straight line connecting 55°00'N/170°00'W, and 55°00' N/168°11'4.75" W.
[6]Hook-and-line no-fishing zones apply only to vessels greater than or equal to 60 feet LOA in waters east of 167° W long. For Bishop Point the 10 nm closure west of 167° W. long. applies to all hook and line and jig vessels.
[7]The trawl closure between 0 nm to 10 nm is effective from January 20, 1200 hours, A.l.t., through June 10, 1200 hours, A.l.t. Trawl closure between 0 nm to 3 nm is effective from September 1, 1200 hours, A.l.t., through November 1, 1200 hours, A.l.t.
[8] The trawl closure between 0 nm to 15 nm is effective from January 20, 1200 hours, A.l.t., to June 10, 1200 hours, A.l.t. Trawl closure between 0 nm to 20 nm is effective from September 1, 1200 hours, A.l.t., through November 1, 1200 hours, A.l.t.
[9]Restriction area includes only waters of the Gulf of Alaska Area.
[10]Contact the Alaska Department of Fish and Game for fishery restrictions at these sites.
[11] The 20 nm closure around this site is effective only in waters outside of the State of Alaska waters of Prince William Sound.
[12] See 50 CFR 679.22(a)(7)(i)(C) for exemptions for catcher vessels less than 60 feet (18.3 m) LOA using jig or hook-and-line gear between Bishop Point and Emerald Island closure areas.
[13]Trawl, hook-and-line, and pot closures around these sites are limited to waters east of 170°0'00" W long.
[14]Trawl closures around Ugidak I., Gramp Rock, and Tanaga I./Bumpy Point are 20 nm west of 178°0'00"W long. year round. Trawl closures around these sites in waters located east of 178°0'00"W. long. are 0 nm to 20 nm June 10, 1200 hours, A.l.t., to November 1, 1200 hours, A.l.t., and 0 nm to 10 nm from January 20, 1200 hours, A.l.t. to June 10, 1200 hours, A.l.t.
[15]In waters west of 177°0'0" W long.

(a) For vessels 60 ft (18.3 m) or greater LOA, the hook- and-line and pot closures are 0 nm to 20 nm from January 1, 0001 hours, A.l.t., to March 1, 1200 hours, A.l.t., and 0 nm to 6 nm from March 1, 1200 hours, A.l.t., to November 1, 1200 hours, A.l.t.

(b) For vessels less than 60 ft (18.3 m), the hook-and-line and pot closures are 0 nm to 6 nm from January 1, 0001 hours, A.l.t., to November 1, 1200 hours, A.l.t.

(c) These restrictions also apply to jig gear vessels of the same LOA.

[16] In waters east of 177°0'0" W long., hook-and-line and pot closures are 0 nm to 20 nm from January 1, 0001 hours, A.l.t., to March 1, 1200 hours, A.l.t., and 0 nm to 10 nm year round. These restrictions also apply to jig gear vessels.
[17]Closures to directed fishing from 0 nm to 20 nm from these sites apply to waters east of 177°0'00" E long. Retention of Pacific cod is prohibited in Area 543, as described in §679.7(a)(19).

Table 6 to Part 679 --Steller Sea Lion Protection Areas Atka Mackerel Fisheries Restrictions

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Atka mackerel No-fishing Zones for Trawl Gear [2,3](nm) |
| | | Latitude | Longitude | Latitude | Longitude | |
| Kiska I./Cape St. Stephen | Aleutian Islands | 51° 52.50 N | 177° 12.70 E | 51° 53.50 N | 177° 12.00 E | 20 |
| Kiska I./Sobaka & Vega | Aleutian Islands | 51° 49.50 N | 177° 19.00 E | 51° 48.50 N | 177° 20.50 E | 20 |
| Kiska I./Lief Cove | Aleutian Islands | 51° 57.16 N | 177° 20.41 E | 51° 57.24 N | 177° 20.53 E | 20 |
| Kiska I./Sirius Pt. | Aleutian Islands | 52° 08.50 N | 177° 36.50 E | | | 20 |
| Tanadak I. (Kiska) | Aleutian Islands | 51° 56.80 N | 177° 46.80 E | | | 20 |
| Segula I. | Aleutian Islands | 51° 59.90 N | 178° 05.80 E | 52° 03.06 N | 178° 08.80 E | 20 |
| Ayugadak Point | Aleutian Islands | 51° 45.36 N | 178° 24.30 E | | | 20 |
| Rat I./Krysi Pt. | Aleutian Islands | 51° 49.98 N | 178° 12.35 E | | | 20 |
| Little Sitkin I. | Aleutian Islands | 51° 59.30 N | 178° 29.80 E | | | 20 |
| Amchitka I./Column Rocks | Aleutian Islands | 51° 32.32 N | 178° 49.28 E | | | 20 |
| Amchitka I./East Cape | Aleutian Islands | 51° 22.26 N | 179° 27.93 E | 51° 22.00 N | 179° 27.00 E | 20 |
| Amchitka I./Cape Ivakin | Aleutian Islands | 51° 24.46 N | 179° 24.21 E | | | 20 |
| Semisopochnoi/Petrel Pt. | Aleutian Islands | 52° 01.40 N | 179° 36.90 E | 52° 01.50 N | 179° 39.00 E | 20 |
| Semisopochnoi I./Pochnoi Pt. | Aleutian Islands | 51° 57.30 N | 179° 46.00 E | | | 20 |
| Amatignak I. Nitrof Pt.[7] | Aleutian Islands | 51° 13.00 N | 179° 07.80 W | | | 20,10 |
| Unalga & Dinkum Rocks[7] | Aleutian Islands | 51° 33.67 N | 179° 04.25 W | 51° 35.09 N | 179° 03.66 W | 20,10 |
| Ulak I./Hasgox Pt. [7] | Aleutian Islands | 51° 18.90 N | 178° 58.90 W | 51° 18.70 N | 178° 59.60 W | 20,10 |
| Kavalga I.[7] | Aleutian Islands | 51° 34.50 N | 178° 51.73 W | 51° 34.50 N | 178° 49.50 W | 20,10 |
| Tag I.[7] | Aleutian Islands | 51° 33.50 N | 178° 34.50 W | | | 20,10 |
| Ugidak I.[6] | Aleutian Islands | 51° 34.95 N | 178°30.45 W | | | 10, 20 |
| Gramp Rock[6] | Aleutian Islands | 51° 28.87 N | 178° 20.58 W | | | 10, 20 |
| Tanaga I./Bumpy Pt.[4] | Aleutian Islands | 51° 55.00 N | 177° 58.50 W | 51° 55.00 N | 177° 57.10 W | 10, 20 |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | Atka mackerel No-fishing Zones for Trawl Gear [2,3](nm) |
| | | Latitude | Longitude | Latitude | Longitude | |
| Bobrof I. | Aleutian Islands | 51° 54.00 N | 177° 27.00 W | | | 20 |
| Kanaga I./Ship Rock | Aleutian Islands | 51° 46.70 N | 177° 20.72 W | | | 20 |
| Kanaga I./North Cape | Aleutian Islands | 51° 56.50 N | 177° 09.00 W | | | 20 |
| Adak I. | Aleutian Islands | 51° 35.50 N | 176° 57.10 W | 51° 37.40 N | 176° 59.60 W | 20 |
| Little Tanaga Strait | Aleutian Islands | 51° 49.09 N | 176° 13.90 W | | | 20 |
| Great Sitkin I. | Aleutian Islands | 52° 06.00 N | 176° 10.50 W | 52° 06.60 N | 176° 07.00 W | 20 |
| Anagaksik I. | Aleutian Islands | 51° 50.86 N | 175° 53.00 W | | | 20 |
| Kasatochi I. | Aleutian Islands | 52° 11.11 N | 175° 31.00 W | | | 20 |
| Atka I./North Cape | Aleutian Islands | 52°24.20 N | 174° 17.80 W | | | 20 |
| Amlia I./Sviech. Harbor[5] | Aleutian Islands | 52° 01.80 N | 173° 23.90 W | | | 20 |
| Sagigik I.[5] | Aleutian Islands | 52° 00.50 N | 173° 09.30 W | | | 20 |
| Amlia I./East[5] | Aleutian Islands | 52° 05.70 N | 172° 59.00 W | 52° 05.75 N | 172° 57.50 W | 20 |
| Tanadak I. (Amlia)[5] | Aleutian Islands | 52° 04.20 N | 172° 57.60 W | | | 20 |
| Agligadak I.[5] | Aleutian Islands | 52° 06.09 N | 172° 54.23 W | | | 20 |
| Seguam I./Saddleridge Pt.[5] | Aleutian Islands | 52° 21.05 N | 172° 34.40 W | 52° 21.02 N | 172° 33.60 W | 20 |
| Seguam I./Finch Pt.[5] | Aleutian Islands | 52° 23.40 N | 172° 27.70 W | 52° 23.25 N | 172° 24.30 W | 20 |
| Seguam I./South Side[5] | Aleutian Islands | 52° 21.60 N | 172° 19.30 W | 52° 15.55 N | 172° 31.22 W | 20 |
| Amukta I. & Rocks | Aleutian Islands | 52° 27.25 N | 171° 17.90 W | | | 20 |
| Chagulak I. | Aleutian Islands | 52° 34.00 N | 171° 10.50 W | | | 20 |
| Yunaska I. | Aleutian Islands | 52° 41.40 N | 170° 36.35 W | | | 20 |

[1]Where two sets of coordinates are given, the baseline extends in a clock-wise direction from the first set of geographic coordinates along the shoreline at mean lower-low water to the second set of coordinates.

[2] Closures as stated in 50 CFR 679.22(a)(7)(vi).

[3] No-fishing zones are the waters between 0 nm and the nm specified in column 7 around each site.

[4]Directed fishing for Atka mackerel by vessels using trawl gear is prohibited in waters located:

(a) 0 nm to 20 nm seaward of Tanaga I./Bumpy Pt and east of 178° W long., and

(b) 0 nm to10 nm seaward of Tanaga I./Bumpy Pt and west of 178° W long.

[5] Some or all of the restricted area is located in the Seguam Foraging Area (SFA), which is closed to all gears types. The SFA is established as all waters within the area between 52° N lat. and 53° N lat. and between 173° 30' W long. and 172° 30' W long.

[6] Directed fishing for Atka mackerel by vessels using trawl gear is prohibited in waters located:

(a) 0 nn to 20 nm seaward of these sites and east of 178° W long., and

(b) 0 nm to 10 nm seaward of these sites and west of 178° W long.

[7]Directed fishing for Atka mackerel by vessels using trawl gear is prohibited in waters located:

(a) 0 nm to 20 nm seaward of these sites and west of 179°0'0" W longitude, and

(a) 0 nm to 10 nm seaward of these sites and east of 179°0'0" W longitude

*****

**Table 12 to Part 679 --Steller Sea Lion Protection Areas 3nm No Groundfish Fishing Sites**

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | No transit[2] |
| | | Latitude | Longitude | Latitude | Longitude | 3 nm |
| Walrus I. (Pribilofs) | Bering Sea | 57 11.00 N | 169 56.00 W | | | N |
| Attu I./Cape Wrangell | Aleutian I. | 52 54.60 N | 172 27.90 E | 52 55.40 N | 172 27.20 E | Y |
| Agattu I./Gillon Pt. | Aleutian I. | 52 24.13 N | 173 21.31 E | | | Y |
| Agattu I./Cape Sabak | Aleutian I. | 52 22.50 N | 173 43.30 E | 52 21.80 N | 173 41.40 E | Y |
| Buldir I. | Aleutian I. | 52 20.25 N | 175 54.03 E | 52 20.38 N | 175 53.85 E | Y |
| Kiska I./Cape St. Stephen | Aleutian I. | 51 52.50 N | 177 12.70 E | 51 53.50 N | 177 12.00 E | Y |
| Kiska I./Lief Cove | Aleutian I. | 51 57.16 N | 177 20.41 E | 51 57.24 N | 177 20.53 E | Y |
| Ayugadak Point | Aleutian I. | 51 45.36 N | 178 24.30 E | | | Y |
| Amchitka I./Column Rocks | Aleutian I. | 51 32.32 N | 178 49.28 E | | | Y |
| Amchitka I./East Cape | Aleutian I. | 51 22.26 N | 179 27.93 E | 51 22.00 N | 179 27.00 E | Y |
| Semisopochnoi/Petrel Pt. | Aleutian I. | 52 01.40 N | 179 36.90 E | 52 01.50 N | 179 39.00 E | Y |
| Semisopochnoi I./Pochnoi | Aleutian I. | 51 57.30 N | 179 46.00 E | | | Y |
| Ulak I./Hasgox Pt. | Aleutian I. | 51 18.90 N | 178 58.90 W | 51 18.70 N | 178 59.60 W | Y |
| Tag I. | Aleutian I. | 51 33.50 N | 178 34.50 W | | | Y |
| Gramp Rock | Aleutian I. | 51 28.87 N | 178 20.58 W | | | Y |
| Tanaga I./Bumpy Pt. | Aleutian I. | 51 55.00 N | 177 58.50 W | 51 55.00 N | 177 57.10 W | Y |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | No transit[2] |
| | | Latitude | Longitude | Latitude | Longitude | 3 nm |
| Kanaga I./Ship Rock | Aleutian I. | 51 46.70 N | 177 20.72 W | | | N |
| Adak I. | Aleutian I. | 51 35.50 N | 176 57.10 W | 51 37.40 N | 176 59.60 W | Y |
| Kasatochi I. | Aleutian I. | 52 11.11 N | 175 31.00 W | | | Y |
| Agligadak I. | Aleutian I. | 52 06.09 N | 172 54.23 W | | | Y |
| Seguam I./Saddleridge Pt. | Aleutian I. | 52 21.05 N | 172 34.40 W | 52 21.02 N | 172 33.60 W | Y |
| Yunaska I. | Aleutian I. | 52 41.40 N | 170 36.35 W | | | Y |
| Adugak I. | Bering Sea | 52 54.70 N | 169 10.50 W | | | Y |
| Ogchul I. | Gulf of Alaska | 52 59.71 N | 168 24.24 W | | | Y |
| Bogoslof I./Fire I. | Bering Sea | 53 55.69 N | 168 02.05 W | | | Y |
| Akutan I./Cape Morgan | Gulf of Alaska | 54 03.39 N | 165 59.65 W | 54 03.70 N | 166 03.68 W | Y |
| Akun I./Billings Head | Bering Sea | 54 17.62 N | 165 32.06 W | 54 17.57 N | 165 31.71 W | Y |
| Ugamak I. | Gulf of Alaska | 54 13.50 N | 164 47.50 W | 54 12.80 N | 164 47.50 W | Y |
| Sea Lion Rock (Amak) | Bering Sea | 55 27.82 N | 163 12.10 W | | | Y |
| Clubbing Rocks (S) | Gulf of Alaska | 54 41.98 N | 162 26.7 W | | | Y |
| Clubbing Rocks (N) | Gulf of Alaska | 54 42.75 N | 162 26.7 W | | | Y |
| Pinnacle Rock | Gulf of Alaska | 54 46.06 N | 161 45.85 W | | | Y |
| Chernabura I. | Gulf of Alaska | 54 45.18 N | 159 32.99 W | 54 45.87 N | 159 35.74 W | Y |

| Column Number 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Site Name | Area or Subarea | Boundaries from | | Boundaries to[1] | | No transit[2] |
| | | Latitude | Longitude | Latitude | Longitude | 3 nm |
| Atkins I. | Gulf of Alaska | 55 03.20 N | 159 17.40 W | | | Y |
| Chowiet I. | Gulf of Alaska | 56 00.54 N | 156 41.42 W | 55 00.30 N | 156 41.60 W | Y |
| Chirikof I. | Gulf of Alaska | 55 46.50 N | 155 39.50 W | 55 46.44 N | 155 43.46 W | Y |
| Sugarloaf I. | Gulf of Alaska | 58 53.25 N | 152 02.40 W | | | Y |
| Marmot I. | Gulf of Alaska | 58 13.65 N | 151 47.75 W | 58 09.90 N | 151 52.06 W | Y |
| Outer (Pye) I. | Gulf of Alaska | 59 20.50 N | 150 23.00 W | 59 21.00 N | 150 24.50 W | Y |
| Wooded I. (Fish I.) | Gulf of Alaska | 59 52.90 N | 147 20.65 W | | | N |
| Seal Rocks (Cordova) | Gulf of Alaska | 60 09.78 N | 146 50.30 W | | | N |

[1] Where two sets of coordinates are given, the baseline extends in a clock-wise direction from the first set of geographic coordinates along the shoreline at mean lower-low water to the second set of coordinates. Where only one set of coordinates is listed, that location is the base point.

[2] See 50 CFR 223.202(a)(2)(i) for regulations regarding 3 nm no transit zones.

Note: No groundfish fishing zones are the waters between 0 nm to 3 nm surrounding each site.

N=No, Y=Yes

[FR Doc. 2010–31226 Filed 12–8–10; 4:15 pm]

BILLING CODE 3510–22–C

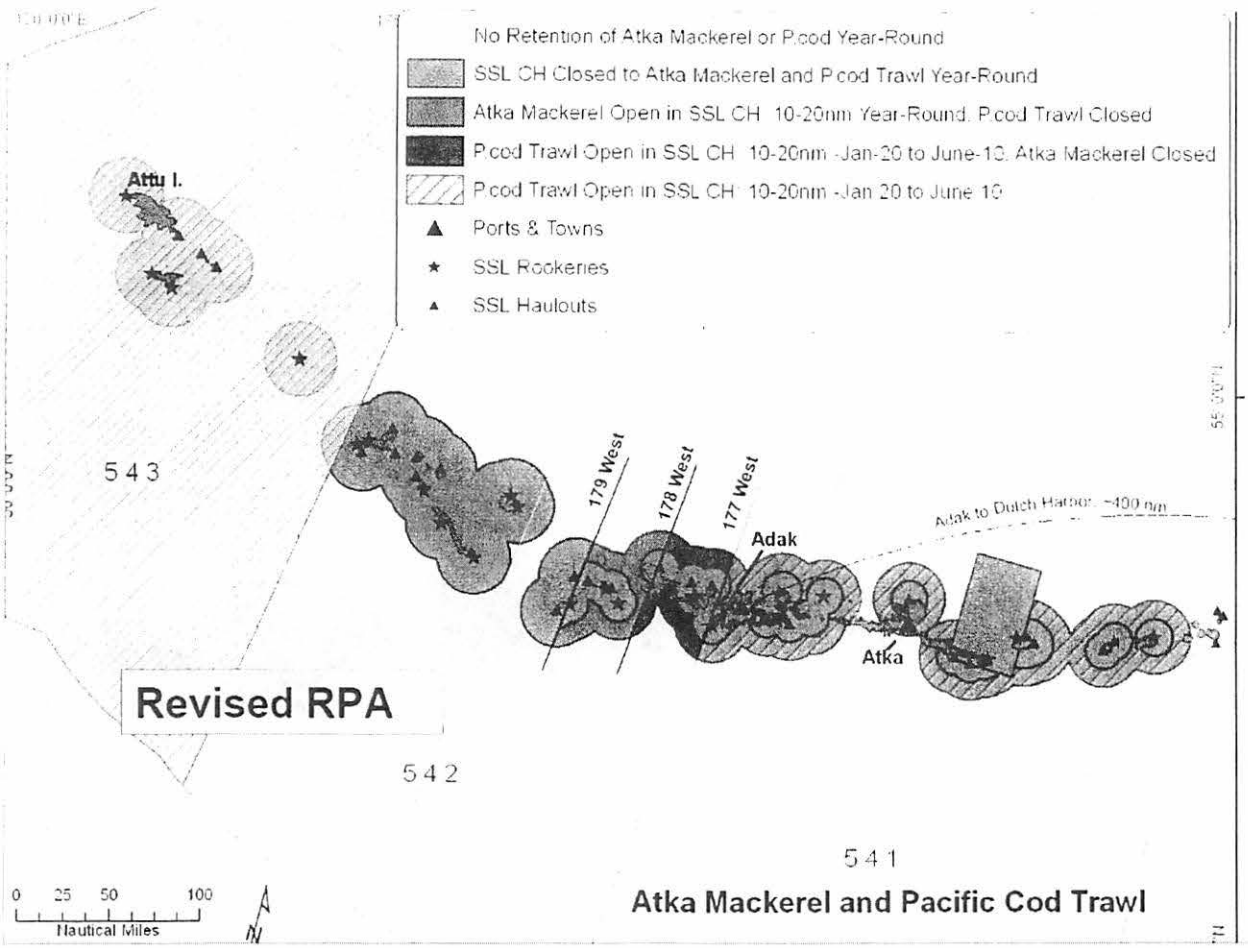


**Figure 1. Final RPA for Atka Mackerel and Pacific Cod Trawl Fisheries.**

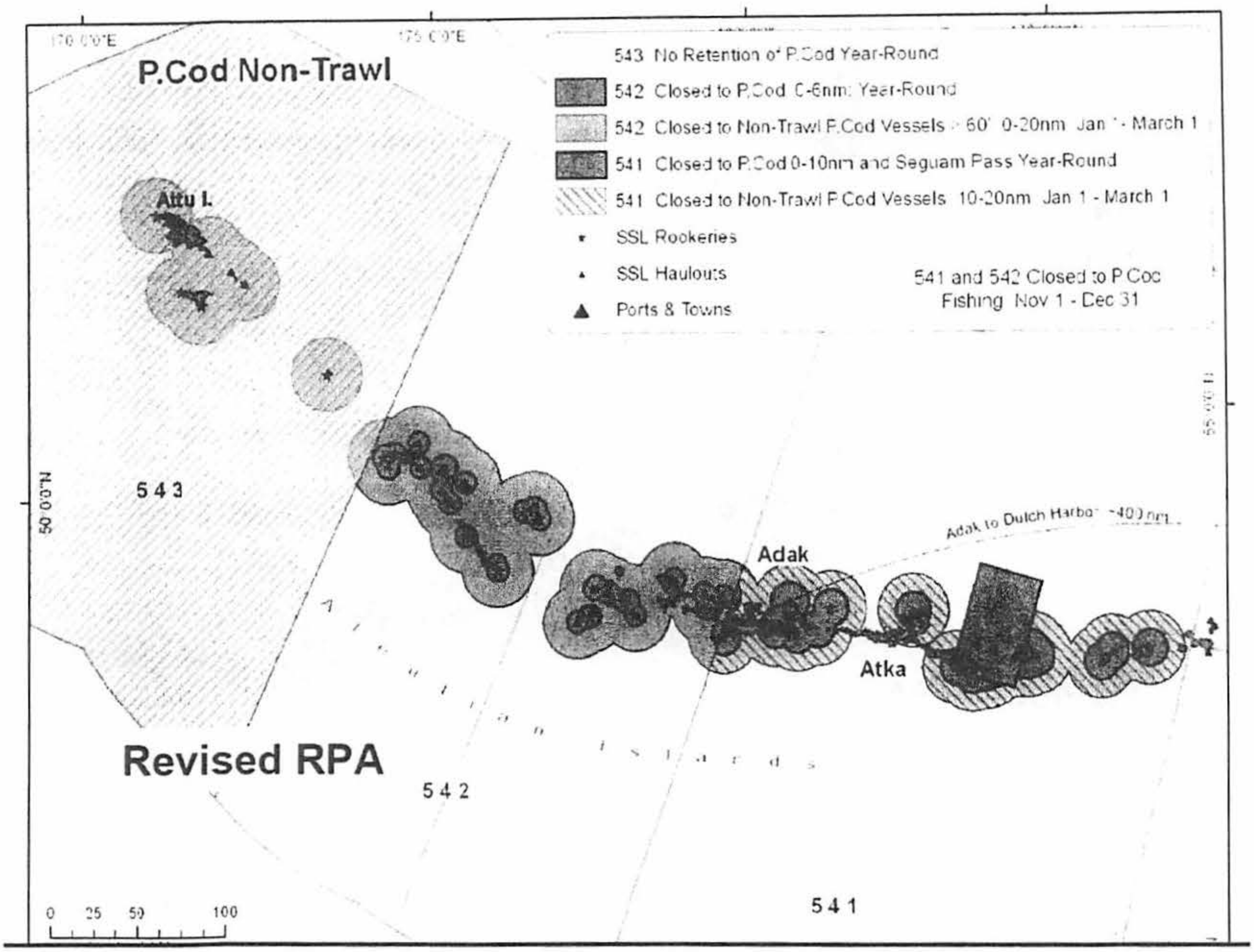


**Figure 2. Final RPA for Pacific Cod Nontrawl Fisheries.**

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

AGENDA B-8
FEBRUARY 2011

January 26, 2011

Mr. Eric A. Olson, Chairman
North Pacific Fishery Management Council
605 W. 4th Avenue, Suite 306
Anchorage, Alaska 99501-2252

Dear Mr. Olson:

Thank you for your letter expressing concerns raised by the North Pacific Fishery Management Council during its December 2010 meeting, on the final Steller sea lion biological opinion (BiOp) and reasonable and prudent alternative (RPA) implemented under an interim final rule published in the Federal Register on December 13, 2010.[1] This letter responds to the four general issues addressed in your letter.

You questioned why NOAA Fisheries did not appear to consider the 2010 Aleutian Islands biomass trawl survey for Steller sea lion prey species. NOAA Fisheries used the best scientific information available when it completed its BiOp. Data from NOAA Fisheries' 2010 groundfish survey and the 2010 fishery were not available at the time the analyses in the BiOp were conducted. NOAA Fisheries updated information in the BiOp several times as new information became available over the 4-year consultation period. However, it was not possible for NOAA Fisheries to extend the consultation period to include the 2010 data and maintain its responsibility under the Endangered Species Act to implement an RPA by January 2011. We agree that the 2010 Atka mackerel stock assessment reviewed by the Council in December indicates that Atka mackerel biomass appears to be up. NMFS will consider this and other information in future consultations. However, continued fishery removals in important times and areas for Steller sea lions where they are in continued decline was an important basis for the RPA and will continue to be a prime consideration under the existing BiOp.

You indicated in your letter that you felt that NOAA Fisheries' conclusions in its finding of no significant impact were flawed, particularly its conclusion that the effects of the interim final rule on the quality of the human environment is likely to be less than highly controversial. NOAA Fisheries considered all relevant factors when making its determinations and believes that its finding of no significant impact is supported by the environmental assessment of the interim final rule.

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[1] FR 77535, December 13, 2010, corrected 75 FR 81921, December 29, 2010.

The discussion of how and when to conduct an independent scientific review of the BiOp has been ongoing. At this time, NOAA Fisheries still intends to complete an independent scientific review of the BiOp. In December, the Council declined to support such a review through the Center for Independent Experts (CIE) because NOAA Fisheries has not modified the associated draft statement of work (SOW) and terms of reference (TOR) sufficiently to accommodate Council comments on those documents provided last February. Although we agree the enclosed SOW and TOR do not fully address Council comments, we are providing them to keep you informed about agency efforts toward transparent review of the scientific information contained in the BiOp and the appropriate use of that science to reach the conclusions presented in the BiOp. We appreciate the Council's interest and input concerning an independent scientific review and still are open to working with the Council on an alternative approach for this review. However, lacking formal action by the Council, we will continue to pursue a CIE review using the attached SOW and TOR.

Last, the Council requested an extended public comment period on the interim final rule and clarification on the process and timing of transition from the interim final rule to a final rule. Consistent with your request, the comment period on the interim final rule was extended 45 days, to February 28, 2011 (76 FR 2027, January 12, 2011). NMFS will assess comments received on the interim final rule and proceed to either: (a) develop a final rule, with any potential changes from the interim final rule governed under the Administrative Procedure Act to reflect the same "logical outgrowth" constraints that govern changes from a proposed rule to a final rule; or (b) initiate a new proposed rule and Section 7 consultation to change the RPA based on new information. Research conducted to date by NOAA General Counsel indicates that there is no specific deadline for an agency to publish a final rule superseding an interim final rule. Further action by NOAA Fisheries is dependent on information provided during the comment period and the timeliness of Council process to explore a new RPA. If NMFS and the Council intend to move expeditiously toward a new RPA, we anticipate that the interim final rule would remain in effect during the development of a new proposed rule. Under either option (a) or (b), the Council could initiate separate exploration of an alternative RPA using its Steller Sea Lion Mitigation Committee or some other process. This process could dovetail with the proposed and final rule process under option (b) if that was the Council's intent.

We will be pleased to further discuss these issues with you during the February Council meeting.

Sincerely,

Robert D Mecum

for James W. Balsiger Ph. D.
Administrator, Alaska Region

Enclosure

## Draft Statement of Work

**External Independent Peer Review by the Center for Independent Experts**
**Review of the 2010 final National Marine Fisheries (NMFS) Biological Opinion on the Effects of the Bering Sea/Aleutian Islands and Gulf of Alaska Federal Groundfish Fisheries and the State of Alaska Parallel Fisheries on ESA Listed Species and Designated Critical Habitats, Including Steller Sea Lions and Their Designated Critical Habitat**

**Scope of Work and CIE Process:** The National Marine Fisheries Service's (NMFS) Office of Science and Technology coordinates and manages a contract to provide external expertise through the Center for Independent Experts (CIE) to conduct impartial and independent peer reviews of NMFS scientific projects. This Statement of Work (SoW) described herein was established by the NMFS Contracting Officer's Technical Representative (COTR) and CIE based on the peer review requirements submitted by NMFS Project Contact. CIE reviewers are selected by the CIE Coordination Team and Steering Committee to conduct the peer review of NMFS science with project specific Terms of Reference (ToRs). Each CIE reviewer shall produce a CIE independent peer review report with specific format and content requirements (**Annex 1**). This SoW describes the work tasks and deliverables of the CIE reviewers for conducting an independent peer review of the following NMFS project.

**Project Description:** Under Section 7 of the ESA, NMFS Alaska Region has completed preparation of a programmatic Biological Opinion. A Biological Opinion is the summary document produced by NMFS that includes (1) the opinion of the agency as to whether or not the Federal action is likely to jeopardize the continued existence of a listed species, or result in adverse modification of designated critical habitat; (2) a summary of the information on which that opinion is based; and (3) a detailed discussion of the effects of the action on listed species and designated critical habitat.

In this opinion, NMFS PRD has evaluated the effects of three actions:

- Authorization of groundfish fisheries under the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area;
- Authorization of groundfish fisheries under the Fishery Management Plan for Groundfish of the Gulf of Alaska; and
- State of Alaska parallel groundfish fisheries for pollock, Pacific cod, and Atka mackerel

The objective of the evaluation in this biological opinion was to determine if the aforementioned groundfish fisheries, as implemented under their respective FMPs and State management plans, are likely to jeopardize the continued existence of listed species and/or are likely to destroy or adversely modify designated critical habitat. Based on the directives of the ESA and implementing regulations, as well as Court findings with respect to previous opinions, the scope of this consultation and resulting opinion is comprehensive. Through the consultation which has led to this Biological Opinion, NMFS has considered not only the effects of the fisheries themselves, but also the overall management framework as established under the respective FMPs. It is NMFS' intent to determine if that management framework includes sufficient conservation and management measures to insure the protection of listed species and their critical habitat.

The main listed species of concern is the endangered western distinct population segment of the Steller sea lion. The designated critical habitat of concern is critical habitat designated for Steller sea lions. The document also evaluates the effects of the action on the threatened eastern distinct population segment of Steller sea lion and the effects on three species of ESA-listed whales: fin whales, humpback whales and sperm whales.

The Biological Opinion that is the subject of this review is the result of a reinitiated Section 7 consultation. NMFS has previously consulted on the effect of the Bering Sea/Aleutian Islands groundfish fisheries, the Gulf of Alaska groundfish fisheries, and the State of Alaska parallel groundfish fisheries. On November 30, 2000, NMFS issued a FMP level biological opinion that evaluated the effects of authorization of the BSAI and GOA FMPs on ESA-listed species, as required by section 7(a)(2) of the ESA. Through that consultation and the resulting biological opinion, NMFS found that the FMPs, as proposed, would jeopardize both the western and eastern distinct population segments (DPSs) of Steller sea lion and adversely modified their designated critical habitat. As a result, a reasonable and prudent alternative (RPA) was provided and partially implemented in 2001.

In January 2001, an RPA committee, comprised of members of the fishing community, the conservation community, NMFS, State agencies and the Council's Science and Statistical Committee, was formed to develop an alternative RPA. In July of 2001, the action agency (SFD) proposed this alternative RPA to replace the components of the original FMP action that had resulted in the jeopardy and adverse modification finding in the 2000 FMP-level consultation. In 2001, NMFS prepared a project level biological opinion which reviewed the revised action and determined that it was not likely to jeopardize or adversely modify critical habitat. The Court reviewed the 2001 Biological Opinion and found that it was arbitrary and capricious and remanded the opinion back to NMFS for revision. In response to the Court order, NMFS prepared a supplement (NMFS 2003) to the 2001 biological opinion (NMFS 2001), which affirmed NMFS's conclusions that the revised FMP actions were not likely to jeopardize ESA-listed species or adversely modify critical habitat. In the 2001 Biological Opinion (2001:8) NMFS specified that:

> "…the FMP level biological opinion will remain in effect as NMFS' coverage at the plan level, and this opinion" (the 2001 opinion) will address the project level effects on listed species that would be likely to occur if the Council's preferred action were implemented."

Since the conclusion of the 2000 and the 2001 consultations and the completion of the resulting biological opinions and supplement, all subsequent modifications and proposed modifications to the action have been considered through informal consultations except for a March 9, 2006 Biological Opinion on the issuance of an exempted fishing permit (EFP) to support a feasibility study using commercial fishing vessels for acoustic surveys of pollock in the Aleutian Islands subarea.

On October 18, 2005, the North Pacific Fishery Management Council (Council) requested that NMFS SFD reinitiate consultation on the BSAI and GOA FMPs. The Council's request was based on the recognition that a substantial amount of new research on Steller sea lions had been published since NMFS completed the 2001 Biological Opinion and associated supplement (2003), such that an evaluation of the FMPs in light of that new information would be prudent. The consultation was formally reinitiated in April of 2006.

Thus, the basis for the reinitiation of consultation is the new information available to the agency as a result of approximately 10 years of intensive research on SSL in Alaska. The new information pertains to the status of the species, the trend and abundance, and the impacts of the existing conservation measures as well as the prosecution of the federal fisheries and the State of Alaska parallel groundfish fisheries. Additionally, since NMFS wrote the last Programmatic Biological opinion in 2000, the subsequent project level biological opinion in 2001, and the 2003 supplement, a considerable amount of information has been collected on topics of relevance to understanding the effects of this action. For example, there is considerable new information on the ways in which fisheries might have effects on various populations and the ecosystems in which they occur, the potential effects that global warming and natural environmental variability might have on the marine ecosystems of the North Pacific, and other topics that are relevant to understanding ways in which listed species and designated critical habitats might be affected by these fisheries.

The subject of review would be the **scientific information** contained in the Biological Opinion **and not the conclusions of the Opinion as per the ESA thresholds**. The reviewers would be asked to comment on the adequacy of the best available science and of the appropriate use of that science to reach the conclusions about potential effects of the actions on listed species and designated critical habitats. The reviewers would be asked to critically evaluate whether NMFS has used the best available science appropriately to consider not only the effects of the fisheries themselves, but also the overall management framework as established under the respective FMPs.
The Terms of Reference (ToRs) of the peer review are attached in **Annex 2**.

**Requirements for CIE Reviewers:**

Three CIE reviewers shall conduct an impartial and independent peer review in accordance with the SoW and ToRs herein. Each CIE reviewer's duties shall not exceed a maximum of 20 days (this may need to be longer) to complete all work tasks of the peer review described herein. CIE reviewers shall have the expertise, background, and experience to complete an independent scientific peer review in accordance with the SoW and ToRs herein. CIE combined reviewer expertise shall include: fishery science; fishery effects on ecosystems and/or ecosystem management of fisheries; marine mammal biology and ecology, with emphasis on otariids, if possible; and familiarity with the standards of the Endangered Species Act Section 7 in relation to conservation biology and marine mammal-fishery interactions.

The CIE reviewers shall have the expertise necessary to complete an impartial peer review and produce the deliverables in accordance with the SoW and ToR as stated herein.

**Location of Peer Review:**

Each reviewer shall conduct the peer review as desk review, therefore no travel is required.

**Statement of Tasks:**

Each CIE reviewer shall conduct necessary preparations prior to the peer review, conduct the peer review, and complete the deliverables in accordance with the SoW and milestone dates as specified in the Schedule section.

Prior to the Peer Review: Upon completion of the CIE reviewer selection by the CIE Steering committee, the CIE shall provide the CIE reviewer information (name, affiliation, and contact details) to the COTR, who forwards this information to the NMFS Project Contact no later the date specified in the Schedule of Milestones and Deliverables. The CIE is responsible for providing the SoW and ToRs to the CIE reviewers. The NMFS Project Contact is responsible for providing the CIE reviewers with the background documents, reports, foreign national security clearance, and information concerning other pertinent arrangements.

Pre-review Background Documents: Approximately six weeks before the peer review, the NMFS Project Contact will send all necessary background information and reports for the peer review to the CIE reviewers by electronic mail, shall make this information and these reports available at an FTP site available to the CIE reviewers, or shall provide electronic links to all background documents. In the case where the documents need to be mailed, the NMFS Project Contact will consult with the CIE on where to send documents. The CIE reviewers shall read all documents in preparation for the peer review.

Below is a tentative list of pre-review documents to be sent to the CIE reviewers as background information of the peer review:

1. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Areas. North Pacific Fishery Management Council. April 2009. http://alaskafisheries.noaa.gov/npfmc/fmp/bsai/bsai.htm

2. Fishery Management Plan for Groundfish of the Gulf of Alaska. North Pacific Fishery Management Council. April 2009. Available at: http://alaskafisheries.noaa.gov/npfmc/fmp/goa/goa.htm

3. Aleutian Islands Fishery Ecosystem Plan. North Pacific Fishery Management Council. December 2007. Available at: http://www.fakr.noaa.gov/npfmc/current_issues/ecosystem/AIFEPbrochure1207.pdf

4. 2000 Endangered Species Act Section 7 Consultation Biological and Incidental take Statement. Authorization of Bering Sea/Aleutian Islands groundfish fisheries based on the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish; and Authorization of Gulf of Alaska groundfish fisheries based on the Fishery Management Plan for Groundfish of the Gulf of Alaska. November 2000. National Marine Fisheries Service. 2000. Available at: http://fakr.noaa.gov/protectedresources/stellers/section7.htm

5. 2001 Biological Opinion and Incidental Take Statement. October 2001. Authorization of Bering Sea/Aleutian Islands groundfish fisheries based on the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish as modified by amendments 61 and 70; and Authorization of Gulf of Alaska groundfish fisheries based on the Fishery Management Plan for Groundfish of the Gulf of Alaska as modified by amendments 61 and 70. Parallel fisheries for pollock, Pacific cod, and Atka mackerel, as authorized by the State of Alaska within 3 nm of shore, plus selected supporting documents. National Marine Fisheries Service. 2001. Available at: http://fakr.noaa.gov/protectedresources/stellers/section7.htm

6. 2003 Supplement to the Endangered Species Action Section 7 Biological Opinion and Incidental take statement of October 2001, plus appendices. National Marine Fisheries Service. 2003. Available at: http://fakr.noaa.gov/protectedresources/stellers/section7.htm

7. Background information on the ESA and NMFS' responsibilities for implementing the ESA is available from the NMFS Office of Protected Resources web site at: Available at: http://www.nmfs.noaa.gov/pr/laws/esa.htm.

8. Copy of final 2010 Biological Opinion. Available at: http://www.fakr.noaa.gov/protectedresources/stellers/esa/biop/final/biop1210_chapters.pdf

9. Copy of public comments that are responsive to this review (list?).

10. Copy of white papers reference in the Biological Opinion (add url address).

11. Copy of references identified in public comments responsive to this review (list?)

These documents and other background material (or links to them) will be provided to the CIE reviewers by the Project Contact according to the schedule herein.

Documents 1 through XX are available for pre-review at this time. This list of pre-review documents may be updated up to two weeks before the peer review. Furthermore, the CIE reviewers are responsible only for the pre-review documents that are delivered to the reviewer in accordance to the SoW scheduled deadlines specified herein.

Desk Peer Review: The primary role of the CIE reviewers is to conduct an impartial peer review in accordance with the SoW and ToRs to ensure that the best available science is utilized for NMFS evaluations of the potential effects of actions on endangered species and designated critical habitat under Section 7 of the Endangered Species Act. **Modifications to the SoW and ToRs cannot be made during the peer review, and any SoW or ToRs modifications prior to the peer review shall be approved by the COTR and CIE Lead Coordinator.**

Contract Deliverables - Independent CIE Peer Review Reports: Each CIE reviewer shall complete an independent peer review report in accordance with the SoW. Each CIE reviewer shall complete the independent peer review according to the required format and content as described in Annex 1.

Each CIE reviewer shall complete the independent peer review addressing each ToR as described in Annex 2.

**Specific Tasks for CIE Reviewers:** The following chronological list of tasks shall be completed by each CIE reviewer in a timely manner as specified in the **Schedule of Milestones and Deliverables.**

1) Conduct necessary pre-review preparations, including the review of background material and reports provided by the NMFS Project Contact in advance of the peer review;
2) Conduct an independent peer review in accordance with the ToRs (Annex 2);
3) No later than REPORT SUBMISSION DATE, each CIE reviewer shall submit an independent peer review report addressed to the "Center for Independent Experts," and sent to Mr. Manoj Shivlani, CIE Lead Coordinator, via email to shivlanim@bellsouth.net, and CIE Regional Coordinator, via email to *{CIE will insert email}*. Each CIE report shall be written using the format and content requirements specified in Annex 1, and address each ToR in Annex 2;
4) CIE reviewers shall address changes as required by the CIE review in accordance with the schedule of milestones and deliverables.

**Schedule of Milestones and Deliverables:** CIE shall complete the tasks and deliverables described in this SoW in accordance with the following schedule.
Draft Schedule:

| | |
|---|---|
| 1 March 2011 | NMFS Project Contact sends the CIE Reviewers the report and background documents TENTATIVE DATE |
| 1-30 March 2011 | Each reviewer conducts an independent peer review as a desk review |
| 15 April 2011 | CIE reviewers submit CIE independent peer review reports to the CIE Lead Coordinator and CIE Regional Coordinator |
| 20 April 2011 | CIE submits CIE independent peer review reports to the COTR |
| 25 April 2011 | The COTR distributes the final CIE reports to the NMFS Project Contact and Regional Administrator |

**Modifications to the Statement of Work:** Requests to modify this SoW must be made through the Contracting Officer's Technical Representative (COTR) who submits the modification for approval to the Contracting Officer at least 15 working days prior to making any permanent substitutions. The Contracting Officer will notify the CIE within 10 working days after receipt of all required information of the decision on substitutions. The COTR can approve changes to the milestone dates, list of pre-review documents, and Terms of Reference (ToR) of the SoW as long as the role and ability of the CIE reviewers to complete the SoW deliverable in accordance with the ToRs and deliverable schedule are not adversely impacted. The SoW and ToRs cannot be changed once the peer review has begun.

**Acceptance of Deliverables:** Upon review and acceptance of the CIE independent peer review reports by the CIE Lead Coordinator, Regional Coordinator, and Steering Committee, these reports shall be sent to the COTR for final approval as contract deliverables based on compliance with the SoW. As specified in the Schedule of Milestones and Deliverables, the CIE shall send via e-mail the contract deliverables (the CIE independent peer review reports) to the COTR (William Michaels, via William.Michaels@noaa.gov).

**Applicable Performance Standards:** The contract is successfully completed when the COTR provides final approval of the contract deliverables. The acceptance of the contract deliverables shall be based on three performance standards: (1) each CIE report shall have the format and content in accordance with Annex 1, (2) each CIE report shall address each ToR as specified in Annex 2, (3) the CIE reports shall be delivered in a timely manner as specified in the schedule of milestones and deliverables.

**Distribution of Approved Deliverables:** Upon notification of acceptance by the COTR, the CIE Lead Coordinator shall send via e-mail the final CIE reports in *.PDF format to the COTR. The COTR will distribute the approved CIE reports to the NMFS Project Contact and regional Center Director.

## Key Personnel:

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Contracting Officer's Technical Representative (COTR)
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Assistant Regional Administrator
Protected Resources Division
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Kaja.Brix@noaa.gov

## Annex 1: Format and Contents of CIE Independent Peer Review Report

1. The CIE independent report shall be prefaced with an Executive Summary providing a concise summary of the findings and recommendations.

2. The main body of the reviewer report shall consist of a Background, Description of the Individual Reviewer's Role in the Review Activities, Summary of Findings for each ToR, and Conclusions and Recommendations in accordance with the Terms of Reference (ToRs).

   a. Reviewers should discuss their independent views of findings, conclusions, and recommendations for each ToRs.

   b. The CIE independent report shall be a stand-alone document as an independent peer review.

3. The reviewer report shall include separate appendices as follows:

   Appendix 1: Bibliography of materials provided for review

   Appendix 2: A copy of the CIE Statement of Work

# Annex 2: Terms of Reference

1. Read and assess the final 201 Biological Opinion on the BSAI and GOA groundfish fisheries; and state waters parallel fisheries for pollock, Atka mackerel, and Pacific cod.

2. Make an assessment as to whether the scientific information constitutes a reasonable rationale for measures selected to ensure the operation of the groundfish fishery is not likely to jeopardize the survival or continued existence of the western DPS of Steller sea lions.

3. CIE reviewers are requested to specifically focus on and address the following questions in their review reports:

   - Does the Biological Opinion thoroughly describe what is known about the status of the listed species?
   - Does the Biological Opinion thoroughly describe the effects (direct and indirect) of the action on the listed species and its critical habitat?
   - Can you identify any additional literature that should be brought to bear on this Biological Opinion?
   - Can you identify any additional assessments or analyses that should contribute to a conclusion in this Biological Opinion?

# PUBLIC TESTIMONY SIGN-UP SHEET

**Agenda Item:** B Reports

| | NAME *(PLEASE PRINT)* | TESTIFYING ON BEHALF OF: |
|---|---|---|
| 1 | Simean Swetzof Jr. | My-Self |
| 2 | Kenny Down | Freezer Longline Coalition |
| 3 | Donna Parker | Marine Conservation Alliance |
| 4 | John Gauvin | AK Seafood Cooperative |
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NOTE to persons providing oral or written testimony to the Council: Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person " to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.