AGENDA B-8
FEBRUARY 2013

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver
Executive Director

DATE: January 25, 2013

SUBJECT: Protected Resources Report

ESTIMATED TIME
6 HOURS
All B Items

ACTION REQUIRED

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

BACKGROUND

Steller sea lions
Writing for the Steller Sea Lion Mitigation Measures EIS is underway. Ms. Melanie Brown (NMFS AKR) is present to provide an update on the progress made to date.

Deep water corals
The 90 day finding on the petition to list 43 species of deep water corals in Alaskan waters is expected soon. If the finding is available at the time of this report, Council or NMFS PR staff will provide an update to the Council.

Polar Bears
On January 11, 2013 U.S District Judge Ralph Beistline remanded the final decision establishing critical habitat for polar bears (*Ursus maritimus*) in the Alaskan Arctic to the USFWS. The Court found that the record lacked evidence of physical or biological features to support establishing critical habitat in some parts of the Arctic, and that the USFWS failed to follow applicable ESA procedures. The Court, therefore, vacated the Final Rule and remanded it to the USFWS to correct the "substantive and procedural deficiencies". The Court's remand is attached as Item B-8(a).

Ringed Seal
On December 28, 2012 NMFS published notice in the Federal Register (Item B-8(b)) of the final determination to list the Arctic (*Phoca hispida hispida*), Okhotsk (*Phoca hispida ochotensis*), and Baltic (*Phoca hispida botnica*) subspeces of the ringed seal as threatened, and the Ladoga (*Phoca hispida ladogensis*) subspecies of the ringed seal as endangered under the U.S. ESA. The listing, which was originally proposed in December 2010, was delayed because of substantial disagreement relating to the sufficiency or accuracy of the model projections and analysis of future sea ice and snow cover for Arctic ringed seals. This listing follows independent peer review of the sections of the December 2010 determination for which there was substantial disagreement.

NMFS determined that the principal threat to ringed seals is habitat alteration stemming from climate change. Specifically, for Arctic ringed seals there is concern 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. This may result in reduced snow cover, which may affect the seals' ability to create snow lairs for pups' protection from cold temperatures and predators. NMFS is also concerned with the potential impacts of ocean acidification on the ringed seals' prey base.

In the original determination from December 10, 2010 NMFS proposed protective regulations pursuant to section 4(d) of the U.S. ESA, including prohibitions on import, take, possession, transport, or sale of ringed seals or any ringed seal parts. Based on public comments and on additional review, NMFS has withdrawn those proposed protective regulations for ringed seals.

NMFS has determined that they lack the necessary data and information to identify and describe primary constituent elements (PCEs) of the habitat of ringed seals, and is therefore not able to designate critical habitat for ringed seals at this time. Critical habitat for Arctic ringed seals will be proposed in a separate rulemaking. No timeframe for critical habitat designation was given.

Bearded Seal

On December 28, 2012 NMFS published notice in the Federal Register (Item B-8(c)) of the final determination to list the Beringia and Okhotsk distinct population segments of the bearded seal (*Erignathus barbatus nauticus*) subspecies as threatened under the U.S. ESA. The listing, which was originally proposed in December 2010, was delayed because of substantial disagreement relating to the sufficiency or accuracy of the model projections and analysis of future sea ice for the Beringia DPS. This listing follows independent peer review of the sections of the December 2010 determination for which there was substantial disagreement.

The main concern for these DPS of bearded seals is the likelihood that their sea ice habitat has been modified by the warming climate and that the scientific consensus projects area for continued and perhaps accelerated warming in the foreseeable future. The main threats associated with the impacts of the warming climate are expected to manifest throughout the current breeding and molting range, and may reduce the availability of suitable breeding and molting habitat.

In the original determination from December 10, 2010 NMFS proposed protective regulations pursuant to section 4(d) of the U.S. ESA, including prohibitions on import, take, possession, transport, or sale of bearded seals or any bearded seal parts. Based on public comments and on additional review, NMFS has withdrawn those proposed protective regulations for these DPSs of bearded seals.

NMFS has determined that they lack of necessary data and information to identify and describe primary constituent elements (PCEs) of the habitat of bearded seals, and is therefore not able to designate critical habitat for these DPSs at this time. Critical habitat for the Beringia population segment of the bearded seal will be proposed in a separate rulemaking. No timeframe for critical habitat designation was given.

North Pacific Right Whale

On January 23, 2013 the National Marine Fisheries service released a draft Recovery Plan for the north Pacific right whale. The North Pacific right whale (*Eubalaena japonica*) is among the rarest of all large whale species, with an estimated 30 individuals in the eastern North Pacific population and 900 individuals in the separate, western North Pacific population. The principal threat to North Pacific right whales was commercial hunting, both legal and illegal, which drove populations to very low levels.

Because commercial whaling for North Pacific right whales has ceased, there are no known "high level" threats to North Pacific right whales. The following threats to North Pacific right whales are considered to have low relative impact to recovery: disturbance from vessels, research activities, predation and natural mortality, and competition for resources. Other potential threats are considered to have unknown impact on recovery and include: disturbance from anthropogenic noise, collisions with vessels, disease,

contaminants and pollutants, marine debris, and loss of prey base due to climate change.

Because the current status of the North Pacific right whales is unknown, and because a substantial number of potential factors have unknown impacts, the primary purpose of the Recovery Plan is to provide a research strategy to obtain data necessary to estimate population abundance, trends, and structure, and to identify factors that may be limiting North Pacific right whale recovery. A number of recovery actions are identified and prioritized in the Recovery Plan.

The Recovery Plan is available from the NMFS website at http://www.nmfs.noaa.gov/pr/recovery/plans/rightwhale_northpacific_draft.pdf. NMFS is soliciting review and comment from the public and all interested parties on the Plan. Comments on the draft Plan must be received by March 11, 2013. Comments can be submitted online at http://www.regulations.gov, by mail to Angela Somma, National Marine Fisheries Service, Office of Protected Resources, Endangered Species Division, 1325 East West Highway, Silver Spring, MD 20919.

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF ALASKA

ALASKA OIL AND GAS ASSOCIATION, *et al.*, Plaintiffs, v. KENNETH L. SALAZAR, *et al.*, Defendants.	Case No. 3:11-cv-0025-RRB
STATE OF ALASKA, Plaintiff, v. KENNETH L. SALAZAR, *et al.*, Defendants.	Case No. 3:11-cv-0036-RRB
ARCTIC SLOPE REGIONAL CORPORATION, *et al.*, Plaintiffs, v. KENNETH L. SALAZAR, *et al.*, Defendants.	Case No. 3:11-cv-0106-RRB Order Granting Plaintiffs' Motions For Summary Judgment

I. INTRODUCTION

Before the Court are Plaintiffs Alaska Oil and Gas Association, the American Petroleum Institute, Arctic Slope Regional Corporation, the North Slope Borough, NANA Regional Corporation, Inc., Bering Straits Native Corporation, Calista Corporation, Tikigaq Corporation, Olgoonik Corporation, Inc., Ukpeagvik Inupiat Corporation, Kuukpik Corporation, Cully Corporation, Kaktovik, Inupiat Corporation, the Inupiat Community of the Arctic Slope, and State of Alaska with three motions for summary judgment, at Docket Numbers 50, 55, and 57, challenging the United States Department of the Interior, Fish and Wildlife Service's ("Service") final rule designating critical habitat for the polar bear ("Final Rule") under the Endangered Species Act ("ESA"). As the present litigation involves three separate but closely related summary judgment motions from three partially consolidated cases, the Court will treat all three motions as a single motion.

Plaintiffs contend that the Service proceeded with an unprecedented critical habitat designation despite the Service's finding that such designation "*will not result in any present or anticipated future conservation benefit to the polar bear species*" and is not "'essential' to the conservation of the species."[1] Plaintiffs further opine that: (1) such designation will "have significant adverse ramifications for the people who live and work on the North Slope, for

[1]Docket 51 at 9 (emphasis in original).

Alaska's oil and gas industry, and for the State of Alaska";[2] (2) the designation will "leave the species worse off because it is impairing the cooperative relationship that the . . . [Service] has sought to build with the Alaska Natives";[3] (3) the Service's failure to exclude "native-owned lands and rural communities" will "disproportionately harm Alaska Natives and other North Slope Borough residents";[4] (4) the Service failed "to engage in meaningful consultation with [the State of Alaska and with] Alaska Natives early in the rulemaking process";[5] (5) the Service's inclusion of "a one-mile no disturbance zone as part of the barrier island habitat unit of the designation . . . exceeds its authority under the ESA"; [6] (6) "[t]he Service failed to adequately consider and include in the calculation of the total economic impacts of the designation the substantial indirect incremental economic impacts";[7] (7) "[t]he Service failed to provide Alaska with an adequate written justification as required by the ESA . . . for promulgating a . . . designation that conflicts with the comments submitted to the" Service;[8] (8) the Service failed to address the area exclusion requests by Alaska "and failed to adequately consider whether the

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[2] *Id.*

[3] Docket 56 at 5.

[4] *Id.*

[5] *Id.* at 6.

[6] *Id.*

[7] Docket 58 at 9.

[8] *Id.*

benefits of excluding those areas were outweighed by the benefits of including them";[9] (9) "[t]he Service improperly included areas that it concedes were not occupied by polar bears at the time of the designation";[10] and (10) "[t]he Service improperly included areas as critical habitat without determining that those areas contained the physical or biological features essential to the conservation of the polar bear."[11] Plaintiffs seek the invalidation of the Final Rule and request that the Court vacate and remand the Rule.

Defendants Kenneth L. Salazar, Secretary of the Interior, Rowan W. Gould, Acting Director of the Service, and the Service (collectively, "Government") and Defendant-Intervenors Center for Biological Diversity, Defenders of Wildlife, Inc., and Greenpeace, Inc. (collectively, "Intervenors") oppose and cross-move for summary judgment at Docket Numbers 64 and 68 respectively.[12] The Government argues that Plaintiffs insert requirements into the ESA that simply do not appear in the Act, ignore or disagree with much of the case law that interprets the critical habitat provisions of the ESA, and ask the Court to review technical and scientific matters that Congress explicitly left to the discretion and expertise of the Service.[13] The Government

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[9]*Id.* at 10.

[10]*Id.*

[11]*Id.*

[12]The Court will treat the Government's and Intervenors' Oppositions / Cross-Motions as oppositions to Plaintiffs' Summary Judgment Motions.

[13]Docket 64 at 15-16.

further claims that the designation "provides many important conservation benefits for the species . . . ."[14] Additionally, the Government contends that because the polar bear and its habitat are highly threatened by climate change, the designation of critical habitat for the species can help mitigate any further habitat degradation.[15] Intervenors agree with the Government and state that the Final Rule "complies with the letter and intent of the ESA."[16]

Inasmuch as the Court concludes that the Final Rule, while valid in many respects, falls short of the APA's arbitrary and capricious standard and because the Service failed to follow the procedural requirements of the ESA, the Court vacates the Final Rule and remands it to the Service.

II. FACTS

These partially consolidated cases present Plaintiffs' collective challenges to the Service's ESA rulemaking designation of critical habitat for the polar bear. The cases are subject to administrative record review under the Administrative Procedure Act ("APA").[17] There are no contested issues of fact, and all parties agree that the cases will be decided by summary judgment

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[14]*Id.* at 15.

[15]*Id.*

[16]Docket 68 at 6.

[17]5 U.S.C. § 706(2) (1966).

based on the administrative record.[18]

III. STANDARD OF REVIEW

A. Summary Judgment

Rule 56 of the Federal Rules of Civil Procedure provides that summary judgment should be granted if there is no genuine dispute as to material facts and if the moving party is entitled to judgment as a matter of law. All evidence presented by the non-movant must be believed for purposes of summary judgment, and all justifiable inferences must be drawn in favor of the non-movant.[19] A court may grant summary judgment if the motion and supporting materials show that the movant is so entitled.[20] The sufficiency of the evidence shown must be such that a judge or jury is required "'to resolve the parties' differing versions of the truth at trial'"[21] because the facts could reasonably be resolved in favor of either party.[22]

B. Administrative Procedure Act

Under the APA, "final agency action for which there is no other adequate remedy in a

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[18]Docket 32 at 2-4.

[19]*Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986).

[20]Fed. R. Civ. P. 56(e)(2), (3).

[21]*Anderson*, 477 U.S. at 249 (quoting *First Nat'l Bank of Ariz. v. Cities Serv. Co.*, 391 U.S. 253, 288-89 (1968)).

[22]*Id.* at 250.

court is subject to judicial review."[23] "[T]he reviewing court shall decide all relevant questions of law, interpret constitutional and statutory provisions, and determine the meaning or applicability of the terms of an agency action."[24] After a court has finished reviewing the action, the "court shall hold unlawful and set aside agency action, findings, and conclusions found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law; . . . in excess of statutory jurisdiction, authority, or limitations, or short of statutory right; [or] without observance of procedure required by law . . . ."[25]

Judicial review of agency action is limited to those actions required by law.[26] A court cannot review agency action that Congress has left to agency discretion.[27] Once a court is "satisfied that an agency's exercise of discretion is truly informed," a court "'must defer to th[at] informed discretion.'"[28] Although an agency "cannot act on pure speculation or contrary to the evidence, the ESA accepts agency decisions in the face of uncertainty."[29] Yet, "an agency must

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[23]5 U.S.C. § 704 (1966).

[24]5 U.S.C. § 706 (1966).

[25]5 U.S.C. § 706(2)(A), (C), (D).

[26]*Norton v. S. Utah Wilderness Alliance*, 542 U.S. 55, 64-65 (2004).

[27]*Id.*

[28]*Greenpeace Action v. Franklin,* 14 F.3d 1324, 1331-32 (9th Cir. 1992) (quoting *Marsh v. Or. Natural Res. Council,* 490 U.S. 360, 377 (1989)).

[29]*Ariz. Cattle Growers' Ass'n v. Salazar*, 606 F.3d 1160, 1163-64 (9th Cir. 2010).

cogently explain why it has exercised its discretion in a given manner . . . ."[30] Additionally, even if agency decision making is discretionary, the required procedures of such decision making may not be.[31]

"Summary judgment is an appropriate mechanism for" resolving disputes over agency action.[32] "[T]he function of the district court is to determine whether or not as a matter of law the evidence in the administrative record permitted the agency to make the decision it did."[33] However, the agency is the fact finder, not the district court.[34]

When reviewing "under the arbitrary and capricious standard[,]" a court is deferential to the agency involved.[35] The agency's action is to be "presum[ed] . . . valid."[36] A court should

> not vacate an agency's decision unless it 'has relied on factors which Congress had not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence

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[30]*Motor Vehicle Mfrs. Assn. of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 48-49 (1983).

[31]*Bennett v. Spear*, 520 U.S. 154, 172 (1997).

[32]*City & Cnty. of S. F. v. United States*, 130 F.3d 873, 877 (9th Cir. 1997) (quoting *Occidental Eng'g Co. v. INS*, 753 F.2d 766, 770 (9th Cir. 1985)).

[33]*Id.* (quoting *Occidental Eng'g Co.*, 753 F.2d at 769).

[34]*Occidental Eng'g Co.*, 753 F.2d at 769.

[35]*Nat'l Ass'n of Home Builders v. Defenders of Wildlife*, 551 U.S. 644, 658 (2007).

[36]*Cal. Wilderness Coal. v. U.S. Dep't of Energy*, 631 F.3d 1072, 1084 (9th Cir. 2011) (quoting *Nw. Ecosystem Alliance v. U.S. Fish & Wildlife Serv.*, 475 F.3d 1136, 1140 (9th Cir. 2007)).

> before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.'[37]

If an agency has not committed one of the these errors, and "'a reasonable basis exists for its decision[,]'" the action should be affirmed.[38] But, in considering whether there is a reasonable basis for the action, a "reviewing court 'must consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment.'"[39] A court's consideration of agency action must be "'thorough, probing, [and] in-depth . . . .'"[40] A reviewing court "'must not rubber-stamp . . . administrative decisions that [a court deems] inconsistent with a statutory mandate or that frustrate the congressional policy underlying a statute.'"[41] An agency must have taken "a 'hard look' at the potential . . . impacts at issue."[42] Moreover, if the agency does not satisfactorily explain its decision, a court should not attempt

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[37]*Nat'l Ass'n of Home Builders*, 551 U.S. at 658 (quoting *Motor Vehicle Mfrs. Assn. of U.S., Inc.*, 463 U.S. at 43).

[38]*Cal. Wilderness Coal.*, 631 F.3d at 1084 (quoting *Nw. Ecosystem Alliance*, 475 F.3d at 1140).

[39]*Marsh*, 490 U.S. at 377-78 (quoting *Citizens to Pres. Overton Park, Inc. v. Volpe*, 401 U.S. 402, 416 (1971))

[40]*Nat'l Ass'n of Home Builders v. Norton*, 340 F.3d 835, 840-41 (9th Cir. 2003) (quoting *James Madison Ltd. by Hecht v. Ludwig*, 82 F.3d 1085, 1098 (D.C. Cir.1996)).

[41]*Ocean Advocates v. U.S. Army Corps of Eng'rs*, 402 F.3d 846, 859 (9th Cir. 2005) (quoting *Ariz. Cattle Growers' Ass'n v. United States Fish & Wildlife*, 273 F.3d 1229, 1236 (9th Cir. 2001)).

[42]*Tri-Valley CAREs v. U.S. Dep't of Energy*, 671 F.3d 1113, 1126 (9th Cir. 2012) (quoting *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 814 (9th Cir. 1999)).

itself to make up for any deficiencies: A court may not supply a reasoned basis for the agency's action that the agency itself has not given.[43] In other words, an "agency must set forth clearly the grounds on which it acted."[44] Additionally, "an agency must account for evidence in the record that may dispute the agency's findings."[45]

A court must inquire whether "the agency . . . examine[d] the relevant data and articulate[d] a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'"[46] "This inquiry must 'be searching and careful,' but 'the ultimate standard of review is a narrow one.'"[47] "[A] court is not to substitute its judgment for that of the agency."[48] "The APA does not allow the court to overturn an agency decision because it disagrees with the decision or with the agency's conclusions . . . ."[49] Rather, a court should

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[43]*Motor Vehicle Mfrs. Ass'n of U.S., Inc.*, 463 U.S. at 42-43.

[44]*Atchison T. & S. F. Ry. Co. v. Wichita Bd. of Trade*, 412 U.S. 800, 807 (1973).

[45]*Port of Seattle, Wash. v. F.E.R.C.*, 499 F.3d 1016, 1035 (9th Cir. 2007) (citing *Universal Camera Corp. v. N.L.R.B.*, 340 U.S. 474, 488 (1951)).

[46]*Id.* (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962)).

[47]*Marsh*, 490 U.S. at 377-78 (quoting *Citizens to Pres. Overton Park, Inc.*, 401 U.S. at 416).

[48]*Motor Vehicle Mfrs. Ass'n of U.S., Inc.*, 463 U.S. at 42-43.

[49]*River Runners for Wilderness v. Martin*, 593 F.3d 1064, 1070 (9th Cir. 2010) (citing *Vt. Yankee Nuclear Power Corp. v. Natural Res. Def. Council, Inc.*, 435 U.S. 519, 555 (1978)).

"uphold a decision of less than ideal clarity if the agency's path may reasonably be discerned."[50] A court "is not to second guess the agency's action[, but] . . . must defer to a reasonable agency action 'even if the administrative record contains evidence for and against its decision.'"[51] The agency's action "'need only be a reasonable, not the best or most reasonable, decision.'"[52]

Deference to an agency's factual conclusions is important when the subject matter involves an agency's experts' complex scientific and technical opinions: "When specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive."[53] However, "[t]he deference accorded an agency's scientific or technical expertise is not unlimited."[54] "The presumption of agency expertise can be rebutted when its decisions, while relying on scientific expertise, are not reasoned."[55] A court "defer[s] to agency expertise on methodology issues, 'unless the agency has completely failed to address some factor

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[50]*Nat'l Ass'n of Home Builders*, 551 U.S. at 658 (quoting *Motor Vehicle Mfrs. Assn. of United States, Inc.*, 463 U.S. at 43).

[51]*Modesto Irr. Dist. v. Gutierrez*, 619 F.3d 1024, 1036 (9th Cir. 2010) (quoting *Trout Unlimited v. Lohn*, 559 F.3d 946, 958 (9th Cir. 2009)).

[52]*River Runners for Wilderness*, 593 F.3d at 1070 (quoting *Nat'l Wildlife Fed. v. Burford*, 871 F.2d 849, 855 (9th Cir. 1989)).

[53]*Marsh*, 490 U.S. at 377-78.

[54]*Brower v. Evans*, 257 F.3d 1058, 1067 (9th Cir. 2001) (citing *Defenders of Wildlife v. Babbitt*, 958 F.Supp. 670, 679 (D. D.C. 1997)).

[55]*Id.* (citing *Defenders of Wildlife*, 958 F.Supp. at 679).

consideration of which was essential to [making an] informed decision.'"[56]

"Unlike substantive challenges [under the arbitrary and capricious standard, a court's] review of an agency's *procedural compliance* is exacting, yet limited."[57] A court is limited to ensuring that statutorily prescribed procedures have been followed, including determining the adequacy of the agency's notice and comment procedure, without deferring to an agency's own opinion of the opportunities it provided.[58] Indeed, "'regulations subject to the APA cannot be afforded the force and effect of law if not promulgated pursuant to the statutory procedural minimum found in that Act.'"[59]

IV. DISCUSSION

A. The Service's designation is not overbroad.

Plaintiffs argue that the Service acted contrary to congressional intent when the Service designated "virtually all of the U.S. range of the polar bear."[60] "[W]hen the statutory language is

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[56]*Id.* (quoting *Inland Empire Pub. Lands Council v. Schultz*, 992 F.2d 977, 981 (9th Cir.1993)).

[57]*Kern County Farm Bureau v. Allen*, 450 F.3d 1072, 1075-76 (9th Cir. 2006) (emphasis added) (quoting *Natural Res. Def. Council, Inc. v. SEC*, 606 F.2d 1031, 1045, 1048-49 (D.C. Cir. 1979)).

[58]*Id.* (quoting *Natural Res. Def. Council v. EPA*, 279 F.3d 1180, 1186 (9th Cir. 2002)).

[59]*Western Oil & Gas Ass'n v. U.S. EPA*, 633 F.2d 803, 812-13 (9th Cir. 1980) (quoting *Chrysler Corp. v. Brown*, 441 U.S. 281, 313 (1979)).

[60]Docket 51 at 23.

plain, we must enforce it according to its terms"[61] Under 16 U.S.C. § 1532(5)(C),"critical habitat shall not include the *entire* geographical area which can be occupied by the" species.[62] Congress's intent is clear. The Service did not designate the *entire* area that could be occupied by the polar bear. The Service left out "those U.S. waters north of the 300-meter depth boundary in the Beaufort Sea[,][63] . . . [some] areas on the North Slope of Alaska that polar bears use for denning[, and] . . . any denning habitat on the West coast of Alaska or west of the town of Barrow . . . ."[64] "Entire" does not mean virtually all; it means *all*. The Service did not designate all of the potential polar bear geographical area. Thus, the Service's action did not violate the APA.

B. <u>The Service's labeling the entire designation as "occupied" is lawful</u>.

Plaintiffs contend that "[t]he Service violated the ESA by concluding that certain geographic areas were occupied by the polar bear at the time of listing without *sufficient* evidence of polar bear occurrence in these areas to show the species is likely to be present during any reasonable span of time."[65] The Court disagrees.

Under the ESA, critical habitat can be composed of areas either occupied or unoccupied .

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[61]*Jimenez v. Quarterman*, 555 U.S. 113, 118 (2009).

[62]Emphasis added.

[63]Administrative Record Index ("ARI") PBCH004587, PBCH0045491.

[64]ARI PBCH0045514-16, PBCH0047384, PBCH0047392, PBCH0045489.

[65]Docket 58 at 42.

by the listed species.[66] Designation of unoccupied areas requires a more rigorous justification from the Service than does the designation of occupied areas.[67] However, the word "occupied" has not been defined by Congress.[68] When ambiguity arises in applying the ESA, the Supreme Court has determined that the Service's "'reasonable interpretation' of the statutory scheme" is owed a degree of deference.[69] Still, "such deference is appropriate only where 'Congress has not directly addressed the precise question at issue' through the statutory text."[70] Thus, where Congress has not addressed statutory ambiguity, a court must establish "whether the agency's answer is based on a permissible construction of the statute."[71]

Here, the Service defined "occupied" regions "as 'areas that the [species] uses with sufficient regularity that it is likely to be present during any reasonable span of time.'"[72] The Ninth Circuit has held that such definition is reasonable.[73] In light of the Ninth Circuit's

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[66]*Ariz. Cattle Growers' Ass'n*, 606 F.3d at 1163-64.

[67]*Id.*

[68]*Id.* at 1164.

[69]*Nat'l Ass'n of Home Builders*, 551 U.S. at 665-66 (quoting *Babbitt v. Sweet Home Chapter, Communities for Great Ore.*, 515 U.S. 687, 703 (1995)).

[70]*Id.* (quoting *Chevron U.S.A. Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 843 (1984)).

[71]*Id.* (quoting *Chevron U.S.A. Inc.*, 467 U.S. at 843).

[72]ARI PBCH0035658-59.

[73]*Ariz. Cattle Growers' Ass'n*, 606 F.3d at 1165.

acceptance and after the Court's independent review, the Service's definition of the term "occupied" is a permissible construction of the ESA.

With the Service's definition of "occupied," the Court turns to the sufficiency of the evidence to establish that polar bears occupied the areas in question at the time of listing. The Service shall make determinations required by the ESA "solely on the basis of the best scientific and commercial data available . . . after conducting a review of the status of the species."[74] Determining a species' frequency of use of an area "is a highly contextual and fact-dependent inquiry [that is] . . . within the purview of the agency's unique expertise and [is] entitled to the standard deference afforded such agency determinations."[75] Additionally, in those areas "where habitat is used on a sporadic basis, allowing the . . . [Service] to designate as 'occupied' habitat where the species is *likely to be found* promotes the ESA's conservation goals and comports with the ESA's policy of 'institutionalized caution.'"[76] Yet, "there is no evidence that Congress intended to allow the . . . Service to regulate any parcel of land that is *merely capable* of supporting a protected species."[77] An "agency may not determine that areas unused by [a

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[74]16 U.S.C. § 1533(b)(1)(A) (2003).

[75]*Id.* at 1165.

[76]*Id.* at 1167 (emphasis added).

[77]*Ariz. Cattle Growers' Ass'n,* 273 F.3d at 1244 (emphasis added).

species] are occupied merely because those areas are suitable for future occupancy."[78]

Here, Plaintiffs attack the Service's evidence of "occupied" areas as old, sporadic sightings that do not show that polar bears existed in the areas at the time of listing in 2008.[79] The Service's justification for categorizing as "occupied" those areas "south and east of St. Lawrence Island, including Norton Sound down to Hooper Bay" is based on a myriad of information that, although antiquated, shows that polar bears resided in those areas in the past and were *likely to be found* there in 2008, thus, falling within the accepted definition of "occupied."[80] Deciding whether such areas were occupied or not at the time of listing falls under the Service's unique expertise and deserves this Court's deference. With the presumption of validity that is attached to all agency actions, and in light of the dearth of opposing or unconsidered record evidence presented by Plaintiffs, the Court must respect the Service's contention that it used the best scientific and commercial data available. The Service must rely only on *available* data, and Plaintiffs have not shown that any more recent or concrete data exists that disputes that polar bears were likely to be found in the areas in question at the time of listing. Therefore, the Service's categorization as "occupied" of such areas is reasonable under the APA.

C. Inclusion of the sea ice primary constituent element is rational.

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[78]*Ariz. Cattle Growers' Ass'n*, 606 F.3d at 1167.

[79]Docket 79 at 25-26.

[80]ARI PBCH0045556, PBCH0047389-90, PBCH0047544, PBCH0049037, PBCH0049039, PBCH0049554, PBCH0045483.

Plaintiffs argue that because "[t]he Service failed to adequately explain and substantiate its reasoning" defining the sea ice primary constituent element ("PCE"), the inclusion of the sea ice area, Unit 1, in the designation is unlawful.[81] Plaintiffs misinterpret the record evidence.

It is clear from even a cursory reading of the record that the Service has established a rational connection between the facts supporting the inclusion of the sea ice area in the designation and the Final Rule. Where Plaintiffs contend that polar bears select their sea ice habitat based on *three* characteristics, the record lists only *two*:

> (1) sea-ice concentrations approximately 50 percent or greater that are adjacent to open water areas, leads, polynyas, and that are over the shallower, more productive waters over the continental shelf (waters 300 m (984.2 ft) or less in depth); and (2) flaw zones that are over the shallower, more productive waters over the continental shelf (waters 300 m (984.2 ft) or less in depth).[82]

Furthermore, whereas the Final Rule defined the other two PCEs as being comprised of multiple components or features, the sea ice PCE has merely one feature: Sea ice over waters 300 m (984.2 ft) or less in depth that occurs over the continental shelf with adequate prey resources to support polar bears.[83] Plaintiffs claim that the single feature definition of the sea ice PCE cannot

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[81]Docket 58 at 50.

[82]ARI PBCH0045506.

[83]ARI PBCH0045510.

be reconciled with the multiple-characteristic explanation in the record.[84] However, "by defining the sea-ice PCE as . . . 'sea ice over waters 300 m (984.2 ft) or less in depth that occurs over the continental shelf . . .[,]' the Service captured *both* of the characteristics" defined by the record.[85] Therefore, due to the rational connection between the facts in the record and the Service's action, and in light of the deference provided to the Service's scientific and technical expertise, the Court finds the Service's inclusion of the sea ice PCE, found in Unit 1, to be valid and not in violation of the APA.

D. The Service shows special management considerations or protection may be required.

Plaintiffs argue that: (1) "[t]he Service has not demonstrated that any special measures may be required";[86] and (2) "[t]he Service unlawfully failed to reconcile its directly contradictory findings."[87] The ease with which the special-management-considerations-or-protection requirement can be satisfied almost renders such requirement nonexistent. Nonetheless, the Service satisfies the low legal standard.[86]

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[84]Docket 58 at 50.

[85]Docket 64 at 53 (quoting PBCH0045506) (emphasis added).

[86]Docket 51 at 33.

[87]Docket 77 at 23.

[86]Because the Court has determined that the Service failed to adequately show the existence of physical or biological features in Units 2 and 3, the Court will focus solely on Unit 1 in analyzing the fulfilment of the special-management-considerations-or-protection requirement.

In addition to establishing that areas designated as a critical habitat contain physical or biological features essential to the conservation of the species, the Service must also show that such features "*may* require *special management considerations or protection.*"[87] "'Special management considerations or protection' means any methods or procedures *useful* in protecting physical and biological features of the environment for the conservation of listed species."[88]

The word "may" connotes possibility.[89] Areas that satisfy the ESA's critical habitat requirements are lands "for which special management or protection *is possible.*"[91] "So long as they are useful in protecting a listed species' habitat, any and every method or procedure qualifies as a special management consideration or protection."[92] Moreover, an agency can "look to past activities to determine the likelihood of future events."[93]

The Service devotes approximately three pages of the Final Rule to explaining the potential special management considerations or protection for the PCEs.[94] Specifically, the

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[87]16 U.S.C. § 1532(5)(A)(i) (emphasis added).

[88]50 C.F.R. § 424.02(j) (1980) (emphasis added) (internal quotation marks in original).

[89]*Ctr. for Biological Diversity v. Norton*, 240 F.Supp.2d 1090, 1098-99 (D. Ariz. 2003) (quoting *The Concise Oxford Dictionary of Current English* (9th ed. 1995)).

[91]*Id.* (emphasis added).

[92]*Id.* at 1099.

[93]*Ariz. Cattle Growers' Ass'n v. Kempthorne*, 534 F.Supp.2d 1013, 1031(D. Ariz. 2008).

[94]ARI PBCH0045510-14.

Service lists the following as "[p]otential impacts that could harm the identified essential physical and biological features": reductions in the extent of the arctic sea ice due to climate change; oil and gas exploration, development, and production; human disturbance; and commercial shipping.[95] After examining the Service's evidence in support of the possible threats to the PCEs, the Court is satisfied that the Service has made a rational connection between the facts found in the record and the choices made by the Service in establishing that special considerations or protection *may* be required to fend off such threats.

Because the emphasis in the requirement is on the word "may," the evidence shown by the Service supports the reasonable conclusion that *some* special management considerations or protection may be needed in the future to protect the sea ice habitat PCE. However, neither the Service nor the ESA have to be the vehicles by which the procedures or actions involved in the considerations or protection are accomplished. The Service has shown that some day, not necessarily at this time, such considerations or protection *may* be required. In other words, the Service has shown that it is within the realm of possibility that such considerations or protection may be needed now or in the future. Furthermore, the Service does not have to identify the source of such considerations or protection, merely that the considerations or protection may be necessary in the future. For example, the evidence in the record showing that sea ice is melting and that it will continue to melt in the future, perhaps at an accelerated rate, is more than enough

[95]ARI PBCH0045510.

proof that protection *may* be needed at some point.

Additionally, the Service did not fail to address any contradictory findings, as argued by the Plaintiffs, because there were none. Plaintiffs contend that because there are currently no regulations that effectively address global warming, the Service cannot determine that the sea ice habitat PCE *may* require special considerations or protection at some point in the future.[96] Such evidence of a lack of effective global warming regulation now or in the future does not foreclose the potential future *need* of such regulations to protect the melting sea ice. Science is forever changing, and today's scientific methods and procedures could change tomorrow. Just because global warming seems to be unanswerable now does not remove a potential solution to the problem from the vast space of possibility within which lies the special-management-considerations-or-protection requirement. Therefore, the Service successfully shows that the sea ice habitat PCE *may* require special management considerations or protection now or in the future and does not violate the APA.

E. <u>The Service considered all potential economic impacts</u>.

Plaintiffs claim that the Service failed to correctly consider all of the economic impacts of the critical habitat designation as required by 16 U.S.C. § 1533(b)(2).[97] Yet, the record clearly shows that the Service did *consider* all such impacts.

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[96] Docket 77 at 22-23.

[97]Docket 58 at 16.

Under 16 U.S.C. § 1533(b)(2), the Service shall designate critical habitat on the basis of the best scientific data available and after taking into consideration the *economic impact*, the impact on national security, and any other relevant impact. The Service "shall identify any significant activities that would either affect an area considered for designation . . . or be likely to be affected by the designation, and shall, after proposing designation of such an area, consider the *probable* economic and other impacts of the designation upon *proposed* or *ongoing* activities."[98] Although Congress has turned over the analysis of the impacts cutting in favor or against critical habitat designation to the discretion of the Service, the Service is still required to show that in arriving at its decision, it took into consideration the economic and other relevant impacts.[99] Specifically, the Service must consider "economic impact[s] *before* the designation of critical habitat."[100] However, "'[a]gencies must consider only those indirect effects that are reasonably foreseeable. They need not consider potential effects that are highly speculative or indefinite.'"[101]

The Service determined that, under the baseline approach, the total incremental economic

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[98]50 CFR § 424.19 (2005) (emphasis added).

[99]*Bennett*, 520 U.S. at 172 (quoting 16 U.S.C. § 1533(b)(2) (2003)).

[100]*Home Builders Ass'n of N. Cal. v. U.S. Fish & Wildlife Serv.*, 616 F.3d 983, 991-92 (9th Cir. 2010) (citing 16 U.S.C. § 1533(b)(2)).

[101]*Presidio Golf Club v. Nat'l Park Serv.*, 155 F.3d 1153, 1163 (9th Cir. 1998) (quoting *Sierra Club v. Marsh*, 976 F.2d 763, 768 (1st Cir. 1992)).

impacts of the critical habitat designation were limited to direct administrative costs of new and reinitiated Section 7 consultations.[102] The Service concluded that the total potential incremental economic impact from the designation over the next thirty years would range from $677,000.00 ($54,000.00 annualized) to $1,210,000.00 ($97,500.00 annualized) in present value terms using a seven percent discount rate.[103] If a three percent discount rate is used, the amounts range from $1,080,000.00 ($55,100.00 annualized) to $1,960,000.00 ($100,000.00 annualized).[104] Like the standard required for establishing that PCEs may necessitate special management considerations or protection, the legal hurdle regarding the Service's analysis of the economic impacts of designation is fairly low. The Service must show only that it *considered* all potential economic impacts of the designation.[105]

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[102]ARI PBCH0041546. The parties recognize that Ninth Circuit precedent has established that the economic impacts of the critical habitat designation should be determined according to the baseline approach. Under this approach, any economic impacts of protecting the species that will occur regardless of the critical habitat designation are treated as part of the regulatory "baseline" and are not factored into the economic analysis of the effects of the critical habitat designation. *Ariz. Cattle Growers' Ass'n*, 606 F.3d at 1172-74. Docket 77 at 27 n. 17 (Alaska Oil and Gas Association and The American Petroleum Institute, recognition); Docket 79 at 11, 13-14 (State of Alaska, recognition of controlling law, but preservation of the issue for appropriate resolution to address the split in authority); Docket 64 at 77 (United States, recognition). Intervenors and the Alaska Native corporations, villages, and communities are silent on the matter.

[103]ARI PBCH0045521-22.

[104]ARI PBCH0041504.

[105]50 C.F.R. § 424.19.

Here, it is clear that the Service considered all of the potential economic impacts of the designation. The Service took all of the direct and indirect incremental cost analysis provided by the parties affected by the designation and, in conjunction with the cost analysis provided by its own experts, broke down the costs into those that were reasonably likely to occur and those that were uncertain or speculative.[106] Those costs that were likely to occur were included in the Final Economic Analysis and later incorporated into the Economic Analysis section of the Final Rule, which culminated in the total potential incremental economic impact in the areas included within the designation.[107] However, those costs that were uncertain or speculative, although still considered, were not included in the total potential incremental economic impact.[108] The uncertain costs were deemed unquantifiable by the Service and were dealt with on a qualitative level in the Draft Economic Analysis ("DEA"), included by reference throughout the Final Rule.

Plaintiffs primarily take issue with the non-inclusion of the indirect incremental costs that the Service deemed too uncertain to include in the total-economic-impact calculation.[109] While it is arguably misleading for the Service to represent that the *total potential* incremental cost of the designation actually includes a complete picture of *all* the costs that could be incurred as a result

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[106]*See* ARI PBCH0045498-502.

[107]ARI PBCH0045521-22.

[108]*Id.*; ARI PBCE0045498-502.

[109]Docket 79 at 11-12.

of the designation, the statute and regulation merely state that the Service must solely *consider* all such costs.[110] The Service then has complete discretion over the application of such analysis vis-à-vis critical habitat designation.[111] It is evident from reading the record that the Service at least generally, if not specifically, considered all the incremental costs presented to it by the various parties. The ESA does not require, and this Court cannot force, the Service to use such incremental cost analysis in a specific manner even when, as here, the way in which the analysis was used is far from ideal or even the most reasonable. With regard to future direct administrative costs to be incurred through Section 7 consultation, the Court will defer to the Service's technical expertise in its cost projections.

Because the Service must only *consider* the economic data provided to it by the parties, Plaintiffs' best-available-scientific-data argument falls short. The Service considered all the economic evidence provided by Plaintiffs and other sources. Thus, the Service *considered all* possible data.

Therefore, the Service's non-inclusion of those costs deemed too uncertain or speculative in the total potential incremental cost of the designation and the method used in determining future Section 7 costs are in accordance with the ESA and do not violate the APA.

F. **The Service lawfully acted within its discretion in not excluding areas.**

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[110] *Bennett*, 520 U.S. at 172 (quoting 16 U.S.C. § 1533(b)(2)).

[111] *Id.*

Plaintiffs argue that the Service acted arbitrarily and capriciously when it failed to exclude *all* Alaska Native communities and did not adequately balance the benefits and disadvantages of including areas that Plaintiffs requested be excluded.[112] This Court disagrees.

Under 16 U.S.C. § 1533(b)(2), the Service *may exclude* any area from critical habitat if it determines that the benefits of such exclusion outweigh the benefits of the area's inclusion. "[T]he Service has *wide discretion* in determining whether to exclude particular areas."[113] Yet, such determination "can be a delicate balancing act."[114] Furthermore, like economic impacts, the Service must *only consider* other impacts when deciding whether or not to include an area in the critical habitat designation.[115]

Here, Plaintiffs misread the statute. The need to balance the benefits of exclusion versus inclusion arises only when the Service decides to exclude an area, not include one. The ESA leaves the decision to include areas in the designation to the discretion of the Service as long as such areas meet the other requirements of the ESA. The Service merely needs to show that it considered all of the impacts of the potential designation prior to creating it. Thus, the Service is not required to show in the record that it carried out a benefits-balancing exercise for each and

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[112]Docket 56 at 18-20.

[113]*Ariz. Cattle Growers' Ass'n*, 534 F.Supp.2d at 1032 (emphasis added).

[114]*Ariz. Cattle Growers' Ass'n*, 606 F.3d at 1172.

[115]16 U.S.C. § 1533(b)(2).

every potential impact to the areas to be designated. Moreover, the record shows that the Service considered all of the impacts involving the requested exclusions.[116] Specifically, the Service thoroughly considered the effect of the designation on the relationship between the Alaska Natives and the Service.[117] Therefore, despite the seemingly unreasonableness of the Service's actions, the Court must be deferential to the weight given by the Service to the impacts of designation.

Plaintiffs point out the Service's incongruity in excluding the Alaska Native villages of Barrow and Kaktovik while not mentioning in the Final Rule the other thirteen villages located within Unit 3.[118] Plaintiffs' argument is premised on a misunderstanding. The thirteen villages were never included in the designation in the first place. "[T]he Service did not include all areas on which there are existing 'manmade structures.'"[119] The only reason that Barrow and Kaktovik were excluded through discretion and not through textual definition, as were the thirteen villages, is because the North Slope Borough provided the Service with the village district boundaries and the legal descriptions necessary to exclude the two areas, as required by 50 C.F.R. § 424.12(c).[120] The Service's action in excluding Alaska Native villages from the designation appears to be

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[116]ARI PBCH0045491-95.

[117]ARI PBCH0045494-95.

[118]Docket 56 at 20.

[119]Docket 64 at 105 (quoting ARI PBCH0045492, PBCH0045514).

[120]ARI PBCH0045492.

uniform and not arbitrary. Therefore, the Service passes statutory muster by showing record evidence that it at least *considered all* of the possible impacts of designation, thereby, showing that its actions regarding the requested exclusions are not arbitrary or capricious.

G. **The No-Disturbance Zone contains a proper physical or biological feature.**

Plaintiffs attack the evidence used to support the inclusion of a no-disturbance zone ("NDZ") in Unit 3 as well as call into question the necessity and purpose of such a zone as a feature in the barrier island habitat PCE.[121] However, the Court has determined that, as a part of Unit 3, the NDZ contains a valid feature of the barrier island habitat PCE.

The Service clearly states that the NDZ is one of the areas that comprises Unit 3 and does not stand alone.[122] Further, the Service explains that as a part of the barrier island habitat PCE, the NDZ contains the refuge-from-human-disturbance physical or biological feature.[123] According to 50 C.F.R. § 424.12(b), freedom from human disturbance is a permissible physical or biological feature. Because the NDZ is a part of Unit 3, it can remain in the designation as long as it contains at least one feature essential to the conservation of the polar bear, which it does. Additionally, it does not matter that other parts of Unit 3 also contain the refuge-from-human-disturbance feature. As long as each part of a unit contains at least one feature of a PCE,

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[121]Docket 77 at 18-21.

[122]Docket 64 at 61.

[123]*Id.*

the entirety of the unit can be designated as critical habitat, and each part of a unit can possess *more than one feature.*

The Service set the width of the NDZ at one mile. Plaintiffs opine that the study used to determine the width of the NDZ was faulty and not applicable in Unit 3.[124] The record proves otherwise. When delving into the realm of an agency's expertise, a court "must defer to the agency's *interpretation* of complex scientific data."[125] Here, the Service adequately considered the contrary opinions of additional experts regarding the distance needed to not disturb the polar bear[126] and, through its own expertise, came to the conclusion that a one mile zone would be required.[127] The Court will defer to the Service's interpretation of the data concerning the correct no-disturbance distance for polar bears. The Court will also defer to the Service concerning the Plaintiffs' contention that the NDZ is only effective for female polar bears and their cubs. The Service considered many factors and reasonably concluded that the NDZ was still necessary for all polar bears in the area.[128] Therefore, the NDZ is a valid part of Unit 3 and the barrier island habitat PCE, and its inclusion is neither arbitrary nor capricious.

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[124]Docket 51 at 54.

[125]*Nw. Ecosystem Alliance*, 475 F.3d at 1150.

[126]Docket 64 at 63-64.

[127]ARI PBCH0045488.

[128]The Service adequately supports its reasons for establishing the NDZ in light of the fact that different polar bears react differently to human disturbance. ARI PBCH0016561, PBCH0016566-68, PBCH0050212, PBCH0047392.

H. The Service's treatment of the prudency of the designation is lawful.

Plaintiffs argue that the Service failed to make a prudency finding prior to creating the designation.[129] Alternatively, Plaintiffs claim that if the Service *did* make a prudency finding, it was not based on the best available scientific data and did not appropriately weigh the benefits and disadvantages of designation.[130] The Court disagrees with both of Plaintiffs' contentions.

Under 16 U.S.C. § 1533(a)(3)(A)(i), the Service shall designate critical habitat "to the maximum extent *prudent* and determinable . . . ."[131] Critical habitat designation "is not prudent when . . . [s]uch designation of critical habitat *would not be beneficial* to the species."[132] The plain language of the statute and the regulation clearly show that the "prudent" factor in designating critical habitat merely sets the outer bounds in determining areas to designate. The Court cannot find a requirement in the ESA or in its enforcing regulations that obliges the Service to expressly find, and to so state in the Final Rule, that the designation was prudent from the outset. Generally, the Service's decision concerning the prudency of a designation is implied with the continuation and completion of such designation. In contrast, it *is* necessary for the Service to expressly justify its actions when it finds designation to *not be prudent*, which is not

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[129]Docket 56 at 37.

[130]*Id.* at 38.

[131]Emphasis added.

[132]50 C.F.R. § 424.12(a)(1)(ii) (emphasis added).

the case here.[133] Thus, Plaintiffs' contention that the Service had to show in the record that it expressly made a prudency finding is unfounded and unconvincing.

Next, Plaintiffs claim that if the Service made a prudency finding prior to the creation of the critical habitat, it did so based on outdated evidence from 2008.[134] Yet, Plaintiffs fail to show any alternative evidence that would constitute the best available scientific data concerning the prudency of the designation.[135]

Finally, Plaintiffs opine that the designation is not prudent because there will be no benefit to the polar bear from such designation and because the adverse consequences to the relationship between the Service and the Native Alaskans will be prohibitively severe.[136] The Court disagrees. The benefits of designation, although arguably generic and insubstantial, are clearly laid out in the Final Rule.[137] Such benefits are in addition to and exclusive of any protections currently offered by the Marine Mammal Protection Act or by any other state or federal regulations presently safeguarding the polar bear. When reviewing the potential benefits of designation, a court *cannot* consider the measures already in place for the protection of the

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[133]50 C.F.R. § 424.12(a).

[134]Docket 56 at 38.

[135]*Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1066 (9th Cir. 2004) (citing *United States v. Alpine Land & Reservoir Co.*, 887 F.2d 207, 213 (9th Cir. 1989)).

[136]*Id.* at 40.

[137]ARI PBCH0045488, PBCH0045520.

species.[138] Also, the Court has already addressed the designation's impact on the Service-Native relationship. *Supra* Discussion § F.

Therefore, in light of the absence of a duty on the part of the Service to expressly show its prudency finding, and with sufficient evidence in the record showing the benefits of designation, Plaintiffs' prudency argument fails.

I. **The Service cooperated with the State to the maximum extent practicable.**

Plaintiffs claim that the Service failed to fully comply with its statutory duty to cooperate with the State to the maximum extent practicable, including consulting with the State prior to designating critical habitat. However, Plaintiffs erroneously interpret the Service's cooperation obligations.

The ESA outlines the Service's duties concerning cooperation with states and state agencies in designating critical habitat. Generally, the Service must give notice of the proposed rule to all affected parties and "give interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments with or without opportunity for oral presentation."[139] However, when the interested party is a state, the Service must cooperate

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[138] *See Natural Res. Def. Council v. U.S. Dep't of the Interior*, 113 F.3d 1121, 1127 (9th Cir. 1997).

[139] 5 U.S.C. § 553(c) (1966).

with the state "to the maximum extent practicable[,] "[140] including "giv[ing] actual notice of the proposed regulation to the State agency in each State in which the species is believed to occur . . . and invite the comment of such agency . . . ."[141]

Here, the Service has defined the ambiguous phrase "maximum extent practicable" to mean using the expertise and soliciting the information of state agencies in preparing proposed and final rules to designate critical habitat.[142] As the Court owes deference to the Service's interpretation of its own regulations, the Court accepts the Service's definition.[143] Based on such definition, the Court finds ample support in the record that the Service fulfilled its statutory duty to cooperate with the State to the maximum extent practicable. For example, the Service: held public meetings at the behest of the State;[144] consulted with the State through the Service's contractor, Northern Economics;[145] and alerted the State to *every* opportunity to participate in the critical-habitat-designation process.[146] Although Plaintiffs may deem the Service's cooperation

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[140]16 U.S.C. § 1535(a) (1988).

[141]16 U.S.C. § 1533(b)(5)(A)(ii); *accord* 50 C.F.R. § 424.16 (2012).

[142]Docket 64 at 117 (internal quotations omitted).

[143]*Nat'l Ass'n of Home Builders*, 551 U.S. at 672 (quoting *Auer v. Robbins*, 519 U.S. 452, 461 (1997)).

[144]ARI PBCH0032310, PBCH0032438.

[145]ARI PBCH0022882.

[146]ARI PBCH0045555.

to be of little real significance in the final production of the designation, the Court does not find any instance in the record in which the Service does not comply with its relatively non-demanding maximum-extent-practicable interpretation.

Additionally, Plaintiffs raise the issue of whether or not the Service fulfilled its obligation to *consult* with the State. Plaintiffs cite 16 U.S.C. § 1536 and the latter half of 16 U.S.C. § 1533(b)(5)(A)(ii) in support of its contention that the Service failed to properly consult with the State prior to creating the Final Rule. However, the statutory language used by Plaintiffs is not applicable in this case. First, 16 U.S.C. § 1536 covers the ESA's Section 7 consultations, and the section of 16 U.S.C. § 1536 that requires consulting with states, refers to the duty of federal agencies to consult with affected states before taking any action on areas *already designated as critical habitat.* The consultation requirement in 16 U.S.C. § 1536 does not apply to the initial creation of the critical habitat designation and thus does not apply here. Likewise, the case cited by Plaintiffs, *California Wilderness Coalition v. United States Department of Energy,* is based on an action under 16 U.S.C. § 1536 and does not support Plaintiffs' claim that the Service was obligated to consult with the State.

Second, the latter part of 16 U.S.C. § 1533(b)(5)(A)(ii) applies *only* when the Service seeks to "acquir[e] any land or water, or interest therein, for the purpose of conserving any endangered species or threatened species." As the Service is not attempting to *acquire* any land, water, or interest therein, the state consultation requirement of 16 U.S.C. § 1533(b)(5)(A)(ii) is

not invoked.

Therefore, the Service fulfilled its statutory obligation to cooperate with the State in the designation of polar bear critical habitat, but was not specifically required to consult with the State during such process. The Service did not violate ESA procedural requirements and thus did not run afoul of the APA.

J. The Service had no duty to consult with Alaska Native Corporations.

Plaintiffs claim that the Service failed to sufficiently consult with the Alaska Natives during the process of developing the Final Rule, relying on the Consolidated Appropriations Act, Pub. L. No. 108-447, § 518, 118 Stat. 2809 (2004), in conjunction with Executive Order 13175, 65 Fed. Reg. 67,249, 67,252 (Nov. 6, 2000).[147] Plaintiffs argue that the Service has a duty to consult with the Alaska Natives, as the Service has with Indian Tribes, prior to the formal promulgation of a regulation that has tribal implications and imposes substantial direct compliance costs on Alaska Natives.[148]

Even though the executive order requires all federal agencies to consult with Alaska Natives prior to finalizing a regulation that would affect such people, the requirement *only* applies to regulations that are "*not required by statute.*" Here, the Service has made it abundantly clear that the designation of critical habitat for a species that is listed as threatened or

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[147]Docket 56 at 28.

[148]*Id.*

endangered under the ESA is *required by statute.*[149] Because the designation of critical habitat here is statutorily mandated, the consultation requirement of Executive Order 13175 does not apply. Thus, because the Service was not required to consult with Alaska Natives to a greater extent than any other interested party, it did not violate the procedural requirements of the ESA.

K. The Service's designation does not comply with 16 U.S.C. § 1532(5)(A)(i).

According to 16 U.S.C. § 1532(5)(A)(i), critical habitat for a threatened species comprises those "*specific areas* within the geographical area occupied by the species, at the time" the species is listed as threatened, "*on which are found those physical or biological features*" that are "essential to the conservation of the species and which may require special management considerations or protection." Such features may include, but are not limited to:

> (1) Space for individual and population growth, and for normal behavior; (2) Food, water, air, light, minerals, or other nutritional or physiological requirements; (3) Cover or shelter; (4) Sites for breeding, reproduction, rearing of offspring . . . ; and generally, (5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species. [The Service should] . . . focus on the principal biological or physical constituent elements within the defined area that are essential to the conservation of the species. Known primary constituent elements shall be listed with the critical habitat description. Primary constituent elements may include, but are not limited to, the following: . . . feeding sites, seasonal wetland or dryland, water quality or quantity, . . . geological formation, vegetation type, [and] tide . . . .[150]

"[A]reas outside of the geographical area occupied by the species at the time" of listing are to be

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[149]Docket 64 at 127 (quoting 16 U.S.C. § 1533(a)(3)(A)).

[150]50 C.F.R. § 424.12(b) (2012).

included in a critical habitat upon the Service's determination "that such areas are essential for the conservation of the species."[151]

1. The record lacks evidence of physical or biological features in Unit 2.

The Service states that "the terrestrial denning habitat PCE includes not just the specific areas where polar bears literally create dens, but also necessarily includes access to and from those den sites, freedom from disturbance, and space for sows to acclimatize newly emerged cubs."[152] Despite having clearly defined the terrestrial denning habitat PCE, the Service has failed to show clear support in the record for all but one of the PCE features.

Although a reviewing court must be deferential to agencies and presume valid their actions, agencies must still show substantial evidence in the record[153] and clearly explain their actions.[154] Specifically, in order for an area to be designated as critical habitat, an agency must determine that the area actually contains physical or biological features essential for the conservation of the species.[155] An agency cannot simply speculate as to the existence of such

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[151]16 U.S.C. § 1532(5)(A)(ii) (1988).

[152]Docket 64 at 54.

[153]*Universal Camera Corp.*, 340 U.S. at 488.

[154]*Atchison T. & S. F. Ry. Co.*, 412 U.S. at 807.

[155]16 U.S.C. § 1532(5)(A)(i).

features.[156]

The Service specifically defined the terrestrial habitat PCE, found in Unit 2, as being comprised of the following component parts: (1) den sites, "[s]teep, stable slopes (range 15.5-50.0°), with heights ranging from 1.3 to 34 m (4.3 to 111.6 ft), and with water or relatively level ground below the slope and relatively flat terrain above the slope"; (2) "unobstructed, undisturbed access between den sites and the coast"; (3) "sea ice in proximity of terrestrial denning habitat prior to the onset of denning during the Fall to provide access to terrestrial den sites"; and (4) "the absence of disturbance from humans and human activities that might attract other polar bears."[157] The Service explained that each of these components is a physical or biological feature that had to be located, on a macro scale, within the whole of Unit 2 at the time of listing in order for the area to be designated as critical habitat.[158] For example, the Service *did not* include in Unit 2 the terrestrial denning habitat in western Alaska because the area "lack[ed] the 'access via sea-ice' component of the terrestrial denning habit PCE that is *necessary for including in critical habitat.*"[159] The Service clarified, however, that "[t]he fact that any single area may be suitable for only one of these functions does not mean that the designated area does

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[156]*See Ariz. Cattle Growers' Ass'n*, 606 F.3d at 1163-64.

[157]ARI PBCH0045510.

[158]*See* Docket 64 at 56.

[159]ARI PBCH0045509 (emphasis added).

not [as a whole] contain the features essential to polar bear denning."[160] Thus, in order to be designated as critical habitat, the entirety of Unit 2 had to have located within it at least one of the above-mentioned features. The Service, however, fails to show, and the record does not contain, evidence of such features save the first and third (den sites and sea ice access), and support for the third feature is vague and confusing .

Unit 2 covers a section of northern Alaska that extends west from the United States-Canada border to the Kavik River and extends from the coast to 20 miles inland and then extends west from the Kavik River to the town of Barrow, Alaska and extends from the coast to five miles inland.[161] In order to define the dimensions for Unit 2, the Service relied on a United States Geological Survey Administrative Report titled *Polar Bear Habitat in Alaska: Inland Extent of Maternity Denning and Graphics Showing Observed and Predicted Changes in Offshore Optimal Habitat.*[162] The results of such report were that "[n]inety-five percent of polar bear dens that were observed on the mainland in the Canada to Kavik region occurred within 18.6 miles of the coast . . . [and] [i]n the Barrow to Kavik region, 95% of dens occurred 2.8 miles from the coast . . . ."[163] Relying on this information, the Service determined that Unit 2 covered ninety-

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[160]*Id.*

[161]Docket 64 at 26.

[162]ARI PBCH0007518-26.

[163]ARI PBCH0007522.

five percent of all historical confirmed and probable dens east of Barrow.[164]

Based *solely* on the location of the confirmed or probable den sites, the Service concluded that the whole of Unit 2 contained *all* of the physical or biological features necessary for the terrestrial denning habitat PCE.[165] While the record evidence can be used to show the existence of the first and maybe third of the necessary features, the evidence is entirely lacking in support for the second and fourth features outlined by the Service, namely "unobstructed, undisturbed access between den sites and the coast" and "the absence of disturbance from humans and human activities that might attract other polar bears."[166]

The Service points to two other studies to show that all of the essential features were found in Unit 2, but such studies only confirm that the first feature is found in roughly one percent of the entire area designated.[167] Thus, the Service has identified physical or biological features in approximately one percent of Unit 2, but fails to point to the location of any features in the remaining ninety-nine percent.

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[164]ARI PBCH0045515.

[165]ARI PBCH004591 ("We . . . believe that the methods used, including the use of the 95 percent of maternal dens located by telemetry and verified as confirmed or probable . . . , accurately capture the major denning areas *and, therefore, the features essential to polar bear denning habitat.*" Emphasis added).

[166]ARI PBCH0045510.

[167]ARI PBCH0045508 (Service cites Durner 2001 and 2006 studies at PBCH0048587 and PBCH0048675, respectively).

The Service's lack of evidence and explanation concerning the second and fourth features is especially stark concerning the inclusion of the areas around Deadhorse, Alaska, as such area is rife with humans, human structures, and human activity.[168] The Service explains that while each portion of Unit 2 does not have to contain all of the four required features, "the Service *could* find that these areas adjacent to human activity provide access between den sites and the sea ice . . . ."[169] By conceding that the Service included the areas around Deadhorse merely because the agency *could* find that such areas contained one of the four essential features, the Service suggests that it had not, at the time of listing or at the time of its briefing, established that *any* of the required features existed in such areas, thereby, violating the requirement that essential features be found in areas *before* designating them as critical habitat.

Even the support for the third feature is tenuous and in need of clarification: "The common feature[] in *many* of the dens in these areas w[as] the presence of sea ice within 16 km (10 mi) of the coast . . . ."[170] The Service and the record fail to explain *which* dens are within ten miles of the coast and how close to the coast are the dens *not* within ten miles. Furthermore, the Service contrarily states in its opposition brief "that it would *not be possible for a den site to*

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[168]*See* Docket 51 at 22 n. 23.

[169]Docket 64 at 60.

[170]ARI PBCH0045515 (emphasis added).

also . . . provide access to the sea ice."[171] The inclusion of such evidence in the Final Rule would be superfluous if not to show access between dens and sea ice; yet, the Service's own words belie such explanation and further add to the ambiguity already present in the record concerning the required access-to-sea-ice feature of the denning habitat PCE.

The Service attempts to explain its lack of specificity regarding essential features in Unit 2 by claiming that "the Service cannot define and is not required to define a patchwork matrix of denning habitat on a micro scale . . . ."[172] Regardless of the procedure used by the Service for its designation, the statute is clear: The *specific* areas designated as critical habitat *must* contain physical or biological features essential to the conservation of the species at the time of listing.[173] Here, there is no way to know if ninety-nine percent of Unit 2 contains the essential features because there is no evidence in the record or cited by the Service that shows where such features are located. Moreover, the question of whether or not the Service used the best scientific data available is premature as there is no clear scientific evidence to review regarding three of the four essential features or components of the terrestrial denning habitat PCE. The Service lists reasons why it does not have to specify the location of all four features, but such justifications do not make up for the lack of clear record evidence supporting even the existence of three of the four

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[171]Docket 64 at 57 (emphasis added).

[172]Docket 64 at 55.

[173]16 U.S.C. § 1532(5)(A)(i).

essential features in Unit 2.[174]

In short, the Service cannot designate a large swath of land in northern Alaska as "critical habitat" based entirely on one essential feature that is located in approximately one percent of the entire area set aside. The Service has not shown and the record does not contain evidence that Unit 2 contains all of the required physical or biological features of the terrestrial denning habitat PCE, and thus the Final Rule violates the APA's arbitrary and capricious standard.

2. The record lacks evidence of physical or biological features in Unit 3.

Unit 3 of the Service's critical habitat designation "includes all barrier islands along the Alaska coast and their associated spits, within the range of the polar bear in the United States, and the water, ice, and terrestrial habitat within 1.6 km (1 mi) of these islands (no disturbance zone)."[175] The barrier island habitat PCE, in Unit 3, is comprised of three features or components: (1) denning habitat; (2) refuge from human disturbance; and (3) access along the coast to maternal den sites and optimal feeding habitat.[176] Each of these components is a

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[174]In the alternative, the Service argues that the proximity inclusion exception of 50 C.F.R. § 424.12(d) applies here to include all of the area designated in Unit 2. The Court finds that such regulation is not applicable.

[175]ARI PBCH0045510.

[176]*Id.*; Docket 64 at 61.

biological or physical feature essential to the conservation of the polar bear.[177] Like the individual areas of the terrestrial denning habitat PCE, each part of the barrier island habitat PCE does not have to contain all three of the required features, only one.[178] For example, the Service "recognize[s] that not all barrier islands have suitable denning habitat."[179]

The Final Rule clearly delineates the location of the first and second features in Unit 3.[180] "Barrier islands that have been used multiple times for denning include Flaxman Island, Pingok Island, Cottle Island, Thetis Island, and Cross Island . . . and the no-disturbance zone (area extending out 1.6 km (1 mi) from the barrier island mean high tide line)."[181] However, the explanation of the location of the other essential feature is lacking. "Polar bears regularly use barrier islands to move along the Alaska cost as they traverse across the open water, ice, and shallow sand bars between the islands . . . and to move along the coast to access den sites or preferred feeding locations."[182] The Service does not explain where on the islands and associated spits the polar bears move to access den sites and preferred feeding habits. Again, areas designated as critical habitat *must* contain physical or biological features essential to the

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[177]*See id.* at 61-62.

[178]*Id.* at 61.

[179]ARI PBCH0045494.

[180]ARI PBCH0045509-10.

[181]*Id.*

[182]*Id.*

conservation of the species at the time of listing.[183] Without even minimal evidence in the record showing *specifically* where all the physical or biological features are located within an area, the area cannot be designated as critical habitat. Although each part of Unit 3 does not have to contain each of the three essential features, *every part* of the designation must have at least one.[184] Despite the record showing where the first and second features are located, it is unclear to the Court whether the third feature is even found in the area. Without such feature, Unit 3 cannot be considered critical habitat within the definition of the barrier island habitat PCE.

Therefore, the Service has not shown, and the record does not contain, evidence that Unit 3 contains all of the required physical or biological features of the barrier island habitat PCE, and thus the Final Rule violates the APA's arbitrary and capricious standard.

L. <u>The Service failed to provide the State with adequate justification</u>.

The Service explains that its responses to the State of Alaska regarding the State's comments that were not adopted in the Final Rule complied with the procedural requirement set out in 16 U.S.C. § 1533(i) and 50 C.F.R. § 424.18(c).[185] This Court disagrees.

Because questions involving the Service's response to state agency comments are procedural issues, the Court's review differs from that under the arbitrary and capricious

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[183]16 U.S.C. § 1532(5)(A)(i).

[184]16 U.S.C. § 1532(5)(A)(i).

[185]Docket 64 at 109.

standard. A court is "limited to ensuring that 'statutorily prescribed procedures have been followed . . . .'"[186] Indeed, "'regulations subject to the APA cannot be afforded the force and effect of law if not promulgated pursuant to the statutory procedural minimum found in that Act.'"[187] The Court here does not analyze the sufficiency of the Service's justifications for its responses to Alaska State Fish and Wildlife Management Agency's ("ADF&G") comments, which is given over to Service discretion, only the procedure the Service followed in carrying out its responses.

On December 10, 2010, after the creation of the Final Rule, the Service sent a letter ("response letter") to Governor Sean Parnell outlining the Service's responses and explanations to the State's comments not adopted in the Final Rule.[188] Although the Service made an effort to comply with ESA response procedures regarding states, the Service fell short of full compliance.

According to 16 U.S.C. § 1533(i) and 50 C.F.R. § 424.18(c), when a state agency "submits comments disagreeing in whole or in part with a proposed rule, and the [Service] issues a final rule that is in conflict with such comments, . . . the [Service] *shall provide such agency with a written justification for the failure to adopt a rule consistent with the agency's comments* .

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[186]*Kern County Farm Bureau*, 450 F.3d at 1075-76 (quoting *Natural Res. Def. Council*, 279 F.3d at 1186).

[187]*Western Oil & Gas Ass'n*, 633 F.2d at 812-13 (quoting *Chrysler Corp.*, 441 U.S. at 313).

[188]ARI PBCH0045553-45562.

. . .»[189]

First, it is clear from the fact that Congress established a *separate procedure* to respond to state agency comments, as opposed to comments from other affected parties, that Congress envisioned a *separate duty* on the part of the Service to specifically respond to those state comments not adopted in a final rule. Indeed, the statute clearly requires that *after* a final rule is issued, the Service must provide a *separate* written justification to the state agency responsible for the comments not used in the final rule.[190] Thus, the Service's statement that adequate responses to the State's unused comments could be found *in part in the Final Rule itself* is directly contrary to ESA procedure.[191] By not including in the response letter *all* its responses to the State's comments not ultimately included in the Final Rule, the Service did not fulfill its response obligations under the ESA.

Second, ADF&G submitted the comments concerning the proposed critical habitat designation, not Governor Sean Parnell.[192] A correct response letter from the Service would have been sent to the Alaska state agency who submitted the comments to the designation as is required.

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[189]Emphasis added.

[190]16 U.S.C. § 1533(i); 50 C.F.R. § 424.18(c).

[191]Docket 64 at 111-13.

[192]Docket 58 at 28.

Accordingly, each of the Service's responses to the State's comments had to be contained in the response letter or in another written response sent specifically to the ADF&G.[193] Therefore, the Court finds that the Service deviated from proscribed procedure in responding to the State of Alaska's comments and ran afoul of the ESA.

In sum, the substantive errors that the Court finds to be arbitrary and capricious, in violation of the APA, are: (1) *the record lacks evidence of physical or biological features in Unit 2*; and (2) *the record lacks evidence of physical or biological features in Unit 3. Supra* Discussion § K. Additionally, *the Service failed to follow applicable ESA procedure by not providing the State with adequate justification for the State's comments not incorporated into the Final Rule. Supra* Discussion § L.

V. CONCLUSION

The Supreme Court has determined that agency actions found to be arbitrary and capricious are to be remanded to the originating agency.[194] Additionally, those actions that fail to meet procedural requirements shall also be remanded.[195] Moreover, where agency action fails "to

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[193]AK's comments to potentially be addressed by Service: ARI PBCH0026247-73; PBCH0032495-518; PBCH0044627-74; PBCH0032512-17; PBCH000032509-11; PBCH0054966-5033; and PBCH0032502-08.

[194]*Nat'l Ass'n of Home Builders*, 551 U.S. at 657-58.

[195]*F.C.C. v. NextWave Pers. Communic'ns Inc.*, 537 U.S. 293, 300 (2003) (quoting *Citizens to Pres. Overton Park, Inc.*, 401 U.S. at 413–14).

follow Congress's clear mandate the appropriate remedy is to vacate that action."[196] "[V]acatur of an unlawful agency rule normally accompanies a remand."[197]

After reviewing the voluminous pages of case law pertaining to the legally required consequence of an agency action found to be arbitrary, capricious, and procedurally errant, and in light of the seriousness of the Service's errors, the Court hereby sets aside the Final Rule.[198] The Court does not hand down this judgment lightly, but only after careful consideration of all the law and facts involved with this critical habitat designation. There is no question that the purpose behind the Service's designation is admirable, for it is important to protect the polar bear, but such protection must be done correctly. In its current form, the critical habitat designation presents a disconnect between the twin goals of protecting a cherished resource and allowing for growth and much needed economic development. The current designation went too far and was too extensive.

Therefore, Plaintiffs' Motions For Summary Judgement at **Docket Numbers 50, 55,** and **57** are hereby **GRANTED**, and the Final Rule shall be **VACATED** and **REMANDED** to the Service to correct the aforementioned substantive and procedural deficiencies.

ORDERED this 10th day of January, 2013.

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[196]*Cal. Wilderness Coal.*, 631 F.3d at 1095.

[197]*Alsea Valley Alliance v. Dep't of Commerce*, 358 F.3d 1181, 1185-86 (9th Cir. 2004).

[198]Designation of Critical Habitat for the Polar Bear (Ursus maritimus) in the United States, 75 Fed. Reg. 76,086 (Dec. 7, 2010).

S/RALPH R. BEISTLINE
UNITED STATES DISTRICT JUDGE

FEDERAL REGISTER

Vol. 77 Friday,
No. 249 December 28, 2012

Part III

Department of Commerce

National Oceanic and Atmospheric Administration

50 CFR Parts 223 and 224

Endangered and Threatened Species; Threatened Status for the Arctic, Okhotsk, and Baltic Subspecies of the Ringed Seal and Endangered Status for the Ladoga Subspecies of the Ringed Seal; Final Rule

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 223 and 224

[Docket No. 101126590–2478–03]

RIN 0648–XZ59

Endangered and Threatened Species; Threatened Status for the Arctic, Okhotsk, and Baltic Subspecies of the Ringed Seal and Endangered Status for the Ladoga Subspecies of the Ringed Seal

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

ACTION: Final rule.

SUMMARY: We, NMFS, issue a final determination to list the Arctic (*Phoca hispida hispida*), Okhotsk (*Phoca hispida ochotensis*), and Baltic (*Phoca hispida botnica*) subspecies of the ringed seal (*Phoca hispida*) as threatened and the Ladoga (*Phoca hispida ladogensis*) subspecies of the ringed seal as endangered under the Endangered Species Act (ESA). We will propose to designate critical habitat for the Arctic ringed seal in a future rulemaking. To assist us in this effort, we solicit information that may be relevant to the designation of critical habitat for Arctic ringed seals. In light of public comments and upon further review, we are withdrawing the proposed ESA section 4(d) protective regulations for threatened subspecies of the ringed seal because we have determined that such regulations are not necessary or advisable for the conservation of the Arctic, Okhotsk, or Baltic subspecies of the ringed seal at this time. Given their current population sizes, the long-term nature of the primary threat to these subspecies (habitat alteration stemming from climate change), and the existing protections under the Marine Mammal Protection Act, it is unlikely that the proposed protective regulations would provide appreciable conservation benefits.

DATES: This final rule is effective on February 26, 2013. Replies to the request for information regarding designation of critical habitat for Arctic ringed seals must be received by February 26, 2013.

ADDRESSES: You may submit comments and information related to the identification of critical habitat for the Arctic ringed seal to Jon Kurland, Assistant Regional Administrator for Protected Resources, Alaska Region, NMFS, Attn: Ellen Sebastian. You may submit this information, identified by FDMS Docket Number NOAA–NMFS–2010–0258, by any one of the following methods:

- *Electronic Submissions:* Submit all electronic public comments via the Federal eRulemaking Portal *http://www.regulations.gov*. To submit information via the e-Rulemaking Portal, first click the "submit a comment" icon, then enter NOAA–NMFS–2010–0258 in the keyword search. Locate the document you wish to comment on from the resulting list and click on the "Submit a Comment" icon on the right of that line.
- *Mail:* Submit written comments to 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.

Comments must be submitted by one of the above methods to ensure that the comments are received, documented, and considered by NMFS. Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered.

All comments received are a part of the public record and will generally be posted for public viewing on *www.regulations.gov* without change. All personal identifying information (*e.g.*, name, address, etc.) submitted voluntarily by the sender 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). Attachments to electronic comments will be accepted in Microsoft Word or Excel, WordPerfect, or Adobe PDF file formats only.

FOR FURTHER INFORMATION CONTACT: Tamara Olson, NMFS Alaska Region, (907) 271–5006; Jon Kurland, NMFS Alaska Region, (907) 586–7638; or Marta Nammack, NMFS Office of Protected Resources, (301) 427–8469.

SUPPLEMENTARY INFORMATION:

Background

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 concurrently with listing under the ESA. In response to the petition, we published a 90-day finding that the petition presented substantial scientific or commercial information indicating that the petitioned action may be warranted (73 FR 51615; September 4, 2008). Accordingly, we prepared 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 a 12-month finding to the Office of the Federal Register by December 3, 2010. Following completion of a status review report and 12-month finding for spotted seals in October 2009 (74 FR 53683; October 20, 2009; see also 75 FR 65239; October 22, 2010), we established Biological Review Teams (BRTs) to prepare status review reports for ringed and bearded seals.

The status review report for the ringed seal (Kelly *et al.*, 2010a) is a compilation of the best scientific and commercial data available concerning the status of the species, including identification and assessment of the past, present, and future threats to the species. The 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 (FWS). 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.

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 (which previously was listed as endangered under the ESA; 58 FR 26920; May 6, 1993).

On December 10, 2010, we published in the **Federal Register** a 12-month finding and proposed to list the Arctic, Okhotsk, Baltic, and Ladoga subspecies

of the ringed seal as threatened (75 FR 77476). We also concluded in that finding that the Saimaa subspecies of the ringed seal remains in danger of extinction, consistent with its current listing as endangered under the ESA. We published a 12-month finding for bearded seals as a separate notification concurrently with this finding (75 FR 77496; December 10, 2010), and proposed to list two population segments of bearded seals as threatened.

On December 13, 2011, we published in the **Federal Register** a document announcing a 6-month extension of the deadline for a final listing determination to address substantial disagreement relating to the sufficiency or accuracy of the model projections and analysis of future sea ice, and in particular snow cover, for Arctic ringed seals (76 FR 77466). At that time we also announced that to address the disagreement and better inform our final determination, we would conduct a special independent peer review of the sections of the status review report over which there was substantial disagreement. We subsequently conducted this special peer review and made available for comment the resulting peer review report (NMFS, 2012) that consolidated the comments received (77 FR 20773; April 6, 2012).

ESA Statutory, Regulatory, and Policy Provisions

Two key tasks are associated with conducting an ESA status review. The first is to identify 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 to include "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 FWS 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). The five subspecies of the ringed seal qualify as "species" under the ESA. In the *Summary of Comments and Responses* below, we discuss the application of the DPS policy to the ringed seal subspecies.

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 over 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.

The principal threat to ringed seals is habitat alteration stemming from climate change. In the 2008 status review for 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 for ringed seals (which is summarized in the preamble to this final rule), and analyzed threats associated with climate change through 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 uncertainty embedded in the assessment of the ribbon seal's response to threats increased as the analysis extended farther into the future.

Since completing the analysis for ribbon seals, with its climate impact analysis, NMFS scientists have revised their analytical approach to the foreseeability of threats due to climate change 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* (AR4; IPCC, 2007) extend through the end of the century (and we note the IPCC's *Fifth Assessment Report* (AR5), due in 2014, will extend even farther into the future), for our analysis of ringed seals we used the same models to assess impacts from climate change through 2100. 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 do 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. This threat-specific approach creates a more robust analysis of the best scientific and commercial data available. It is also consistent with the memorandum issued by the Department of Interior, Office of the Solicitor, regarding the meaning of the term "foreseeable future" (Opinion M–37021; January 16, 2009).

NMFS and FWS recently published a draft policy to clarify the interpretation of the phrase "significant portion of the range" in the ESA definitions of "threatened" and "endangered" (76 FR 76987; December 9, 2011). The draft policy consists of the following four components:

1. If a species is found to be endangered or threatened in only a significant portion of its range, the entire species is listed as endangered or threatened, respectively, and the ESA's protections apply across the species' entire range.

2. A portion of the range of a species is "significant" if its contribution to the viability of the species is so important that, without that portion, the species would be in danger of extinction.

3. The range of a species is considered to be the general geographical area within which that species can be found at the time FWS or NMFS makes any particular status determination. This range includes those areas throughout all or part of the species' life cycle, even if they are not used regularly (*e.g.*, seasonal habitats). Lost historical range is relevant to the analysis of the status of the species, but cannot constitute a significant portion of a species' range.

4. If the species is not endangered or threatened throughout all of its range, but it is endangered or threatened within a significant portion of its range, and the population in that significant portion is a valid DPS, we will list the DPS rather than the entire taxonomic species or subspecies.

The Services are currently reviewing public comment received on the draft policy. While the Services' intent ultimately is to establish a legally binding interpretation of the term "significant portion of the range," the draft policy does not have legal effect until such time as it may be adopted as final policy. However, the discussion

and conclusions set forth in the draft policy are consistent with NMFS's past practice as well as our understanding of the statutory framework and language. We have therefore considered the draft policy as non-binding guidance in evaluating whether to list the Arctic, Okhotsk, Ladoga, and/or Baltic subspecies of the ringed seal under the ESA.

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/*). This information, along with an analysis of species delineation and DPSs, was summarized in the preamble to the proposed rule (75 FR 77476; December 10, 2010) and will not be repeated here.

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. The preamble to the proposed rule discussed each of these factors for each subspecies of the ringed seal (75 FR 77476; December 10, 2010). That discussion will not be repeated in its entirety here, but we provide a summary for each of the factors below. Section 4.2 of the status review report provides a more detailed discussion of the factors affecting the five subspecies of the ringed seal (see **ADDRESSES**). 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 associated with impacts of the warming climate on the habitat of ringed seals (analyzed in the preamble to the proposed rule and in the status review report), 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.

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. Nevertheless, NMFS determined that the models reflect reasonable assumptions regarding habitat alterations to be faced by ringed seals in the foreseeable future.

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 20–25 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 5 cm or less by 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: None of the IPCC models performed satisfactorily at projecting sea ice for the Sea of Okhotsk, so projected surface air temperatures were examined relative to current climate conditions as a proxy to predict sea ice extent and duration. Sea ice extent is strongly controlled by temperature; this is especially true for smaller bodies of water relative to the grid size of available models. Also, the physical processes by which increased greenhouse gases (GHGs) lead to warming are better understood and more easily modeled than the other processes that influence sea ice

formation and persistence. Therefore, whether the whole geographic region around the Sea of Okhotsk is above or below the freezing point of sea water should be a reasonable indicator of the presence or absence of sea ice.

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 and Ladoga ringed seals: For the Baltic Sea, we considered the analysis of regional climate models by Jylhä *et al.* (2008). 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.

For example, 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 Lake Ladoga, 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 will challenge its ability to adapt to environmental changes 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 other known decline 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 shorefast ice over continental shelves along Arctic coasts, bays, and inter-island channels. While some authors suggest that shorefast ice (ice attached to the shore) 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 Ryg, 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.*, 2010b).

Increased rain-on-snow events during the late winter also negatively affect 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 three 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 drifts to 45 cm or more are 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 and speculative (see additional discussion below). Initially, it is possible that impacts will 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. Thus, even if the range of the Arctic ringed seal contracts northward, by 2100 April snow cover suitable for birth lairs is expected to be limited to a portion of the central Arctic, most of the Canadian Arctic Archipelago, and a few other small isolated areas. 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 (which were used because the climate models did not meet the performance criteria for projecting sea ice), 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 and Ladoga 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 Lake Ladoga 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. Although Baltic and Ladoga 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 population in Lake Ladoga will be unable to shift its range.

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 Lake Ladoga. 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 Analysis

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. The precise extent and timing of these changes is uncertain, yet the overall trend is clear: Ringed seals will face an increasing degree of habitat modification through the foreseeable future.

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 to occur in only parts of the Canadian Arctic Archipelago, a portion of the central Arctic, and a few small isolated areas in other regions. Without the protection of lairs, ringed seals, especially newborns, 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 and are likely to curtail the range of the species substantially within the foreseeable future.

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 and Lake Ladoga 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 presently seem 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 future 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 there is no evidence that overutilization of ringed seals is occurring at present.

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 population-level impacts to ringed seal abundance or productivity. After the proposed listing rule was published, the occurrence of an elevated number of sick or dead ringed seals in the Arctic and Bering Strait regions of Alaska beginning in July 2011 led to the declaration of an unusual mortality event (UME) by NMFS under the Marine Mammal Protection Act (MMPA) on December 20, 2011. The underlying cause of this UME is unknown and remains under focused expert investigation. Abiotic and biotic changes to ringed seal habitat potentially could lead to exposure to new pathogens or new levels of virulence, but we continue to consider the potential threats to ringed seals from disease 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 set 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, 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

As noted above in the discussion of Factor A, 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 combined with modification of habitat by ocean acidification. Current mechanisms do not effectively regulate GHG emissions, which are contributing to global climate change and associated modifications to ringed seal habitat. The projections we used to assess risks from GHG emissions were based on the assumption that no new regulation will take place (the underlying IPCC emissions scenarios were all "non-mitigated" scenarios). Therefore, the inadequacy of mechanisms to regulate GHG emissions is already included in our risk assessment, and contributes to the risks posed to ringed seals by these emissions.

Based on questionnaire and interview data obtained from fishermen at Lake Ladoga, Verevkin *et al.* (2006, 2010) concluded that annual bycatch mortality of Ladoga ringed seals has been substantial in recent years and that mitigation measures are needed. Thus inadequacy of existing mechanisms to regulate bycatch of Ladoga ringed seals is contributing to the severity of the threat posed by fisheries interactions with that subspecies, and compounds the effects of threats induced by climate change discussed above.

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

Pollution and Contaminants

Contaminants research on ringed seals is 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.

Present and future impacts of contaminants on ringed seal populations warrant further study. 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. The BRT considered the potential threat posed to ringed seals from contaminants as of low to moderate significance, with the least threat identified for Arctic ringed seals and the greatest for Baltic ringed seals.

Oil and Gas Activities

Extensive oil and gas reserves coupled with rising global demand make it very likely that oil and gas development 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 affect 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 previously been drilled in the Chukchi Sea, no oil fields have been developed or brought into production. Shell plans to drill up to three wells during 2012 at several locations in the northeast Chukchi Sea. Shell also plans to drill offshore in the Beaufort Sea in 2012 near Camden Bay. No offshore oil or gas fields are currently in development or production in the Bering Sea.

About 80 percent of the oil and 99 percent of the gas produced in the Arctic comes from Russia (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 likely 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. The U.S. Arctic has very little infrastructure to support oil spill response, with few roads and no major port facilities. 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 would be the most

challenging because industry and government have little experience containing or effectively recovering spilled oil in such conditions. The difficulties experienced in stopping and containing the blowout at the Deepwater Horizon well in the Gulf of Mexico, where environmental conditions and response preparedness are comparatively good (but waters are much deeper than the Arctic continental shelf), 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 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 (Sakhalin Island). In the Arctic, a blowout at an offshore platform in the Ekofisk oil field in the North Sea in 1977 released more than 200,000 barrels of oil.

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 of oiling 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.

The BRT considered the threat posed to ringed seals by disturbance, injury, or mortality from oil spills, and/or other discharges, as of low to moderate significance, with the greatest threat identified for Okhotsk and Baltic ringed seals.

Commercial Fisheries Interactions and Bycatch

Commercial fisheries may affect ringed seals through direct interactions (*i.e.*, incidental take or bycatch) and indirectly through competition for prey resources and other impacts on prey populations. NMFS has access to estimates of Arctic ringed seal bycatch only for commercial fisheries that operate in Alaska waters. Based on data from 2002–2006, there has been an annual average of 0.46 Arctic ringed seal mortalities 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. We could find no information 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 there. The BRT considered the threat posed to Okhotsk ringed seals from physical disturbance associated with the combined factors of oil and gas development, shipping, and commercial fisheries moderately significant.

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. 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 reportedly changed since then, and in the late 1990s fishing was not regarded to be a threat to Ladoga ringed seal populations, although 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. Further, Verevkin *et al.* (2010) reported questionnaire responses by fishermen that indicated annual bycatch of Ladoga ringed seals caught in fishing nets has been substantial in recent years.

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 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 the possibility of introducing exotic species that may affect 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 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 shipping levels in the Sea of Okhotsk, resource development over the last decade stands out as a likely significant contributor. 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.

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

The threats posed from shipping activity in the Sea of Okhotsk, Baltic Sea, and Lake Ladoga and 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 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 threats and impacts (now and in the future) makes threat assessment in these regions uncertain. More information is needed to adequately assess the risks of shipping to ringed seals. The BRT considered the threat posed to Okhotsk, Baltic, and Ladoga ringed seals from physical disturbance associated with the combined factors of oil and gas development, shipping, and commercial fisheries moderately significant, while also noting that drowning of seals in fishing nets and disturbance from human activities are specific conservation concerns for Ladoga 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 collectively place the Arctic or Okhotsk subspecies of ringed seals at risk of becoming endangered in the foreseeable future. We recognize, however, that the significance of these threats would likely 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 collectively pose a significant risk to the persistence of the Baltic ringed seals. We recognize, however, that the significance of these threats would likely 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 Lake Ladoga and could exacerbate the effects of climate change on this seal population. Drowning in fishing gear is also one of the most significant sources of mortality for ringed seals in the Baltic Sea. Although we currently do not have any data to conclude that these threats are having population-level effects on Baltic ringed seals, reported bycatch mortality in Lake Ladoga appears to pose a significant threat to that subspecies, particularly when combined with the effects of climate change on ringed seal habitat.

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, with the Ladoga ringed seal receiving the highest scores. 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' 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, including the potentially retracted northward one. The BRT also judged the risks to persistence of the Okhotsk and Baltic ringed seal in the foreseeable future to be moderate (diversity) to high (abundance, productivity, and spatial structure). Okhotsk and Baltic ringed seals will have limited opportunity to shift their range northward because the sea ice will retract toward land.

Risks to Ladoga ringed seal persistence within the foreseeable future were judged by the BRT to be moderate (diversity), or high to very high (abundance, productivity, and spatial structure). As noted above, Ladoga ringed seals are a landlocked population that will be unable to shift their range in response to the pronounced degradation of ice and snow habitats forecasted to occur.

Conservation Efforts

When considering the listing of a species, section 4(b)(1)(A) of the ESA requires NMFS 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 (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 monitoring 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; and (3) 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) 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 (2) the Ladoga ringed seal is included in the Red Data Books of the Russian Federation, the Leningrad Region, and Karelia.

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 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 Ladoga ringed seal is listed under Appendix II, and other ringed seals fall under Appendix III. Hunting of Ladoga ringed seals has been prohibited since 1980, and hunting of Baltic ringed seals has also been suspended (although Finland permitted the harvest of small numbers of ringed seals in the Bothnian Bay beginning in 2010).

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 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 ringed seal habitat.

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 IMO'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.

Domestic U.S. Conservation Efforts

NMFS is 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 domestic conservation efforts under our Policy on Evaluating Conservation Efforts (68 FR 15100; March 28, 2003).

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 this 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.

Listing 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 these subspecies of the ringed seal, as well as other relevant factors, and considered 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 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, snow cover, and thermal capacity of birthing lairs will likely lead to decreased pup survival. Thus, within the foreseeable future it is likely that the number of Arctic ringed seals will decline substantially, and they will no longer persist in substantial portions of their range. We have determined that the Arctic subspecies of the ringed seal is not in danger of extinction throughout all of its range, but is likely to become so within the foreseeable future. Therefore, we are listing it as threatened.

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. It has been estimated that the ringed seal population in the Sea of Okhotsk numbered more than one million in 1955. (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, we are not aware of any occurrence of ringed seals whelping or nursing young on land. (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 have determined that the Okhotsk subspecies of the ringed seal is not in danger of extinction throughout its range, but is likely to become so within the foreseeable future. Therefore, we are listing it as threatened.

Baltic subspecies: (1) Current estimates of 10,000 Baltic ringed seals suggest that the population has been significantly reduced from historical numbers. It has been estimated that about 180,000 ringed seals inhabited the Baltic Sea in 1900 and that by the 1940s this population had been reduced to about 25,000. (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, we are not aware of any occurrence of ringed seals whelping or nursing young on land. (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 have determined that the Baltic subspecies of the ringed seal is not in danger of extinction throughout all its range, but is likely to become so within the foreseeable future. Therefore, we are listing it as threatened.

Ladoga subspecies: (1) The population size of the ringed seal in Lake Ladoga is currently estimated at 3,000 to 5,000 seals, a decrease from estimates of 20,000 seals reported for the 1930s, and estimates of 5,000 to 10,000 seals in the 1960s. (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, we are not aware of any occurrence of ringed seals whelping or nursing young on land. (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. (5) Ongoing mortality incidental to fishing activities is also a significant conservation concern. Based on the substantial threats currently affecting Ladoga ringed seals at a significant level across the range of this subspecies, the high likelihood that the severity of the impacts of deteriorating snow and ice conditions will increase for this subspecies in the foreseeable future, and the fact that the subspecies is landlocked and will be unable to respond to habitat loss by dispersing to new habitat, we have determined that the Ladoga ringed seal is in danger of extinction throughout all of its range. Therefore, we are listing it as endangered.

Significant Portion of the Range Evaluation

Under the ESA and our implementing regulations, a species warrants listing if it is endangered or threatened throughout all or a significant portion of its range. In our analysis for this final rule, we initially evaluated the status of and threats to the Arctic, Okhotsk, and Baltic subspecies throughout their entire ranges. We found that the consequences of habitat change associated with a warming climate can be expected to manifest throughout the current breeding and molting ranges of ringed seals, and that the ongoing and projected changes in sea ice habitat pose significant threats to the persistence of these subspecies. The magnitude of the threats posed to the persistence of ringed seals, including from changes in sea ice habitat, are likely to vary to some degree across the range of the species depending on a number of factors, including where affected populations occur. In light of the potential differences in the magnitude of the threats to specific areas or populations, we evaluated whether the Arctic, Okhotsk, or Baltic subspecies might be in danger of extinction in any significant portions of their ranges. In accordance with our draft policy on "significant portion of its range," our first step in this evaluation was to review the entire supporting record for this final determination to "identify any portions of the range[s] of the [subspecies] that warrant further consideration" (76 FR 77002; December 9, 2011). We evaluated whether substantial information indicated "that (i) the portions may be significant [within the meaning of the draft policy] and (ii) the species [occupying those portions] may be in danger of extinction or likely to become so within the foreseeable future" (76 FR 77002; December 9, 2011). Under the draft policy, both considerations must apply to warrant listing a species as endangered throughout its range based upon threats within a portion of the range. In other words, if either consideration does not apply, we would not list a species as endangered based solely upon its status within a significant portion of its range. For the Arctic and Okhotsk subspecies, we found it more efficient to address the status question first, whereas for the Baltic subspecies, we found it more efficient to address the significance question first.

The consequences of the potential threats to the Arctic and Okhotsk subspecies, including from changes in sea ice habitat, have been addressed in other sections of the preamble to this final rule. Based on our review of the record, we did not find substantial information indicating that any of the threats to the Arctic and Okhotsk subspecies, including those associated with the changes in sea ice habitat, are so severe or so concentrated as to indicate that either subspecies currently qualifies as endangered within some portion of its range. As described in our *Listing Determinations,* the threats are such that we concluded that Arctic and Okhotsk ringed seals are likely to become endangered within the foreseeable future. As a result, we find that the best available data show that there are no portions of their ranges in which the threats are so concentrated or acute as to place those portions of the ranges of either subspecies in danger of extinction. Because we find that the Arctic and Okhotsk subspecies are not endangered in any portions of their ranges, we need not address the question of whether any portions may be significant.

About 75 percent of the Baltic population is found in the Gulf of Bothnia (Bothnian Bay) in the northern Baltic Sea, while considerably smaller portions of the population are found in the Gulf of Riga and Gulf of Finland (15 percent and 5 percent of Baltic ringed seals, respectively; Ministry of Agriculture and Forestry, 2007). Palo *et al.* (2001) noted that the Baltic Sea subspecies has recently been fragmented into these three breeding segments, but that genetic evidence of the separation is not yet evident. Recent population increases in the Baltic subspecies have been attributed entirely to the Gulf of Bothnia portion of the population, while little growth rate or possible declines have been suggested for ringed seals in the Gulf of Finland and Gulf of Riga (Harkonnen *et al.,* 2008; Karlsson *et al.,* 2008). We conclude that the best information available does not suggest that declines in or loss of the Gulf of Finland and/or Gulf of Riga portion(s) would result in a substantial decline in the rest of the subspecies. We find that: (1) there is substantial information indicating that the Gulf of Bothnia may be a significant portion of the Baltic ringed seal's range; and (2) the Gulf of Finland and Gulf of Riga are not so significant that the decline or loss of these portions of the range would leave the remainder of the subspecies in danger of extinction, and thus they do not constitute significant portions of the Baltic ringed seal's range.

The consequences of the potential threats to the Baltic subspecies, including from climate change, have been addressed in other sections of the

preamble to this final rule. As described in our *Listing Determinations,* the threats are such that we concluded that Baltic ringed seals are likely to become endangered within the foreseeable future. We do not have any information that would lead to a different conclusion for ringed seals in the Gulf of Bothnia. Therefore, we find that the Gulf of Bothnia portion of the Baltic subspecies' range is not in danger of extinction, but is likely to become so within the foreseeable future.

Prohibitions and Protective Measures

Section 9 of the ESA prohibits the take of endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or engage in any such conduct (16 U.S.C. 1532(19)). In the case of threatened species, ESA section 4(d) authorizes NMFS to issue regulations it considers necessary and advisable for the conservation of the species. Such regulations may include any or all of the section 9 prohibitions. These regulations apply to all individuals, organizations, and agencies subject to U.S. jurisdiction. On December 10, 2010, we proposed protective regulations pursuant to section 4(d) to include all of the prohibitions in section 9(a)(1) (75 FR 77476) based on a preliminary finding that such measures were necessary and advisable for the conservation of the threatened subspecies of the ringed seal.

In light of public comments and upon further review, we are withdrawing the proposed ESA section 4(d) protective regulations for ringed seals. We received comments arguing against adoption of the 4(d) rule and we have not received any information, and are not aware of any, indicating that the addition of the ESA section 9 prohibitions would apply to any activities that are currently unregulated and are having, or have the potential to have, significant effects on the Arctic, Okhotsk, or Baltic subspecies. Further, the Arctic, Okhotsk, and Baltic subspecies appear sufficiently abundant to withstand typical year-to-year variation and natural episodic perturbations in the near term. The principal threat to these subspecies of ringed seals is habitat alteration stemming from climate change within the foreseeable future. This is a long-term threat and the consequences for ringed seals will manifest themselves over the next several decades. Finally, ringed seals currently benefit from existing protections under the MMPA, and activities that may take listed species and involve a Federal action will still be subject to consultation under section 7(a)(2) of the ESA to ensure such actions will not jeopardize the continued existence of the species. We therefore conclude that it is unlikely that the proposed section 4(d) regulations would provide appreciable conservation benefits. As a result, we have concluded that the 4(d) regulations are not necessary at this time. Such regulations could be promulgated at some future time if warranted by new information.

Section 7(a)(2) of the ESA requires 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.

For the Ladoga subspecies of the ringed seal that we are listing as endangered, take will be prohibited under section 9 of the ESA. 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.

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

On July 1, 1994, NMFS 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). 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 identify, to the extent known, 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 Ladoga ringed seal occurs outside the jurisdiction of the United States, we are presently unaware of any specific activities that could result in violation of section 9 of the ESA for this subspecies. However, we note that it is illegal for any person subject to the jurisdiction of the United States to "take" within the United States or upon the high seas, import or export, deliver, receive, carry, transport, or ship in interstate or foreign commerce in the course of a commercial activity, or to sell or offer for sale in interstate or foreign commerce, any endangered wildlife species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken in violation of the Act.

Critical Habitat

Section 3 of the ESA (16 U.S.C. 1532(5)(A)) defines critical habitat as: (i) specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that 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, we lack the data and information necessary to identify and describe PCEs of the habitat of the Arctic ringed seal, as well as the economic consequences of designating critical habitat. In the proposed rule, we solicited information on the economic attributes within the range of the Arctic ringed seal that could be impacted by critical habitat designation, as well as the identification of the PCEs or "essential features" of this habitat and to what extent those features may require special management considerations or protection. However, few substantive comments were received in response to this request. We find designation of critical habitat for Arctic ringed seals to be not determinable at this time. We will propose critical habitat for Arctic ringed seals in a separate rulemaking. Because the known distributions of the Okhotsk, Baltic, and Ladoga subspecies of the ringed seal occur outside the jurisdiction of the United States, we will not propose critical habitat for Okhotsk, Baltic, or Ladoga ringed seals.

Public Comments Solicited

To ensure that subsequent rulemaking resulting from this final rule will be as accurate and effective as possible, we are soliciting information from the public, other governmental agencies, Alaska Natives, the scientific community, industry, and any other interested parties. Specifically, we request comments and information to help us identify: (1) The PCEs or "essential features" of critical habitat for Arctic ringed seals, and to what extent those features may require special management considerations or protection; as well as (2) the economic, national security, and other relevant 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, regulations at 50 CFR 424.12(h) specify 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. You may submit this information by any one of several methods (see **ADDRESSES** and **DATES**). Comments and information submitted during the initial comment period on the December 10, 2010 proposed rule (75 FR 77476) or during the comment period on the peer review report (77 FR 20773; April 6, 2012) should not be resubmitted since they are already part of the record.

Summary of Comments and Responses

With the publication of the proposed listing determination for the Arctic, Okhotsk, Baltic, and Ladoga subspecies of the ringed seal on December 10, 2010 (75 FR 77476), we announced a 60-day public comment period that extended through February 8, 2011. We extended the comment period an additional 45 days in response to public requests (76 FR 6754; February 8, 2011). Also in response to public requests, including from the State of Alaska, we held three public hearings in Alaska in Anchorage, Barrow, and Nome (76 FR 9733, February 22, 2011; 76 FR 14882, March 18, 2011).

During the public comment periods on the proposed rule we received a total of 5,294 comment submissions in the form of letters via mail, fax, and electronically through the Federal eRulemaking portal. These included 5,238 form letter submissions and 56 other unique submissions. In addition, at the three public hearings we received testimony from 41 people and received written submissions from 12 people. Comments were received from U.S. State and Federal Agencies including the Marine Mammal Commission and the Alaska Department of Fish and Game (ADFG); government agencies of Canada, Nunavut, and Greenland; Native Organizations such as the Ice Seal Committee (ISC; Alaska Native co-management organization); environmental groups; industry groups; and interested individuals.

In accordance with our July 1, 1994, Interagency Cooperative Policy on Peer Review (59 FR 34270), we requested the expert opinion of four independent scientists with expertise in seal biology and/or Arctic sea ice and climate change regarding the pertinent scientific data and assumptions concerning the biological and ecological information use in the proposed rule. The purpose of the review was to ensure that the best biological and commercial information was used in the decision-making process, including input of appropriate experts and specialists. We received comments from three of these reviewers. Two of the reviewers questioned the magnitude and immediacy of the threats posed to Arctic ringed seals by the projected changes in sea ice habitat, in particular on-ice snow cover, while the third reviewer was generally supportive of the information and analyses underlying the determinations.

The differences of opinion amongst the peer reviewers, as well as uncertainty in the best available information regarding the effects of climate change, led NMFS to take additional steps to ensure a sound basis for our final determination on whether to list ringed seals under the ESA. To better inform our final listing determination and address the disagreement regarding the sufficiency or accuracy of the available data relevant to the determination, on December 13, 2011, we extended the deadline for the final listing decision by 6 months to June 10, 2012 (76 FR 77466). Subsequently, we conducted special independent peer review of the sections of the ringed seal status review report (Kelly *et al.*, 2010a) related to the disagreement. For this special peer review, we recruited two scientists with marine mammal expertise and specific knowledge of ringed seals, and two physical scientists with expertise in climate change and Arctic sea ice and snow to review these sections of the status review report and provide responses to specific review questions. We received comments from the two physical scientists and one of the marine mammal specialists. We

consolidated the comments received in a peer review report that was made available for comment during a 30-day comment period that opened April 6, 2012 (77 FR 20773). During this public comment period on the special peer review we received an additional 15 comment submissions via fax and electronically through the Federal eRulemaking portal.

We fully considered all comments received from the public and peer reviewers on the proposed rule in developing this final listing of the Arctic, Okhotsk, Baltic, and Ladoga subspecies of the ringed seal. Summaries of the substantive public and peer review comments that we received concerning our proposed listing determination for these subspecies, and our responses to all of the significant issues they raise, are provided below. Comments of a similar nature were grouped together where appropriate.

Some peer reviewers provided feedback of an editorial nature that noted inadvertent minor errors in the proposed rule and offered non-substantive but clarifying changes to wording. We have addressed these editorial comments in this final rule as appropriate. Because these comments did not result in substantive changes to the final rule, we have not detailed them here. In addition to the specific comments detailed below relating to the proposed listing rule, we also received comments expressing general support for or opposition to the proposed rule and comments conveying peer-reviewed journal articles, technical reports, and references to scientific literature regarding threats to the species and its habitat. Unless otherwise noted in our responses below, after thorough review, we concluded that the additional information received was considered previously or did not alter our determinations regarding the status of the four ringed seal subspecies.

Peer Review Comments

Comment 1: Four peer reviewers commented that the best available data on ringed seal demographics and current and past abundance are limited to poor or non-existent. Consequently, these reviewers noted that there is considerable uncertainty associated with these parameters, including in many areas of Canadian waters. In addition, one reviewer noted that results of ringed seal surveys reported by Kingsley *et al.* (1985) were not cited. One of the reviewers also commented that new information regarding the health and status of ringed seals in Alaska that became available after the proposed rule was published (*i.e.*, Quakenbush *et al.*, 2011) should be considered, and that this information indicates they are currently doing as well or better than they have since the 1960s. The State of Alaska submitted a summary of this information with its comments on the proposed rule, and also subsequently submitted a full copy of Quakenbush *et al.* (2011), commenting that these data indicate Arctic ringed seals are currently healthy.

Response: We agree that data on ringed seal demography and population size are limited. None of the published reports (including Kingsley *et al.*, 1985) provide reliable estimates of total or range-wide population size. We have taken Quakenbush *et al.*'s (2011) data (available at *http://alaskafisheries.noaa.gov/protectedresources/seals/ice.htm*) into consideration in reaching our final listing determination, and these data will be useful in future status reviews. We note, however, that healthy individual animals are not inconsistent with a population facing threats that would cause it to become in danger of extinction in the foreseeable future. For example, animals sampled from the endangered Western DPS of Steller sea lions have consistently been found to be healthy. In the case of ringed seals, substantial losses due to predation and hypothermia associated with reduced snow cover could not be detected by assessing the health of survivors. In fact, survivors might be expected to fare well for a period of time as a consequence of reduced competition.

Comment 2: A peer reviewer suggested that although the ringed seal population in the Sea of Okhotsk is reported to have been in a state of steady decline for 55 years, there are still a substantial number of seals estimated in this population. This reviewer noted that it is possible that the perceived decline reflects sampling error rather than an actual decline in abundance.

Response: We must base our listing decisions solely on the best scientific and commercial data available, after conducting a status review of the species and taking into account efforts to protect the species. Improved population estimates certainly are desirable. In the meantime, as discussed in the proposed rule and detailed in the status review report, the best available information indicates a decline for the Okhotsk subspecies from historical numbers.

Comment 3: Four peer reviewers expressed the view that the atmosphere-ocean general circulation models (AOGCMs) used for climate, sea ice, and snow prediction are not appropriate for directly linking to ringed seal habitat or for predicting snow on sea ice at a scale that is important for ringed seals. For example, some of these reviewers commented that the models: (1) Do not represent precipitation adequately, particularly at a local scale (one reviewer stated that it is well known that AOGCMs do not adequately predict precipitation, and two reviewers noted that some regional models predict precipitation poorly); (2) do not account for openings in the ice that are large sources of moisture and heat in the atmosphere, thus making winter precipitation prediction problematic; and (3) do not account for ice surface roughness caused by deformation in autumn through winter, or wind speeds and directions, which are critical to the distribution and accumulation pattern of snow on ice. Related comments of some of these reviewers suggested that increased deformation can be expected as ice forms later in the autumn and remains thinner throughout the winter, and that this could actually mean an improvement to Arctic ringed seal habitat. One of these reviewers pointed out that in addition, the projections of future Arctic snow cover are discussed in terms of the present climatology of snow over sea ice (*i.e.*, increased precipitation in autumn and spring, and less in winter). This reviewer suggested that snow climatology would be expected to change due to more open water later into the winter, which would provide a moisture source for increasing pulses of snow on sea ice in the autumn and perhaps through winter if the atmosphere remained warmer. Several public comments, including from the State of Alaska, Canada's Department of Fisheries and Oceans (DFO), and Nunavut's Department of Environment, expressed more general concerns about limitations with the model projections of snow cover, and some commenters also suggested that the model projections should be verified by field observations.

In contrast, a third peer reviewer commented that the model considered in the status review is the best source available for snow cover projections, and a commenter expressed a similar view. The commenter also noted that the snow depth findings of the status review are now supported by a new snow depth analysis by Hezel *et al.* (2012) that uses a more advanced suite of models from the Coupled Model Intercomparison Project Phase 5 (CMIP5; IPCC AR5) and suggested that this analysis addresses some of the

critiques raised in the special peer review.

Response: The model (CCSM3; IPCC) that we used to project snow depths includes the ice-thickness distribution and therefore accounts for sea ice deformation as a function of the sea ice compressive strength (resistance to compressive stresses; computed from the potential energy of the ice-thickness distribution) and the opening and closing rates of leads (linear cracks of open water in the ice) in the ice (computed from the ice motion field). The model has roughly 2 percent open water and 10 percent of the area with ice thickness less than 60 cm in the central Arctic in winter months. These aspects of the model are well documented in Holland *et al.* (2006). The consequence of resolving open water and thin ice allows for higher evaporation rates over these surfaces. The model shows a greater rate of evaporation as the sea ice concentration declines over the 21st century. This contributes to higher snowfall rates in winter (November–March).

Sea ice deformation rates in the CCSM3 indicate the 21st century will see increased deformation rates in regions where sea ice motion is towards the shore, such as north of Greenland and the Canadian Archipelago. As we noted in the proposed rule and the status review report, this region is projected to maintain summer sea ice cover during this century longer than any other. Though we agree that there may be a greater concentration of deformed ice in some regions where snow may collect, the CCSM3 (and other models analyzed by Hezel *et al.*, 2012) also predicts that snow depths will decrease on average in this region within this century. When ice floes (sheets of floating ice) converge, they first must fill in leads between the floes. Hence when there is more open water in the 21st century and only occasional converging events, there can be less rafting and ridging. Therefore, deformation is not expected to increase in frequency everywhere. For example, the projected deformation rate changes little in the CCSM3 in most of the Barents Sea and Siberian coastal regions.

As noted by a commenter, recently, Hezel *et al.* (2012) considered historical and 21st century snow depth changes on Arctic sea ice using 10 models from the CMIP5 that had snow depth data available. The model projections were compared with existing observations, and according to Hezel *et al.* (2012), the model projections were on average about 10 percent below observations, but about one-third of the individual models projected more snow than observed. Despite the broad range of snow depths among the 10 models over the 21st century, the models all agree that snow depths will decline substantially in the future, similar to the CCSM3. Snow depths decline faster in the models with greater initial depth, so the spread in the model projections declines over time, lending greater support for these forecasts. Hezel *et al.* (2012) discuss that over the 21st century, the loss of sea ice as a platform to collect snow in autumn and early winter (due to later sea ice formation) results in a substantial reduction in the amount of snow that can accumulate on sea ice, the primary concern that was also expressed in the status review report and the proposed rule. Hezel *et al.* (2012) also discuss that their analysis may underestimate future decreases in snow depths because decreases in autumn and winter sea ice concentrations could result in loss of drifting snow into leads, and the models also do not account for the effect of rainfall in winter and spring on net snow accumulation and melting.

We continue to conclude that the best available information suggests that the CCSM3 projects snow depth reasonably well. We note, for example, that snow depths from the CCSM3 are consistent with measured snow in the Arctic Ocean (Radionov *et al.*, 1997) and Hudson Bay (Ferguson *et al.*, 2005). The resolution of the model projections of snow is certainly limited, but the CCSM3 and more recent model results point unequivocally to less snow accumulation on the ice throughout the range of the species. The reviewers/commenters did not present—and we are not aware of—evidence that snow accumulation is likely to increase at any scale that would likely be helpful for ringed seal populations responding to the expected climate warming.

Comment 4: A peer reviewer commented that fast (shorefast) ice conditions are not considered adequately in any of the AOGCMs used. This reviewer expressed the opinion that this is a key problem with the assessment because a significant amount of Arctic ringed seal habitat is related to fast ice, and fast ice zones will also be less affected than marginal ice zones.

Response: The sea ice dynamical schemes used in AOGCMs (including the CCSM3) have regions of very slow moving ice, though not perfectly rigid. These regions exhibit little deformation and lead openings in AOGCMs. NMFS did not use AOGCMs to estimate changes to the fast ice area. Instead, we used AOGCMs to estimate changes to snow depth and sea ice area. Nevertheless, the status review report indicated that there is already clear evidence of advancement in the break-up date of fast ice and the onset of snow melt in several parts of the Arctic (*e.g.*, Ferguson *et al.*, 2005; Kelly *et al.*, 2006). No evidence was found by the BRT or presented by the peer reviewers or other commenters that indicates these trends are likely to abate or reverse. Early break up and early snow melt dates have clearly been associated with poor survival of ringed seal young. Therefore, these trends are likely to result in reduced productivity, resilience, and abundance of the Arctic ringed seal population, despite the fact that the models do not explicitly distinguish fast ice from pack ice (both of which are important ringed seal habitats).

Comment 5: A peer reviewer, as well as Canada's DFO, noted observations of regional snow conditions and ringed seal pupping that they suggested may conflict with the model projections of snow depths and the 20 cm minimum snow depth criterion identified for ringed seal birth lairs. The reviewer pointed out that based on CCSM3 model projections presented in the status review report, average April snow depths on sea ice for the first decade of this century in Hudson Bay appear to be below 20 cm, which she suggested implies longer-term reproductive failure in this population than the decline and/or perhaps decadal cycles suggested by the available data. In addition, this reviewer noted that loss of sea ice and snow can vary regionally, and that this needs to be taken into consideration in evaluating impacts. A few public comments also pointed out what were believed to be discrepancies in some regions between the model projections of snow depths and local observations, and expressed the view that a model that does not agree with current conditions should not be used to project future conditions. For example, these comments noted that: (1) Ringed seals continue to occupy and reproduce in the northern Bering Sea, while the model projections suggest that snow depths are currently below 20 cm in these areas; and (2) the observed trend in annual snowfall accumulation since the 1980s in the vicinity of Barrow shows a clear upward trend, with levels similar to or exceeding those recorded during previous periods when ringed seals successfully maintained lairs.

Response: The models should be interpreted as indicating trends in conditions when averaged over large areas. There may well be local or regional variation sufficient to produce locally different trends. A single model is prone to large errors on the scale of

a few hundred kilometers. For example, the CCSM3 has too much sea ice area in the Sea of Okhotsk and in the Labrador Sea. On the scale of the Northern Hemisphere, the errors across these regions cancel somewhat. Another appropriate use of a model is to evaluate agreement across regions. Although the rate of change varies by region, the CCSM3 has snow depth decreasing everywhere, which lends support for the projected direction of future change.

Comment 6: A peer reviewer expressed the opinion that insufficient consideration is given to the greater role that the Arctic Archipelago will likely play as an ice retention zone over the coming decades.

Response: The proposed rule noted that the Arctic Archipelago is predicted to become an ice refuge through the end of this century. Indeed, the Archipelago "will likely play" a "greater role" in ringed seal habitat "over the coming decades," but not because habitat will improve there (snow accumulation, for example, is projected to decline). Rather, the Archipelago's increased role will reflect greater losses of ice and snow elsewhere in the Arctic. In other words, the Archipelago is projected to be the last possible remnant of suitable habitat, although we do not know how suitable or for how long.

Comment 7: A peer reviewer expressed the opinion that use of temperatures as a proxy for projecting sea ice conditions in the Sea of Okhotsk appears problematic given that: (1) The climate models did not perform satisfactorily at projecting sea ice, and sea ice extent is strongly controlled by temperature; and (2) temperature itself is strongly controlled by sea ice conditions.

Response: The decision to use temperature as an indicator for the presence of ice is a geographic size issue. While the climate models' grid size is too coarse to develop full sea ice physics for the Sea of Okhotsk, these models are able to resolve temperature, which is mostly controlled by large-scale weather patterns on the order of 500 km or more. As the reviewer notes, sea ice extent is strongly controlled by temperature; this is especially true for smaller bodies of water relative to the grid size of available models. Thus, whether the whole geographic region around the Sea of Okhotsk is above or below the freezing point of sea water should be a reasonable indicator of the presence or absence of sea ice.

Comment 8: A peer reviewer suggested that climate models capable of adequately capturing fast ice formation, the physics of snow precipitation, and the catchment of snow should be a high priority for development.

Response: We agree with this recommendation.

Comment 9: A peer reviewer expressed the view that climate model predictions should not be considered beyond mid-century because they rely on assumptions about future policy decisions that will affect GHG emissions and are thus highly speculative. Related public comments, including from the State of Alaska, noted that NMFS's recent ESA listing determination for the ribbon seal and a subsequent court decision concluded that projections of climate scenarios beyond 2050 are too heavily dependent on socioeconomic assumptions and are therefore too divergent for reliable use in assessing threats to the species. Two reviewers and several commenters expressed the opinion that trying to predict the response of seals to environmental change beyond mid-century increases the uncertainty unreasonably. A reviewer and several public comments also pointed out that assessing impacts to ringed seals from climate change through the end of this century is inconsistent with: (1) Other recent ESA determinations for Arctic species, such as ribbon seal and polar bear, that considered species responses through mid-century; (2) the IUCN red list process, which uses a timeframe of three generation lengths; and (3) the mid-century timeframe considered to evaluate environmental responses of marine mammals to climate change in a special issue (March 2008) of the journal Ecological Applications (Walsh, 2008). A few commenters expressed the opinion that the altered approach is significant because the listing determinations are wholly dependent upon NMFS's use of a 100-year foreseeable future. Several commenters expressed the opinion that inadequate justification was provided for NMFS's use of a 100-year foreseeable future. Many of these commenters suggested that the best scientific data support a "foreseeable future" time frame of no more than 50 years, and some commenters such as the State of Alaska suggested a shorter time horizon of no more than 20 years. In contrast, another peer reviewer and some commenters expressed support for use of climate model projections through the end of the 21st century.

Response: The ESA requires us to make a decision as to whether the species under consideration is in danger of extinction throughout all or a significant portion of its range (endangered), or is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (threatened) based on the best scientific and commercial data available. While we may consider the assessment processes of other scientists (*i.e.*, IUCN; Walsh, 2008), we must make a determination as to whether a species meets the definition of threatened or endangered based upon an assessment of the threats according to section 4 of the ESA. We have done so in this rule, using a threat-specific approach to the "foreseeable future" as discussed below and in the proposed listing rule.

In the December 30, 2008, ribbon seal listing decision (73 FR 79822) the horizon of the foreseeable future was determined to be the year 2050. The reasons for limiting the review to 2050 included the difficulty in incorporating the increased divergence and uncertainty in future emissions scenarios beyond this time, as well as the lack of data for threats other than those related to climate change beyond 2050, and that the uncertainty inherent in assessing ribbon seal responses to threats increased as the analysis extended farther into the future. By contrast, in our more recent analyses for spotted, ringed, and bearded seals, we did not identify a single specific time as the foreseeable future. Rather, we addressed the foreseeable future based on the available data for each respective threat. This approach better reflects real conditions in that some threats (*e.g.*, disease outbreaks) appear more randomly through time and are therefore difficult to predict, whereas other threats (climate change) evince documented trends supported by paleoclimatic data from which reasonably accurate predictions can be made farther into the future. Thus, the time period covered for what is reasonably foreseeable for one threat may not be the same for another. The approach is also consistent with the memorandum issued by the Department of Interior, Office of the Solicitor, regarding the meaning of the term "foreseeable future" (Opinion M–37021; January 16, 2009). In consideration of this modified threat-specific approach, NMFS initiated a new status review of the ribbon seal on December 13, 2011 (76 FR 77467).

As discussed in the proposed listing rule, the analysis and synthesis of information presented in the IPCC's AR4 represents the scientific consensus view on the causes and future of climate change. The IPCC's AR4 used state-of-the-art AOGCMs under six "marker" scenarios from the Special Report on Emissions Scenarios (SRES; IPCC, 2000) to develop climate projections under

clearly stated assumptions about socioeconomic factors that could influence the emissions. Conditional on each scenario, the best estimate and likely range of emissions were projected through the end of the 21st century. In our review of the status of the ringed seal, we considered model projections of sea ice developed using the A1B scenario, a medium "business-as-usual" emissions scenario, as well the A2 scenario, a high emissions scenario, to represent a significant range of variability in future emissions.

We also note that the SRES scenarios do not assume implementation of additional climate initiatives beyond current mitigation policies. This is consistent with consideration of "existing" regulatory mechanisms in our analysis under ESA listing Factor D. It is also consistent with our Policy on Evaluating Conservation Efforts (68 FR 15100; March 28, 2003), which requires that in making listing decisions we consider only formalized conservation efforts that are sufficiently certain to be implemented and effective.

The model projections of global warming (defined as the expected global change in surface air temperature) out to about 2040–2050 are 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 emissions scenarios. For the second half of the 21st century, however, the choice of an emissions scenario becomes the major source of variation among climate projections. As noted above, in our 2008 listing decision for ribbon seal, the foreseeable future was determined to be the year 2050. The identification of mid-century as the foreseeable future took into consideration the approach taken by FWS in conducting its status review of the polar bear under the ESA, and the IPCC assertion that GHG levels are expected to increase in a manner that is largely independent of assumed emissions scenarios until about the middle of the 21st century, after which the emissions scenarios become increasingly influential.

Subsequently, in the listing analyses for spotted, ringed, and bearded seals, we noted that although projections of GHGs become increasingly uncertain and subject to assumed emissions scenarios in the latter half of the 21st century, projections of air temperatures consistently indicate that warming will continue throughout the century. Although the magnitude of the warming depends somewhat on the assumed emissions scenario, the trend is clear and unidirectional. To the extent that the IPCC model suite represents a consensus view, there is relatively little uncertainty that warming will continue. Because sea ice production and persistence is related to air temperature through well-known physical processes, the expectation is also that loss of sea ice and reduced snow cover will continue throughout the 21st century. Thus, the more recent inclusion of projections out to the year 2100 reflects NMFS's intention to use the best and most current data and analytical approaches available. AOGCM projections consistently show continued reductions in ice extent and multi-year ice (ice that has survived at least one summer melt season) throughout the 21st century (*e.g.*, Holland *et al.*, 2006; Zhang and Walsh, 2006; Overland and Wang, 2007), albeit with a spread among the models in the projected reductions. In addition, as discussed by Douglas (2010), the observed rate of Arctic sea ice loss has been reported as greater than the collective projections of most IPCC-recognized AOGCMs (*e.g.*, Stroeve *et al.*, 2007; Wang and Overland, 2009), suggesting that the projections of sea ice declines within this century may in fact be conservative.

We concluded that in this review of the status of the ringed seal, the climate projections in the IPCC's AR4, as well as the scientific papers used in this report or resulting from this report, represent the best scientific and commercial data available to inform our assessment of the potential impacts from climate change. In our risk assessment for ringed seals, we therefore considered the full 21st century projections to analyze the threats stemming from climate change. We continue to recognize that the farther into the future the analysis extends, the greater the inherent uncertainty, and we incorporated that consideration into our assessments of the threats and the species' responses to the threats.

Comment 10: Three peer reviewers expressed the opinion that the potential for ringed seals to modify their behavior in response to climate conditions is underestimated. These reviewers suggested that plasticity in ringed seal life-history activities includes variability in timing of reproduction and molting relative to changes in the ice and snow cover season; the ability to survive slightly shortened nursing periods; and the ability to migrate over long distances, to use alternative platforms to haul out on, and to use alternative food resources. One reviewer noted that changes in Ladoga and Saimaa seal reproductive behavior in recent history (*e.g.*, increased use of shorelines for lair construction) also demonstrate adaptive responses. The resilience and adaptability of ringed seals was also noted in several public comments, including those of Canada's DFO, Nunavut's Department of Environment, and Greenland's Department of Fishing, Hunting, and Agriculture (DFHA). In addition, a related public comment expressed the view that the determination appears to contradict NMFS's emphasis in its recent ESA listing determinations for ribbon and spotted seals on the ability of ice seals to adapt to declines in sea ice.

Response: Presumably the reviewers are referring to phenotypic plasticity, which is the ability of an individual genotype (genetic composition) to produce multiple phenotypes (observable characteristics or traits) in response to its environment. Plasticity in the timing of ringed seal reproduction and molting is not established. More importantly, the BRT would predict population reductions as habitat changes (*i.e.*, depth and duration of ice and especially snow cover decreases) require changes in the timing of reproduction and molting, decreased nursing periods, changes in migration, use of alternative haul-out substrates, and changes in diet. If the reviewers are arguing that ringed seal populations might persist in the face of such changes, we agree. If the reviewers are suggesting that ringed seal populations would not be expected to decline significantly in the face of such changes, we disagree.

Comment 11: A peer reviewer commented that regional variation in the minimum snow depth required for Arctic ringed seal lair construction and maintenance is an important consideration, and noted that the ambient temperatures and primary predator in a particular region may influence the minimum snow drift depth needed for birth lair formation and maintenance. This reviewer discussed that ringed seal birth lairs have been successfully constructed in drifts shallower than 45 cm, with corresponding snow depths on flat ice of less than 20 cm, in some parts of the subspecies' range, and also noted how difficult it is to measure snow depth and how poor the data coverage is across various parts of the Arctic ringed seal's range. A commenter expressed the opinion that given the reviewer's emphasis on regional variation, 20 cm average snow depth might not be adequate in many regions. This commenter also noted that Ferguson *et al.* (2005) found a minimum of 32 cm average snow depth was needed for lairs in western Hudson Bay.

Response: We recognize that there is some uncertainty in measurement of snow depth and in identifying a threshold depth (measured as the average accumulation of snow on flat ice) for adequate recruitment of ringed seals. The minimum adequate snow depth is unlikely to be a sharp threshold, so that there will no doubt be many cases in which successful lairs have been created and maintained in snow shallower than the threshold, and also many cases where ringed seals have succumbed to predation or exposure in lairs made in deeper snow. Also, there may be regional differences in this threshold depth, though the examples that were cited in the status review report and the proposed rule, and used to estimate the snow depth threshold, included documentation of predation by bears, foxes, and birds. However, our conclusions were based primarily on the expectation that snow depths will decrease substantially in the coming decades, and that poor survival of young seals has already been documented in recent years with early break-up or onset of snow melt. No compelling evidence was received during the peer reviews and public comment periods to indicate that these impacts are likely to abate or reverse, or that they are expected to be isolated to particular regions. We discussed in the preamble to the proposed rule that the best available estimate of the minimum average snow depth (on flat ice) for the formation of birthing lairs is at least 20–30 cm, and we considered areas projected to have less than 20 cm average snow depth in April to be inadequate for the formation of ringed seal birth lairs. However, the conclusion that snow habitat will decline substantially throughout the ringed seal's range was not highly dependent on that specific value.

Comment 12: A peer reviewer commented that while the observations reported of the effects of extreme weather events on Arctic ringed seals are important to consider, there are relatively few data on how these habitat effects are influencing longer-term reproductive potential and population dynamics need to be considered in the proper geographic and temporal context. This reviewer noted that these observations are also for Arctic ringed seals in the southern extent of their range and in the western Arctic, where ringed seals are expected to be more strongly affected by climate change. Therefore, they need to be considered in the proper geographic and temporal context.

Response: Long-term data on population dynamics of ice-associated seals would be prohibitively difficult and expensive to acquire. Therefore, it is critical and required by the ESA to make use of existing data, which include observations from years or short periods of extreme conditions, as analogs for projected future trends. As the reviewer noted, it is important to keep in mind possible limitations of this approach, including the geographic and temporal contexts. Although several of the key studies relating ringed seal vital rates to environmental conditions do come from southern parts of the species' distribution, the conditions encountered in those studies did not exceed the values for temperatures, minimum snow depths, and ice break-up dates that are anticipated in the coming decades throughout most of the Arctic ringed seal's range.

Comment 13: A peer reviewer suggested that the assumption that inadequate snow depths and warmer temperatures will cause high pup mortality due to the loss of thermal protection is based on very limited data. This reviewer also commented that ringed seal pups may not need lairs for thermal protection to the same degree as temperatures warm, which may be why ringed seals successfully pup without lairs in the Sea of Okhotsk. Another reviewer commented that the thermal benefit of lairs appears secondary to predator avoidance. A related public comment noted that some data on seal pup mortality due to hypothermia (*i.e.*, Hammill and Smith, 1991) suggest that seal pups are largely unaffected by the snow depth of subnivean lairs, and are in fact much more tolerant of temperature extremes than suggested.

Response: Substantial data indicate high pup mortality due to hypothermia and predation as a consequence of inadequate snow cover (Kumlien, 1879; Lydersen *et al.*, 1987; Lydersen and Smith, 1989; Smith *et al.*, 1991; Smith and Lydersen, 1991; Hammill and Smith, 1989; Hammill and Smith, 1991). The suggestion that ringed seals may not need lairs to the same degree as temperatures warm is overly simplistic. Unseasonal warming and rains will become increasingly common as the climate warms, and such events have led to high pup mortality when collapse of lairs was followed by a return to cold temperatures (Lukin and Potelov, 1978; Stirling and Smith, 2004; Ferguson *et al.*, 2005). Whether one benefit is secondary or not, the preamble to the proposed rule summarized considerable data that was detailed in the status review report indicating that lairs protect seals from both cold and predators.

Comment 14: A peer reviewer suggested that the climate model projections of snow cover indicate it is highly likely sufficient snow will be available to Arctic ringed seals in the foreseeable future during the key months when reproduction is likely to occur.

Response: As discussed in the preamble to the proposed rule, contrary to this reviewer's suggestion, by the end of the century, April snow cover is projected to become inadequate for the formation and occupation of ringed seal birth lairs over much of the Arctic ringed seal's range.

Comment 15: A peer reviewer commented that the increasing probability of spring precipitation coming in the form of rain during the critical birth lair period (*i.e.*, April) is of particular concern.

Response: This concern (*i.e.*, potential for spring rain to damage lairs) was identified in the preamble to the proposed rule and was acknowledged and considered by the BRT in its risk assessment (see Kelly *et al.*, 2010a). We note that Hezel *et al.* (2012) reported a projected increase in rainfall in April and May through the end of this century.

Comment 16: One of the peer reviewers expressed the opinion there should be more focus on the seasonal thresholds and types of ice that are thought to be important for ringed seals, as some thresholds are likely to be more critical than others. This reviewer suggested this type of synthesis is needed to evaluate how important changing ice extent, thickness, and presence of multiyear ice will be in the future. For example, a change in ice thickness in core Arctic habitat may be less significant than a change in freeze-up dynamics that affects ice roughness and subsequent snow drift development in the medium and long-term.

Response: A multi-factorial model of the impacts of ice extent, thickness, and ice type on ringed seal populations would be desirable. However, we are not aware of any time series or other data sets that could be used in such an analysis.

Comment 17: A peer reviewer noted there are few data on what proportion of the habitat identified as "suitable" is actually used by Arctic ringed seals, and commented that without this information it is difficult to evaluate the impact of ice loss. This reviewer suggested that in core Arctic areas, availability of ice may not be a limiting factor, even with changes in the short and medium term.

Response: The greatest uncertainty about areas actually used by ringed seals

is with respect to the offshore areas, especially the central Arctic Basin. Along the coasts and in the marginal seas, there is relatively good evidence that ringed seals are currently widespread if not ubiquitous in areas with regular presence of suitable winter ice and snow cover. Many of these areas are projected to become unsuitable within the 21st century. Because potentially suitable sea ice and snow are projected to be present in parts of core Arctic areas longer than in other areas of the Arctic ringed seal's range, ringed seals may be affected later in these areas. Nevertheless, reductions in snow depths are projected throughout the Arctic ringed seal's range, including in core Arctic areas, such that Arctic ringed seals are threatened by the anticipated habitat changes throughout their range.

Comment 18: A peer reviewer commented that considerable emphasis is placed on the projected loss of multi-year and seasonal ice cover. However, this reviewer noted that Arctic ringed seals avoid multi-year ice, instead preferring stable first-year ice and stable pack ice, and they only require ice during breeding and possibly molting. In addition, the reviewer commented that how Arctic ringed seals might respond to replacement of multi-year sea ice by seasonal first-year ice is not sufficiently considered, noting that although the Arctic Basin has relatively low productivity, it is unclear whether this will remain the case in the future. Another peer reviewer and Greenland's DFHA both commented that the translation of multi-year ice into more first-year ice could actually increase the amount of ringed seal habitat.

A few commenters, including Canada's DFO, similarly suggested that some habitat changes caused by projected changes in climatic conditions, such as increased open water foraging areas, may be beneficial to ringed seals. One commenter expressed the opinion that NMFS arbitrarily adopted a precautionary approach that assumed the worst possible future habitat conditions without taking into account any future potential habitat gains. This commenter also stated that it was unclear why NMFS provided the special peer reviewers of the bearded seal status review a supplemental analysis that highlighted habitat losses and gains based on the sea ice concentration criteria, but did not provide a similar analysis for ringed seals.

Response: As discussed above, we used AOGCM projections to estimate changes to snow depth and sea ice area throughout the range of Arctic ringed seals. Thus, our analysis did not place particular emphasis on certain ages or types of ice. NMFS considered the impacts of an increased proportion of Arctic ice being made up of first-year ice. Indeed, first-year ice is predicted to form progressively later in fall, after much of the annual snow has already fallen, so snow depths are projected to be diminished on first-year ice as well. An increase in the proportion of first-year ice would not be beneficial to ringed seal breeding and pup survival if snow depths on the new regions of first-year ice are insufficient for lair creation and maintenance.

We agree that ongoing climate disruption and warming may cause some habitat changes that could be beneficial to ringed seals. However, a shift from unsuitable to suitable values of a few habitat dimensions is not a strong indication that other habitat will become suitable overall. For example, if Arctic ringed seals move north with retreating ice and occupy new areas, they may encounter less prey availability in the deeper, less productive Arctic Basin. The reviewer's assertion that the Arctic Basin may become more productive is highly speculative; unlike the physical models used to predict ice and snow, there is not a broad scientific consensus on the general direction of the expected trends.

We are not aware of any documented examples of ice-associated species expanding into previously unsuitable habitat that has become suitable due to climate or other large-scale shifts in conditions. Therefore, we conclude that it is more likely that losses of current habitat will outweigh any potential habitat gains. We also note that as ice and snow cover decline, Arctic waters may become more hospitable to species like spotted and harbor seals that do not depend on snow-covered ice for breeding. So, as breeding habitat declines for ringed seals, they may also face greater competition for food.

Regarding the supplemental analysis provided to the special peer reviewers of the bearded seal status review report, that analysis summarized the projected changes in areas of suitable bearded seal habitat based on sea ice concentration and bathymetry criteria during the months of reproduction and molting, both including and excluding areas of potential habitat gains. Possible habitat gains for bearded seals were described as areas where sea ice concentrations were currently too dense to be considered suitable, but where projected future concentrations fall within the suitable range. For ringed seals, a key consideration in evaluating the potential impacts of the projected changes in ice and snow is sufficient snow depth for the formation and maintenance of lairs. We considered areas projected to have less than 20 cm of average snow depth in April to be inadequate for the formation of ringed seal birth lairs. Model projections indicate that throughout the range of ringed seals there will be a substantial reduction in on-ice snow cover within this century. Therefore, a supplemental analysis similar to the one provided to the bearded seal special peer reviewers would not have indicated any potential gains in suitable habitat in terms of areas with snow depths sufficient for ringed seal birth lairs in April.

Comment 19: A peer reviewer noted that there was discussion in the status review report of limited evidence suggesting lack of a suitable ice platform may lead to a delayed molt. This reviewer commented that this should be discussed, along with the longer term impact from a survival aspect. The Marine Mammal Commission submitted a related comment that the projected loss of ice poses a threat to molting Arctic ringed seals that should not be overlooked. The Commission noted that failure of ice in a molting area may mean that seals are forced to spend more time in the water, where they must expend more energy to maintain body temperature-energy that does not go to the production of a new coat.

Response: The limited evidence suggesting that a lack of suitable ice may lead to a delayed molt was discussed in the status review report. The BRT considered the threat posed from decreases in sea ice habitat suitable for molting as moderately significant to the persistence of Arctic, Baltic, and Ladoga ringed seals, and moderately to highly significant to the persistence of Okhotsk ringed seals (Tables 5–8; Kelly *et al.*, 2010a).

Comment 20: A peer reviewer commented that given what is known about the relatively diverse diet of Arctic ringed seals in different regions and the potential for new species of forage fish to shift northward, it is very difficult to predict how quickly the distribution of ringed seals might change in some regions. This reviewer expressed the opinion that it is likely to be highly variable, making conclusions about climate change impacts over broad geographic regions difficult.

Response: NMFS agrees that drawing such conclusions is difficult. The BRT members' assessments of the significance of specific threats to ringed seal persistence in the foreseeable future were summarized in the status review report in numerical scores. The BRT members assigned relatively low threat

scores and low degrees of certainty to threats from changes in prey availability or density and higher threat scores to changes in snow cover and the impacts on rearing young (Table 5; Kelly *et al.*, 2010a). It is not clear how increased food would compensate for the loss of snow, nor is it clear that forage fish moving north would not be accompanied by predators that would compete with ringed seals for those prey.

Comment 21: A peer reviewer suggested that the lack of subnivean lairs in the Sea of Okhotsk has apparently not increased pup mortality there to an extent that it has significantly decreased the population.

Response: Russian literature has been inconsistent as to whether or not lairs are or were used in the Sea of Okhotsk. We know of no data that would support the reviewer's assertion that pup mortality has not increased or that the population has not significantly decreased. The best available information would suggest the population has decreased, but as noted elsewhere, estimates of population size are poor.

Comment 22: Two peer reviewers commented that Arctic ringed seals are considerably more abundant and broadly distributed than Okhotsk and Baltic ringed seals, and their habitat is forecast to change less substantially. Therefore, it is unclear why the demographic risks for all three populations were assessed at relatively similar levels.

Response: The "relatively similar levels" are, in part, a function of the 1 to 5 numeric scale used to estimate risk in the status review report. The BRT assessed the risk in terms of abundance for the Okhotsk population as 31 percent higher than for the Arctic population, and the risk for the Baltic population as 38 percent higher than for the Arctic population in the foreseeable future (Table 10; Kelly *et al.*, 2010a). The assessment of demographic risks was detailed for each population in section 4.3 of the status review report.

Comment 23: A peer reviewer commented that while it is acknowledged that ringed seals have likely responded to previous warm periods, no attempt is made to explore the extent of these warming periods and how ringed seals may have adapted to them. The State of Alaska and another commenter similarly suggested that past warming periods were not adequately considered. They stated that the survival of ringed seals during interglacial periods can be considered better evidence for population persistence than predictive models of ice condition for species extinction, and that this is a primary reason why listing of ringed seals as threatened is not warranted. Greenland's DFHA expressed a similar view.

Response: We are not aware of any available information on ringed seal adaptive responses during the interglacial periods. A fundamental difficulty in using pre-historic warm periods as analogs for the current climate disruption is that the rate of warming in the pre-historic periods is poorly known. The species' resilience to those previous warming events, which may have been slower than the current warming, does not necessarily translate into present-day resilience. Moreover, there may be cumulative effects from climate warming and ocean acidification, or other human impacts, that combine to limit the species' resilience to the changes anticipated in the coming decades.

Comment 24: A peer reviewer commented that the magnitude of the impact that increased predation might have relative to mortalities associated with other climate related factors like an early spring rain or an early break-up in a particular region is not discussed. This reviewer also commented that how the suite of predators in a particular range might change from predominantly "on-ice" species (*e.g.*, polar bears) to "in-water" species (*e.g.*, sharks and killer whales) and what impacts that might have is not addressed.

Response: Although the relative impacts of the various factors cited by the reviewer are no doubt significant to the eventual status of ringed seals in various portions of their range, we consider them too speculative to evaluate at this time. The reviewer did not provide additional data or evidence on which to base such an evaluation.

Comment 25: A peer reviewer expressed the opinion that the threat posed to Arctic ringed seals by polar bear predation should be qualified. This reviewer commented that it is unlikely polar bear predation would cause significant pup mortality across the entire range of the Arctic ringed seal. In addition, this reviewer noted that it is assumed that polar bear abundance will remain high as snow conditions deteriorate; however, it is expected that polar bear populations will decline, which could reduce predator effects on ringed seals. In addition, this reviewer commented that ringed seals may also become less accessible to polar bears as seasonal sea ice decreases. Greenland's DFHA similarly discussed the dynamic relationship between polar bears and ringed seals, suggesting that observations of ringed seal declines from increased polar bear predation during ice reductions are part of the normal predator-prey cycle and should not be over-interpreted in considering potential impacts of projected changes in sea ice habitat.

Response: "Significant pup mortality" from polar bear predation would not have to occur "across the entire range of the Arctic ringed seal" to pose a threat. We recognize that expected declines in polar bear populations could lessen predation on ringed seals; however, decreased snow cover has also been shown to markedly increase predation success by polar bears (Kumlien, 1879; Lydersen *et al.*, 1987; Lydersen and Smith, 1989; Hammill and Smith, 1989; Hammill and Smith, 1991; Smith et *al.*, 1991; Smith and Lydersen, 1991). While decreased sea ice might decrease accessibility of seals to bears, it also may be that the decreased extent of ice could concentrate ringed seals, resulting in the opposite effect. The possible decreases in predation are speculative, while increases in predation associated with decreased snow cover have been well documented. Therefore, the best scientific and commercial data available show that the threat posed to ringed seals by predation is currently moderate, but this threat can be expected to increase as snow and sea ice conditions change with a warming climate.

Comment 26: A peer reviewer found the assessment of subsistence harvest in the proposed rule reasonable, noting that harvest appears to be substantial in some areas of the Arctic, but appears to remain sustainable. This reviewer commented that the ISC has been developing a harvest monitoring program with personnel assistance from the State of Alaska. The Marine Mammal Commission also commented that it does not believe that the subsistence harvest of ringed seals in U.S. waters constitutes a significant risk factor for Arctic ringed seals, and several other commenters expressed similar views regarding subsistence harvest in U.S. waters, as well as elsewhere. In contrast, another commenter expressed concern that the impact of Native subsistence hunting on ringed seals is substantially underestimated. The commenter expressed the view that NMFS needs to obtain reliable estimates of subsistence harvest of ringed seals such that their conservation status can be more closely monitored, in particular considering climate change is expected to have impacts on ringed seals and those could be exacerbated by other factors such as harvest. This commenter also suggested that additional resources should be

devoted to obtaining these estimates of subsistence harvest, and suggested that NMFS institute a harvest monitoring system rather than rely on self-reporting.

A number of commenters, including the ISC and Greenland's DFHA, emphasized that ice seals have been a vital subsistence species for indigenous people in the Arctic and remain a fundamental resource for many northern coastal communities. Some commenters, including the ISC, requested that NMFS identify what additional measures would be required before the subsistence hunt could be affected by Federal management of ringed seals and under what conditions the agency would consider taking those additional measures, and this information should be provided to residents of all potentially affected communities.

Response: We recognize the importance of Arctic ringed seals to Alaska Native coastal communities. Section 101(b) of the MMPA provides an exemption that allows Alaska Natives to take ringed seals for subsistence purposes as long as the take is not accomplished in a wasteful manner. Section (10)(e) of the ESA also provides an exemption from its prohibitions on the taking of endangered or threatened species by Alaska Natives for subsistence purposes, provided that such taking is not accomplished in a wasteful manner. Although the number of ringed seals harvested annually by Alaska Natives is not precisely known or comprehensively monitored, ongoing hunter surveys in several communities give no indication that the harvest numbers are excessive or have a significant impact on the dynamics of the populations (Quakenbush *et al.*, 2011). The numbers of seals harvested have likely declined substantially in recent decades because the need for food to supply sled-dog teams has diminished as snowmobiles have been adopted as the primary means of winter transport. The proportion of Alaska Natives that make substantial use of marine mammals for subsistence may also have declined due to increased availability and use of non-traditional foods in coastal communities. However, there may also be a counterbalancing increase in awareness of health benefits of traditional foods compared with non-traditional alternatives.

Under the MMPA the Alaska stock of ringed seals will be considered "depleted" on the effective date of this listing. In the future, if NMFS expressly concludes that harvest of ringed seals by Alaska Natives is materially and negatively affecting the species, NMFS may regulate such harvests pursuant to sections 101(b) and 103(d) of the MMPA. NMFS would have to hold an administrative hearing on the record for such proposed regulations. Currently, based on the best available data, the subsistence harvest of ringed seals by Alaska Natives appears sustainable. If the current situation changes, NMFS will work under co-management with the ISC (under section 119 of the MMPA) to find the best approach to ensure that sustainable subsistence harvest of these seals by Alaska Natives can continue into the future. NMFS is also continuing to work with the ISC to develop and expand collaborative harvest monitoring methods.

Comment 27: A peer reviewer commented that it is suggested that climate change will likely alter patterns of subsistence harvest of marine mammals by hunting communities. However, this reviewer noted that hunter questionnaire data from five Alaska villages (Quakenbush *et al.*, 2011) did not indicate decreases in ringed seal availability at any location.

Response: The alterations to subsistence harvest patterns by climate change suggested in the proposed rule are likely to occur at some unspecified time in the future, when changes to snow and ice cover are predicted to be more pronounced that they are at present. The hunter questionnaire data relate to recent, not future, ringed seal availability.

Comment 28: A peer reviewer commented that no information from the subsistence community or the ISC is considered in the status review report. This reviewer noted that subsistence hunters know a great deal about the biology, ecology, behavior, and movement of ringed seals, and keep a close watch for changes in the seals relative to environmental change. Several related public comments, including from the ISC, expressed the opinion that NMFS has not made adequate use of the traditional ecological knowledge (TEK) of Alaska Natives related to ice seals in the listing process. The ISC also suggested that NMFS should conduct a TEK study related to ice seals. Another commenter specifically suggested that TEK should be sought and incorporated into model projections of future snow cover on sea ice; and that the adaptive capacity of Arctic ringed seals should be further investigated by seeking observations of Native communities, especially those in the southern part of its range. This commenter also suggested that NMFS should use an empirical static modeling approach (Guisan and Zimmerman, 2000) to defensibly derive habitat parameters and use TEK to provide presence/absence data for model fitting and evaluation.

Response: The contribution of TEK to the overall understanding of ice-associated seal species is greater than commonly acknowledged. Much of our basic understanding of the natural history of ice-associated seals stems from information imparted by indigenous Arctic hunters and observers to the authors who first documented the biology of the species in the scientific literature. NMFS recognizes that Alaska Native subsistence hunting communities hold much more information that is potentially relevant and useful for assessing the conservation status of ice seals. Productive exchanges of TEK and scientific knowledge between the agency and Alaska Native communities can take many forms. Collaborative research projects, for example, provide opportunities for scientists and hunters to bring together the most effective ideas and techniques from both approaches to gather new information and resolve conservation issues. NMFS supports efforts to expand reciprocal knowledge-sharing, which can be facilitated through our co-management agreements. These efforts require time to build networks of relationships with community members, and the ESA does not allow us to defer a listing decision in order to collect additional information.

Comment 29: Four peer reviewers expressed the view that while the best scientific data available was evaluated in assessing the status of the Arctic ringed seal, this information does not provide an adequate basis to support the listing proposal for this subspecies. Two of these reviewers noted that Arctic ringed seals number in the millions, are widely distributed across a vast area and variety of habitats, and have a high degree of genetic diversity. They expressed the view that they are thus unlikely to be at high risk of major declines due to environmental perturbations including catastrophic events, and as such, they are not at risk of extinction now or in the foreseeable future, and should not be listed as threatened. In addition, these reviewers pointed out that the climate model projections suggest there will be sufficient snow and ice to support survival and reproduction of Arctic ringed seals through mid-century, and they appear to have healthy abundant populations across their range. One of these reviewers suggested that this was the case for the other subspecies as well, and noted that there is therefore still

time to monitor the status of these populations and their responses to changes in ice and snow conditions before any of the demographic characteristics considered could be expected to be at any elevated risk level.

In opposing the proposed listing of Arctic ringed seals, several related public comments, including from the State of Alaska, Canada's DFO, Nunavut's Department of Conservation, and Greenland's DFHA, similarly noted that Arctic ringed seals appear to have healthy abundant populations across their range. Several commenters suggested that the ESA is not intended to list currently healthy abundant species that occupy their entire historical ranges. Some of these commenters expressed the opinion that if NMFS lists healthy abundant species under the ESA based on assessments that consider the potential biological consequences of multi-decadal climate forecasts, virtually every species could be considered threatened. A few commenters also stated that a conclusion that the Arctic ringed seal subspecies will decline from millions of seals to being threatened with extinction should be accompanied with some level of quantification regarding what constitutes being in danger of extinction. Finally, the State of Alaska commented that although the monitoring could be enhanced, ADFG's Arctic Marine Mammal Program is adequate to detect landscape population level patterns and problems, should they arise in the future.

Response: The ESA defines a threatened species as one that "is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532(20)). Whether a species is healthy at the time of listing or beginning to decline is not the deciding factor. The inquiry requires NMFS to consider the status of the species both in the present and through the foreseeable future. Having received a petition and subsequently having found that the petition presented substantial information indicating that listing ringed seals may be warranted (73 FR 51615; September 4, 2008), we are required to use the best scientific and commercial data available to determine whether ringed seals satisfy the definition of an endangered or threatened species because of any of the five factors identified under section 4(a)(1) of the ESA. These data were compiled in the status review report of the ringed seal (Kelly *et al.*, 2010a) and summarized in the preamble to the proposed rule.

We agree that Arctic ringed seals are currently thought to be distributed throughout their range and number in the millions, are widely distributed and genetically diverse, and are not presently in danger of extinction. However, these characteristics do not protect them from becoming at risk of extinction in the foreseeable future as a consequence of widespread habitat loss. Based on the best available scientific data, we have concluded that the persistence of Arctic ringed seals likely will be challenged as decreases in ice and, especially, snow cover lead to increased juvenile mortality from premature weaning, hypothermia, and predation. Initially impacts may be somewhat ameliorated as the subspecies' range retracts northward with sea ice habitat. By the end of this century, however, average snow depths are projected to be less than the minimum depths needed for successful formation and maintenance of birth lairs throughout a substantial portion of the subspecies' range. Thus, within the foreseeable future it is likely that the number of Arctic ringed seals will decline substantially, and they will no longer persist in substantial portions of their range.

Data were not available to make statistically rigorous inferences how Arctic ringed seals will respond to habitat loss over time. We note that we currently have no mechanism to detect even major changes in ringed seal population size (Taylor *et al.*, 2007). However, the BRT's assessment of the severity of the demographic risks posed to the persistence of each of the ringed seal subspecies was formalized using a numerical scoring system. The BRT judged the risks to Arctic ringed seal persistence to be moderate to high within the foreseeable future (Table 10; Kelly *et al.*, 2010a). After considering these risks as well as the remaining factors from section 4(a)(1) of the ESA, we concluded that the Arctic ringed seal is likely to become endangered within the foreseeable future (threatened), primarily due to the projected loss of sea ice habitat, in particular snow cover.

Comment 30: A peer reviewer commented that although Baltic and Ladoga ringed seals are the most at risk due to their lower abundances and limited habitat, there do not appear to be sufficient data available to evaluate the risks to their persistence. Similarly, several commenters expressed the view that there are insufficient data, including on abundance and population trends, to proceed with the listing of Arctic ringed seals at this time. Some commenters stated that we should defer the listing decision for the Arctic ringed seal in particular until more information becomes available. Two commenters specifically noted that NMFS has announced that it is conducting large-scale ice seal aerial surveys, and they requested that NMFS delay the listing determination until the results of these surveys become available.

Response: Under the ESA, we must base each listing decision on the best available scientific and commercial data available after conducting a review of the status of the species and taking into account any efforts being made by states or foreign governments to protect the species, and we have done so in assessing the status of Arctic, Okhotsk, Baltic, and Ladoga ringed seals. These data were summarized in the preamble to the proposed rule and are discussed in detail in the status review report (see Kelly *et al.*, 2010a). The existing body of literature concerning ringed seal population status and trends is limited, and additional studies are needed to better understand many aspects of ringed seal population dynamics and habitat relationships. However, the ESA does not allow us to defer listing decisions until additional information becomes available. In reaching a final listing determination we have considered the best scientific and commercial data available, including the information provided in the status review report as well as information received via the peer review process and public comment. These data are sufficient to conclude that Arctic, Okhotsk, and Baltic ringed seals are likely to become endangered within the foreseeable future (threatened) and Ladoga ringed seals are in danger of extinction (endangered).

Comments on the Climate Model Projections and the Identification and Consideration of Related Habitat Threats

Comment 31: A commenter noted that studies indicate the risks from climate change are substantially greater than those assessed in the IPCC's AR4, raising concern that the IPCC climate change projections used in the status review report likely underestimate climate change risks to ringed seals.

Response: Although recent observations of annual minimum ice extent in the Arctic Ocean have been outside (*i.e.*, below) the majority of model runs projected from the most commonly used scenarios, a few models exhibit anomalies of a similar magnitude early in the 21st century. Nonetheless, the observed sea ice retreat has been faster than the consensus projection, which may have occurred either because: (1) climate models do

not have sufficient sea ice sensitivity to the rise in GHG forcing, or (2) there is an unusually large contribution in observations from natural variability. Many of the same recent years have been characterized by near record high ice extents in regions such as the Bering Sea, for example. While we recognize the possibility that consensus projections may underestimate the future risks to ringed seals, the likelihood of that does not seem to be sufficiently established to warrant abandonment of the IPCC AR4 as the best available scientific basis for projection of future conditions.

Comment 32: The State of Alaska noted that predicting climate change is made more difficult and uncertain by decades long shifts in temperature that occur due to such variables as the Pacific Decadal Oscillation (PDO).

Response: Climate models account for PDO variability but the PDO is chaotic—the future points at which it will shift between its warm and cool phases cannot currently be predicted. In this sense, a specific PDO is not predictable in the future. To address this unpredictable variability, NMFS used the average from an ensemble of models and model runs. The average of the ensemble indicates the expected response forced by rising GHGs and aerosol changes. The individual model runs that compose the ensemble vary substantially, often trending above or below the average, or bouncing back and forth across it. The variability among the model runs in the ensemble reflects the unpredictability of the PDO and many other factors. We used the range of this variability in our projections of future ice conditions, for example, to characterize the minimum, mean, and maximum ice concentrations in future decades.

Comment 33: The State of Alaska and another commenter noted that it is assumed Arctic ringed seals cannot survive without year-round ice. However, they suggested that the current status of the other ringed seal subspecies indicates ringed seals can survive without multi-year ice.

Response: Our risk assessment for Arctic ringed seals was not based on an assumption that they require sea ice year-round. The threats that were scored by the BRT as moderate to high significance were a decrease in sea ice habitat suitable for whelping and nursing, and increased hypothermia due to insufficient depth or duration of snow cover (Table 5; Kelly *et al.*, 2010a). Both of these threats are relevant to the period of whelping and pup rearing, about mid-March to mid-June for Arctic ringed seals. We discussed in the preamble to the proposed rule that the projected decreases in sea ice, and especially snow cover, are expected to lead to increased pup mortality from premature weaning, hypothermia, and predation.

Comment 34: A commenter expressed the view that sea ice in the Arctic has been in decline for a number of years without observed detrimental effects on ringed seals, thus calling into question NMFS's assumption that future declines in sea ice will inevitably result in impacts to ringed seals.

Response: As noted in the preamble to the proposed rule and discussed in detail in the status review report, our present ability to detect changes in the Arctic and Okhotsk ringed seal populations is limited. There are no population estimates sufficiently precise for use as a reference in judging trends. Indices of condition, such as those recently reported by ADFG (Quakenbush *et al,* 2011), are available for only a limited portion of the Arctic ringed seal's range and would not be expected to detect certain types of detrimental effects, such as an increase in pup mortality by predation. Therefore, while NMFS is not aware of unequivocal evidence that Arctic or Okhotsk ringed seals have declined, the converse is equally true: there is no firm evidence that these populations are stable or increasing. Our decision to list these subspecies is based primarily on our conclusion for ESA listing Factor A that ongoing and projected changes in sea ice habitat pose significant threats to the persistence of all of the ringed seal subspecies.

The primary concern about future ringed seal habitat stems from projections of inadequate snow depths for birth lair formation and maintenance later in the 21st century. Although the model projections considered in the status review report indicate a decline in snow depth on sea ice has been underway for some years, the average predicted depth remains at least slightly greater than the 20 cm minimum for lairs. Thus, these projections are consistent with a scenario in which little or no impact from climate disruption has yet been felt by Arctic ringed seals. The anticipated impacts likely will begin to appear in the near future as average snow depth on ice declines.

Comment 35: The State of Alaska and another commenter suggested that the record high winter ice in the Bering Sea from 2007–2010 casts some doubt on the determination of the threat of extinction to ringed seals. They noted that the climate model projections make it clear that winter ice will continue to occur, and that the length of open water and changes in snow accumulation are the primary issues. These commenters expressed the view that changes in the distribution and numbers of ringed seals may occur, but the continued occurrence of winter ice, and particularly years where its record extent coincides with low summer ice, indicate that a more thorough assessment of seal habitat and population responses is needed before the threat of extinction can be assessed with any level of certainty.

Response: The above average ice cover in winter in the Bering Sea in 4 of the last 5 years is consistent with natural variability of the past 33 years and does not represent a statistically significant increase. In any case, as the reviewer notes, the length of the open water season and snow depths are the primary issues. Furthermore it is the trend, forced from rising GHGs, in the sea ice cover in fall (and hence open water) that causes snow depth to decline in the model projections.

Comment 36: A commenter noted that NMFS's current MMPA stock assessment report and proposed draft update state that there are insufficient data to predict the effects of Arctic climate change on the Alaska ringed seal stock, suggesting that predicting future population declines based upon climate change effects is speculative.

Response: NMFS's MMPA stock assessments for ice-associated seals need to be updated, which NMFS is in the process of doing to reflect new data and recent analyses from ESA status reviews.

Comment 37: A commenter noted that elders and hunters interviewed in 2011 for a Kawerak research project on TEK of ice seals and walruses reported changes in ice and weather that complicated hunter access, but they also explained that walrus, bearded, and ringed seals were as healthy as ever. The commenter also noted that multiple hunters in these interviews also reported that marine mammals have shifted their migrations to match the timing of earlier ice break-ups. Individual observations regarding ice seal ecology, health, abundance, behavior, and habitat were also provided by a number of coastal Alaska residents, primarily Native hunters. Many of these comments, including those from the ISC, indicated that although the effects of a warming Arctic have been observed for a number of years, ringed seals appear healthy and abundant, and any significant decline does not appear to be sufficiently imminent to warrant listing Arctic

ringed seals as threatened under the ESA at this time.

Response: TEK provides a relevant and important source of information on the ecology of Arctic ringed seals, and we have carefully reviewed the comments submitted from individuals with TEK on ringed seals and climate change. We do not find that these observations conflict with our conclusions. As we have noted in response to other related comments, Arctic ringed seals are not presently in danger of extinction, but are likely to become endangered within the foreseeable future.

Comment 38: Greenland's DFHA commented that the most pessimistic scenarios for consequences of sea ice loss on polar bears estimate a reduction in the polar bear population to one-third of its present size by 2099, and that if the densities of polar bears and Arctic ringed seals continue to stay correlated in the ratio of 1:200, this implies that there would still be more than 2 million ringed seals.

Response: The ratio between ringed seal and polar bear densities, and the speculation that such a ratio would remain constant in the face of extreme changes in the Arctic ecosystem, are interesting as a conceptual exercise but cannot be considered the best scientific and commercial information for the purpose of our ESA listing decision.

Comment 39: Greenland's DFHA suggested that if the projected changes in sea ice cover are realized, ringed seal habitat will likely shift northward of the range of Inuit hunters. They commented that in recent years new ringed seal habitat has emerged in northern areas where there is not hunting, which has actually created a new sanctuary for ringed seals in what must be some of the most pristine habitats on earth.

Response: The current levels of subsistence hunting do not threaten ringed seal populations. If sanctuaries from human or other predation were to emerge, as the commenter suggested, this could moderate, to some extent, losses due to poor snow and ice conditions. However, given the relatively small impact of hunting, and the potentially very large impact from the loss of pupping habitat, such sanctuaries would have limited benefit for the declining population status over time.

Comment 40: Some commenters argued that ocean acidification should be determined to be a significant threat, in particular when considered cumulatively with other climate change impacts. Another commenter disagreed, and felt that NMFS more clearly discussed the uncertainties associated with assessing the potential impacts of ocean acidification in the previous ESA listing determinations for ribbon and spotted seals.

Response: As we discussed in the preamble to the proposed rule, the impact of ocean acidification on ringed seals is expected to be primarily through changes in community composition, but the nature and timing of these changes is uncertain. The BRT members tended to rank the threat from ocean acidification as relatively low, but also noted the very low degree of certainty about the nature and magnitude of potential effects on ringed seals (Tables 5–8; Kelly *et al.*, 2010a). However, the BRT did consider cumulative effects as part of the threats assessment scoring procedure, as evidenced by the fact that the overall score for each ESA section 4(a)(1) factor tended to be as high or higher than the score assigned for individual threats within each factor.

Comments on the Identification and Consideration of Other Threats

Comment 41: A commenter expressed the opinion that the listing of ringed seals is related to the elevated number of sick or dead ringed seals reported in 2011. This commenter noted, however, that testing has not identified a cause for this apparent disease outbreak, and that the significance of the mortalities to the population as a whole is unclear.

Response: The proposed listing of Arctic ringed seals is not related to the disease outbreak referred to by the commenter, which began after the proposal was published. The elevated numbers of sick or dead ringed seals in the Arctic and Bering Strait regions of Alaska beginning in July 2011 led to the declaration of an unusual mortality event (UME) by NMFS under the MMPA on December 20, 2011. The underlying cause of this UME is unknown and remains under focused expert investigation. We acknowledged in the preamble to the proposed rule that abiotic and biotic changes to ringed seal habitat could lead to exposure to new pathogens or new levels of virulence. However, based on the best scientific and commercial data available, we continue to consider the potential threats to ringed seals from disease to be low.

Comment 42: A few commenters expressed the opinion that existing regulatory mechanisms in the United States and elsewhere are not adequate to address the factors driving climate disruption (*i.e.*, GHGs). One of these commenters suggested that U.S. agencies are either failing to implement or only partially implementing laws for GHGs, and that the continued failure of the U.S. Government and international community to implement effective and comprehensive GHG reduction measures places ringed seals at ever-increasing risk, where the worst-case IPCC scenarios are becoming more likely.

Response: While some progress is being made in addressing anthropogenic GHG emissions, we recognize in our analysis under ESA listing Factor D that current mechanisms do not effectively regulate the anthropogenic processes influencing global climate change and the associated changes to ringed seal habitat, and that this is contributing to the risks posed to ringed seals by these emissions. Further, we note that our analysis considered future emissions scenarios that did not involve dramatic and substantial reductions in GHG emissions.

Comment 43: Some commenters suggested that NMFS should re-examine its conclusion that fisheries do not threaten ringed seals because a warming climate could lead to shifts in commercial fisheries that could affect the seal's food base.

Response: The possible advent of new commercial fisheries, and the nature and magnitude of ecosystem responses, are speculative. Although there are possible risks, those should be mitigated through appropriate management of new fisheries. In U.S. waters, the intent to conduct such responsible management is evident in the *Arctic Fishery Management Plan* (North Pacific Fishery Management Council, 2009), which establishes a framework for sustainably managing Arctic marine resources.

Comment 44: Some commenters stated that offshore oil and gas development should be determined to be a threat to ringed seals in part because there is no technology available to effectively contain or recover spilled oil in ice covered waters, and a large oil spill could be devastating to these seals. In addition one of these commenters emphasized that extensive offshore oil developments are currently underway within the range of Arctic ringed seals, and additional drilling is proposed in the Beaufort and Chukchi seas. Other commenters stated that offshore oil and gas development, as currently regulated, does not pose a significant threat to Arctic ringed seals.

Response: Although a large oil spill could cause substantial injury, mortality, and indirect impacts to seals in the area, the risks posed to persistence of the ringed seal subspecies as a whole are low and are possible to mitigate by preventive measures, at least relative to the much more pervasive

risks from climate change and habitat loss.

Comments on the Status Determinations for the Ringed Seal Subspecies

Comment 45: The State of Alaska, Canada's DFO, Nunavut's Department of Environment, and several other commenters expressed the opinion that Arctic ringed seals should not be listed because there are no scientific data demonstrating any observed past or present adverse impacts on ringed seal populations resulting from sea ice recession or other environmental changes attributed to climate change. The State of Alaska also extended this comment to the other subspecies of ringed seals proposed for listing. These commenters suggested that the determinations rely on the results of predictive models and speculation about future impacts, which they argued provide insufficient justification. Some of these commenters noted that in contrast, the polar bear ESA determination relied upon data for some populations that suggested a link between observed population declines or other population vital rates and climate change. Further, the State of Alaska and another commenter suggested that climate model projections should be considered as hypotheses to be tested with data collected over time.

Response: We have concluded that the best scientific and commercial data available, which are discussed in detail in the status review report and are summarized in this notice, provide sufficient evidence that: (1) Ringed seals are strongly ice-associated and the pupping and nursing seasons, in particular, are adapted to the phenology of ice and snow; (2) reductions in sea ice and in particular the depth and duration of snow cover on sea ice are very likely to occur within the foreseeable future; (3) without the protection of lairs, ringed seals, in particular newborn pups, are vulnerable to freezing and predation; (4) the rates of environmental change will be rapid in the coming centuries and may outpace possible adaptive responses; and (5) the rapid changes in sea ice habitat are likely to decrease the ringed seal populations to levels where they are in danger of extinction. Because Arctic ringed seals stay with the ice as it annually advances and retreats, the southern edge of this subspecies' range may initially shift northward. However, whether Arctic ringed seals will continue to move north with retreating ice over the deeper, less productive Arctic Basin waters and whether species that they prey on will also move north is uncertain. Land boundaries will limit the ability of Okhotsk, Baltic, and Ladoga ringed seals to shift their range northward in response to deteriorating ice and snow conditions. Regarding the climate model forecasts, the BRT analyses used simulations from six CMIP Phase 3 (CMIP3) models prepared for the IPCC's AR4, which represent the scientific consensus view on the causes and future of climate change and constitute the best scientific and commercial data available. Based on this information, and after considering the five ESA section 4(a)(1) factors, we have determined that the Arctic, Okhotsk, and Baltic subspecies are likely to become endangered within the foreseeable future throughout their ranges (*i.e.*, threatened under the ESA). Ladoga ringed seals are also faced with additional threats and the population has been greatly reduced from historical numbers. We have therefore determined that an endangered listing is appropriate for this subspecies.

With regard to the comment that the climate model projections should be considered as hypotheses, with data collected over time to test the hypotheses, taking that approach in lieu of listing is not an option under the ESA. If the best scientific and commercial data available indicate that a species satisfies the definition of threatened or endangered, then NMFS must list it. In time, as new data become available, NMFS may de-list a species, change its listing status, or maintain its listing status. The determination here is based on the best scientific and commercial data that is presently available.

Comment 46: The Marine Mammal Commission recommended that before listing the Arctic ringed seal subspecies, NMFS first determine whether ringed seals in the Canadian Arctic Archipelago might be recognized as a discrete and significant population and excluded from the listing due to limited change in physical and ecological conditions projected for that area. A related comment from Canada's DFO expressed the view that the subspecies-wide listing of Arctic ringed seals does not address the variable spatial and temporal scales of threats that the different populations of Arctic ringed seals face. This commenter noted, for example, that while in the southern parts of its range certain Arctic ringed seal populations might be compromised if warming trends continue, in other Arctic regions ringed seal habitat could be expected to remain.

Response: Under our "Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act" (61 FR 4722; February 7, 1996) two elements are considered when evaluating whether a population segment qualifies as a distinct population segment (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. 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).

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; 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. As summarized in the preamble to the proposed rule and discussed in detail in the status review report (p. 35–39), we found no evidence of discrete segments within the Arctic ringed seal population, including within the Canadian Arctic Archipelago. Therefore, we did not take the next step of determining whether any population segment is significant to the taxon to which it belongs.

Comment 47: A commenter suggested that if NMFS determines that any of the ringed seal subspecies are threatened under the ESA, it should adopt the approach used by FWS for species such as the walrus and designate them as candidate species, or alternatively list them as species of concern. This commenter expressed the opinion that listing the species as candidate species or species of concern would avoid unnecessary expenditure of resources while providing for the option to take appropriate action under the ESA if it becomes necessary.

Response: Although NMFS and FWS define candidate species the same way in their joint regulations, the two agencies have slightly different interpretations of the term. FWS candidate species are those species for which FWS has sufficient information to support an ESA listing but for which issuance of a proposed rule is precluded due to higher priority listings (61 FR 64481; December 5, 1996). Therefore,

FWS has already determined that its candidate species warrant listing under the ESA. In contrast, NMFS uses the term "candidate species" to refer to "(1) species that are the subject of a petition to list and for which NMFS has determined that listing may be warranted, pursuant to section 4(b)(3)(A), and (2) species for which NMFS has determined, following a status review, that listing is warranted (whether or not they are the subject of a petition)" (69 FR 19976; April 15, 2004). Regardless, once a species has been proposed for listing, section 4(b)(6)(A) of the ESA does not allow us to issue a "warranted but precluded" finding. Such a finding is only permissible at the time of a 12-month finding (see section 4(b)(3)(B)), not a final rule. NMFS defines a "species of concern" as a species that is not being actively considered for listing under the ESA, but for which significant concerns or uncertainties regarding its biological status and/or threats exist (69 FR 19975; April 15, 2004). This is not the case for Arctic, Okhotsk, Baltic, or Ladoga ringed seals.

Comment 48: A commenter noted that the Alaska stock of ringed seals is not listed as depleted or strategic under the MMPA by NMFS, which they suggested indicates the absence of scientific data or consensus that these populations are currently threatened or in significant decline.

Response: The absence of a depleted designation does not mean that a species is not threatened under the ESA. Similarly, the absence of a threatened designation does not mean a species or population stock is not depleted under the MMPA. Under both the ESA and the MMPA, these determinations are based on reviews of the best scientific and commercial data available, which is the process NMFS is undertaking here.

The criteria for depleted or strategic status under the MMPA also differ from those for threatened or endangered species under the ESA. A species or population stock is considered depleted under the MMPA if it is determined through rulemaking to be below its optimum sustainable population (OSP) or if it is listed as threatened or endangered under the ESA. Section 3(9) of the MMPA (16 U.S.C. 1362(9)) defines OSP as "the number of animals which will result in the maximum productivity of the population or species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element." Under the MMPA, the term "strategic stock" means a marine mammal stock: (1) for which the level of human-caused mortality exceeds the maximum number of animals that may be removed (not including natural mortalities) while allowing the stock to reach or maintain its OSP; (2) based on the best available scientific information, is declining and likely to be listed as threatened under the ESA; or (3) is listed as threatened or endangered under the ESA. While we may consider MMPA stock assessment information, our determination as to whether the Arctic ringed seal meets the definition of a threatened or endangered species must be based on an assessment of the threats according to section 4 of the ESA.

Comment 49: Several commenters, including Canada's DFO and Nunavut's Department of Environment, expressed the view that listing the ringed seal subspecies as threatened is inconsistent with the IUCN's listing of ringed seals among species of "least concern."

Response: While we may review the assessment processes and conclusions of other expert organizations such as the IUCN, our determination as to whether the ringed seal subspecies meet the definition of threatened or endangered must be an independent one based on an assessment of the threats according to section 4 of the ESA. After reviewing the best scientific and commercial data available, we have determined that Arctic, Okhotsk, and Baltic, ringed seals are likely to become endangered within the foreseeable future (threatened) and that Ladoga ringed seals are in danger of extinction (endangered).

Comment 50: The Marine Mammal Commission recommended that NMFS re-evaluate individual and cumulative threats to the Baltic and Ladoga subspecies of ringed seals and consider listing these species as endangered. The Commission noted that the Baltic and Ladoga subspecies are greatly reduced from historical numbers and are subject to a range of threats in addition to reduction in ice habitat, including mortality in fishing gear, industrial pollution, and for Ladoga ringed seals, disturbance of summer haul-out site areas, and likely increased risk of predation as lair conditions deteriorate.

Response: With regard to Baltic ringed seals, we expressly recognized the threats identified by the Commission in the preamble to the propose rule. The BRT judged the risks posed by those threats to be low to moderate at present. In weighing the immediacy and magnitude of the threats posed to Baltic ringed seals, we continue to conclude that Baltic ringed seals are likely to become endangered within the foreseeable future, rather than that they are in danger of extinction.

We have also considered the Commission's comments and information regarding Ladoga ringed seals. After reanalyzing the factors affecting Ladoga ringed seals, we agree that greater weight should be given to the range of threats affecting these seals, and in particular the severity of the threats posed by loss of ice and snow and mortality in fishing gear. As noted in the preamble to the proposed rule, threats such as drowning of seals in fishing gear and disturbance from human activities are conservation concerns for Ladoga ringed seals that could exacerbate the effects to these seals due to climate change and habitat loss. There is evidence that seal-fisheries conflicts continue, and that bycatch of seals in fishing nets is a significant source of mortality (Verevkin *et al.*, 2010). Medvedev and Sipilä (2010) also reported that in the north portion of Lake Ladoga there has been a marked decrease in snow cover and thickness of snow drifts. They noted that the importance of this northern part of the lake as breeding habitat is likely to increase as ice cover decreases or disappears in southern Lake Ladoga. We have therefore concluded in our analysis of the five ESA section 4(a)(1) factors that the risks to Ladoga ringed seals under listing Factor A ("The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range") and to a lesser extent Factor D ("Inadequacy of Existing Regulatory Mechanisms") and Factor E ("Other Natural or Manmade Factors Affecting the Species' Continued Existence") are collectively significantly contributing to the risk of extinction for this landlocked population. We note that Kovacs *et al.* (2012) cited similar threats in classifying the Ladoga ringed seal as endangered according to the IUCN Red List classification criteria. After reconsidering the ESA section 4(a)(1) factors in light of the Commission's comments and the new information discussed above, and taking into consideration other relevant factors, including conservation efforts and special designations for this population, we have determined that Ladoga ringed seals are "in danger of extinction," and are now listing them as endangered in this final rule.

Comments Related to Subsistence Harvest of Ringed Seals

Comment 51: Several comments received, including from the ISC, expressed concern that Alaska Natives who harvest ice seals, and all of the coastal communities, will likely be disproportionately affected by the listing of Arctic ringed seals as

threatened; and that the listing could cause hardship in the form of restrictions being placed on subsistence hunting of the seals, and could also result in other restrictions that could impair economic development. Some of these commenters expressed concern that the listing could also result in additional unfunded mandates, such as monitoring of the seal harvest.

Response: As discussed above, the MMPA and ESA exempt subsistence takes by Alaska Natives from the marine mammal take prohibitions. Subsistence harvest of ringed seals by Alaska Natives appears sustainable and does not pose a threat to the populations. If the current situation changes, we will work under the co-management agreement with the ISC to find the best approach to ensure that sustainable subsistence harvest of these seals by Alaska Natives continues. Protection under the ESA does not automatically result in specific data collection and reporting requirements for the species. However, benefits of listing a species under the ESA can include enhanced funding and research opportunities that might address aspects of the harvest for a listed species. In addition, when a species is listed under the ESA, additional protections apply that promote the conservation of the species and therefore have the potential to benefit subsistence harvests. For example, section 7 of the ESA requires Federal agencies to ensure that the activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the action agency must enter into consultation with NMFS.

Comment 52: The ISC expressed the view that, should Arctic ringed seals be listed under the ESA, the Alaska Native community should have a strong role in determining the terms of subsequent management, including (1) representation on the recovery team, (2) the identification of critical habitat, (3) identification of criteria that must be met before any changes could be required in the harvest of ringed seals or trade in their parts, (4) identification of research priorities, and (5) identification of a mechanism for distribution of funds available for research and management. Some other commenters similarly suggested that local Native subsistence users should be involved directly and have primary roles in any subsistence-related management or monitoring activities involving ringed seals.

Response: We recognize the importance of ringed seals to the Alaska Native community, as well as the expertise and particular knowledge the Alaska Native hunting communities possess regarding the species and its habitats. We are committed to meaningful involvement of stakeholders, including the Alaska Native Community, throughout any recovery planning process. Critical habitat will be proposed in subsequent rulemaking. We are soliciting comments on the identification of critical habitat (see **DATES, ADDRESSES**, and Public Comments Solicited for additional information). We encourage those with expertise and understanding of those physical or biological features which are essential to the conservation of the Arctic ringed seal and which may require special management to submit written comments.

In the response to comment 26 above, we explained the criteria that must be satisfied for any regulation of subsistence harvest of ringed seals or trade in their parts to occur under the MMPA.

We appreciate the ISC's interest in identifying research priorities and a mechanism to distribute funds for ice seal research and management. The ISC's *Ice Seal Management Plan* identifies its biological and subsistence research recommendations for ice seals. The ISC has provided this management plan to NMFS and we are taking the information into consideration in planning future research (the ISC has also made a copy of this plan available at our web site; see **ADDRESSES**).

Comments on the ESA Process and Related Legal and Policy Issues

Comment 53: NMFS received comments that we should consult directly with all of the Alaska Native communities that could potentially be affected by the proposed listings, hold public hearings in each of these communities, and consult directly with the ISC on the listings. The ISC stated that they protest the lack of consultation, request an explanation from NMFS, and require a commitment to be involved in all future aspects of the listing process prior to any future public announcement. Some commenters, including the ISC, also expressed concern that without holding hearings in more communities where a majority of the ice seal hunters live, these communities were not able to provide informed comments. In addition, one commenter stated there is confusion and frustration in the Alaska Native community regarding the listing process and harvest implications, and suggested that a better process is needed to ensure that all stakeholders have an opportunity to learn about and understand the proposed rules and their implications. We received several comments expressing concern that consultation with Alaska coastal communities and local leaders was inadequate. One commenter asserted that the Inuit of Alaska, Canada, Russia, and Greenland should all play a central consultative role in any decision that could affect them in relation to wildlife food sources and wildlife management regimes.

Response: NMFS has coordinated with Alaska Native communities regarding management issues related to ice seals through co-management organizations, particularly the ISC. NMFS discussed the listing petitions with the ISC, and provided updates regarding the timeline for the ringed seal status review. Following publication of the proposed listing determination, we notified the ISC of the proposal and requested comments on the proposed rule. NMFS remains committed to working with Alaska Natives on conservation and subsistence use of ringed seals.

We acknowledge the value of face-to-face meetings, and NMFS held three public meetings in: (1) Anchorage, Alaska, on March 7, 2011; (2) Barrow, Alaska, on March 22, 2011; and (3) Nome, Alaska, on April 5, 2011. The logistical difficulties with holding additional hearings in other remote communities made it impractical to do so. We instead used other methods to provide opportunities for the public to submit comments both verbally and in writing. With assistance from the North Slope and Northwest Arctic boroughs, we provided teleconferencing access to the Barrow hearing from outlying communities in the North Slope Borough and from Kotzebue. The public hearings in Anchorage and Barrow were announced in the **Federal Register** on February 22, 2011 (76 FR 9733), and the public hearing in Nome was announced in the **Federal Register** on March 18, 2011 (76 FR 14882). The communities of Kaktovik, Wainwright, Point Lay, Point Hope, Nuiqsut, Anaktuvuk Pass, and Kotzebue participated in the Barrow hearing via teleconferencing. The public hearings were attended by approximately 88 people. In response to comments received during the public comment period that indicated some tribes may wish to consult on the proposed rule, we also contacted potentially affected tribes by mail and offered them the opportunity to consult on the proposed action.

We recognize the value of ringed seals to the Inuit of Canada, Alaska, Russia, and Greenland, and we have considered

all of the comments received from interested parties in our final determination. Further, we note that E.O. 13175 outlines specific responsibilities of the Federal Government in matters affecting the interests of recognized tribes in the contiguous 48 states and in Alaska. We have met those obligations in the development of this final action.

Comment 54: The State of Alaska commented that NMFS did not involve the State in a meaningful manner in either the development of the status review report or the proposed listing rule.

Response: We sent a copy of the 90-day petition finding to ADFG and considered all of the comments and information submitted in response to this finding in the development of the status review report and the proposed rule. We also provided funding to ADFG to analyze information and samples collected from Alaska Native subsistence harvest of ringed seals to make these data available for inclusion in the status review report. Although reports on the results of this work were submitted after the status review report was completed and the proposed rule was published, we have considered this information in our final determination. During the initial public comment period, we sent a copy of the proposed rule to ADFG and the Alaska Department of Natural Resources (ADNR), and in those mailings noted the Internet availability of the proposed rule, status review report, and other related materials. In response to requests received, including from the State of Alaska, we extended the public comment period 45 days to provide additional time for submission of comments. We have thoroughly considered the comments submitted by the State of Alaska, and these comments are addressed in this final rule.

Comment 55: Some commenters expressed the opinion that the ESA is not intended as a means to regulate potential impacts from climate change, or that the primary potential threats to ringed seals identified are the result of a global phenomenon that cannot be effectively addressed through the ESA, and thus the proposed listings will not provide a significant conservation benefit.

Response: First, this rulemaking does not regulate impacts from climate change. Rather, it lists certain species as threatened or endangered, thereby establishing certain protections for them under the ESA. Second, section 4(b)(1)(A) of the ESA states that the Secretary shall make listing determinations solely on the basis of the best scientific and commercial data available after conducting a review of the status of the species and taking into account efforts to protect the species. Based on our review of the best available information on the status of Arctic, Okhotsk, Baltic, and Ladoga ringed seals, and efforts currently being made to protect these subspecies, we conclude that Arctic, Okhotsk, and Baltic ringed seals should be listed as threatened and Ladoga ringed seals should be listed as endangered. Our supporting analysis is provided in this final rule and is supplemented by our responses to peer review and public comments. While listing does not have a direct impact on the loss of sea ice or the reduction of GHGs, it may indirectly enhance national and international cooperation and coordination of conservation efforts; enhance research programs; and encourage the development of mitigation measures that could help slow population declines. In addition, the development of a recovery plan will guide efforts intended to ensure the long-term survival and eventual recovery of Arctic ringed seals.

Comment 56: Several commenters, including the State of Alaska and the ISC, expressed the view that ringed seals and their habitat are adequately protected by existing international agreements, conservation programs, and laws such as the MMPA.

Response: We recognize that there are existing regulatory mechanisms, such as the MMPA, that include protections for ringed seals. However, declining to list a species under the ESA because it is generally protected under other laws such as the MMPA would not be consistent with the ESA, which requires us to list a species based on specified factors and after considering conservation efforts being made to protect the species. As discussed in our analysis under ESA listing Factor A, 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 that the scientific consensus projections are for continued and perhaps accelerated warming for the foreseeable future. While we acknowledge that there is some progress being made in addressing anthropogenic GHG emissions, we also recognize under listing Factor D that current mechanisms do not effectively regulate the anthropogenic factors that influence global climate change and the associated changes to ringed seal habitat.

Comment 57: The State of Alaska commented that NMFS's proposed listing of the Arctic ringed seal would interfere directly with Alaska's management of ringed seals and their habitat and would therefore harm Alaska's sovereign interests. The State also commented that NMFS's listing determination impedes Alaska's ability to implement its own laws by displacing State statutes and regulations addressing Alaska's wildlife and natural resources generally, and ringed seals specifically.

Response: The ESA does not preclude the State from managing ringed seals or their habitat. We disagree that the listing of a species under the ESA would displace a specific state law or otherwise impede the State's ability to implement its own laws. We note that in 2009 NMFS and ADFG entered into a cooperative agreement for the conservation of threatened and endangered species pursuant to ESA section 6(c)(1).

Comment 58: The State of Alaska commented that NMFS's consideration of the State's formal conservation measures designed to improve the habitat and food supply of ringed seals is extremely limited, and without any supporting analysis. Such limited consideration of the State's conservation programs fails to comply with NMFS's affirmative statutory obligation under ESA section 4(b) and NMFS's Policy for the Evaluation of Conservation Efforts.

Response: The ESA provides that NMFS shall make listing determinations solely on the basis of the best scientific and commercial data available and after conducting a review of the status of the species and taking into account those efforts, if any, of any state or foreign nation to protect such species. NMFS has developed a specific Policy for Evaluation of Conservation Efforts (68 FR 15100; March 28, 2003) that identifies criteria for determining whether formalized conservation efforts that have yet to be implemented or to show effectiveness contribute to making listing a species as threatened or endangered unnecessary.

The State of Alaska asserts that it has implemented laws, regulations, and mitigation measures that are generally aimed at protecting ice seals and their prey. These "measures" (the most relevant of which are summarized below), however, are not specifically directed toward the conservation of ringed seals and their ice habitat. For example, the mitigation measures referenced by the State aim to minimize the impact of oil and gas operations, rather than proactively or specifically to conserve the species. Moreover, the threats to ringed seals stem principally from habitat loss associated with global climate change, a threat the State could not single-handedly mitigate. Under

NMFS's policy and the ESA, notwithstanding state conservation efforts, "if the best available scientific and commercial data indicate that the species meets the definition of 'endangered species' or 'threatened species' on the day of the listing decision, then we must proceed with the appropriate rule-making activity under section 4 of the Act," *i.e.*, list the species (68 FR 15115; March 28, 2003).

Finally, in the preamble to the proposed rule we described our consideration of the effects of existing programs on the extinctions risk of the four ringed seal subspecies proposed for listing. In response to these comments from the State of Alaska, we add the following details about the State of Alaska's regulatory programs.

Under the Submerged Lands Act, the State of Alaska has authority over the submerged lands and resources therein, within an area extending from the mean high tide line to 3 nautical miles offshore. The ADNR Division of Oil and Gas (DOG) develops mitigation measures and lessee advisories as part of its best interest finding process for area-wide oil and gas lease sales. The North Slope Area-wide and Beaufort Sea Area-wide lease sales have the potential to affect ringed seals. Mitigation measures and lessee advisories identified for these lease sales include advisories that ESA-listed and candidate species may occur in the lease sale area, that lessees shall comply with recommended protection measures for these species, and that lessees must also comply with MMPA provisions. Other provisions to protect certain concentrations of resources and to protect subsistence harvest could provide some incidental benefit to ringed seals.

The Alaska Department of Environmental Conservation's (ADEC) mission involves the permitting and authorization of actions relating to oil and gas development, oil spill prevention and response, pollutant discharge, and other activities affecting Alaska's land and waters in the Arctic. State of Alaska solid waste management, water quality, wastewater, air quality, and vehicle emission standards are found in the Alaska Administrative Code (AAC) at 18 AAC 60, 18 AAC 70, 18 AAC 72, 18 AAC 50, and 18 AAC 52, respectively. Oil spill contingency plans are required under Alaska Statute AS 46.04.030 and at 18 AAC 75 for crude oil tankers, non-crude vessels and barges, oil and gas exploration facilities, oil flow lines and gathering lines, and for certain non-crude oil terminals and non-tank vessels. The ADEC contaminated sites cleanup process is governed by Alaska Statutes at Title 46 and regulations at 18 AAC 75 and 18 AAC 78.

We acknowledge that the State of Alaska's regulatory regime may provide some general benefits to ringed seals and their habitat. However, these laws and regulations do not reduce or mitigate in any material way the principal threats posed to Arctic ringed seals from the projected changes in sea ice habitat. As a result, they do not change our extinction risk assessment within this final listing determination.

Comment 59: Several comments were received regarding the proposed 4(d) rules requesting additional analyses to support the conclusion that they are necessary and advisable and petitioning NMFS to establish certain limitations on the application of those rules, such as excluding activities occurring outside the range of any of the subspecies of ringed seals listed as threatened.

Response: For species listed as threatened, section 4(d) of the ESA requires the Secretary to issue such regulations as are deemed necessary and advisable to provide for the conservation of the species. Such 4(d) protective regulations may prohibit, with respect to threatened species, some or all of the acts that section 9(a) of the ESA prohibits with respect to endangered species. Both the section 9(a) prohibitions and section 4(d) regulations apply to all individuals, organizations, and agencies subject to U.S. jurisdiction. On December 10, 2010 (75 FR 77476), we proposed to issue protective regulations for ringed seals under section 4(d) of the ESA to include all of the prohibitions in section 9(a)(1) based on a preliminary finding that such regulations were necessary and advisable for the conservation of the species. As explained above, in light of public comments and upon further review, we have determined that such regulations are not necessary at this time. The Arctic, Okhotsk, and Baltic subspecies appear sufficiently abundant to withstand typical year-to-year variation and natural episodic perturbations in the near term. The principal threat to these subspecies of ringed seals is habitat alteration stemming from climate change within the foreseeable future. This is a long-term threat and the consequences for ringed seals will manifest themselves over the next several decades. Finally, ringed seals currently benefit from existing protections under the MMPA, and activities that may take listed species and involve a Federal action will still be subject to consultation under section 7(a)(2) of the ESA to ensure such actions will not jeopardize the continued existence of the species. We therefore conclude that it is unlikely that the proposed section 4(d) regulations would provide appreciable conservation benefits. As a result, we have concluded that the 4(d) regulations are not necessary at this time. Such regulations could be promulgated at some future time if warranted by new information.

Comment 60: Comments were received that critical habitat is both prudent and determinable; other comments were received that critical habitat is not currently determinable and would require extensive additional study.

Response: Section 4(a)(3) of the ESA requires that, to the maximum extent practicable and determinable, critical habitat be designated concurrently with the listing of a species. Critical habitat is not determinable when information sufficient to perform required analyses of the impacts of the designation is lacking or if the biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat. Existing data are lacking in several areas necessary to support the designation of critical habitat, including identification and description of the physical and biological features essential to the conservation of Arctic ringed seals, and economic data which would allow for consideration of the costs of designation. We have therefore determined that designating critical habitat for the Arctic ringed seal is prudent but not determinable at this time. We will designate critical habitat for Arctic ringed seals in a subsequent rulemaking as provided under the ESA, and we are soliciting comments related to the designation (see **DATES, ADDRESSES**, and Information Solicited).

Comment 61: Comments were received that it is unclear how future recovery planning, including establishing accurate recovery and delisting criteria, can occur given the apparent lack of abundance data. Other comments were received expressing support for recovery planning for ringed seals.

Response: Section 4(f) of the ESA requires that NMFS develop recovery plans for ESA listed species, unless such a plan will not promote the conservation of the species. Section 4(f)(1)(A) of the ESA also states that in developing and implementing recovery plans, the Secretary shall, to the maximum extent practicable, "give priority to those endangered species or threatened species, without regard to taxonomic classification, that are most likely to benefit from such plans." The ranges of Okhotsk, Baltic, and Ladoga

ringed seals occur entirely under the jurisdiction of other countries. These subspecies would therefore qualify for exemption from the ESA section 4(f) recovery planning process because the U.S. has little authority to implement actions necessary to recover foreign species. A recovery plan will be developed for Arctic ringed seals, provided that the limitations in section 4(a)(1)(A) of the ESA do not apply. Future recovery planning efforts for the Arctic ringed seal will incorporate the best scientific and commercial data available regarding abundance at that time, and would identify data gaps that warrant further research.

Comment 62: A number of comments stressed that the determination should be based on sound scientific data and analysis. Some comments suggested inappropriate factors such as political pressure from the climate change debate may have influenced our decision making.

Response: We were petitioned to evaluate the status of the ringed seal under the ESA. Section 4(b)(1)(A) of the ESA requires us to make listing determinations solely on the basis of the best scientific and commercial data available. Consistent with this requirement, in reaching our final listing determination, we considered the status review report prepared by the BRT, information received through public and peer review comments, and efforts being made to protect the species. This information is summarized in this final rule.

Comment 63: A commenter expressed the opinion that to provide a meaningful process in which interested parties could review and comment on the special peer review comments, NMFS should have made the original comment letters available (rather than NMFS's "summary interpretation of those comments") and opened more than a 30-day comment period.

Response: On April 6, 2012, we announced in the **Federal Register** the availability of a peer review report that consolidated the comments received from special peer review of the ringed seal status review report (77 FR 20773). We issued a news release to ensure that the public was made aware of this comment period. The comment period was limited to 30 days in consideration of the statutory deadline requiring a prompt final listing determination. We did not receive any specific requests to extend the comment period. The peer review report simply consolidated the comments received from the special peer reviewers to facilitate public review—the report did not provide our interpretation of those comments.

Comments on the Consequences of the Proposed Listing Rule

Comment 64: Several commenters, including the State of Alaska and the ISC, expressed concern that the ultimate effect of the listings will be additional regulatory burden and increased economic and other human impacts without significant conservation benefit. Some of these commenters noted that the proposed listing would affect an area of national significance because of its importance for domestic oil and gas development. The State of Alaska specifically expressed concern that the proposed action will cause substantial injury to Alaska's economic interests, including those of northern coastal municipal governments. The State expressed the view, for example, that the listing will deter or delay activities such as oil and gas exploration and development, and shipping operations, which could reduce State royalties and revenue. One commenter also expressed concern that the listings could also potentially cause resources and efforts to be distracted away from the conservation of populations at greater risk.

Response: Section 4(b)(1)(A) of the ESA states that the Secretary shall make listing determinations based solely on the best scientific and commercial data available, after conducting a status review of the species and taking into account efforts to protect the species. The regulations implementing the ESA at 50 CFR 424.11(b), consistent with case law interpreting the ESA and its legislative history, state that the listing determination will be made without reference to possible economic or other impacts of such determination. Therefore, we cannot consider such potential consequences in our final determination. However, we will consider economic impacts when designating critical habitat. We also note that such activities have been occurring despite the presence of several ESA-listed whale species in the areas.

Comment 65: A few commenters, including Greenland's DFHA, expressed concern that if the Arctic ringed seal is listed as threatened a negative market perception toward use of seal products could, in turn, impact trade and harm Inuit communities. These commenters suggested that the proposed listing could also result in ringed seals being listed under the Convention on the International Trade in Endangered Species (CITES), which would directly affect the trade of seal products, a vital part of the Inuit subsistence lifestyle and economic independence.

Response: As noted above, section 4(b)(1)(A) of the ESA states that the Secretary shall make listing determinations based solely on the best scientific and commercial data available and the regulations implementing the ESA state that the listing determination will be made without reference to possible economic or other impacts of such determinations. Therefore, we cannot consider such potential consequences in our final determination. Regarding listing under CITES, we note that the structure of CITES is similar to the ESA, in that species are listed in CITES Appendices according to their conservation status. However, listed CITES species must also meet the test that trade is at least in part contributing to their decline. We did not find this to be the case for ringed seals.

Additional Comments

Comment 66: The Marine Mammal Commission recommended that NMFS develop a research plan to address the major uncertainties and information gaps identified in the status review report, and strengthen collaborative efforts among range nations to facilitate research and management to assess the status and trends of ringed seal populations throughout the species' range, and identify protective measures where necessary. Canada's DFO noted that they remain open to exploring potential areas for cooperation for improving mutual understanding of Arctic seal populations. The Commission and another commenter expressed the view that NMFS also needs to prioritize funding to collect data on ringed seal population size and trends and many other aspects of the seal's biology, such as population structure of the Arctic subspecies, which are currently poorly understood.

Response: We agree that additional research is needed to help resolve areas of uncertainty and to add to the ecological knowledge of this species. We look forward to working with our partners and stakeholders in the conservation and recovery of ringed seals, including obtaining needed research to fill in knowledge gaps.

Comment 67: The State of Alaska and another commenter pointed out that the proposed rule referred to the "long generation time" of ringed seals without stating what it is. These commenters suggested this is an important parameter for population projections and population genetics assessments.

Response: Based solely on the type of life history that ringed (and other) seals have evolved, with high adult survival rates and low birth rates, the species is expected to have a relatively long

generation time. The age at first reproduction and the birth rate would be expected to vary somewhat between regions and years because these typically depend upon foraging conditions. Palo *et al.* (2001) estimated the generation time of ringed seals to be about 11 years, based on vital statistics reported by Smith (1973) from seals sampled in the Canadian Arctic during 1966–1970.

Comment 68: The State of Alaska and another commenter noted that there is a high degree of uncertainty associated with the ringed seal subspecies identified that should be more explicitly acknowledged, and they provided a number of references to support this comment.

Response: Although the concept of a subspecies as an identifiable taxon has been questioned by some evolutionary biologists, and has been applied inconsistently by taxonomists with respect to the nature and amount of differentiation required for subspecies designation, the concept remains in wide use and there is clearly no consensus to abandon it. In the case of ringed seals, the five subspecies designations have been in wide use for many years (for details see Kelly *et al.*, 2010a) and constitute the best scientific and commercial data available. There is clearly no means of dispersal between the landlocked subspecies in Lake Saimaa and Lake Ladoga, or between those subspecies and the remaining three subspecies. The BRT presented and considered reasonable evidence in the status review report that, although there could be some exchange of individuals between Arctic ringed seals and the subspecies in the Baltic Sea or Sea of Okhotsk, there is no documented evidence of exchange rates that would be sufficient to fuel a recovery of the latter populations if they were to become severely depleted. Thus, all five of the widely-recognized subspecies are appropriate for consideration of whether a listing is warranted.

Comment 69: A commenter noted that the Society for Marine Mammalogy Committee on Taxonomy currently assigns the ringed seal species and the five subspecies to the genus *Pusa* rather than *Phoca*.

Response: The status review report presented and considered a current lack of consensus on placement of ringed seals in the genus *Pusa* or *Phoca* (perhaps in a subgenus *Pusa*). The proposal to list ringed seals is not dependent on the nomenclature used.

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

Under the plain language of the ESA and 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.

NMFS has coordinated with Alaska Native communities regarding management issues related to ice seals through co-management organizations, particularly the ISC. NMFS discussed the listing petition with the ISC and provided updates regarding the timeline for the ringed seal status review. Following publication of the proposed listing determination, we notified the ISC of the proposal and requested comments on the proposed rule.

We fully considered all of the comments received from Alaska Native organizations and tribes on the proposed rule and have addressed those comments in this final rule. In response to comments received during the public comment period that indicated some tribes may wish to consult on the proposed rule, we contacted potentially affected tribes by mail and offered them the opportunity to consult on the proposed action and discuss any concerns they may have. No requests for consultation were received in response to this mailing.

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

50 CFR Part 223

Endangered and threatened species, Exports, Imports, Transportation.

50 CFR Part 224

Endangered and threatened species, Exports, Reporting and recordkeeping requirements.

Dated: December 20, 2012.

Alan D. Risenhoover,

Director, Office of Sustainable Fisheries, performing the functions and duties of the Deputy Assistant Administrator for Regulatory Programs National Marine Fisheries Service.

For the reasons set out in the preamble, 50 CFR parts 223 and 224 are 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, add paragraphs (a)(4), (a)(5), and (a)(6) 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			
*	*	* * *	*	*
(4) Ringed seal, Arctic subspecies.	*Phoca (=Pusa) hispida hispida.*	The Arctic subspecies of the ringed seal includes all ringed seals from breeding populations in the Arctic Ocean and adjacent seas except west of 157° E. Long., or west of the Kamchatka Peninsula, where breeding populations of ringed seals of the Okhotsk subspecies are listed as threatened under § 223.102(a)(5); or in the Baltic Sea where breeding populations of ringed seals are listed as threatened under § 223.102(a)(6).	[INSERT FR CITATION & 12/28/12].	NA
(5) Ringed seal, Okhotsk subspecies.	*Phoca (=Pusa) hispida ochotensis.*	The Okhotsk subspecies of the ringed seal includes all ringed seals from breeding populations west of 157° E. Long., or west of the Kamchatka Peninsula, in the Pacific Ocean.	[INSERT FR CITATION & 12/28/12].	NA
(6) Ringed seal, Baltic subspecies.	*Phoca (=Pusa) hispida botnica.*	The Baltic subspecies of the ringed seal includes all ringed seals from breeding populations within the Baltic Sea.	[INSERT FR CITATION & 12/28/12].	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).

* * * * *

PART 224—ENDANGERED MARINE AND ANADROMOUS SPECIES

■ 3. The authority citation for part 224 continues to read as follows:

Authority: 16 U.S.C. 1531–1543 and 16 U.S.C. 1361 *et seq.*

§ 224.101 [Amended]

■ 4. In § 224.101, amend paragraph (b) by adding the phrase "Ladoga ringed seal (*Phoca (=Pusa) hispida ladogensis*);" immediately after the phrase " Killer whale (*Orcinus orca*), Southern Resident distinct population segment, which consists of whales from J, K and L pods, wherever they are found in the wild, and not including Southern Resident killer whales placed in captivity prior to listing or their captive born progeny;".

[FR Doc. 2012–31066 Filed 12–21–12; 4:15 pm]

BILLING CODE 3510–22–P

FEDERAL REGISTER

Vol. 77 Friday,
No. 249 December 28, 2012

Part IV

Department of Commerce

National Oceanic and Atmospheric Administration

50 CFR Part 223

Endangered and Threatened Species; Threatened Status for the Beringia and Okhotsk Distinct Population Segments of the Erignathus barbatus nauticus Subspecies of the Bearded Seal; Final Rule

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 223

[Docket No. 101126591-2477-03]

RIN 0648-XZ58

Endangered and Threatened Species; Threatened Status for the Beringia and Okhotsk Distinct Population Segments of the Erignathus barbatus nauticus Subspecies of the Bearded Seal

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

ACTION: Final rule.

SUMMARY: We, NMFS, issue a final determination to list the Beringia and Okhotsk distinct populations segments (DPSs) of the *Erignathus barbatus nauticus* subspecies of the bearded seal (*Erignathus barbatus*) as threatened under the Endangered Species Act (ESA). We will propose to designate critical habitat for the Beringia DPS in a future rulemaking. To assist us with this effort, we solicit information that may be relevant to the designation of critical habitat for the Beringia DPS. In light of public comments and upon further review, we are withdrawing the proposed ESA section 4(d) protective regulations for the Beringia and Okhotsk DPSs because we have determined that such regulations are not necessary or advisable for the conservation of the Beringia and Okhotsk DPSs at this time. Given their current population sizes, the long-term nature of the primary threat to these DPSs (habitat alteration stemming from climate change), and the existing protections under the Marine Mammal Protection Act, it is unlikely that the proposed protective regulations would provide appreciable conservation benefits.

DATES: This final rule is effective on February 26, 2013. Replies to the request for information regarding designation of critical habitat for the Beringia DPS must be received by February 26, 2013.

ADDRESSES: You may submit comments and information related to the identification of critical habitat for the Beringia DPS of bearded seals to Jon Kurland, Assistant Regional Administrator for Protected Resources, Alaska Region, NMFS, Attn: Ellen Sebastian. You may submit this information, identified by FDMS Docket Number NOAA-NMFS-2010-0259, by any one of the following methods:

- *Electronic Submissions:* Submit all electronic public comments via the Federal eRulemaking Portal *http://www.regulations.gov.* To submit comments via the e-Rulemaking Portal, first click the "submit a comment" icon, then enter NOAA-NMFS-2010-0259 in the keyword search. Locate the document you wish to comment on from the resulting list and click on the "Submit a Comment" icon on the right of that line.
- *Mail:* Submit written comments to 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.

Comments must be submitted by one of the above methods to ensure that the comments are received, documented, and considered by NMFS. Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered.

All comments received are a part of the public record and will generally be posted for public viewing on *www.regulations.gov* without change. All personal identifying information (e.g., name, address, etc.) submitted voluntarily by the sender 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). Attachments to electronic comments will be accepted in Microsoft Word or Excel, WordPerfect, or Adobe PDF file formats only.

FOR FURTHER INFORMATION CONTACT: Tamara Olson, NMFS Alaska Region, (907) 271-5006; Jon Kurland, NMFS Alaska Region, (907) 586-7638; or Marta Nammack, NMFS Office of Protected Resources, (301) 427-8469.

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 concurrently with listing under the ESA. In response to the petition, we published a 90-day finding that the petition presented substantial scientific or commercial information indicating that the petitioned action may be warranted (73 FR 51615; September 4, 2008). Accordingly, we prepared 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 bearded seal (and the ringed seal) and submit a 12-month finding to the Office of the Federal Register by December 3, 2010. Following completion of a status review report and 12-month finding for spotted seals in October 2009 (74 FR 53683; October 20, 2009; see also 75 FR 65239; October 22, 2010), we established Biological Review Teams (BRTs) to prepare status review reports for bearded and ringed seals.

The status review report for the bearded seal (Cameron *et al.*, 2010) is a compilation of the best scientific and commercial data available concerning the status of the species, including identification and assessment of the past, present, and future threats to the species. The 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 (FWS). 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.

Based on the best scientific and commercial data available on the bearded seals' taxonomy, the BRT concluded that there are two currently recognized subspecies of the bearded seal that qualify as "species" under the ESA: *Erignathus barbatus nauticus,* inhabiting the Pacific sector, and *Erignathus barbatus barbatus,* inhabiting the Atlantic sector. Based on evidence for discreteness and ecological uniqueness of bearded seals in the Sea of Okhotsk, we determined that the *E. b. nauticus* subspecies consists of two distinct populations segments—the Okhotsk DPS and the Beringia DPS.

On December 10, 2010, we published in the **Federal Register** a 12-month finding and proposed to list the Beringia and Okhotsk DPSs of the *E. b. nauticus* subspecies of the bearded seal as threatened (75 FR 77496). We published a 12-month finding for ringed seals as a

separate notification concurrently with this finding (75 FR 77476; December 10, 2010), and proposed to list four subspecies of ringed seals as threatened.

On December 13, 2011, we published in the **Federal Register** a document announcing a 6-month extension of the deadline for a final listing determination to address a substantial disagreement relating to the sufficiency or accuracy of the model projections and analysis of future sea ice for the Beringia DPS (76 FR 77465). At that time we also announced that to address the disagreement and better inform our final determination, we would conduct a special independent peer review of the sections of the status review report over which there was substantial disagreement. We subsequently conducted this special peer review and made available for public comment the resulting peer review report that consolidated the comments received (77 FR 20774; April 6, 2012).

ESA Statutory, Regulatory, and Policy Provisions

Two key tasks are associated with conducting an ESA status review. The first is to identify 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 to include "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 FWS 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). Under our DPS Policy 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. As stated in the joint DPS policy, Congress expressed its expectation that the Services would exercise authority with regard to DPSs sparingly and only when the biological evidence indicates such action is warranted.

In the preamble to the proposed rule and in the status review report we evaluated whether *E. b. nauticus* population segments met the DPS policy criteria. We determined that this subspecies consists of two DPSs—the Okhotsk DPS and the Beringia DPS. Comments regarding the DPS evaluation are addressed below in the *Summary of Comments and Responses.*

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 over 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.

The principal threat to bearded seals is habitat alteration stemming from climate change. In the 2008 status review for 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 for bearded seals, and analyzed threats associated with climate change through 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 uncertainty embedded in the assessment of the ribbon seal's response to threats increased as the analysis extended farther into the future.

Since completing the analysis for ribbon seals, 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* (AR4; IPCC, 2007) extend through the end of the century (and we note the IPCC's *Fifth Assessment Report* (AR5), due in 2014, will extend even farther into the future), for our analysis for bearded seals we used the same models to assess impacts from climate change through 2100. 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 do 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. This threat-specific approach creates a more robust analysis of the best scientific and commercial data available. It is also consistent with the memorandum issued by the Department of Interior, Office of the Solicitor, regarding the meaning of the term "foreseeable future" (Opinion M–37021; January 16, 2009).

NMFS and FWS recently published a draft policy to clarify the interpretation of the phrase "significant portion of the range" in the ESA definitions of "threatened" and "endangered" (76 FR 76987; December 9, 2011). The draft policy consists of the following four components:

1. If a species is found to be endangered or threatened in only a significant portion of its range, the entire species is listed as endangered or threatened, respectively, and the ESA's protections apply across the species' entire range.

2. A portion of the range of a species is "significant" if its contribution to the viability of the species is so important that, without that portion, the species would be in danger of extinction.

3. The range of a species is considered to be the general geographical area within which that species can be found at the time FWS or NMFS makes any particular status determination. This range includes those areas throughout all or part of the species' life cycle, even if they are not used regularly (e.g., seasonal habitats). Lost historical range is relevant to the analysis of the status of the species, but cannot constitute a significant portion of a species' range.

4. If the species is not endangered or threatened throughout all of its range, but it is endangered or threatened within a significant portion of its range, and the population in that significant portion is a valid DPS, we will list the DPS rather than the entire taxonomic species or subspecies.

The Services are currently reviewing public comment received on the draft policy. While the Services' intent ultimately is to establish a legally binding interpretation of the term "significant portion of the range," the draft policy does not have legal effect until such time as it may be adopted as final policy. However, the discussion and conclusions set forth in the draft policy are consistent with NMFS's past practice as well as our understanding of the statutory framework and language. We have therefore considered the draft policy as non-binding guidance in evaluating whether to list the Beringia and Okhotsk DPSs of the bearded seal under the ESA.

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/*). This information, along with an analysis of species delineation and DPSs, was summarized in the preamble to the proposed rule (75 FR 77496; December 10, 2010) and will not be repeated here.

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. The preamble to the proposed rule discussed each of these factors for the Beringia and Okhotsk DPSs (75 FR 77496; December 10, 2010). That discussion will not be repeated in its entirety here, but we provide a summary for each of the factors below. Section 4.2 of the status review report provides a more detailed discussion of the factors affecting bearded seals (see **ADDRESSES**). The 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 associated with impacts of the warming climate on the habitat of bearded seals (analyzed in the preamble to the proposed rule and in the status review report), 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 the Beringia and Okhotsk DPSs.

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. Nevertheless, NMFS determined that the models reflect reasonable assumptions regarding habitat alterations to be faced by bearded seals in the foreseeable future.

Potential Impacts of Changes in Sea Ice on Bearded Seals

In order to feed on the seafloor, bearded seals 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 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 female bearded seals 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, cited in 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, likely impacting the transfer of energy to

offspring and affecting 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 haul 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 local distributions of bearded seals and walrus (*Odobenus rosmarus*), another ice-associated benthic (ocean bottom) 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 factors 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 are projected to occur more frequently than in the past, may reduce recruitment and 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 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 Beringia and Okhotsk DPSs 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. The amount of ice cover required by bearded seals for critical life functions has not been documented in the scientific literature, but for purposes of this final listing determination, we concluded that the above percentages are reasonable assumptions based upon the life history characteristics and field observations of bearded seals by NMFS marine mammal biologists.

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 for May only in small zones of the Gulf of Anadyr and in the area between St. Lawrence Island and Bering Strait. 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 feeding 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. 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. In the 2090s, ice suitable for molting in June (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, the net difference between sea ice related habitat creation and loss is likely to be negative, especially because other factors like ocean warming and acidification (discussed below) are likely to affect habitat.

A substantial portion (about 70 percent) 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 modified 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 suited, 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 throughout all of its range.

Okhotsk DPS: None of the IPCC models performed satisfactorily at projecting sea ice for the Sea of Okhotsk, so projected surface air temperatures were examined relative to current climate conditions as a proxy to predict sea ice extent and duration. Sea ice extent is strongly controlled by temperature; this is especially true for smaller bodies of water relative to the grid size of available models. Also, the physical processes by which increased greenhouse gases (GHGs) lead to warming are better understood and more easily modeled than the other processes that influence sea ice formation and persistence. Therefore, whether the whole geographic region around the Sea of Okhotsk is above or below the freezing point of sea water should be a reasonable indicator of the presence or absence of sea ice.

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. These months are 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 become in danger of going 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 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 throughout all 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 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. 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. Further shifts in spatial distribution and northward range extensions appear to be inevitable, and 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 affect 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 Sea 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 at present. 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 future impacts of hunting as well as to respond appropriately to potential climate-induced changes in populations. We conclude that there is no evidence overutilization of the Beringia or Okhotsk DPS is occurring at present.

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. After the proposed listing rule was published, the occurrence of an elevated number of sick or dead ringed seals in the Arctic and Bering Strait regions of Alaska beginning in July 2011 led to the declaration of an unusual mortality event (UME) by NMFS under the Marine Mammal Protection Act (MMPA) on December 20, 2011. A small number of sick or dead bearded seals were also reported. The underlying cause of this UME is unknown and remains under focused expert investigation. Abiotic and biotic changes to bearded seal habitat potentially could lead to exposure to new pathogens or new levels of virulence, but we continue to consider the potential threats to bearded seals from disease 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. The data that are currently available do not suggest that predation is posing a significant threat to the persistence of bearded seals at present.

D. Inadequacy of Existing Regulatory Mechanisms

As noted above in the discussion of Factor A, 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 combined with modification of habitat by ocean acidification. Current mechanisms do not effectively regulate GHG emissions, which are contributing to global climate change and associated modifications to bearded seal habitat. The projections we used to assess risks from GHG emissions were based on the assumption that no new regulation will take place (the underlying IPCC emissions scenarios were all "non-mitigated" scenarios). Therefore, the inadequacy of mechanisms to regulate GHG emissions is already included in our risk assessment, and contributes 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 warrant further study. 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. The BRT considered the potential threat posed from contaminants as of low to moderate significance to the Beringia DPS and of moderate significance to the Okhotsk DPS.

Oil and Gas Activities

Extensive oil and gas reserves coupled with rising global demand make it very likely that oil and gas development 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 affect 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 Beringia and the Okhotsk DPSs, offshore oil and gas exploration and production activities are currently underway in the United States, Canada, 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 previously drilled in the Chukchi Sea, no oil fields have been developed or brought into production. Shell plans to drill up to three wells during 2012 at several locations in the northeast Chukchi Sea. Shell also plans to drill offshore in the Beaufort Sea in 2012 near Camden Bay. No offshore oil or gas fields are currently in development or production in the Bering Sea.

About 80 percent of the oil and 99 percent of the gas produced in the Arctic comes from Russia (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 likely continue to be the dominant producer of Arctic oil and gas in the future (AMAP, 2007). 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. The U.S. Arctic has very little infrastructure to support oil spill response, with few roads and no major port facilities. 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 would be the most challenging because industry and government have little experience containing or recovering spilled oil effectively in such conditions. The difficulties experienced in stopping and containing the blowout at the Deepwater Horizon well in the Gulf of Mexico, where environmental conditions and response preparedness are comparatively good (but waters are much deeper than the Arctic continental shelf), 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 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 (Sakhalin Island). In the Arctic, a blowout at an offshore platform in the Ekofisk oil field in the North Sea in 1977 released more than 200,000 barrels of oil.

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 of oiling 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.

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. The BRT considered the threat posed to the Beringia and Okhotsk DPSs by disturbance, injury, or mortality from oil spills, and/or other discharges, as moderately significant.

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. NMFS has access to estimates of bearded seal bycatch only for commercial fisheries that operate in Alaska waters. Based on data from 2002–2006, there has been an annual average of 1.0 bearded seal mortality incidental to commercial fishing operations. We could find no information regarding bearded seal bycatch in the Sea of Okhotsk; however, given the intensive levels of commercial fishing that occur in this sea, bycatch of bearded seals likely occurs there. The BRT considered the threat posed to the Okhotsk DPS from physical disturbance associated with the combined factors of oil and gas development, shipping, and commercial fisheries moderately significant.

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 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 the possibility of introducing exotic species that may affect 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 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 are few 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.

The BRT considered the threat posed from physical disturbance associated with the combined factors of oil and gas development, shipping, and/or commercial fisheries as of low to moderate significance to the Beringia DPS and of moderate significance to the Okhotsk DPS.

Summary for Factor E

We find that the threats posed by pollutants, oil and gas industry activities, fisheries, and shipping do not individually or collectively place the Beringia DPS or the Okhotsk DPS at risk of becoming endangered in the foreseeable future. We recognize, however, that the significance of these threats would likely 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 and the Okhotsk DPS 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.

Conservation Efforts

When considering the listing of a species, section 4(b)(1)(A) of the ESA requires NMFS 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 (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 monitoring 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.

Domestic Conservation Efforts

NMFS is 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 domestic conservation efforts under our Policy on Evaluating Conservation Efforts (68 FR 15100; March 28, 2003).

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.

Listing 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 and the Okhotsk DPS, as well as other relevant factors, and considered 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 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 within the foreseeable future, particularly in the Bering Sea. To adapt to this modified 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, forcing the seals to adapt to suboptimal conditions and exploit potentially unsuitable habitats, and likely compromising their reproduction and survival rates. (3) Available information indicates a moderate to high threat that reductions in spring and summer sea ice will result in spatial separation of sea ice resting areas from benthic feeding habitat. (4) Available information indicates a moderate to high threat of reductions in sea ice suitable for molting (i.e., areas with at least 15 percent ice concentration in May-June) and a moderate threat of reductions in sea ice suitable for pup maturation (i.e., areas with at least 25 percent ice concentration in April-May). (5) 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 have determined that the Beringia DPS is not in danger of extinction throughout all of its range, but it is likely to become so within the foreseeable future. Therefore, we are listing it as threatened.

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 presently 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 for these critical life history functions 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 have determined that the Okhotsk DPS is not in danger of extinction throughout all its range, but it is likely to become so in the foreseeable future. Therefore, we are listing it as threatened.

Significant Portion of the Range Evaluation

Under the ESA and our implementing regulations, a species warrants listing if it is endangered or threatened throughout all or a significant portion of

its range. In our analysis for this final rule, we initially evaluated the status of and threats to the Beringia and Okhotsk DPSs of the bearded seal throughout their entire ranges. We found that the consequences of habitat change associated with a warming climate can be expected to manifest throughout the current breeding and molting ranges of bearded seals, and that the ongoing and projected changes in sea ice habitat pose significant threats to the persistence of these DPSs. The magnitude of the threats posed to the persistence of bearded seals, including from changes in sea ice habitat, are likely to vary to some degree across the range of the species depending on a number of factors, including where affected populations occur. In light of the potential differences in the magnitude of the threats to specific areas or populations, we evaluated whether the Beringia or Okhotsk DPSs might be in danger of extinction in any significant portions of their ranges. In accordance with our draft policy on "significant portion of its range," our first step in this evaluation was to review the entire supporting record for this final determination to "identify any portions of the range[s] of the [DPSs] that warrant further consideration" (76 FR 77002; December 9, 2011). We evaluated whether substantial information indicated "that (i) the portions may be significant [within the meaning of the draft policy] and (ii) the species [occupying those portions] may be in danger of extinction or likely to become so within the foreseeable future" (76 FR 77002; December 9, 2011). Under the draft policy, both considerations must apply to warrant listing a species as endangered throughout its range based upon threats within a portion of the range. In other words, if either consideration does not apply, we would not list a species as endangered based solely upon its status within a significant portion of its range. For both the Beringia and Okhotsk DPSs, we found it more efficient to address the status consideration first.

The consequences of the potential threats to the Beringia and Okhotsk DPSs, including from changes in sea ice habitat, have been addressed in other sections of the preamble to this final rule. Based on our review of the record, we did not find substantial information indicating that any of the threats to the Beringia and Okhotsk DPSs, including those associated with the changes in sea ice habitat, are so severe or so concentrated as to indicate that either DPS currently qualifies as endangered within some portion of its range. As described in the section entitled *Listing Determinations of this final rule,* the threats are such that we concluded that Beringia and Okhotsk DPSs are likely to become endangered within the foreseeable future. As a result, we find that the best available data show that there are no portions of their ranges in which the threats are so concentrated or acute as to place those portions of the ranges of either DPS in danger of extinction. Because we find that the Arctic and Okhotsk DPSs are not endangered in any portions of their ranges, we need not address the question of whether any portions may be significant.

Prohibitions and Protective Measures

Section 9 of the ESA prohibits the take of endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or engage in any such conduct (16 U.S.C. 1532(19)). In the case of threatened species, ESA section 4(d) authorizes NMFS to issue regulations it considers necessary and advisable for the conservation of the species. Such regulations may include any or all of the section 9 prohibitions. These regulations apply to all individuals, organizations, and agencies subject to U.S. jurisdiction. On December 10, 2010, we proposed protective regulations pursuant to section 4(d) to include all of the prohibitions in section 9(a)(1) (75 FR 77496) based on a preliminary finding that such measures were necessary and advisable for the conservation of the Beringia DPS and the Okhotsk DPS.

In light of public comments and following further review, we are withdrawing the proposed ESA section 4(d) protective regulations for the Beringia and Okhotsk DPSs. We received comments arguing against adoption of the 4(d) rule and we have not received any information, and are not aware of any, indicating that the addition of the ESA section 9 prohibitions would apply to any activities that are currently unregulated and are having, or have the potential to have, significant effects on the Beringia or Okhotsk DPS. Further, the Beringia and Okhotsk DPSs appear sufficiently abundant to withstand typical year-to-year variation and natural episodic perturbations in the near term. The principal threat to these DPSs of bearded seals is habitat alteration stemming from climate change within the foreseeable future. This is a long-term threat and the consequences for bearded seals will manifest themselves over the next several decades. Finally, bearded seals currently benefit from existing protections under the MMPA, and activities that may take listed species and involve a Federal action will still be subject to consultation under section 7(a)(2) of the ESA to ensure such actions will not jeopardize the continued existence of the species. We therefore conclude that it is unlikely that the proposed section 4(d) regulations would provide appreciable conservation benefits. As a result, we have concluded that the 4(d) regulations are not necessary at this time. Such regulations could be promulgated at some future time if warranted by new information.

Section 7(a)(2) of the ESA requires 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.

Critical Habitat

Section 3 of the ESA (16 U.S.C. 1532(5)(A)) defines critical habitat as: (i) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that 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, we lack the data and information necessary to identify and describe PCEs of the habitat of the Beringia DPS, as well as the economic consequences of designating critical habitat. In the proposed rule, we solicited information on the economic attributes within the range of the Beringia DPS that could be impacted by critical habitat designation, as well as the identification of the PCEs or "essential features" of this habitat and to what extent those features may require special management considerations or protection. However, few substantive comments were received in response to this request. We find designation of critical habitat for the Beringia DPS to be not determinable at this time. We will propose critical habitat for the Beringia DPS of the bearded seal in a separate rulemaking. Because the known distribution of the Okhotsk DPS of the bearded seal occurs in areas outside the jurisdiction of the United States, we will not propose critical habitat for the Okhotsk DPS.

Public Comments Solicited

To ensure that subsequent rulemaking resulting from this final rule will be as accurate and effective as possible, we are soliciting information from the public, other governmental agencies, Alaska Natives, the scientific community, industry, and any other interested parties. Specifically, we request comments and information to help us identify: (1) The PCEs or "essential features" of critical habitat for the Beringia DPS of bearded seals, and to what extent those features may require special management considerations or protection, as well as (2) the economic, national security, and other relevant attributes within the range of the Beringia DPS that could be impacted by critical habitat designation. Regulations at 50 CFR 424.12(h) specify 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. You may submit this information by any one of several methods (see **ADDRESSES** and **DATES**). Comments and information submitted during the initial comment period on the December 10, 2010 proposed rule (75 FR 77496) or during the comment period on the peer review report (77 FR 20774; April 6, 2012) should not be resubmitted since they are already part of the record.

Summary of Comments and Responses

With the publication of the proposed listing determination for the Beringia and Okhotsk DPSs on December 10, 2010 (75 FR 77496), we announced a 60-day public comment period that extended through February 8, 2011. We extended the comment period an additional 45 days in response to public requests (76 FR 6755; February 8, 2011). Also in response to public requests, including from the State of Alaska, we held three public hearings in Alaska in Anchorage, Barrow, and Nome (76 FR 9734, February 22, 2011; 76 FR 14883, March 18, 2011).

During the public comment periods on the proposed rule we received a total of 5,298 comment submissions in the form of letters via mail, fax, and electronically through the Federal eRulemaking portal. These included 5,238 form letter submissions and 60 other unique submissions. In addition, at the three public hearings we received testimony from 41 people and received written submissions from 12 people. Comments were received from U.S. State and Federal Agencies including the Marine Mammal Commission and the Alaska Department of Fish and Game (ADFG); Canada's Department of Fisheries and Oceans (DFO); Native Organizations such as the Ice Seal Committee (ISC; Alaska Native co-management organization); environmental groups; industry groups; and interested individuals.

In accordance with our July 1, 1994, Interagency Cooperative Policy on Peer Review (59 FR 34270), we requested the expert opinion of four independent scientists with expertise in seal biology and/or Arctic sea ice and climate change regarding the pertinent scientific data and assumptions concerning the biological and ecological information use in the proposed rule. The purpose of the review was to ensure that the best biological and commercial information was used in the decision-making process, including input of appropriate experts and specialists. We received comments from three of these reviewers. There was significant disagreement among the peer reviewers regarding magnitude and immediacy of the threats posed to the Beringia DPS by the projected changes in sea ice habitat.

The differences of opinion amongst the peer reviewers, as well as uncertainty in the best available information regarding the effects of climate change, led NMFS to take additional steps to ensure a sound basis for our final determination on whether to list the Beringia and Okhotsk DPSs under the ESA. To better inform our final listing determination and address the disagreement regarding the sufficiency or accuracy of the available data relevant to the determination, on December 13, 2011, we extended the deadline for the final listing decision by 6 months to June 10, 2012 (76 FR 77465). Subsequently, we conducted special independent peer review of the sections of the bearded seal status review report (Cameron *et al.*, 2010) related to the disagreement. For this special peer review, we recruited three scientists with marine mammal expertise and specific knowledge of

bearded seals to review these sections of the status review report and provide responses to specific review questions. We received comments from two of the marine mammal specialists. We consolidated the comments received in a peer review report that was made available for comment during a 30-day comment period that opened April 6, 2012 (77 FR 20774). During this public comment period on the special peer review we received an additional 14 comment submissions via fax and electronically through the Federal eRulemaking portal.

We fully considered all comments received from the public and peer reviewers on the proposed rule in developing this final listing of the Beringia and Okhotsk DPSs of the bearded seal. Summaries of the substantive public and peer review comments that we received concerning our proposed listing determination for these DPSs, and our responses to all of the significant issues they raise, are provided below. Comments of a similar nature were grouped together where appropriate.

Some peer reviewers provided feedback of an editorial nature that noted inadvertent minor errors in the proposed rule and offered non-substantive but clarifying changes to wording. We have addressed these editorial comments in this final rule as appropriate. Because these comments did not result in substantive changes to the final rule, we have not detailed them here. In addition to the specific comments detailed below relating to the proposed listing rule, we also received comments expressing general support for or opposition to the proposed rule and comments conveying peer-reviewed journal articles, technical reports, and references to scientific literature regarding threats to the species and its habitat. Unless otherwise noted in our responses below, after thorough review, we concluded that the additional information received was considered previously or did not alter our determinations regarding the status of the Beringia and Okhotsk DPSs. We also received comments addressing our final decision regarding *E. b. barbatus* (the Atlantic subspecies of bearded seals). Because we previously determined that a status review was not warranted for *E. b. barbatus* (75 FR 77496; December 10, 2010) and this rulemaking concerns listing of the Beringia and Okhotsk DPSs, we have not provided specific responses to those comments here.

Peer Review Comments

Comment 1: A peer reviewer expressed the opinion that there is compelling evidence of additional discrete populations within the Beringia DPS. This reviewer noted that Davis *et al.* (2008) reported significant genetic differentiation between bearded seals in the Bering and Beaufort seas, and that Risch *et al.* (2007) found differences in bearded seal vocalizations between the Barrow and the Canadian Beaufort regions.

Response: The reviewer's assertion that there are additional discrete populations within the Beringia DPS stemmed in part from a misunderstanding about the sampling locations for the Davis *et al.* (2008) study. That study used samples referred to as "Beaufort Sea" bearded seals, though they were obtained from the Amundsen Gulf, which is east of the Beaufort Sea in the Canadian Arctic. Even if one considers the Amundsen Gulf to be part of the Beaufort Sea, there were no other Beaufort Sea samples, so the vast majority of the Beaufort Sea was not represented. In fact, the samples came from the region that is thought to be transitional between the two subspecies of bearded seals and where the boundary was identified in the proposed rule between the Beringia DPS and the *E. b. barbatus* subspecies.

The vocalizations studied by Risch *et al.* (2007) in the Canadian Beaufort region also came from the zone of transition between the two subspecies. The differences in vocalizations cited by the reviewer, between the Barrow region and the Canadian Beaufort region, are insufficient evidence on their own for population discreteness. It is unknown whether vocal differences in bearded seals reflect breeding population structure, or simply local variations in calls that are learned and used by breeding individuals. In the latter case, if bearded seals commonly disperse from natal sites to different sites for breeding, the vocal differences would not reflect breeding population structure (Risch *et al.*, 2007).

In the status review report, the BRT considered a zone in the western Canadian Arctic where skull morphology was intermediate between the two recognized subspecies, vocalizations were more similar to those of *E. b. nauticus* than to those of *E. b. barbatus*, and the genetics were more similar to *E. b. barbatus* than to *E. b. nauticus*. Recognizing the likelihood that no truly distinct boundary occurs in the distribution of the two bearded seal subspecies, and also the great uncertainty about where the best location for a boundary should be, the BRT selected the midpoint between the Beaufort Sea and Pelly Bay (112° W. longitude), which was the region encompassed by the intermediate samples in the skull morphology study, as the North American delineation between the two subspecies, and thus also between the Beringia DPS and *E. b. barbatus*. We concurred with this delineation in the proposed rule.

Based on the reviewer's comment above, and further consideration of the genetic results of Davis *et al.* (2008), we now conclude a stronger argument can be made for placing the boundary between the two subspecies at 130° W. long., rather than at 112° W. long. The study by Davis *et al.* (2008) used two different approaches to detect genetic variation. A pairwise comparison of bearded seal samples from around the Arctic found differentiation between all sample locations, including the Bering Sea and the Amundsen Gulf (the eastern extent of the Beaufort Sea, which was included in our proposed Beringia DPS); the second approach, with a commonly used population-genetic analysis called STRUCTURE, found only two groups, with the Bering Sea (St. Lawrence Island and Gulf of Anadyr) samples clustering separately from the remainder (Amundsen Gulf, Labrador Sea, Greenland, and Svalbard). One of the 16 Amundsen Gulf samples was strongly assigned to the Bering Sea cluster, and the inferred ancestry of the Amundsen Gulf samples was 21 percent from the Bering Sea cluster indicating substantial current or historical gene flow between the Bering Sea and the Amundsen Gulf (and presumably the Beaufort Sea, which lies between), and again confirming that the Amundsen Gulf is a transitional region.

A line at 130° W. long. divides the two clusters found by Davis *et al.* (2008) in the STRUCTURE analysis and is consistent with that study's pairwise differences between the Bering Sea and Amundsen Gulf samples. This line also falls within the zone found to be transitional in skull morphology, and it recognizes the vocalization differences found between Barrow and the western Canadian Arctic (7 of 8 recording locations east of 130° W. long.). Finally, this line corresponds closely to the margin of the continental shelf that runs north along the Arctic Basin at the western edge of the Canadian Arctic.

Moving the eastern boundary of the Beringia DPS from 112° W. long. to 130° W. long. would have little or no impact on risk and threat scores and no impact on ESA listing status. The estimates of bearded seal abundance in the vicinity of these alternative boundaries are too low to significantly alter the overall abundance estimate of either the Beringia DPS or the *E. b. barbatus* subspecies by including them in one or

the other group. The average bearded seal numbers estimated by Stirling *et al.* (1982) in the Amundsen Gulf, which was originally included in the Beringia DPS but is now considered part of the *E. b. barbatus* subspecies after moving the eastern boundary, was 1,015 individuals. Compared with the overall population estimates of 155,000 for the Beringia DPS and 188,000 for *E. b. barbatus*, this number is small and well within the imprecision associated with the estimates. Therefore, we have concluded that the best information currently available supports an eastern boundary line for the Beringia DPS at 130° W. long. and we have revised this final rule accordingly.

Comment 2: A peer reviewer expressed the view that there are conservation concerns associated with the failure to recognize a DPS in the Bering Sea and noted that the Bering Sea is at the southern edge of the distribution of bearded seals where there is greater risk of losing ice during the spring pupping season than in the Beaufort and Chukchi seas. This reviewer also suggested that certain other threats are also likely to affect this region more; for example, increased shipping and fishing are expected in the Bering Sea.

Response: Under our DPS Policy, we determine whether any species division is discrete and significant before evaluating whether any such potential DPSs qualify as threatened or endangered. In the case of the Bering Sea, there is no compelling evidence that the bearded seals there are distinct from the bearded seals of the Chukchi and Beaufort seas, and indeed large numbers of the bearded seals found seasonally in the Chukchi and Beaufort seas are associated with breeding areas in the Bering Sea. Species often are more vulnerable to threats at the extremes of the range, but the ESA status must be based on the species, subspecies, or DPS as a whole, with due regard for whether any vulnerable extremities of the range constitute a significant portion of the overall range.

Although increases in shipping and commercial fishing pose potential threats to bearded seals, it is not clear that those threats will be greater in the Bering Sea than in the Beaufort and Chukchi seas. Future conditions in which a reduced ice regime allows for more shipping and fishing will likely also result in very different distributions of bearded seal prey communities and seasonal congregations that might be vulnerable to oil spills from shipping accidents. The BRT considered the likelihood that these risks would increase in the future, but projecting the specific geographic distributions of these risks within the Beringia DPS is presently not feasible.

Comment 3: A peer reviewer commented that the identified components of uncertainty with the model projections of changes in sea ice cover were not particularly well explained. This reviewer expressed the opinion that additional detail could be provided regarding the relative size of the uncertainty components and how maximum and minimum concentrations were defined when considering projections from several models, averaged over 11-year periods, with presumably a range of starting conditions, and under at least two different emissions scenarios. In contrast, another peer reviewer expressed the opinion that the uncertainties associated with the model projections were well identified and characterized.

Response: As we discussed in the status review report and in the preamble to the proposed rule, there are three main sources of uncertainty in climate predictions: large natural variability, the range in emissions scenarios, and across-model differences (i.e., differences between models in physical parameterizations and resolution). For the 21st century projections considered in our analysis, beyond about 2050, the dominant source of uncertainty is the choice of emissions scenario. Because the current consensus is to treat all six "marker" scenarios from the Special Report on Emissions Scenarios (SRES; IPCC, 2000) as equally likely, one option for representing the full range of variability in potential outcomes would be to project from any model under all six scenarios. This approach is impractical in many situations, so the typical procedure is to use an intermediate scenario to predict trends, or one intermediate and one extreme scenario to represent a significant range of variability. In our analysis, model outputs under both the A1B ("medium") and A2 ("high") emissions scenarios were included in projecting the seasonal cycle of sea ice extent at a regional level. By including output under both scenarios, the number of ensemble members was doubled and represented much of the range of variability contained in the SRES scenarios. The projected distributions of sea ice were mapped using model output under the A1B emissions scenario from the six CMIP3 models that met the performance criteria for projecting sea ice, and the ice concentrations were averaged over 11-year periods to minimize the influence of year-to-year variability.

Hawkins and Sutton (2009) discussed that for time horizons of many decades or longer and at regional or larger scales, the other dominant source of uncertainty is across-model differences. As was noted in the status review report, for the bearded seal analysis, these across-model differences were addressed, and mitigated in part, by using ensemble means from multiple models. To reduce the impacts of models that performed poorly, criteria were applied to cull models with large errors in reproducing the magnitude of the observed seasonal cycle of sea ice extent. The uncertainty due to differences among the models was also explored by mapping for each 11-year period the projected ice distribution for the model with the least and greatest ice extent, along with the distribution of average ice concentrations as noted above.

Comment 4: A peer reviewer expressed the opinion that use of temperatures as a proxy for projecting sea ice conditions in the Sea of Okhotsk appears problematic given that: (1) The climate models did not perform satisfactorily at projecting sea ice, and sea ice extent is strongly controlled by temperature; and (2) temperature itself is strongly controlled by sea ice conditions.

Response: The decision to use temperature as an indicator for the presence of ice is a geographic size issue. While the climate models' grid size is too coarse to develop full sea ice physics for the Sea of Okhotsk, these models are able to resolve temperature, which is mostly controlled by large-scale weather patterns on the order of 500 km or more. As the reviewer notes, sea ice extent is strongly controlled by temperature; this is especially true for smaller bodies of water relative to the grid size of available models. Thus, whether the whole geographic region around the Sea of Okhotsk is above or below the freezing point of sea water should be a reasonable indicator of the presence or absence of sea ice.

Comment 5: A peer reviewer and several public comments pointed out that assessing impacts to bearded seals from climate change through the end of this century is inconsistent with: (1) Other recent ESA determinations for Arctic species, such as ribbon seal and polar bear, that considered species responses through mid-century; and (2) IUCN red list process, which uses a timeframe of three generation lengths. Related public comments, including from the State of Alaska, noted that NMFS's recent ESA listing determination for the ribbon seal and a subsequent court decision concluded

that projections of climate scenarios beyond 2050 are too heavily dependent on socioeconomic assumptions and are therefore too divergent for reliable use in assessing threats to the species. A reviewer and some commenters expressed the opinion that trying to predict the responses of bearded seals to environmental changes beyond mid-century increases the uncertainty unreasonably. A few commenters suggested that the altered approach is significant because the listing determination is wholly dependent upon NMFS's use of a 100-year foreseeable future. Several commenters expressed the opinion that inadequate justification was provided for NMFS's use of a 100-year foreseeable future. Many of these commenters suggested that the best scientific data support a "foreseeable future" time frame of no more than 50 years, and some commenters such as the State of Alaska suggested a shorter time horizon of no more than 20 years. In contrast, another peer reviewer and some commenters expressed support for use of climate model projections through the end of the 21st century.

Response: The ESA requires us to make a decision as to whether the species under consideration is in danger of extinction throughout all or a significant portion of its range (endangered), or is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (threatened) based on the best scientific and commercial data available. While we may consider the assessment processes of other scientists (i.e., IUCN), we must make a determination as to whether a species meets the definition of threatened or endangered based upon an assessment of the threats according to section 4 of the ESA. We have done so in this rule, using a threat-specific approach to the "foreseeable future" as discussed below and in the proposed listing rule.

In the December 30, 2008, ribbon seal listing decision (73 FR 79822) the horizon of the foreseeable future was determined to be the year 2050. The reasons for limiting the review to 2050 included the difficulty in incorporating the increased divergence and uncertainty in future emissions scenarios beyond this time, as well as the lack of data for threats other than those related to climate change beyond 2050, and that the uncertainty inherent in assessing ribbon seal responses to threats increased as the analysis extended farther into the future. By contrast, in our more recent analyses for spotted, ringed, and bearded seals, we did not identify a single specific time as the foreseeable future. Rather, we addressed the foreseeable future based on the available data for each respective threat. This approach better reflects real conditions in that some threats (e.g., disease outbreaks) appear more randomly through time and are therefore difficult to predict, whereas other threats (climate change) evince documented trends supported by paleoclimatic data from which reasonably accurate predictions can be made farther into the future. Thus, the time period covered for what is reasonably foreseeable for one threat may not be the same for another. The approach is also consistent with the memorandum issued by the Department of the Interior, Office of the Solicitor, regarding the meaning of foreseeable future (Opinion M–37021; January 16, 2009). In consideration of this modified threat-specific approach, NMFS initiated a new status review of the ribbon seal on December 13, 2011 (76 FR 77467).

As discussed in the proposed listing rule, the analysis and synthesis of information presented in the IPCC's AR4 represents the scientific consensus view on the causes and future of climate change. The IPCC's AR4 used state-of-the-art atmosphere-ocean general circulation models (AOGCMs) under six "marker" scenarios from the SRES (IPCC, 2000) to develop climate projections under clearly stated assumptions about socioeconomic factors that could influence the emissions. Conditional on each scenario, the best estimate and likely range of emissions were projected through the end of the 21st century. In our review of the status of the bearded seal, we considered model projections of sea ice developed using the A1B scenario, a medium "business-as-usual" emissions scenario, as well the A2 scenario, a high emissions scenario, to represent a significant range of variability in future emissions.

We also note that the SRES scenarios do not assume implementation of additional climate initiatives beyond current mitigation policies. This is consistent with consideration of "existing" regulatory mechanisms in our analysis under ESA listing Factor D. It is also consistent with our Policy on Evaluating Conservation Efforts (68 FR 15100; March 28, 2003), which requires that in making listing decisions we consider only formalized conservation efforts that are sufficiently certain to be implemented and effective.

The model projections of global warming (defined as the expected global change in surface air temperature) out to about 2040–2050 are 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 emissions scenarios. For the second half of the 21st century, however, the choice of an emissions scenario becomes the major source of variation among climate projections. As noted above, in our 2008 listing decision for ribbon seal, the foreseeable future was determined to be the year 2050. The identification of mid-century as the foreseeable future took into consideration the approach taken by the FWS in conducting its status review of the polar bear under the ESA, and the IPCC assertion that GHG levels are expected to increase in a manner that is largely independent of assumed emissions scenarios until about the middle of the 21st century, after which the emissions scenarios become increasingly influential.

Subsequently, in the listing analyses for spotted, ringed, and bearded seals, we noted that although projections of GHGs become increasingly uncertain and subject to assumed emissions scenarios in the latter half of the 21st century, projections of air temperatures consistently indicate that warming will continue throughout the century. Although the magnitude of the warming depends somewhat on the assumed emissions scenario, the trend is clear and unidirectional. To the extent that the IPCC model suite represents a consensus view, there is relatively little uncertainty that warming will continue. Because sea ice production and persistence is related to air temperature through well-known physical processes, the expectation is also that loss of sea ice and reduced snow cover will continue throughout the 21st century. Thus, the more recent inclusion of projections out to the year 2100 reflects NMFS's intention to use the best and most current data and analytical approaches available. AOGCM projections consistently show continued reductions in ice extent and multi-year ice (ice that has survived at least one summer melt season) throughout the 21st century (e.g., Holland *et al.*, 2006; Zhang and Walsh, 2006; Overland and Wang, 2007), albeit with a spread among the models in the projected reductions. In addition, as discussed by Douglas (2010), the observed rate of Arctic sea ice loss has been reported as greater than the collective projections of most IPCC-recognized AOGCMs (e.g., Stroeve *et al.*, 2007; Wang and Overland, 2009), suggesting that the projections of sea ice declines within this century may in fact be conservative.

We concluded that in this review of the status of the bearded seal, the climate projections in the IPCC's AR4, as well as the scientific papers used in this report or resulting from this report, represent the best scientific and commercial data available to inform our assessment of the potential impacts from climate change. In our risk assessment for bearded seals, we therefore considered the full 21st century projections to analyze the threats stemming from climate change. We continue to recognize that the farther into the future the analysis extends, the greater the inherent uncertainty, and we incorporated that consideration into our assessments of the threats and the species' responses to the threats.

Comment 6: A peer reviewer noted that the cut-off criteria used to define areas of projected sea ice concentrations suitable for whelping, nursing, and molting were reasonable. Another reviewer commented that the criteria probably provide an adequate basis for estimating changes in the amount of available bearded seal habitat, but noted that the question of whether a more complex definition of suitable habitat could be supported by the available data was not fully explored in the status review report. Both of these reviewers noted that the relationship between sea ice characteristics and bearded seal habitat selection is likely more complex than the simple sea ice concentration and bathymetry criteria considered in the proposed rule.

A related public comment suggested that NMFS should re-evaluate the sea ice concentration criteria (i.e. the sea ice concentrations identified as sufficient for bearded seal whelping, nursing, rearing, and molting) to determine whether these thresholds are protective enough because they do not take into account the lower probability of occurrence of bearded seals at medium-low ice concentrations, and thus may have over-estimated the seals' ability to use marginal sea ice habitat. Another commenter suggested that NMFS should use an empirical static modeling approach (Guisan and Zimmerman, 2000) to defensibly derive habitat parameters and use traditional ecological knowledge (TEK) to provide presence/absence data for model fitting and evaluation.

Response: We acknowledge that the prediction and projection of bearded seal habitat based solely on water depth and a range of preferred sea ice concentration is based upon incomplete information and incorporates assumptions. We are not aware of additional data that would support alternative, more complex, and possibly more realistic habitat descriptions, and the reviewers and commenters did not identify additional data sets that should be considered in this context. Without such additional data, the suggestion to create a more formal empirical static model for bearded seal habitat is not presently feasible (though we did use a form of this approach in deriving the preferred ice concentrations from surveys in a portion of the Bering Sea). We agree that TEK can be a good source of information about bearded seal habitat requirements. However, incorporating information obtained by traditional ways of observing bearded seals into statistical models of habitat would require additional, dedicated studies that are beyond the scope of ESA listing determinations, which must be made within the time limits required by section 4(b) of the ESA and the regulations implementing the ESA at 50 CFR 424.17, using the best scientific and commercial data that are currently available.

Comment 7: A peer reviewer questioned whether the 500 m depth limit used to define the core distribution (e.g., whelping, breeding, molting, and most feeding) of bearded seals is too deep, and suggested that an analysis of how sensitive the conclusions might be to the choice of depth limit would be appropriate. A commenter agreed, noting that the literature review for the petition to list bearded seals and the status review report found that bearded seals prefer depths less than 200 m.

Response: Our literature review found that although bearded seals seem to prefer depths less than 200 m, the species occurs in waters deeper than 500 m, and dives to depths of 300–500 m have been recorded for a substantial portion of the bearded seals that have been studied with satellite-linked dive recorders. Because the 200 m and 500 m depth contours tend to be very close to each other around the continental slope margins of the Beringia DPS, the area defined by a boundary of 200 m is only 2 percent smaller than that defined by a 500 m boundary. Therefore, the conclusions about risk from habitat loss for that DPS would not be sensitive to the choice of depth limit. In the Sea of Okhotsk and the range of *E. b. barbatus,* the differences in area encompassed by the 200 m and 500 m depth boundaries are greater (27 percent and 36 percent, respectively). Even for these populations units, however, the conclusions about risk from habitat loss are not expected to be particularly sensitive to the choice of depth limit because both present and future habitat areas were computed as the areas where water depth and ice concentration are suitable. If we have overestimated the current areas of available habitat by selecting 500 m as the depth limit, the projected future areas of available habitat would also be overestimated, but the predicted change, driven by loss of sea ice extent, would be similar under either depth limit choice.

Comment 8: A peer reviewer expressed the opinion that while it is reasonable to ask the question of whether there will be habitat gains with projected changes in sea ice cover, the more important question is what types and quantities of food would be available in those areas gained. This reviewer noted that in most cases, what are projected for the Beringia DPS are not habitat gains, but rather possible earlier seasonal access to areas that are currently used somewhat later; and comparing areas of gains and losses is only informative if there is some way to scale their relative values. In addition, he pointed out that the habitat projected to be lost in the Bering Sea during spring is a region that is among the most productive for bearded seal prey species; while in contrast, areas of projected gains in the Beaufort Sea and along the shelf break of the Arctic basin are not known to be highly productive. This reviewer commented that it therefore appears that the Beringia DPS will lose highly productive habitat in southern regions, and probably gain access earlier in the spring to low productivity areas.

Two related comments expressed the opinion that the reviewer's suggestion that bearded seals will "lose highly productive habitat in southern regions, and probably gain access earlier in the spring to low productivity areas" (p. 8; NMFS, 2012) did not consider that the projected climate change effects will also affect ocean productivity such that some areas of low productivity will be highly productive in the foreseeable future (and vice versa). These commenters also expressed the view that the proposed rule did not adequately evaluate how the productivity of the ocean environment could be expected to change in response to the different projected climate scenarios, and instead focused primarily on projected changes in sea ice cover. A few other related comments more generally suggested that some habitat changes caused by projected changes in climatic conditions, such as increased open water foraging areas, may be beneficial to bearded seals.

Finally, a commenter expressed the opinion that the supplementary habitat analysis provided to the special peer reviewers indicates that in assessing the

projections of future sea ice extent and distribution and potential impacts to bearded seals, NMFS arbitrarily adopted a precautionary approach that assumed the worst possible future habitat conditions without taking into account any future potential habitat gains.

Response: The range of opinions and lack of consensus among these reviewers and commenters is understandable given the incomplete scientific understanding of bearded seal habitat requirements and the difficulty in projecting future habitat conditions. There is a near universal consensus in the scientific community that the Arctic climate will continue to warm and that sea ice will decline in extent and thickness as a result. The magnitude of these changes is subject to debate, but the general direction of the trend is widely accepted and is based on well-known physical principles of radiative forcing by GHGs. There is little or no similar consensus about the biological responses that are most likely to follow the physical habitat changes. There is broad recognition that changes in sea ice and acidification of ocean waters will cause changes in biological communities, but the nature, direction, and magnitude of changes in these highly complex systems are highly uncertain. An additional element of uncertainty is the unknown resilience of bearded seals to whatever changes may occur.

We are unaware of documented examples of bearded seals or other closely related species occupying new habitat in response to major and rapid environmental shifts, as there are no known recent-history analogs to the climate warming presently underway. While it is clear that the predicted reductions in sea ice during the remainder of this century will entail major changes in areas that are known to be important bearded seal habitat presently, it is much less certain that regions previously covered by very dense ice during the bearded seal's whelping and nursing periods will become more suitable habitat as ice thins and declines. In particular, we are not aware of any reliable basis for concluding that presently low productivity benthic habitats would become populated with suitable prey for bearded seals that move to more northerly areas. We did not receive any new information as part of the additional peer review and public comment period to indicate that our prior analysis of habitat losses anticipated in the foreseeable future was overstated.

Comment 9: A peer reviewer and several commenters, including Canada's DFO, suggested that the potential for bearded seals to modify their behavior in response to climate change is underestimated, and a few commenters noted that this appears to contradict NMFS's emphasis in its recent ESA listing determinations for ribbon and spotted seals on the ability of ice seals to adapt to declines in sea ice. The peer reviewer noted, for example, that bearded seals are known to: (1) Feed on pelagic fish species, indicating flexibility in their diet that could allow them to adapt to feeding in deeper water; and (2) use terrestrial haul-out sites in some areas when ice is unavailable in the vicinity of their shallow water feeding habitat. A few commenters also noted that bearded seals have a diverse diet, switch from pack ice to open water in response to changing sea ice conditions to maintain access to preferred food resources, and display a wide range of habitat tolerances given their wide circumpolar distribution. Another peer reviewer commented that it is poorly known how a species with a generation time of about 11 years would adapt to the large redistribution of available habitat predicted for the Beringia DPS, noting that it would do so only under a drastically altered distribution and migratory scheme.

Response: The status review report presented evidence for resilience of bearded seals in responding to changes in paleoclimatic history (p. 190–192; Cameron *et al.*, 2010). Two main factors argue for a conservative approach to drawing inferences about whether bearded seals will be able to adapt to the changes anticipated through the remainder of this century. First, the paleoclimatic history has relatively poor resolution for determining how rapid past warming events have been and then comparing those rates with the rate of the present warming event. Although a few past warming events have apparently been rapid, there is insufficient resolution to judge whether that has typically been the case. If large warming events of the past have typically occurred over centuries rather than decades, the fact that bearded seals exist as a species today does not necessarily reflect their capacity to adapt to a more rapid change such as the present warming. The other reviewer's comment about the generation time of the species reflects this concern as well. Individual bearded seals are likely to be faithful to their breeding sites; shifts in breeding range are therefore more likely to occur by successive generations of new breeders establishing their breeding sites farther north in response to reduced ice extent, rather than by individuals making shifts within their lifetimes. If the warming and loss occurs too rapidly relative to the generation time, adaptation is unlikely to occur. Second, unlike past (pre-historic) warming events, the present warming is accompanied by other significant human-caused environmental changes that may pose additive threats, such as ocean acidification, increased shipping, and chemical pollutants.

The present-day traits of bearded seals such as a diverse diet and occasional use of terrestrial haul-out sites must be interpreted carefully in evaluating their implications for resilience. While the diet is taxonomically diverse, the vast majority of bearded seal foraging seems to be on or near the bottom. They have adaptations, such as their prominent mystacial vibrissae (whiskers) and a mouth structure for capturing prey by suction, that indicate a relatively specialized mode of feeding. This contrasts with ribbon and spotted seals, which forage substantially in the mid-water as well as at the bottom, and which are adapted to a more generalized mode of seizing prey in their sharp teeth.

Despite the use of haul-out sites on shore in the Sea of Okhotsk and occasionally in other areas, these sites have not been documented for whelping and nursing. The general phocid seal ("earless" or "true" seal) trait of having young that are vulnerable to carnivore predators has not proven to be adaptable throughout evolutionary history. The group likely evolved in sea ice as a strategy of predator avoidance and the only present-day exceptions to the ice-breeding strategy occur in places where reproductive sites on shore are devoid of or substantially protected from predators. Such sites are uncommon within the range of bearded seals and therefore it is unlikely that they could successfully make a switch to land-based reproduction. Therefore, the regional or occasional use of haul-out sites on land, primarily during summer and autumn months, does not imply that bearded seals have much potential for switching to a strategy of breeding on shore in the absence of suitable sea ice.

Comment 10: A peer reviewer expressed the opinion that the concern about future accessibility of shallow water feeding habitat for bearded seal whelping and nursing is not reasonable. This reviewer noted that the central and northern Bering Sea and all of the Chukchi Sea are shallow water feeding habitat for bearded seal females with pups, and suggested that the ice edge

would have to be north of Barrow by May for this concern to be founded.

Response: The sea ice projections indicate that both the ice concentrations and overlap between sea ice and shallow waters (less than 500 m deep) in May will be significantly reduced by 2090, especially in the Okhotsk and Bering seas in "average" sea ice years, and additionally in the eastern Chukchi and central Beaufort in "minimal" sea-ice years. This could lead to increased competition and decreased carrying capacity for bearded seal populations in those areas.

Comment 11: A peer reviewer commented that the threat posed by polar bear predation should be qualified. This reviewer stated that the degree to which predation by polar bears may increase in the future is not determinable, and that bearded seals may also become less accessible to polar bears as seasonal sea ice decreases. A related comment also noted that it is expected that polar bear populations will decline, which could reduce predator effects on bearded seals.

Response: The BRT's speculation about future scenarios of polar bear predation (p. 140; Cameron *et al.*, 2010) included qualifications and considerations similar to those expressed by this reviewer and commenter. The threat scoring by the BRT did not assign high levels of threat or certainty about polar bear predation, and thus this risk factor was not a significant contributor to the overall assessment of risks facing the Beringia DPS.

Comment 12: A peer reviewer commented that new information regarding the health and status of bearded seals in Alaska that became available after the proposed rule was published (i.e., Quakenbush *et al.*, 2011) should be considered. This reviewer expressed the opinion that these data indicate current ice conditions are not affecting vital rate parameters of the Beringia DPS in the Bering and Chukchi seas. The State of Alaska submitted a summary of this information with its comments on the proposed rule, and also subsequently submitted a full copy of Quakenbush *et al.* (2011), commenting that these data indicate bearded seals are currently healthy.

Response: We have taken Quakenbush *et al.*'s (2011) data (available at *http://alaskafisheries.noaa.gov/protectedresources/seals/ice.htm*) into consideration in reaching our final listing determination, and these data will be useful in future status reviews. We note, however, that healthy individual animals are not inconsistent with a population facing threats that would cause it to become in danger of extinction in the foreseeable future. For example, animals sampled from the endangered Western DPS of Steller sea lions have consistently been found to be healthy. In the case of the Beringia DPS, substantial losses associated with reductions in the extent and timing of sea ice cover could not be detected by assessing the health of survivors. In fact, survivors might be expected to fare well for a period of time as a consequence of reduced competition.

Comment 13: A peer reviewer found the assessment of subsistence harvest in the proposed rule reasonable, noting that harvest appears to be substantial in some areas of the Arctic, but appears to remain sustainable. This reviewer commented that the ISC has been developing a harvest monitoring program with personnel assistance from the State of Alaska. The Marine Mammal Commission also commented that it does not believe that the subsistence harvest of bearded seals in U.S. waters constitutes a significant risk factor for the Beringia DPS, and several other commenters expressed similar views regarding subsistence harvest in U.S. waters as well as elsewhere. In contrast, another commenter expressed concern that the impact of Native subsistence hunting on bearded seals is substantially underestimated. The commenter expressed the view that NMFS needs to obtain reliable estimates of subsistence harvest of bearded seals such that their conservation status can be more closely monitored, in particular considering climate change is expected to have impacts on bearded seals and those could be exacerbated by other factors such as harvest. This commenter also suggested that additional resources should be devoted to obtaining these estimates of subsistence harvest, and suggested that NMFS institute a harvest monitoring system rather than rely on self-reporting.

A number of commenters, including the ISC, emphasized that ice seals have been a vital subsistence species for indigenous people in the Arctic and remain a fundamental resource for many northern coastal communities. Some commenters, including the ISC, requested that NMFS identify what additional measures would be required before the subsistence hunt could be affected by Federal management of bearded seals and under what conditions the agency would consider taking those additional measures, and this information should be provided to residents of all potentially affected communities.

Response: We recognize the importance of bearded seals to Alaska Native coastal communities. Section 101(b) of the Marine Mammal Protection Act (MMPA) provides an exemption that allows Alaska Natives to take bearded seals for subsistence purposes as long as the take is not accomplished in a wasteful manner. Section (10)(e) of the ESA also provides an exemption from its prohibitions on the taking of endangered or threatened species by Alaska Natives for subsistence purposes, provided that such taking is not accomplished in a wasteful manner. Although the number of bearded seals harvested annually by Alaska Natives is not precisely known or comprehensively monitored, ongoing hunter surveys in several communities give no indication that the harvest numbers are excessive or have a significant impact on the dynamics of the populations (Quakenbush *et al.*, 2011). The numbers of seals harvested have likely declined substantially in recent decades because the need for food to supply sled-dog teams has diminished as snowmobiles have been adopted as the primary means of winter transport. The proportion of Alaska Natives that make substantial use of marine mammals for subsistence may also have declined, due to increased availability and use of non-traditional foods in coastal communities. However, there may also be a counterbalancing increase in awareness of health benefits of traditional foods compared with non-traditional alternatives. Under the MMPA the Alaska stock of bearded seals will be considered "depleted" on the effective date of this listing. In the future, if NMFS expressly concludes that the harvest of bearded seals by Alaska Natives is materially and negatively affecting the species, NMFS may regulate such harvests pursuant to sections 101(b) and 103(d) of the MMPA. NMFS would have to hold an administrative hearing on the record for such proposed regulations. Currently, based on the best available data, the subsistence harvest of bearded seals by Alaska Natives appears sustainable. If the current situation changes, NMFS will work under co-management with the ISC (under section 119 of the MMPA) to find the best approach to ensure that sustainable subsistence harvest of these seals by Alaska Natives can continue into the future. NMFS is also continuing to work with the ISC to develop and expand collaborative harvest monitoring methods.

Comment 14: A peer reviewer commented that it is suggested that climate change will likely alter patterns of subsistence harvest of marine mammals by hunting communities.

However, this reviewer noted that hunter questionnaire data from five Alaska villages (Quakenbush *et al.*, 2011) did not indicate decreases in bearded seal availability at any location.

Response: The alterations to subsistence harvest patterns by climate change suggested in the proposed rule are likely to occur at some unspecified time in the future, when changes to ice cover are predicted to be more pronounced that they are at present. The hunter questionnaire data relate to recent, not future, bearded seal availability.

Comment 15: A peer reviewer commented that no information from the subsistence community or the ISC is considered in the status review report. This reviewer noted that subsistence hunters know a great deal about the biology, ecology, behavior, and movement of bearded seals, and keep a close watch for changes in the seals relative to environmental change. Several related public comments, including from the ISC, expressed the opinion that NMFS has not made adequate use of TEK of Alaska Natives related to ice seals in the listing process. The ISC also suggested that NMFS should conduct a TEK study related to ice seals. In addition, another commenter suggested that NMFS should further investigate the adaptive capacity of bearded seals by seeking the observations of Native communities, especially those that live in the southern part of the range of the Beringia DPS.

Response: The contribution of TEK to the overall understanding of ice-associated seal species is greater than commonly acknowledged, and to the extent that such information is available, we have considered it in this final rule. Following publication of the proposed listing determination, we notified the ISC of the proposal and requested comments on the proposed rule. NMFS held three public meetings in Anchorage, Barrow, and Nome, Alaska, and outlying communities in the North Slope Borough and accessed the Barrow hearing via teleconferencing. We also contacted potentially affected tribes by mail and offered them the opportunity to consult on the proposed action and discuss any concerns they may have. We fully considered all of the comments received from Alaska Native organizations and individuals with TEK, transmitted either in written form or orally during public hearings, in developing this final rule.

We recognize that much of our basic understanding of the natural history of ice-associated seals stems from information imparted by indigenous Arctic hunters and observers to the authors who first documented the biology of the species in the scientific literature. NMFS recognizes that Alaska Native subsistence hunting communities hold much more information that is potentially relevant and useful for assessing the conservation status of ice seals. Productive exchanges of TEK and scientific knowledge between the agency and Alaska Native communities can take many forms. Collaborative research projects, for example, provide opportunities for scientists and hunters to bring together the most effective ideas and techniques from both approaches to gather new information and resolve conservation issues. NMFS supports efforts to expand reciprocal knowledge-sharing, which can be facilitated through our co-management agreements. These efforts require time to build networks of relationships with community members, and the ESA does not allow us to defer a listing decision in order to collect additional information.

Comment 16: A peer reviewer commented that there were only two time scales considered by the BRT in the status review report in analyzing demographic risks: "imminent" risk (i.e., the present), and risk in the foreseeable future. Consequently, this reviewer suggested that in the ESA listing determination an endangered time scale is equated with the extremely short time frame of present-day, which is not consistent with the term "in danger of extinction." This reviewer expressed the view that this also contrasts with the more precautionary 30-year and 75-year endangered time frames used in other recent ESA assessments for black abalone and the Hawaiian false killer whale DPS, respectively.

Response: The reviewer incorrectly equated the BRT's assessment of "imminent risk" with a time frame of zero years to reach an extinction threshold. The BRT members' assessment of the severity of the demographic risks posed to the persistence of each of the bearded seal DPSs was formalized using a numerical scoring system. Each BRT member assigned a severity score to questions that, in general, asked, "Are the conditions at present such that the species is already or soon to be on a path toward demise, from which it would not likely deviate unless appropriate protective measures were undertaken?" Implicit in this question is the possibility that it may take some time, perhaps years or generations, to go from present conditions to demise. Although the BRT did not specify a time frame (this was left to individuals to consider implicitly in their scoring), it is incorrect to assert that the procedure was less precautionary than other examples in which the time frame was made explicit. A qualitative assessment of "imminent risk" is not the same as setting a zero time to extinction threshold in a quantitative assessment.

The black abalone and false killer whale examples cited were both cases in which there was a relatively well-documented (i.e., quantified) decline of the species. In such cases it is useful and practical to define an extinction threshold, which may include a time frame as well as an abundance threshold. Models can then be constructed to assess probabilities of reaching the extinction threshold abundance within the specified time frame. Defining an extinction threshold for bearded seals and attempting to assess the probability of reaching such a threshold within a specified time frame is not possible using existing data because of the lack of quantitative information about the current status and about the sensitivity of vital rates to projected environmental conditions.

Comment 17: A peer reviewer commented that although in general the needed expertise was brought to bear on the general biology of bearded seals and the most serious threats facing the species, it is unclear whether sufficient expertise was available to evaluate the evidence on the discreteness of bearded seal populations or on determining what time scales may be of interest to decision makers in interpreting the data on whether the population units warrant being listed as threatened or endangered. This reviewer noted that, for example, there were no members on the BRT or among the peer reviewers of the status review report that would list as their primary expertise population genetics, taxonomy, or risk analysis.

Response: The BRT was composed of eight marine mammal biologists, one climate scientist, one marine chemist, and one fishery biologist. Although the BRT did not include members whose primary expertise is population genetics or taxonomy, several of the members were senior level biologists and ecologists familiar with population genetics and taxonomy concepts for seals and other species. The peer reviewers of the draft status review report also included a marine mammal specialist who has supervised and published research on genetic analysis of the phylogeny of pinnipeds. The BRT incorporated a simplified structured decision-making process into the qualitative risk analysis, which considered a full range of time scales for

extinction risk over the period from the present to the extent of the foreseeable future. Given the limited time and data available, the BRT was not able to incorporate a quantitative assessment of various time scales in its risk analysis, though that may be possible and desirable for inclusion in future updates to the status of the species.

Comment 18: A peer reviewer commented that the proposed listings are premature, suggesting that there is still time to monitor the status of bearded seal populations and their responses to changes to have better information upon which to base management decisions. This reviewer discussed that the climate model projections suggest there will be sufficient ice to support bearded seal pupping in the Bering Sea through 2050 and beyond, and there is even more time before ice conditions are forecast to change appreciably in the Chukchi and Beaufort seas, noting that it is also likely there is at least 25 years before a significant change in the Okhotsk DPS can occur. In addition, this reviewer commented that although there is no evidence that bearded seals pup successfully on land, the Beringia and Okhotsk DPSs are moderately large, are widely distributed across varied habitat, and appear to have a high degree of genetic diversity. The reviewer suggested that they are thus unlikely to be at high risk of major declines due to environmental perturbations including catastrophic events, and as such, they are not at risk of extinction now or in the foreseeable future, and should not be listed as threatened.

In opposing the proposed listing of the Beringia DPS, several related public comments, including from the State of Alaska, similarly noted that the Beringia DPS appears to have healthy abundant populations across its range. Several commenters suggested that the ESA is not intended to list currently healthy abundant species that occupy their entire historical ranges. Some of these commenters expressed the opinion that if NMFS lists healthy abundant species under the ESA based on assessments that consider the potential biological consequences of multi-decadal climate forecasts, virtually every species could be considered threatened. A few commenters also stated that a conclusion that the Beringia DPS will decline from over 100,000 animals to being threatened with extinction should be accompanied with some level of quantification regarding what constitutes being in danger of extinction. Finally, the State of Alaska also commented that although the monitoring could be enhanced, ADFG's Arctic Marine Mammal Program is adequate to detect landscape population level patterns and problems, should they arise.

Response: The ESA defines a threatened species as one that "is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532(20)). Whether a species is healthy at the time of listing or beginning to decline is not the deciding factor. The inquiry requires NMFS to consider the status of the species both in the present and through the foreseeable future. Having received a petition and subsequently having found that the petition presented substantial information indicating that listing bearded seals may be warranted (73 FR 51615; September 4, 2008), we are required to use the best scientific and commercial data available to determine whether bearded seals satisfy the definition of an endangered or threatened species because of any of the five factors identified under section 4(a)(1) of the ESA. These data were compiled in the status review report of the bearded seal (Cameron *et al.*, 2010) and summarized in the preamble to the proposed rule.

We agree that the Beringia and Okhotsk DPSs are moderately large population units, are widely distributed and genetically diverse, and are not presently in danger of extinction. However, these characteristics do not protect them from becoming at risk of extinction in the foreseeable future as a consequence of widespread habitat loss. Based on the best available scientific data, we have concluded that it is highly likely that sea ice will decrease substantially within the range of the Beringia DPS in the foreseeable future, particularly in the Bering Sea. To adapt to this modified sea 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 spring and summer ice edge to retreat to deep waters of the Arctic basin. The most significant threats to the Beringia DPS were identified by the BRT as decoupling of sea ice resting areas from benthic foraging areas, decreases in sea ice habitat suitable for molting and pup maturation, and decreases in prey density and/or availability due to changes in ocean temperature and ice cover, which were scored as of 'moderate' or 'moderate to high' significance (Table 7; Cameron *et al.*, 2010). The greatest threats to the persistence of bearded seals in the Okhotsk DPS were determined by the BRT to be decreases in sea ice habitat suitable for whelping, nursing, pup maturation, and molting. These threats, which were assessed by the BRT as of 'high significance,' are more severe in the range of the Okhotsk DPS than in the range of the Beringia DPS because of the likelihood that the Sea of Okhotsk will by the end of this century frequently be ice-free or nearly so during April–June, the crucial months for these life history events.

Data were not available to make statistically rigorous inferences about how these DPSs will respond to habitat loss over time. We note that we currently have no mechanism to detect even major changes in bearded seal population size (Taylor *et al.*, 2007). However, the BRT's assessment of the severity of the demographic risks posed to the persistence of each of bearded seals DPSs was formalized using a numerical scoring system. The risks to the persistence of the Beringia and Okhotsk DPSs within the foreseeable future were judged to be moderate to high, with consistently higher risk scores assigned to the Okhotsk DPS (Table 9; Cameron *et al.*, 2010). After considering these risks as well as the remaining factors from section 4(a)(1) of the ESA, we concluded that the Beringia and Okhotsk DPSs are likely to become endangered within the foreseeable future (threatened), primarily due to the projected loss of sea ice habitat.

Comment 19: A peer reviewer commented that there is a high level of uncertainty about future sea ice concentrations in the Sea of Okhotsk, there is little information regarding the response of the Okhotsk DPS to threats from climate change, and the current status of the Okhotsk DPS is unknown. Several commenters expressed a similar general view that there are insufficient data, including on bearded seal abundance and population trends, to proceed with the listings at this time. Some commenters stated that we should defer the listing decision for the Beringia DPS in particular until more information becomes available. Two commenters specifically noted that NMFS has announced that it is conducting large-scale ice seal aerial surveys, and they requested that NMFS delay the listing determination until the results of these surveys become available.

Response: Under the ESA, we must base each listing decision on the best available scientific and commercial data available after conducting a review of the status of the species and taking into account any efforts being made by states or foreign governments to protect the species, and we have done so in

assessing the status of the Beringia and Okhotsk DPSs. These data were summarized in the preamble to the proposed rule and are discussed in detail in the status review report (see Cameron *et al.*, 2010). The existing body of literature concerning bearded seal population status and trends is limited, and additional studies are needed to better understand many aspects of bearded seal population dynamics and habitat relationships. However, the ESA does not allow us to defer listing decisions until additional information becomes available. In reaching a final listing determination we have considered the best scientific and commercial data available, including the information provided in the status review report as well as information received via the peer review process and public comment. These data are sufficient to conclude that the Beringia and Okhotsk DPSs are likely to become endangered within the foreseeable future (threatened).

Comment 20: A peer reviewer commented that cooperative research on the Okhotsk DPS is needed to better understand its responses to threats when they occur.

Response: We agree that there is still much to learn about bearded seals, particularly in the Sea of Okhotsk. Towards that end, NMFS has increased the scope of cooperative research efforts planned in Russian waters (e.g., aerial surveys and tagging projects scheduled for 2012 and 2013).

Comments on the Climate Model Projections and the Identification and Consideration of Related Habitat Threats

Comment 21: A commenter noted that studies indicate the risks from climate change are substantially greater than those assessed in the IPCC's AR4, raising concern that the IPCC climate change projections used in the status review report likely underestimate climate change risks to bearded seals.

Response: Although recent observations of annual minimum ice extent in the Arctic Ocean have been outside (i.e., below) the majority of model runs projected from the most commonly used scenarios, a few models exhibit anomalies of a similar magnitude early in the 21st century. Nonetheless, the observed sea ice retreat has been faster than the consensus projection, which may have occurred either because: (1) climate models do not have sufficient sea ice sensitivity to the rise in GHG forcing, or (2) there is an unusually large contribution in observations from natural variability. Many of the same recent years have been characterized by near record high ice extents in regions such as the Bering Sea, for example. While we recognize the possibility that consensus projections may underestimate the future risks to bearded seals, the likelihood of that does not seem to be sufficiently established to warrant abandonment of the IPCC AR4 as the best available scientific basis for projection of future conditions.

Comment 22: The State of Alaska noted that predicting climate change is made more difficult and uncertain by decades long shifts in temperature that occur due to such variables as the Pacific Decadal Oscillation (PDO).

Response: Climate models account for PDO variability but the PDO is chaotic—the future points at which it will shift between its warm and cool phases cannot currently be predicted. To address this unpredictable variability, NMFS used the average from an ensemble of models and model runs. The average of the ensemble indicates the expected response forced by rising GHGs and aerosol changes. The individual model runs that compose the ensemble vary substantially, often trending above or below the average, or bouncing back and forth across it. The variability among the model runs in the ensemble reflects the unpredictability of the PDO and many other factors. We used the range of this variability in our projections of future ice conditions, for example, to characterize the minimum, mean, and maximum ice concentrations in future decades.

Comment 23: Several commenters, including the State of Alaska and Canada's DFO, expressed the view that the AOGCMs used for climate and sea ice prediction are not appropriate for projecting sea ice at a scale that is important for bearded seals. A commenter also suggested that the analysis of the IPCC model projections at a regional level is questionable because these models perform poorly at smaller than continental scales. In addition, some commenters suggested that there should be field verification of the model predictions of sea ice conditions.

Response: We used the AOGCMs to determine how soon and in which month sea ice cover can be expected to retreat in the future relative to conditions in the 20th century. This is a reasonable question to evaluate using the modern models, as it is occurring on a large scale. With regard to the comment that the model predictions should be verified with field observations, we note that the BRT limited the IPCC model projections analyzed in the status review report to those that performed satisfactorily at reproducing the magnitude of the observed seasonal cycle of sea ice extent.

Comment 24: The State of Alaska and another commenter noted that it is assumed the Beringia DPS cannot survive without year-round ice. However, they suggested that the current status of the Okhotsk DPS indicates bearded seals can survive without multi-year ice.

Response: Our risk assessment for the Beringia DPS was not based on an assumption that they require sea ice year-round. As discussed in the preamble to the proposed rule, based on the best available scientific data we have concluded that it is highly likely that sea ice will decrease substantially within the range of the Beringia DPS in the foreseeable future, particularly in the Bering Sea. Pup maturation and molting, in particular, are important life history events that depend on the presence of suitable sea ice (annual timing of peak pup maturation in April/May, and molting in May/June and sometimes through August).

Comment 25: A commenter noted that it does not appear that climate change effects on sea ice habitat during mating or molting are likely to threaten the Beringia or Okhotsk DPS.

Response: The importance of sea ice for bearded seal mating has not been determined. Ice may not be necessary for copulation, which may occur mostly in the water, but the mating season occurs during a period when bearded seals are closely associated with ice and when they are spending substantial portions of time hauled out on the ice. The BRT assessed the threat from loss of ice habitat for mating as being of 'moderate significance' for the Beringia DPS and of 'moderate to high significance' for the Okhotsk DPS. The process of molting in phocid seals is energetically costly and facilitated by hauling out so that the skin temperature can be raised above water temperatures. The BRT judged the threat posed from loss of ice suitable for molting as of 'moderate to high significance' for both the Beringia and Okhotsk DPSs, and the threat scores were somewhat higher than for mating. The combination of these and other moderate threats from loss of sea ice habitat and ocean acidification contributed to overall threat scores for destruction, modification, or curtailment of habitat or range that were of 'high significance' for the Beringia and Okhotsk DPSs.

Comment 26: A commenter expressed the view that sea ice in the Arctic has been in decline for a number of years without observed detrimental effects on

bearded seals, thus calling into question NMFS's assumption that future declines in sea ice will inevitably result in impacts to bearded seals.

Response: As noted in the preamble to the proposed rule and discussed in detail in the status review report, our present ability to detect changes in the Beringia and Okhotsk DPSs is limited. There are no population estimates sufficiently precise for use as a reference in judging trends. Indices of condition, such as those recently reported by ADFG (Quakenbush *et al.*, 2011), are available for only a portion of the Beringia DPS's range and would not be expected to detect certain types of detrimental effects, such as an increase in pup mortality by predation. Therefore, while NMFS is not aware of unequivocal evidence that the Beringia or Okhotsk DPSs have declined, the converse is equally true: there is no firm evidence that these populations are stable or increasing. Our decision to list these DPSs is based primarily on our conclusion for ESA listing Factor A that ongoing and projected changes in sea ice habitat pose significant threats to the persistence of the two bearded seal DPSs.

The primary concern about future habitat for the Beringia and Okhotsk DPSs stems from projected reductions in the extent and timing of sea ice cover. The projections are consistent with a scenario in which little or no impact from climate disruption has yet been felt by the Beringia DPS in particular, but the anticipated impacts will begin to appear within the foreseeable future (i.e., over the 21st century), as the peak ice extent becomes reduced and the sea ice retreats earlier in the spring. The ice-covered area is much smaller in the Sea of Okhotsk than the Bering Sea, and unlike the Bering Sea, there is no marine connection to the Arctic Ocean. Over the long-term, bearded seals in the Sea of Okhotsk do not have the prospect of following a shift in the ice front northward. The question of whether a lack of ice will cause the Okhotsk DPS 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 bearded seals are known to use land for hauling out, this only occurs in late summer and early autumn. The BRT is not aware of any occurrence of bearded seal whelping or nursing on land, so the predicted loss of sea ice is expected to be significantly detrimental to the long-term viability of the population.

Comment 27: The State of Alaska and another commenter suggested that the record high winter ice in the Bering Sea from 2007–2010 casts some doubt on the determination of the threat of extinction to the Beringia DPS. They noted that the climate model projections make it clear that winter ice will continue to occur, and that the length of open water is the primary issue. These commenters expressed the view that changes in the distribution and numbers of bearded seals may occur, but the continued occurrence of winter ice, and its record extent simultaneous with low summer ice years, indicate that a more thorough assessment of seal habitat and population responses is needed before the threat of extinction can be assessed with any level of certainty.

Response: The above average ice cover in winter in the Bering Sea in 4 of the last 5 years is consistent with natural variability of the past 33 years. Just a few years prior to the recent high ice years, ice in the Bering Sea was at very low levels in 2002–2005, consistent with the expectation that variability from year to year will continue to be great, and will likely increase along with the expected warming trend. The recent years of above average Bering Sea ice extent are very unlikely to indicate a long-term reversal of the observed and projected declining trend. As the commenters noted, the length of the open water season is important for seasonally ice-associated species such as bearded seals. The open water season is determined by the dates of ice formation and melting. In 2012, despite above average winter ice extent in the Bering Sea, melt began over the Beaufort and Chukchi seas 12 and 9 days earlier than normal (as compared to the averages for the period 1979–2000), respectively (National Snow and Ice Data Center, 2012). Thus, the expectation that winter ice will continue to form in the future is insufficient grounds for concluding that the threat of habitat loss for bearded seals will not rise to the level of posing a risk of extinction.

Comment 28: A commenter noted that NMFS's current MMPA stock assessment report and proposed draft update state that there are insufficient data to predict the effects of Arctic climate change on the Alaska bearded seal stock, suggesting that predicting future population declines based upon climate change effects is speculative.

Response: NMFS's MMPA stock assessments for ice-associated seals need to be updated, which NMFS is in the process of doing to reflect new data and recent analyses from ESA status reviews.

Comment 29: A commenter noted that elders and hunters interviewed in 2011 for a Kawerak research project on TEK of ice seals and walruses reported changes in ice and weather that complicated hunter access, but they also explained that walrus, bearded, and ringed seals were as healthy as ever. The commenter also noted that multiple hunters in these interviews also reported that marine mammals have shifted their migrations to match the timing of earlier ice break-ups. Individual observations regarding ice seal ecology, health, abundance, behavior, and habitat were also provided by a number of coastal Alaska residents, primarily Native hunters. Many of these comments, including those from the ISC, indicated that although the effects of a warming Arctic have been observed for a number of years, bearded seals appear healthy and abundant, and any significant decline does not appear to be sufficiently imminent to warrant listing the Beringia DPS of bearded seals as threatened under the ESA at this time.

Response: TEK provides a relevant and important source of information on the ecology of bearded seals, and we have carefully reviewed the comments submitted from individuals with TEK on bearded seals and climate change. We do not find that these observations conflict with our conclusions. As we have noted in response to other related comments, the Beringia DPS is not presently in danger of extinction, but is likely to become endangered within the foreseeable future (threatened).

Comment 30: One commenter argued that declines in benthic biodiversity due to ocean warming should be determined to be a threat to the Beringia DPS given the scientific evidence indicating benthic biomass in the northern Bering Sea and Chukchi Sea food webs is declining. Another commenter stated productivity in the region is expected to increase into the foreseeable future, which will likely lead to an increased forage base for bearded seals.

Response: The difference in views of these commenters is consistent with our judgment that there is considerable scientific uncertainty regarding the likely biological responses to warming and ocean acidification.

Comment 31: Some commenters argued that ocean acidification should be determined to be a significant threat, in particular when considered cumulatively with other climate change impacts. Another commenter disagreed, and felt that NMFS more clearly discussed the uncertainties associated with assessing the potential impacts of ocean acidification in the previous ESA listing determinations for ribbon and spotted seals.

Response: As we discussed in the preamble to the proposed rule, the impact of ocean acidification on bearded seals is expected to be primarily through the loss of benthic calcifiers and lower trophic levels on which the species' prey depend, but the possibilities are complex. We concluded that because of the bearded seals' apparent dietary flexibility, the threat posed from ocean acidification is of less concern than the direct effects of sea ice degradation. The BRT members tended to rank the threat from ocean acidification as moderate, but also noted the very low degree of certainty about the nature and magnitude of potential effects on bearded seals (Tables 7 and 8; Cameron *et al.*, 2010). However, the BRT did consider cumulative effects as part of the threats assessment scoring procedure, as evidenced by the fact that the overall score for each ESA section 4(a)(1) factor tended to be higher than the scores assigned for individual threats within each factor.

Comment 32: The State of Alaska and several other commenters suggested that past warming periods were not adequately considered. They expressed the view that the survival of bearded seals during interglacial periods can be considered better evidence for population persistence than predictive models of ice condition for species extinction, and that this is a primary reason why listing of bearded seals as threatened is not warranted.

Response: We are not aware of any available information on bearded seal adaptive responses during the interglacial periods. A fundamental difficulty in using pre-historic warm periods as analogs for the current climate disruption is that the rate of warming in the pre-historic periods is poorly known. The species' resilience to those previous warming events, which may have been slower than the current warming, does not necessarily translate into present-day resilience. Moreover, there may be cumulative effects from climate warming and ocean acidification, or other human impacts, that combine to limit the species' resilience to the changes anticipated in the coming decades.

Comments on the Identification and Consideration of Other Threats

Comment 33: A commenter suggested that terrestrial predators could become a greater threat to bearded seal pups if sea ice loss results in land-based or shorefast pupping.

Response: This threat was acknowledged in the status review report (p. 140; Cameron *et al.*, 2010) and was considered by the BRT in its threats analysis.

Comment 34: A commenter noted that residents throughout the Bering Strait region regularly observe young bearded seals spending their summers in rivers feeding on fish and hauling out on river banks. This commenter observed that many of these young bearded seals survive and are observed into autumn; therefore, the risk from land-based predators may not be a threat to population viability.

Response: The main concern about risk from land-based predators in a scenario of reduced ice stems from the vulnerability of very young bearded seals, such as maternally dependent pups and recently weaned young, that have not yet gained the strength and skills needed for evading predators. The young bearded seals described by the commenter, observed in summer and autumn, are likely at least a few months to a few years old, and able to fend for themselves.

Comment 35: A few commenters expressed the opinion that existing regulatory mechanisms in the United States and elsewhere are not adequate to address the factors driving climate disruption (i.e., GHGs). One of these commenters suggested that U.S. agencies are either failing to implement or only partially implementing laws for GHGs, and that the continued failure of the U.S. Government and international community to implement effective and comprehensive GHG reduction measures places bearded seals at ever-increasing risk, where the worst-case IPCC scenarios are becoming more likely.

Response: While some progress is being made in addressing anthropogenic GHG emissions, we recognize in our analysis under ESA listing Factor D that current mechanisms do not effectively regulate the anthropogenic processes influencing global climate change and the associated changes to bearded seal habitat, and that this is contributing to the risks posed to bearded seals by these emissions. Further, we note that our analysis considered future emissions scenarios that did not involve dramatic and substantial reductions in GHG emissions.

Comment 36: Some commenters suggested that NMFS should re-examine its conclusion that fisheries do not threaten bearded seals because a warming climate could lead to shifts in commercial fisheries that could affect the seal's food base. The ISC also expressed concern that the Bristol Bay region used to offer good seal hunting, but this is no longer the case and could be due to trawl fishing impacts on bearded seal foraging habitat.

Response: The possible advent of new commercial fisheries, and the nature and magnitude of ecosystem responses, are speculative. Although there are possible risks, those should be mitigated through appropriate management of new fisheries. In U.S. waters, the intent to conduct such responsible management is evident in the *Arctic Fishery Management Plan* (North Pacific Fishery Management Council, 2009), which establishes a framework for sustainably managing Arctic marine resources.

Comment 37: Some commenters stated that offshore oil and gas development should be determined to be a threat to bearded seals in part because there is no technology available to effectively contain or recover spilled oil in ice covered waters, and a large oil spill could be devastating to these seals. In addition one of these commenters emphasized that extensive offshore oil developments are currently underway within the range of the Beringia DPS, and additional drilling is proposed in the Beaufort and Chukchi seas. Other commenters stated that offshore oil and gas development, as currently regulated, does not pose a significant threat to bearded seals.

Response: Although a large oil spill could cause substantial injury, mortality, and indirect impacts to seals in the area, the risks posed to persistence of the Beringia and Okhotsk DPSs as a whole are low and are possible to mitigate by preventive measures, at least relative to the much more pervasive risks from climate change and habitat loss.

Comments on the Status Determinations for the Beringia and Okhotsk DPSs

Comment 38: The State of Alaska and several other commenters expressed the opinion that the Beringia DPS should not be listed because there are no scientific data demonstrating any observed past or present adverse impacts on their populations resulting from sea ice recession or other environmental changes attributed to climate change. The State of Alaska also extended this comment to the Okhotsk DPS. These commenters suggested that the determinations rely on the results of predictive models and speculation about future impacts, which they argued provide insufficient justification. Some of these commenters noted that in contrast, the polar bear ESA determination relied upon data for some populations that suggested a link between observed population declines or other population vital rates and

climate change. Further, the State of Alaska and another commenter suggested that climate model forecasts should be considered as hypotheses to be tested with data collected over time.

Response: We have concluded that the best scientific and commercial data available, which are discussed in detail in the status review report and are summarized in this notice provide sufficient evidence that: (1) Bearded seals are strongly ice-associated, and the presence of suitable sea ice is considered a requirement for whelping and nursing young; (2) similarly, the molt is believed to be promoted by elevated skin temperatures that can only be achieved when seals are hauled out on suitable ice; (3) reductions in the extent and timing of sea ice cover are very likely to occur within the foreseeable future; (4) if suitable ice cover is absent from shallow feeding areas during times of peak whelping and nursing (April/May) or molting (May/June and sometimes through August), bearded seals would be forced to seek either sea ice habitat over deeper water (likely with poorer access to food) or coastal regions in the vicinity of haul-out sites on shore (likely with increased risks of disturbance, predation and competition); (5) both scenarios would require bearded seals to adapt to suboptimal conditions and exploit habitats to which they may not be well adapted, likely compromising their reproductions and survival rates; (6) the rates of environmental change will be rapid in the coming decades and may outpace possible adaptive responses; and (7) the rapid changes in sea ice habitat are likely to decrease the Beringia and Okhotsk DPSs to levels where they are in danger of extinction. Land boundaries will also limit the ability of the Okhotsk DPS to shift its range northward in response to deteriorating ice conditions. Regarding the climate model forecasts, the BRT analyses used simulations from six models of the Coupled Model Intercomparison Project Phase 3 (CMIP3) prepared for the IPCC's AR4, which represent the scientific consensus view on the causes and future of climate change and constitute the best scientific and commercial data available. Based on this information, and after considering the five ESA section 4(a)(1) factors, we have determined that the Beringia and Okhotsk DPSs are likely to become endangered within the foreseeable future throughout their ranges (i.e., threatened under the ESA).

With regard to the comment that the climate model projections should be considered as hypotheses, with data collected over time to test the hypotheses, taking that approach in lieu of listing is not an option under the ESA. If the best scientific and commercial data available indicate that a species satisfies the definition of threatened or endangered, then NMFS must list it. In time, as new data become available, NMFS may de-list a species, change its listing status, or maintain its listing status. The determination here is based on the best scientific and commercial data that is presently available.

Comment 39: A commenter suggested that if NMFS determines that the Beringia or Okhotsk DPS is threatened under the ESA, it should adopt the approach used by the FWS for species such as the walrus and designate them as candidate species, or alternatively list them as species of concern. This commenter expressed the opinion that listing the species as candidate species or species of concern would avoid unnecessary expenditure of resources while providing for the option to take appropriate action under the ESA if it becomes necessary.

Response: Although NMFS and FWS define candidate species the same way in their joint regulations, the two agencies have slightly different interpretations of the term. FWS candidate species are those species for which FWS has sufficient information to support an ESA listing but for which issuance of a proposed rule is precluded due to higher priority listings (61 FR 64481; December 5, 1996). Therefore, FWS has already determined that its candidate species warrant listing under the ESA. In contrast, NMFS uses the term "candidate species" to refer to "(1) species that are the subject of a petition to list and for which NMFS has determined that listing may be warranted, pursuant to section 4(b)(3)(A), and (2) species for which NMFS has determined, following a status review, that listing is warranted (whether or not they are the subject of a petition)" (69 FR 19976; April 15, 2004). Regardless, once a species has been proposed for listing, section 4(b)(6)(A) of the ESA does not allow us to issue a "warranted but precluded" finding. Such a finding is only permissible at the time of a 12-month finding (see section 4(b)(3)(B)), not a final rule. NMFS defines a "species of concern" as a species that is not being actively considered for listing under the ESA, but for which significant concerns or uncertainties regarding its biological status and/or threats exist (69 FR 19975; April 15, 2004). This is not the case for the Beringia DPS or the Okhotsk DPS.

Comment 40: A commenter noted that the Alaska stock of bearded seals is not listed as depleted or strategic under the MMPA by NMFS, which they suggested indicates the absence of scientific data or consensus that these populations are currently threatened or in significant decline.

Response: The absence of a depleted designation does not mean that a species is not threatened under the ESA. Similarly, the absence of a threatened designation does not mean a species or population stock is not depleted under the MMPA. Under both the ESA and the MMPA, these determinations are based on reviews of the best scientific and commercial data available, which is the process NMFS is undertaking here.

The criteria for depleted or strategic status under the MMPA also differ from those for threatened or endangered species under the ESA. A species or population stock is considered depleted under the MMPA if it is determined through rulemaking to be below its optimum sustainable population (OSP) or if it is listed as threatened or endangered under the ESA. Section 3(9) of the MMPA (16 U.S.C. 1362(9)) defines OSP as "the number of animals which will result in the maximum productivity of the population or species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element." Under the MMPA, the term "strategic stock" means a marine mammal stock: (1) For which the level of human-caused mortality exceeds the maximum number of animals that may be removed (not including natural mortalities) while allowing the stock to reach or maintain its OSP; (2) based on the best available scientific information, is declining and likely to be listed as threatened under the ESA; or (3) is listed as threatened or endangered under the ESA. While we may consider MMPA stock assessment information, our determination as to whether the Beringia DPS of bearded seals meets the definition of a threatened or endangered species must be based on an assessment of the threats according to section 4 of the ESA.

Comment 41: Some commenters, including Canada's DFO, expressed the view that listing the Beringia and Okhotsk DPSs as threatened is inconsistent with the IUCN's listing of bearded seals among species of "least concern."

Response: While we may review the assessment processes and conclusions of other expert organizations such as the IUCN, our determination as to whether the bearded seal DPSs meet the definition of threatened or endangered must be an independent one based on an assessment of the threats according

to section 4 of the ESA. After reviewing the best scientific and commercial data available, we have determined that Beringia and Okhotsk DPSs of bearded seals are likely to become endangered within the foreseeable future, and are accordingly listing them as threatened.

Comments Related to Subsistence Harvest of Bearded Seals

Comment 42: Several comments received, including from the ISC, expressed concern that Alaska Natives who harvest ice seals, and all of the coastal communities, will likely be disproportionately affected by the listing of the Beringia DPS as threatened; and that the listing could cause hardship in the form of restrictions being placed on subsistence hunting of the seals, and could also result in other restrictions that could impair economic development. Some of these commenters expressed concern that the listing could also result in additional unfunded mandates, such as monitoring of the seal harvest.

Response: As discussed above, the MMPA and ESA exempt subsistence takes by Alaska Natives from the marine mammal take prohibitions. Subsistence harvest of bearded seals by Alaska Natives appears sustainable and does not pose a threat to the populations. If the current situation changes, we will work under the co-management agreement with the ISC to find the best approach to ensure that sustainable subsistence harvest of these seals by Alaska Natives continues. Protection under the ESA does not automatically result in specific data collection and reporting requirements for the species. However, benefits of listing a species under the ESA can include enhanced funding and research opportunities that might address aspects of the harvest for a listed species. In addition, when a species is listed under the ESA, additional protections apply that promote the conservation of the species and therefore have the potential to benefit subsistence harvests. For example, section 7 of the ESA requires Federal agencies to ensure that the activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the action agency must enter into consultation with NMFS.

Comment 43: The ISC expressed the view that, should the Beringia DPS be listed under the ESA, the Alaska Native community should have a strong role in determining the terms of subsequent management, including (1) representation on the recovery team, (2) the identification of critical habitat, (3) identification of criteria that must be met before any changes could be required in the harvest of the Beringia DPS of bearded seals or trade in their parts, (4) identification of research priorities, and (5) identification of a mechanism for distribution of funds available for research and management. Some other commenters similarly suggested that local Native subsistence users should be involved directly and have primary roles in any subsistence-related management or monitoring activities involving the Beringia DPS.

Response: We recognize the importance of bearded seals to the Alaska Native community, as well as the expertise and particular knowledge the Alaska Native hunting communities possess regarding the species and its habitats. We are committed to meaningful involvement of stakeholders, including the Alaska Native Community, throughout any recovery planning process. Critical habitat will be proposed in subsequent rulemaking. We are soliciting comments on the identification of critical habitat (see **DATES, ADDRESSES**, and Public Comments Solicited for additional information). We encourage those with expertise and understanding of those physical or biological features which are essential to the conservation of the Beringia DPS of bearded seals and which may require special management to submit written comments.

In the response to comment 13 above, we explained the criteria that must be satisfied for any regulation of subsistence harvest of bearded seals or trade in their parts to occur under the MMPA.

We appreciate the ISC's interest in identifying research priorities and a mechanism to distribute funds for ice seal research and management. The ISC's *Ice Seal Management Plan* identifies its biological and subsistence research recommendations for ice seals. The ISC has provided this management plan to NMFS and we are taking the information into consideration in planning future research (the ISC has also made a copy of this plan available at our Web site; see **ADDRESSES**).

Comments on the ESA Process and Related Legal and Policy Issues

Comment 44: NMFS received comments that we should consult directly with all of the Alaska Native communities that could potentially be affected by the proposed listings, hold public hearings in each of these communities, and consult directly with the ISC on the listings. The ISC stated that they protest the lack of consultation, request an explanation from NMFS, and require a commitment to be involved in all future aspects of the listing process prior to any future public announcement. Some commenters, including the ISC, also expressed concern that without holding hearings in more communities where a majority of the ice seal hunters live, these communities were not able to provide informed comments. In addition, one commenter stated there is confusion and frustration in the Alaska Native community regarding the listing process and harvest implications, and suggested that a better process is needed to ensure that all stakeholders have an opportunity to learn about and understand the proposed rules and their implications. We received several comments expressing concern that consultation with Alaska coastal communities and local leaders was inadequate. One commenter asserted that the Inuit of Alaska, Canada, Russia, and Greenland should all play a central consultative role in any decision that could affect them in relation to wildlife food sources and wildlife management regimes.

Response: NMFS has coordinated with Alaska Native communities regarding management issues related to ice seals through co-management organizations, particularly the ISC. NMFS discussed the listing petitions with the ISC, and provided updates regarding the timeline for the bearded seal status review. Following publication of the proposed listing determination, we notified the ISC of the proposal and requested comments on the proposed rule. NMFS remains committed to working with Alaska Natives on conservation and subsistence use of bearded seals.

We acknowledge the value of face-to-face meetings, and NMFS held three public meetings in: (1) Anchorage, Alaska, on March 7, 2011; (2) Barrow, Alaska, on March 22, 2011; and (3) Nome, Alaska, on April 5, 2011. The logistical difficulties with holding additional hearings in other remote communities made it impractical to do so. We instead used other methods to provide opportunities for the public to submit comments both verbally and in writing. With assistance from the North Slope and Northwest Arctic boroughs, we provided teleconferencing access to the Barrow hearing from outlying communities in the North Slope Borough and from Kotzebue. The public hearings in Anchorage and Barrow were announced in the **Federal Register** on February 22, 2011 (76 FR 9734), and the public hearing in Nome was announced

in the Federal Register on March 18, 2011 (76 FR 14883). The communities of Kaktovik, Wainwright, Point Lay, Point Hope, Nuiqsut, Anaktuvuk Pass, and Kotzebue participated in the Barrow hearing via teleconferencing. The public hearings were attended by approximately 88 people. In response to comments received during the public comment period that indicated some tribes may wish to consult on the proposed rule, we also contacted potentially affected tribes by mail and offered them the opportunity to consult on the proposed action.

We recognize the value of bearded seals to the Inuit of Canada, Alaska, Russia, and Greenland, and we have considered all of the comments received from interested parties in our final determination. Further, we note that E.O. 13175 outlines specific responsibilities of the Federal Government in matters affecting the interests of recognized tribes in the contiguous 48 states and in Alaska. We have met those obligations in the development of this final action.

Comment 45: The State of Alaska commented that NMFS did not involve the State in a meaningful manner in either the development of the status review report or the proposed listing rule.

Response: We sent a copy of the 90-day petition finding to ADFG and considered all of the comments and information submitted in response to this finding in the development of the status review report and the proposed rule. We also provided funding to ADFG to analyze information and samples collected from Alaska Native subsistence harvest of bearded seals to make these data available for inclusion in the status review report. Although reports on the results of this work were submitted after the status review report was completed and the proposed rule was published, we have considered this information in our final determination. During the initial public comment period, we sent a copy of the proposed rule to ADFG and the Alaska Department of Natural Resources (ADNR), and in those mailings noted the Internet availability of the proposed rule, status review report, and other related materials. In response to requests received, including from the State of Alaska, we extended the public comment period 45 days to provide additional time for submission of comments. We have thoroughly considered the comments submitted by the State of Alaska, and these comments are addressed in this final rule.

Comment 46: Some commenters expressed the opinion that the ESA is not intended as a means to regulate potential impacts from climate change, or that the primary potential threats to bearded seals identified are the result of a global phenomenon that cannot be effectively addressed through the ESA, and thus the proposed listings will not provide a significant conservation benefit.

Response: First, this rulemaking does not regulate impacts from climate change. Rather, it lists certain species as threatened, thereby establishing certain protections for them under the ESA. Second, section 4(b)(1)(A) of the ESA states that the Secretary shall make listing determinations solely on the basis of the best scientific and commercial data available after conducting a review of the status of the species and taking into account efforts to protect the species. Based on our review of the best available information on the status of the Beringia and Okhotsk DPSs, and efforts currently being made to protect these population units, we conclude that the Beringia and Okhotsk DPSs of bearded seals should be listed as threatened. Our supporting analysis is provided in this final rule and is supplemented by our responses to peer review and public comments. While listing does not have a direct impact on the loss of sea ice or the reduction of GHGs, it may indirectly enhance national and international cooperation and coordination of conservation efforts; enhance research programs; and encourage the development of mitigation measures that could help slow population declines. In addition, the development of a recovery plan will guide efforts intended to ensure the long-term survival and eventual recovery of the Beringia DPS.

Comment 47: Several commenters, including the State of Alaska and the ISC, expressed the view that bearded seals and their habitat are adequately protected by existing international agreements, conservation programs, and laws such as the MMPA.

Response: We recognize that there are existing regulatory mechanisms, such as the MMPA, that include protections for bearded seals. However, declining to list a species under the ESA because it is generally protected under other laws such as the MMPA would not be consistent with the ESA, which requires us to list a species based on specified factors and after considering conservation efforts being made to protect the species. As discussed in our analysis under ESA listing Factor A, a primary concern about the conservation status of the Beringia and Okhotsk DPSs stems from the likelihood that its sea ice habitat has been modified by the warming climate and that the scientific consensus projections are for continued and perhaps accelerated warming for the foreseeable future. While we acknowledge that there is some progress being made in addressing anthropogenic GHG emissions, we also recognize under listing Factor D that current mechanisms do not effectively regulate the anthropogenic factors that influence global climate change and the associated changes to the habitat of these bearded seal DPSs.

Comment 48: The State of Alaska commented that NMFS's proposed listing of the Beringia DPS would interfere directly with Alaska's management of bearded seals and their habitat and would therefore harm Alaska's sovereign interests. The State also commented that NMFS's listing determination impedes Alaska's ability to implement its own laws by displacing State statutes and regulations addressing Alaska's wildlife and natural resources generally, and bearded seals specifically.

Response: The ESA does not preclude the State from managing bearded seals or their habitat. We disagree that the listing of a species under the ESA would displace a specific state law or otherwise impede the State's ability to implement its own laws. We note that in 2009 NMFS and ADFG entered into a cooperative agreement for the conservation of threatened and endangered species pursuant to ESA section 6(c)(1).

Comment 49: The State of Alaska commented that NMFS's consideration of the State of Alaska's formal conservation measures designed to improve the habitat and food supply of the Beringia DPS is extremely limited, and without any supporting analysis. Such limited consideration of the State's conservation programs fails to comply with NMFS's affirmative statutory obligation under ESA section 4(b) and NMFS's Policy for the Evaluation of Conservation Efforts.

Response: The ESA provides that NMFS shall make listing determinations solely on the basis of the best scientific and commercial data available and after conducting a review of the status of the species and taking into account those efforts, if any, of any state or foreign nation to protect such species. NMFS has developed a specific Policy for Evaluation of Conservation Efforts (68 FR 15100; March 28, 2003) that identifies criteria for determining whether formalized conservation efforts that have yet to be implemented or to show effectiveness contribute to making

listing a species as threatened or endangered unnecessary.

The State of Alaska asserts that it has implemented laws, regulations, and mitigation measures that are generally aimed at protecting ice seals and their prey. These measures (the most relevant of which are summarized below), however, are not specifically directed toward the conservation of the Beringia DPS of bearded seals and its ice habitat. For example, the mitigation measures referenced by the State aim to minimize the impact of oil and gas operations, not proactively or specifically to conserve the species. Moreover, the threats to bearded seals stem principally from habitat loss associated with global climate change, a threat the State could not single-handedly mitigate. Under NMFS's policy, notwithstanding state conservation efforts, "if the best available scientific and commercial data indicate that the species meets the definition of 'endangered species' or 'threatened species' on the day of the listing decision, then we must proceed with the appropriate rule-making activity under section 4 of the Act," i.e., list the species (68 FR 15115; March 28, 2003).

Finally, in the preamble to the proposed rule we described our consideration of the effects of existing programs on the extinctions risk of the Beringia and Okhotsk DPSs. In response to these comments from the State of Alaska, we add the following details about the State of Alaska's regulatory programs.

Under the Submerged Lands Act, the State of Alaska has authority over the submerged lands and resources therein, within an area extending from the mean high tide line to 3 nautical miles offshore. The ADNR Division of Oil and Gas (DOG) develops mitigation measures and lessee advisories as part of its best interest finding process for area-wide oil and gas lease sales. The North Slope Area-wide and Beaufort Sea Area-wide lease sales have the potential to affect bearded seals. Mitigation measures and lessee advisories identified for these oil and gas lease sales include advisories that ESA listed and candidate species may occur in the lease sale area, that lessees shall comply with recommended protection measures for these species, and that lessees must also comply with MMPA provisions. Other provisions to protect certain concentrations of resources and to protect subsistence harvest could provide some incidental benefit to bearded seals.

The Alaska Department of Environmental Conservation's (ADEC) mission involves the permitting and authorization of actions relating to oil and gas development, oil spill prevention and response, pollutant discharge, and other activities affecting Alaska's land and waters in the Arctic. State of Alaska solid waste management, water quality, wastewater, air quality, and vehicle emission standards are found in the Alaska Administrative Code (AAC) at 18 AAC 60, 18 AAC 70, 18 AAC 72, 18 AAC 50, and 18 AAC 52, respectively. Oil spill contingency plans are required under Alaska Statute AS 46.04.030 and at 18 AAC 75 for crude oil tankers, non-crude vessels and barges, oil and gas exploration facilities, oil flow lines and gathering lines, and for certain non-crude oil terminals and non-tank vessels. The ADEC contaminated sites cleanup process is governed by Alaska Statutes at Title 46 and regulations at 18 AAC 75 and 18 AAC 78.

We acknowledge that the State of Alaska's regulatory regime may provide some general benefits to bearded seals and their habitat. However, these laws and regulations do not reduce or mitigate in any material way the principal threats posed to the Beringia DPS from the projected changes in sea ice habitat. As a result, they do not change our extinction risk assessment within this final listing determination.

Comment 50: Several comments were received regarding the proposed 4(d) rules requesting additional analyses to support the conclusion that they are necessary and advisable and petitioning NMFS to establish certain limitations on the application of those rules, such as excluding activities occurring outside the range of any of the listed DPSs of bearded seals.

Response: For species listed as threatened, section 4(d) of the ESA requires the Secretary to issue such regulations as are deemed necessary and advisable to provide for the conservation of the species. Such 4(d) protective regulations may prohibit, with respect to threatened species, some or all of the acts that section 9(a) of the ESA prohibits with respect to endangered species. Both the section 9(a) prohibitions and section 4(d) regulations apply to all individuals, organizations, and agencies subject to U.S. jurisdiction. On December 10, 2010 (75 FR 77496), we proposed to issue protective regulations for the Beringia and Okhotsk DPSs under section 4(d) of the ESA to include all of the prohibitions in section 9(a)(1) based on a preliminary finding that such regulations were necessary and advisable for the conservation of the species. As explained above, in light of public comments and upon further review, we have determined that such regulations are not necessary at this time. The Beringia and Okhotsk DPSs appear sufficiently abundant to withstand typical year-to-year variation and natural episodic perturbations in the near term. The principal threat to these DPSs of bearded seals is habitat alteration stemming from climate change within the foreseeable future. This is a long-term threat and the consequences for bearded seals will manifest themselves over the next several decades. Finally, bearded seals currently benefit from existing protections under the MMPA, and activities that may take listed species and involve a Federal action will still be subject to consultation under section 7(a)(2) of the ESA to ensure such actions will not jeopardize the continued existence of the species. We therefore conclude that it is unlikely that the proposed section 4(d) regulations would provide appreciable conservation benefits. As a result, we have concluded that the 4(d) regulations are not necessary at this time. Such regulations could be promulgated at some future time if warranted by new information.

Comment 51: Comments were received that critical habitat is both prudent and determinable; other comments were received that critical habitat is not currently determinable and would require extensive additional study.

Response: Section 4(a)(3) of the ESA requires that, to the maximum extent practicable and determinable, critical habitat be designated concurrently with the listing of a species. Critical habitat is not determinable when information sufficient to perform required analyses of the impacts of the designation is lacking or if the biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat. Existing data are lacking in several areas necessary to support the designation of critical habitat, including identification and description of the physical and biological features essential to the conservation of the Beringia DPS, and economic data which would allow for consideration of the costs of designation. We have therefore determined that designating critical habitat for the Beringia DPS is prudent but not determinable at this time. We will designate critical habitat for the Beringia DPS in a subsequent rulemaking as provided under the ESA, and we are soliciting comments related to the designation (see **DATES, ADDRESSES,** and Information Solicited).

Comment 52: Comments were received that it is unclear how future recovery planning, including

establishing accurate recovery and delisting criteria, can occur given the apparent lack of abundance data. Other comments were received expressing support for recovery planning for the Beringia DPS.

Response: Section 4(f) of the ESA requires that NMFS develop recovery plans for ESA listed species, unless such a plan will not promote the conservation of the species. Section 4(f)(1)(A) of the ESA also states that in developing and implementing recovery plans, the Secretary shall, to the maximum extent practicable, "give priority to those endangered species or threatened species, without regard to taxonomic classification, that are most likely to benefit from such plans." The range of the Okhotsk DPS of bearded seals occurs entirely under the jurisdiction of other countries. This DPS would therefore qualify for exemption from the ESA section 4(f) recovery planning process because the U.S. has little authority to implement actions necessary to recover foreign species. A recovery plan will be developed for the Beringia DPS of bearded seals provided the limitations in section 4(a)(1)(A) of the ESA do not apply. Future recovery planning efforts for the Beringia DPS will incorporate the best scientific and commercial data available regarding abundance at that time, and would identify data gaps that warrant further research.

Comment 53: A number of comments stressed that the determination should be based on sound scientific data and analysis. Some comments suggested inappropriate factors such as political pressure from the climate change debate may have influenced our decision making.

Response: We were petitioned to evaluate the status of the bearded seal under the ESA. Section 4(b)(1)(A) of the ESA requires us to make listing determinations solely on the basis of the best scientific and commercial data available. Consistent with this requirement, in reaching our final listing determination, we considered the status review report prepared by the BRT, information received through public and peer review comments, and efforts being made to protect the species. This information is summarized in this final rule.

Comment 54: A commenter expressed the opinion that to provide a meaningful process in which interested parties could review and comment on the special peer review comments, NMFS should have made the original comment letters available (rather than NMFS's "summary and interpretation of those comments") and opened more than a 30-day comment period.

Response: On April 6, 2012, we announced in the **Federal Register** the availability of a peer review report that consolidated the comments received from special peer review of the bearded seal status review report (77 FR 20774). We issued a news release to ensure that the public was made aware of this comment period. The comment period was limited to 30 days in consideration of the statutory deadline requiring a prompt final listing determination. We did not receive any specific requests to extend the comment period. The peer review report simply consolidated the comments received from the special peer reviewers to facilitate public review—the report did not provide our interpretation of those comments.

Comments on the Consequences of the Proposed Listing Rule

Comment 55: Several commenters, including the State of Alaska and the ISC, expressed concern that the ultimate effect of the listings will be additional regulatory burden and increased economic and other human impacts without significant conservation benefit. Some of these commenters noted that the proposed listing would affect an area of national significance because of its importance for domestic oil and gas development. The State of Alaska specifically expressed concern that the proposed action will cause substantial injury to Alaska's economic interests including those of northern coastal municipal governments. The State expressed the view, for example, that the listing will deter or delay activities such as oil and gas exploration and development, and shipping operations, which could reduce State royalties and revenue. One commenter also expressed concern that the listings could also potentially cause resources and efforts to be distracted away from the conservation of populations at greater risk.

Response: Section 4(b)(1)(A) of the ESA states that the Secretary shall make listing determinations based solely on the best scientific and commercial data available, after conducting a status review of the species and taking into account efforts to protect the species. The regulations implementing the ESA at 50 CFR 424.11(b), consistent with case law interpreting the ESA and its legislative history, state that the listing determination will be made without reference to possible economic or other impacts of such determination. Therefore, we cannot consider such potential consequences in our final determination. However, we will consider economic impacts for the designation of critical habitat. We also note that such activities have been occurring despite the presence of several ESA listed whale species in the areas.

Additional Comments

Comment 56: Two commenters suggested that the abundance estimate for the Chukchi Sea likely underestimates the actual population size due to several factors including that it does not appear to account for any seals that may occur in the central Chukchi Sea. These commenters noted that the abundance estimate for the Beaufort Sea also likely underestimates the actual population size and it likely undergoes significant inter-annual variation.

Response: The numbers of bearded seals in the Chukchi and Beaufort seas (*i.e.*, the number that breed there rather than migrating there seasonally after breeding in the Bering Sea) are very poorly documented. Our estimate of 27,000 for the Chukchi Sea included an assumption that the western Chukchi Sea along the Russian coast has similar densities to the eastern Chukchi Sea. A relatively small area of the north-central Chukchi is, as the reviewer noted, unaccounted for in this estimate. The bearded seal densities in the survey stratum adjacent to this area were very low. Because it has not been documented whether bearded seals occur in that north-central area, there was no sound basis for computing an estimate. If the adjoining survey stratum densities (0.001–0.05 seals/km^2) were used as an estimate, only about 50 to 2,250 additional seals would be included. This is well within the imprecision of the overall estimate, and not different enough to affect the threats analysis or risk assessment for the Beringia DPS.

Comment 57: The State of Alaska and another commenter noted that there is a high degree of uncertainty associated with the bearded seal subspecies identified that should be more explicitly acknowledged, and they provided a number of references to support this comment.

Response: Although the concept of a subspecies as an identifiable taxon has been questioned by some evolutionary biologists, and has been applied inconsistently by taxonomists with respect to the nature and amount of differentiation required for subspecies designation, the concept remains in wide use and there is clearly no consensus to abandon it. In the case of bearded seals, the two subspecies designations are widely recognized (for

details see Cameron *et al.*, 2010). As was discussed in the preamble to the proposed rule, and considered in more detail in the status review report, the geographic distribution of these two subspecies is not separated by conspicuous gaps, and there are regions of intergrading generally described as somewhere along the northern Russian and central Canadian coasts. The validity of the division into subspecies has been questioned, though recent research on skull morphology and genetics tends to support their continued recognition. Despite doubts expressed by some about the veracity of dividing *E. barbatus* into two subspecies, the BRT concluded, and NMFS concurred, that the evidence for retaining the subspecies is stronger than any evidence for combining them.

Comment 58: The Marine Mammal Commission recommended that NMFS develop a research plan to address the major uncertainties and information gaps identified in the status review report, and strengthen collaborative efforts among range nations to facilitate research and management to assess the status and trends of bearded seal populations throughout the species' range, and identify protective measures where necessary. Canada's DFO noted that they remain open to exploring potential areas for cooperation for improving mutual understanding of bearded seal populations. The Commission and another commenter expressed the view that NMFS also needs to prioritize funding to collect data on bearded seal population size and trends and many other aspects of the seal's biology which are currently poorly understood.

Response: We agree that additional research is needed to help resolve areas of uncertainty and to add to the ecological knowledge of this species. We look forward to working with our partners and stakeholders in the conservation and recovery of bearded seals, including obtaining needed research to fill in knowledge gaps.

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

Under the plain language of the ESA and 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.

NMFS has coordinated with Alaska Native communities regarding management issues related to ice seals through co-management organizations, particularly the ISC. NMFS discussed the listing petition with the ISC and provided updates regarding the timeline for the bearded seal status review. Following publication of the proposed listing determination, we notified the ISC of the proposal and requested comments on the proposed rule.

We fully considered all of the comments received from Alaska Native organizations on the proposed rule and have addressed those comments in this final rule. In response to comments received during the public comment period that indicated some tribes may wish to consult on the proposed rule, we contacted potentially affected tribes by mail and offered them the opportunity to consult on the proposed action and discuss any concerns they may have. No requests for consultation were received in response to this mailing.

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 20, 2012.

Alan D. Risenhoover,

Director, Office of Sustainable Fisheries, performing the functions and duties of the Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

For the reasons set out in the preamble, 50 CFR part 223 is 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, add paragraphs (a)(7) and (a)(8) 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) * * *				
(7) Bearded seal, Beringia DPS.	*Erignathus barbatus nauticus.*	The Beringia DPS of the bearded seal includes all bearded seals from breeding populations in the Arctic Ocean and adjacent seas in the Pacific Ocean between 145° E. Long. (Novosibirskiye) and 130° W. Long., except west of 157° E. Long or west of the Kamchatka Peninsula, where bearded seals from breeding populations of the Okhotsk DPS are listed as threatened under § 223.102(a)(8).	[INSERT FR CITATION; 12/28/12].	NA
(8) Bearded seal, Okhotsk DPS.	*Erignathus barbatus nauticus.*	The Okhotsk DPS of the bearded seal includes all bearded seals from breeding populations of bearded seals west of 157° E. Long. or west of the Kamchatka Peninsula in the Pacific Ocean.	[INSERT FR CITATION; 12/28/12].	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).

* * * * *

[FR Doc. 2012–31068 Filed 12–21–12; 4:15 p.m.]

BILLING CODE 3510–22–P

Melanie Brown
B-8

Comparison of Council Recommended Alternatives and Draft Steller Sea Lion Protection Measures EIS Alternatives 1/31/13

In December 2012, the Council recommended three alternatives for analysis in the Steller sea lion protection measures EIS. The Council's recommended Alternatives 1 and 2 were the basis for Alternatives 2 and 3 in the EIS. The alternatives are based on the recommendations from the Steller Sea Lion Mitigation Committee (SSLMC) and review by the Council's Advisory Panel. The Council heard public testimony on the SSLMC's alternatives before making its recommendations.

The Council's Alternative 3 is a return to the Steller sea lion protection measures before the implementation of the interim final rule in 2011, with adjustments made to account for fisheries management changes since the adoption of the protection measures in 2003 (Amendment 80, etc.). The Council's recommended Alternative 3 is Alternative 4 in the EIS. No details were provided for the Council's Alternative 3 so no comparison is possible of the specific features of the EIS Alternative 4 with the Council's Alternative 3.

The following text shows the changes made to the Council's recommended alternatives to develop Alternatives 2 and 3 in the EIS. Where the alternative contains substantial additions to the Council's recommendation, the text is italicized. Where the text was left out of the alternative in the EIS, the text is struck. Items struck from the alternative may be due to a variety of reasons. These include that the Council's intent in the alternative does not require a change in the regulations, or the recommendation cannot be implemented under this action. The alternatives will be explained in detail in Chapter 2 of the EIS. Section 2.3.2 of the EIS will contain the explanation of why certain Council recommended provisions of the alternatives were not included for analysis in the EIS.

EIS Alternative 2 (based on Council's Alternative 1)

Groundfish

Close waters from 0–3 nm around Kanaga Island/Ship Rock to directed fishing for groundfish by federally permitted vessels.

Atka mackerel

- A season : 1/ 20 – 6/10
- B season: 6/10 – 12/31
- 50:50 seasonal apportionment of TAC *and critical habitat harvest limit*, including CDQ
- Allow rollover between seasons, ~~with no limit on rollover~~
- ~~Allow MRA when directed fishing for Atka mackerel is closed or in areas where directed fishing for Atka mackerel is prohibited~~

Area 543

- Remove the area-wide retention prohibition
- Prohibit directed fishing inside Steller sea lion critical habitat *by vessels using trawl gear*
- Prohibit directed fishing *with trawl gear* for Atka mackerel west of 174.5° East longitude
- TAC set at 65% of ABC
    - Suboption: TAC set at 50% of ABC
    - Suboption: TAC set at 40% of ABC

542

- ~~Apply 2010 SSL closures around rookeries and haulouts (0-10 nm)~~
- Prohibit directed fishing *with trawl gear* in waters *0-3 nm at haulouts and 0-10 nm at rookeries.*

- Prohibit directed fishing *with trawl gear* inside Steller sea lion critical habitat from 178° East longitude to 180° longitude, and from 178° West longitude to 177° West longitude.
    - option: Prohibit directed fishing *with trawl gear* inside Steller sea lion critical habitat *in Area 542* by the Bering Sea trawl limited access vessels
- TAC is set at 65% of Area 542 ABC.
- ~~Catch limit inside Critical Habitat established, based on most recent estimates of local biomass (e.g., FIT studies), to maintain harvest ≤ 5% of local abundance, but not to exceed 50% of TAC~~
- *Harvest* limit inside Steller sea lion critical habitat ≤at 50% of Area 542 TAC, *evenly distributed between seasons.*
- Prohibit fishing rollover amounts inside Steller sea lion critical habitat.
- Limits apply to all sectors

Area 541/Bering Sea

- Prohibit directed fishing *with trawl gear* inside Steller sea lion critical habitat except for a portion of critical habitat between 12 nm and 20 nm southeast of Seguam.
- Prohibit directed fishing *with trawl gear* inside Steller sea lion critical habitat by the BSAI trawl limited access *sector.*
- *Harvest* limit inside critical habitat ≤ is 50% of area 541 TAC, *evenly distributed between seasons.*
- Prohibit fishing of seasonal rollover amount inside critical habitat.
- Modify MRA regulations for Amendment 80 vessels and CDQ entities operating in the Bering Sea subarea to calculate MRAs *for Atka mackerel as an incidental species* on an offload-to-offload basis (in the same manner as pollock).

Pacific cod

~~Catch limit in Aleutian Islands is that portion of the Pacific cod stock(s) in the Aleutian Islands, as identified by stock assessment, split between the Aleutian Islands management areas (543, 542, 541) by the 4 survey rolling average of cod occurrence (e.g., for 2013 25% in 543, 75% in 541/542).~~

Apportion the Aleutian Islands portion of the BSAI Pacific cod TAC or the Aleutian Islands Pacific cod TAC as catch limits among the statistical areas in the Aleutian Islands subarea based on the annual stock assessment process. The Council establishes the TAC after accounting for the State guideline harvest level (GHL) fishery. The CDQ fishery is subtracted from the Aleutian Island TAC to get the initial TAC (ITAC) for the Aleutian Islands. Apportion the ITAC among the statistical areas based on the stock assessment process. NMFS Inseason Management will establish a directed fishing allowance (DFA) for each area considering incidental catch needs.

Seasonal apportionment by sector of Pacific cod harvest would be set at the BSAI TAC level.

CPs are vessels that harvest and process only their own catch.

Motherships are vessels that receive and process catch from other vessels under a Federal Fisheries Permit with a mothership endorsement. This would include CP that receive fish from another vessel and vessels operating and reporting like a Stationary floating processor but operating under a mothership endorsed permit.

Seasons:

- *Nontrawl gear*:
    - *Hook and Line:*
        - *A season: 1/1-6/10*
        - *B seasons: 6/10-11/1*

        - *Pot:*
            - *A season: 1/1-6/10*
            - *B season: 9/1-11/1*
        - *Jig:*
            - *A season: 1/1-4/30*
            - *B season: 4/30-8/31*
            - *C season: 8/31-11/1*
    - *BSAI Trawl Limited Access and trawl catcher vessel:*
        - *A season: 1/20-4/30*
        - *B season: 4/30-6/10*
        - *C season: 6/10-11/1*
    - *CDQ Trawl and Amendment 80 CP:*
        - *A season: 1/20-4/30*
        - *B season: 4/30-6/10*
        - *C season: 6/10-12/31*

Area 543

- Remove the area-wide retention prohibition
- Set the catch limit as a portion of Area 543 abundance in relation to total abundance in Aleutian Islands subarea *based on the annual stock assessment process.*
- *Prohibit directed fishing with trawl gear after April 30.*

Option 1: Prohibit directed fishing by vessels except ~~HAL~~ *nontrawl gear* CP and trawl CP *and catcher vessels delivering shoreside* (No mothership participation)

- Establish catch limits for *nontrawl* CPs and trawl gear CPs, *including CDQ*, based on *average ratio of annual* catch *in the Pacific cod target in these two sectors* during 2006 – 2010.
- *Catcher vessels delivering to shoreside or stationary floating processors are subject to the overall Area 543 catch limit.*
- Prohibit directed fishing in critical habitat 0- 6 nm from rookeries and haulouts for *nontrawl gear vessels.*
- *Prohibit directed fishing in critical habitat 0-20 nm from rookeries and haulouts by trawl vessels,* except prohibit directed fishing in critical habitat 0-10 nm from rookeries and haulouts between 173° East longitude and 174.5° East longitude
- ~~No more than 2 HAL CP vessels and 2 Trawl CP vessels at one time in the directed fishery~~

Option 2: Include mothership participation

- Establish a catch limit for the ~~HAL~~ *nontrawl gear* and trawl gear *CP* sectors, *including motherships and CDQ,* based on the portion of *average annual catch in the Pacific cod target in these sectors* during 2006 – 2010.
- *Catcher vessels delivering to shoreside or stationary floating processors are subject to the overall Area 543 catch limit.*
- Prohibit directed fishing in critical habitat 0- 6 nm from rookeries and haulouts by *nontrawl gear* CPs *and CVs.*

- *Prohibit directed fishing in critical habitat 0-20 nm from rookeries and haulouts by trawl gear CPs and CVs*, except between 173° East longitude and 174.5° East longitude prohibit directed fishing in critical habitat 0-10 nm from rookeries and haulouts by trawl gear CPs *and CVs*.
- ~~No more than 2 HAL CP vessels and 2 Trawl CP vessels at one time in the directed fishery~~

Protective Option:

Trawl Gear

- *A season and B Season: Close 0-10 nm from rookeries, close 0-20 nm from haulouts*
- *C season: Close 0-10 nm from rookeries and haulouts*

Non-trawl Gear

- *A season: Close 0-10 nm from rookeries and haulouts*
- *B and C seasons: Close 0-6 nm from rookeries and haulouts*

Areas 542/541

- Establish an Area 542/541 annual catch limit based on the *Area 541/542 portion of* Aleutian Islands *abundance*~~TAC or Aleutian Islands portion of the BSAI Pacific cod TAC~~ *as determined by the from the annual stock assessment process*, ~~minus the State waters Pacific cod guideline harvest limit (GHL)~~ fishery~~, and minus the *area* catch limit for Area 543~~.
- Establish a catch limit for nontrawl gear CP, trawl gear CP, *including CDQ*, and mothership (CV delivering to mothership processor) based on the *average annual* catch *in the Pacific cod target* during 2006 – 2010 expressed as a ratio *of the sector's catch* to the total catch in 541 and 542. Catcher vessels delivering to shoreside and stationary floating processors are subject to *the overall* Area 541/542 catch limit.
- Prohibit directed fishing in critical habitat 0-3 nm at rookeries *and in the Seguam Foraging Area* by *nontrawl* gear
- *Prohibit directed fishing in critical habitat 0-20 nm west of 178° West longitude and east of 174° West longitude and in the Seguam Foraging Area by trawl gear*
- Prohibit directed fishing in critical habitat east of 178° West longitude and west of 174° West longitude by trawl gear
    - 0- 3 nm from haulouts
    - 0-10 nm from rookeries

~~Walleye~~ pollock

Area 543

- Prohibit directed fishing for ~~walleye~~ pollock

Areas 542/541

- ~~Apportion ABC between 541 and 542 based on the best estimate of total AI biomass ratio using the same methods as applied to Atka mackerel ABC, while allowing TAC to be harvested in any ration within the limits of each area ABC.~~
- ~~Catch limit in 541 or 542 cannot exceed corresponding ratio of ABC from survey biomass~~
- Establish an A-season catch limit at 40% of ABC.

- Prohibit directed fishing inside Steller sea lion critical habitat except for:
    - a portion of Steller sea lion critical habitat west of 178° West longitude outside of 3 nm from Krysi Pt. (Hawadax Island), Tanadak, and Segula haulouts, and outside 10 nm from Little Sitkin haulout and Ayugudak *rookery and*
    - a portion of Kanaga Sound east of 178° West longitude outside 3 nm from haulouts *Options 1 may be combined with either option 2 or 3.*
        - option *1*: prohibit directed fishing *inside the open portion of critical habitat at Kanaga Sound* by vessels ≥ 60 feet length overall.
        - *option 2: prohibit directed fishing 0- 10 nm around Kanaga I./Ship Rock rookery*
        - *option 3 prohibit directed fishing 0-6 nm around Kanaga I./Ship Rock rookery*
- Prohibit directed fishing inside Steller sea lion critical habitat in Area 541 except for
    - a portion of critical habitat *outside of 3 nm of haulouts* at Atka North Cape,
    - a portion of critical habitat *outside of 3 nm of* haulouts at Amukta Pass/Seguam-southside

Protective Option:

Area 542

- *A season: close 0-10 nm from rookeries, close 0-20 nm from haulouts*
- *B season: close 0-10 nm from rookeries and haulouts*

Area 541

- *A season: close 0-10 nm from rookeries, 0-20 nm from haulouts*
- *B season: close 0-20 nm from rookeries, 0-10 nm from haulouts*

EIS Alternative 3 (Based on Council's Alternative 2)

Groundfish

Close waters from 0–3 nm around Kanaga Island/Ship Rock to directed fishing for groundfish by federally permitted vessels.

Atka mackerel

- A-season Jan 20 – Jun 10; B-season Jun 10 – Dec 31
    - option: B-season Jun 10 – Nov 1
- 50:50 seasonal apportionment of TAC *and critical habitat harvest limit*, including CDQ
- Allow rollover between seasons ~~with no limit on rollovers~~
- Establish a critical habitat catch limit west of 178° W longitude at 60 percent of TAC, *evenly distributed between seasons.*

Area 543

- Remove the area-wide retention prohibition.
- Prohibit directed fishing *with trawl gear* for Atka mackerel in waters *0-3 nm from haulouts and 0-10 nm from rookeries.*
    - option: prohibit directed fishing *with trawl gear* in Steller sea lion critical habitat

- Prohibit directed fishing *with trawl gear* 0-15 nm at Buldir, except for portions of critical habitat from 10-15 nm at Buldir Island
    - option: Prohibit directed fishing *with trawl gear* for Atka mackerel in waters west of 174.5° E longitude.

Area 542

- Prohibit directed fishing *with trawl gear* for Atka mackerel in Steller sea lion critical habitat *from 0-3 nm of haulouts and 0-10 nm of rookeries west of 178° W longitude*, except prohibit directed fishing *with trawl gear* for Atka mackerel in critical habitat between 178°E longitude and 180° longitude (around Amchitka Island).
- *Prohibit directed fishing with trawl gear for Atka mackerel in Steller sea lion critical habitat east of 178° W longitude.*

Area 541/Bering Sea

- Prohibit directed fishing *with trawl gear* inside critical habitat except a portion of critical habitat ~~10~~*12*-20 nm at Seguam and prohibit directed fishing *with trawl gear* in the Bering Sea subarea.
- *Modify MRA regulations for Amendment 80 vessels and CDQ entities operating in the Bering Sea subarea to calculate MRAs for Atka mackerel as an incidental species on an offload-to-offload basis (in the same manner as pollock).*

Pacific cod

~~Catch limit in Aleutian Islands is that portion of the Pacific cod stock(s) in the Aleutian Islands, as identified by stock assessment, split between the Aleutian Islands management areas (543, 542, 541) by the 4 survey rolling average of cod occurrence (e.g., for 2013 25% in 543, 75% in 541/542).~~

Apportion the Aleutian Islands portion of the BSAI Pacific cod TAC or the Aleutian Islands Pacific cod TAC as catch limits among the statistical areas in Aleutian Islands subarea based on the annual stock assessment process. The Council establishes the TAC after accounting for the State guideline harvest level (GHL) fishery. The CDQ fishery is subtracted from the Aleutian Island TAC to get the initial TAC (ITAC) for the Aleutian Islands. Apportion the ITAC among the statistical areas based on the stock assessment process. NMFS Inseason Management will establish a directed fishing allowance (DFA) for each area considering incidental catch needs.

Area 543

- Remove the area-wide retention prohibition
- ~~Catch limit in area 543 is the AI portion of Pacific cod stock(s), as identified by the stock assessment, multiplied by the 4 survey biomass proportion for 543 (e.g., 25% for 2013)~~
- Establish an annual catch limit in Area 543 *based on the annual stock assessment process.*
- Establish catch limits for *nontrawl gear* CP and trawl gear CP, *including CDQ and motherships*, based on *average ratio of annual* catch *in the Pacific cod target in these sectors* during 2006 – 2010.
- *Catcher vessels delivering to shoreside or stationary floating processors are subject to the overall Area 543 catch limit.*
- Prohibit directed fishing for Pacific cod in waters *0-3 nm from rookeries and 0-10 nm from Buldir* for *nontrawl gear* vessels.
- Prohibited directed fishing for Pacific cod in waters *0-3 nm of haulouts and 0-10 nm of rookeries* by trawl gear vessels.
- Seasons
    - *Nontrawl gear*:

- *Hook and Line:*
  - *A season: 1/1-6/10*
  - *B seasons: 6/10-12/31*
- *Pot:*
  - *A season: 1/1-6/10*
  - *B season: 9/1-12/31*
- *Jig:*
  - *A season: 1/1-4/30*
  - *B season: 4/30-8/31*
  - *C season: 8/31-12/31*

o Trawl gear:
- *A season: 1/1-4/30*
- *B season: 4/30-6/10*
- *C season: 6/10-11/1*

~~• No more than 2 HAL CP vessels and 2 TRW CP vessels at one time in directed fishery~~

Areas 542 and 541

Pacific cod measures under Alternative 3 for Areas 542 and 541 are the same as Alternative 2

~~Walleye~~ pollock

~~• Apportion ABC between 543, 541, and 542 based on the best estimate of total AI biomass ratio using the same methods as applied to Atka mackerel ABC, while allowing TAC to be harvested in any ratio within the limits of each area ABC~~

- Establish an A season catch limit at 40% of the Aleutian Islands pollock ABC.

Area 543

- Prohibit directed fishing for pollock in critical habitat except open a portion of Steller sea lion critical habitat outside 3 nm from Shemya, Alaid, and Chirikof haulouts.

Area 542

- Prohibit directed fishing in waters 0-10 nm from rookeries and haulouts west of 178° West longitude
- Prohibit directed fishing in waters 0-10 nm from rookeries and 0-3 nm from haulouts east of 178° West longitude
- Open portions of critical habitat identified in Alternative 2

Area 541

- Prohibit directed fishing for pollock in critical habitat to 0-10 nm from rookeries and 0-3 nm from haulouts *and in the Seguam Foraging Area.*

Protective Option

Area 542

- *A season: close 0-10 nm from rookeries, close 0-20 nm from haulouts*
- *B season: close 0-10 nm from rookeries and haulouts*

Area 541

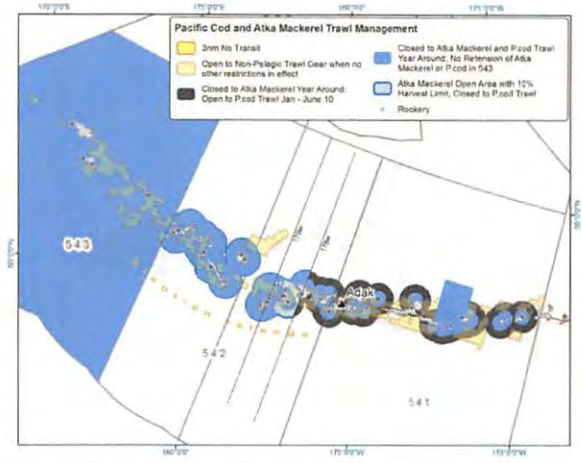
- *A season: close 0-10 nm from rookeries, close 0-20 nm from haulouts*
- *B season: close 0-20 nm from rookeries, close 0-10 nm from haulouts*

The figures provided in the Council's motion were further reviewed with the developers of the proposed areas and refined to the figures provided in Chapter 2 of the EIS.

Melanie Brown
B-8

Draft SSL EIS Alternative and Options Closure Maps 2/1/13

Atka Mackerel



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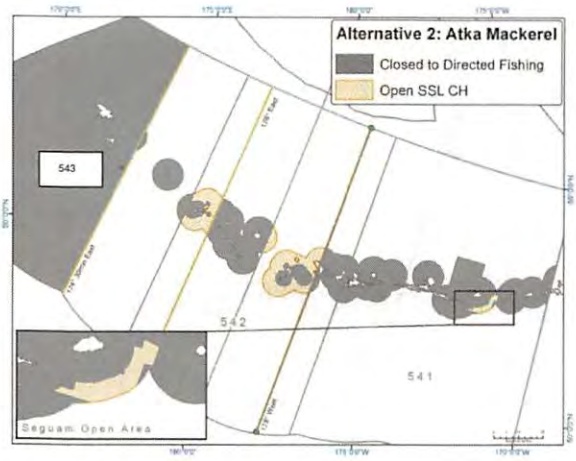

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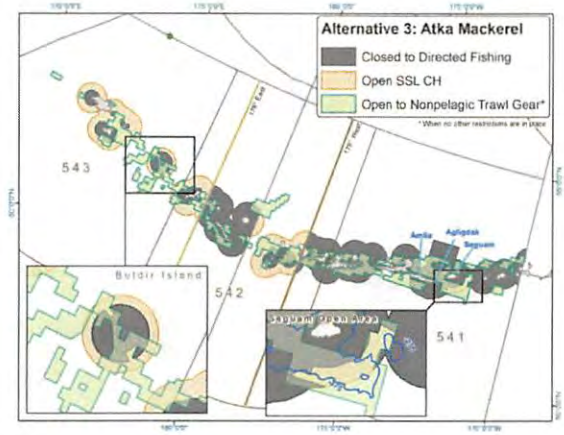

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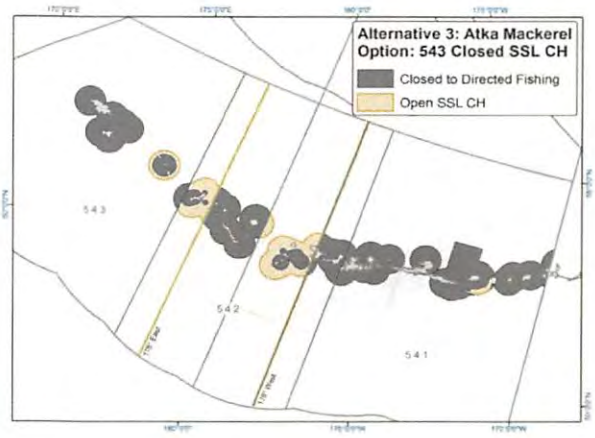
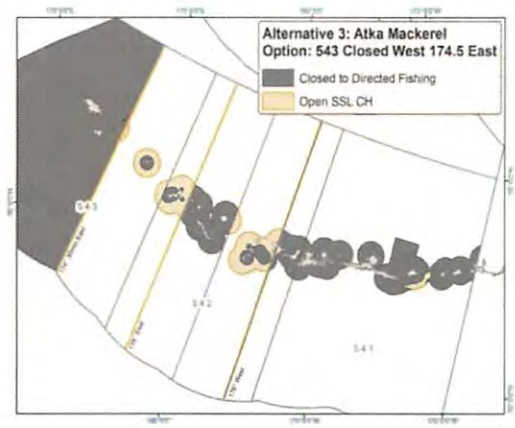
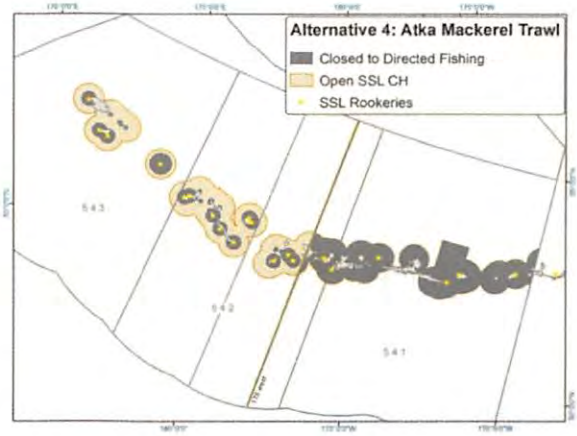


Alternative 3 with Critical Habitat Closed Option

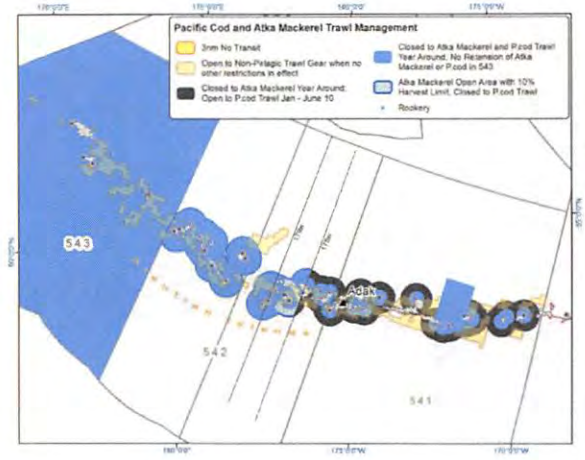


Alternative 3 with West 174.5 E Long. Closed Option



Alternative 4

Pacific Cod Trawl



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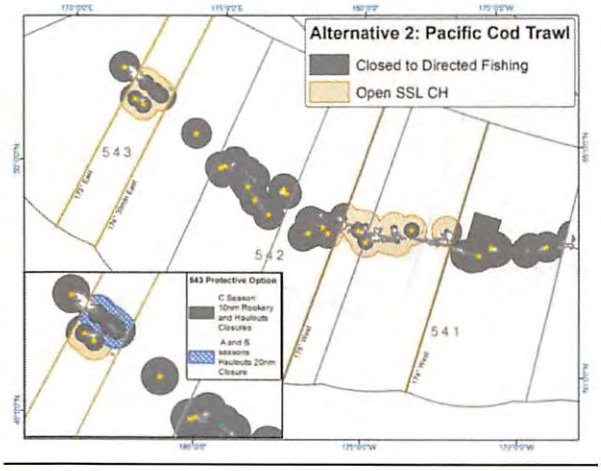
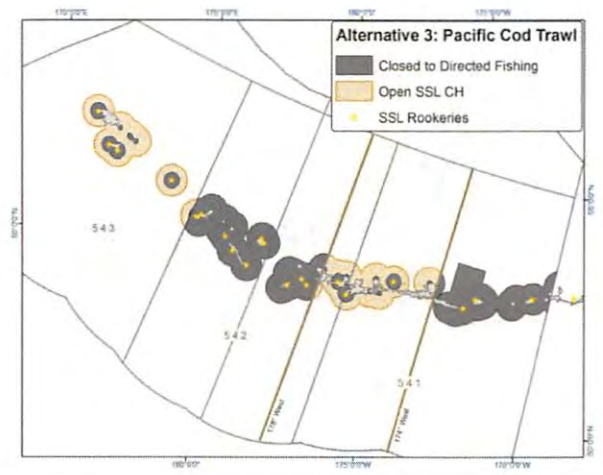


Alternative 2



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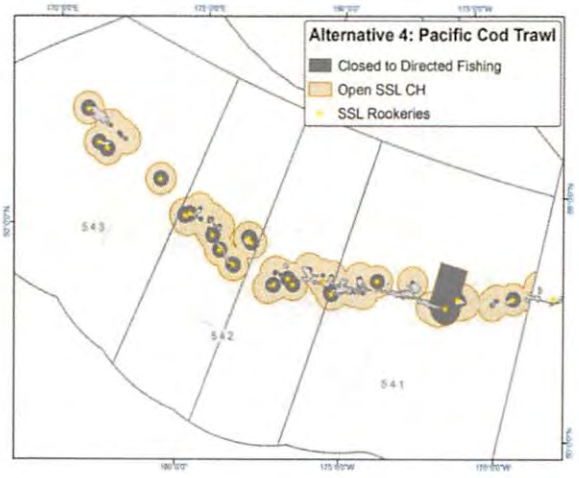
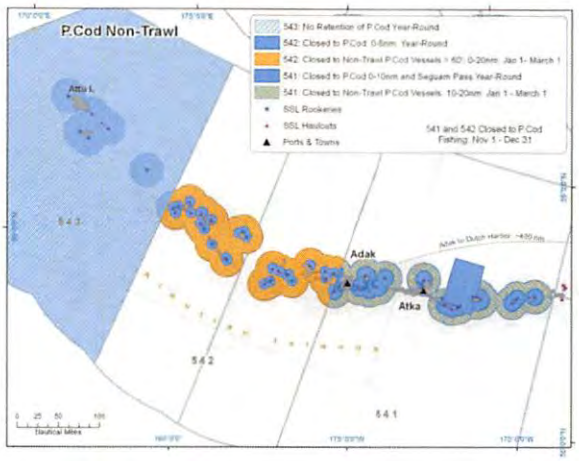


Alternative 4

Pacific cod non-trawl



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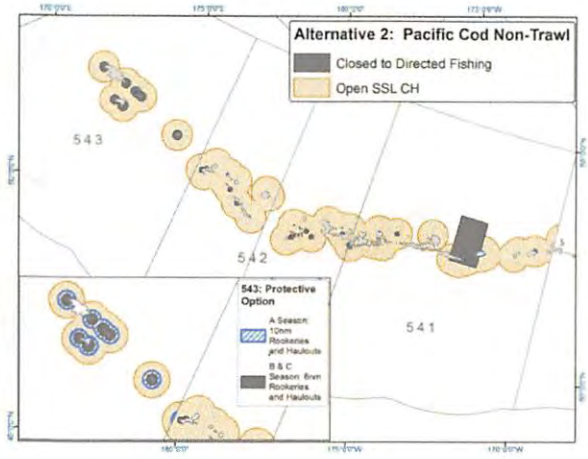

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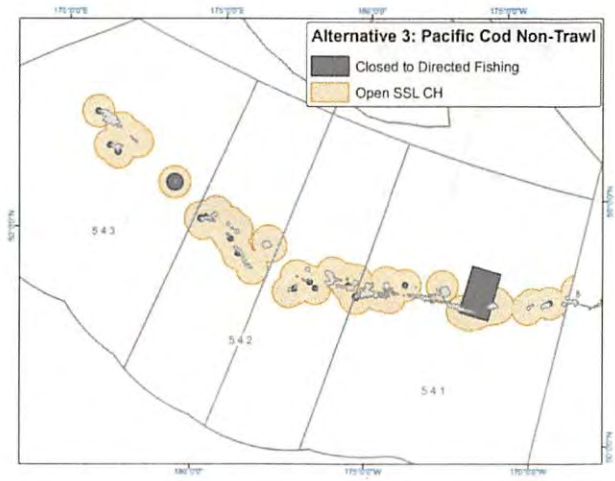

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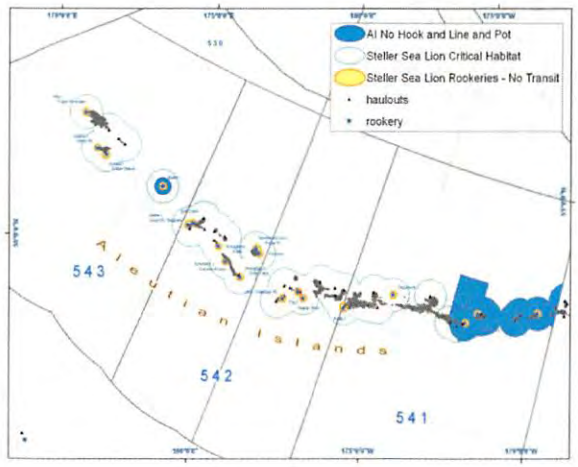
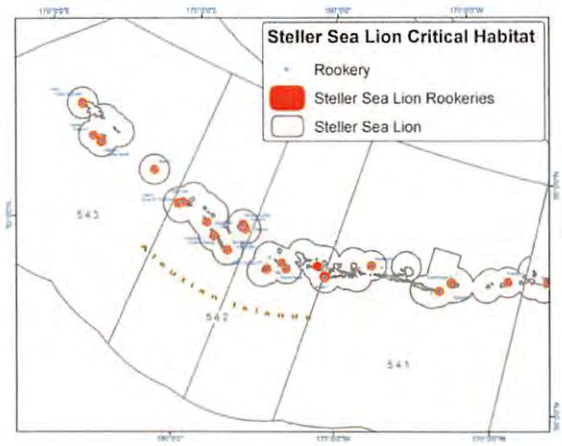
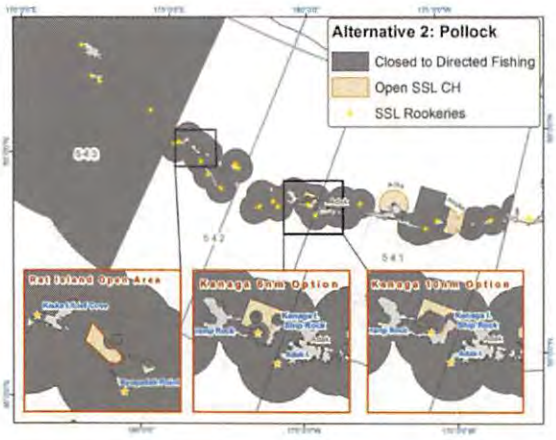


Alternative 4

Pollock



Alternative 1 CH closed to pollock directed fishing



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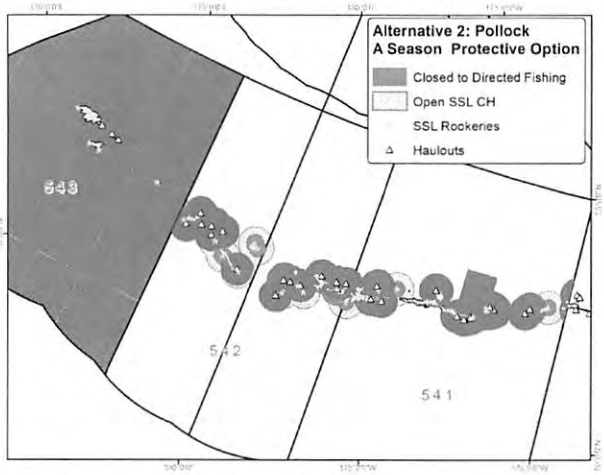
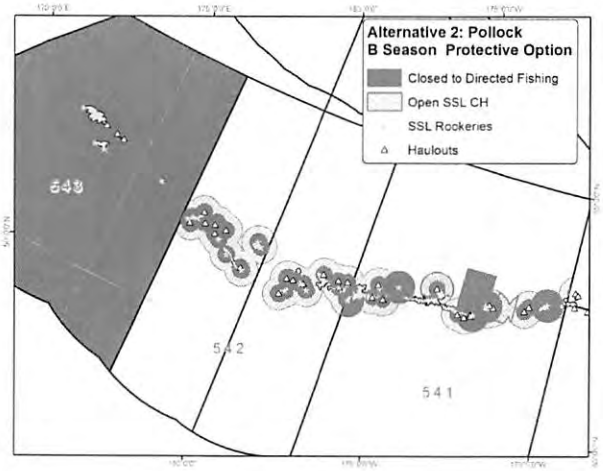
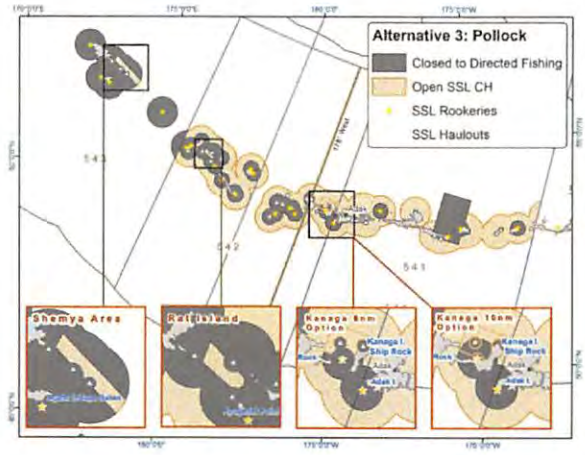


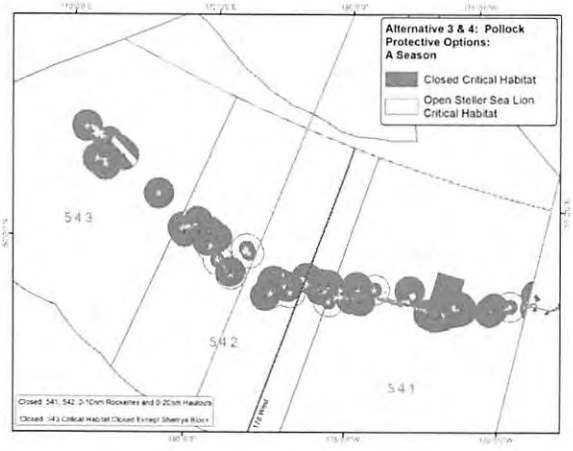
Alt. 2 Protective Option A season



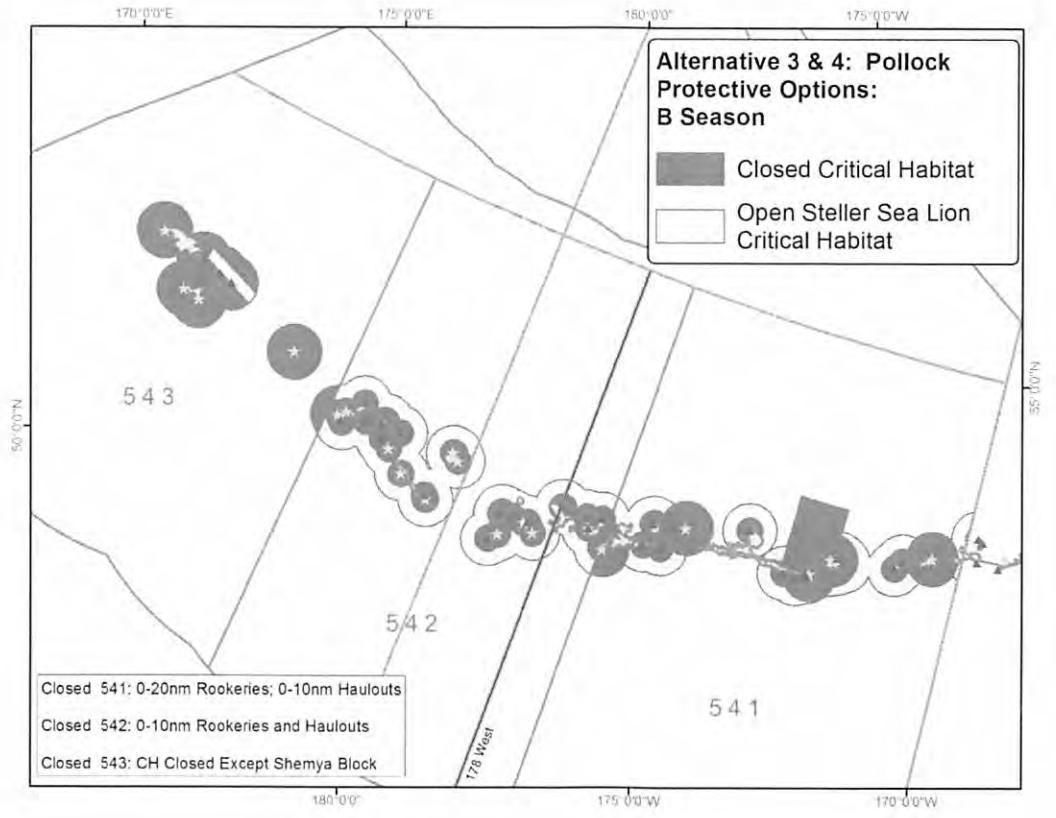
Alt. 2 Protective Option B Season



Alternative 3 and Alternative 4



Alt. 3 and 4 Protective Option A season



Alternative 3 and 4 Pollock Protective Option B season