PETITION TO DELIST THE ARCTIC SUBSPECIES OF RINGED SEAL (*PHOCA HISPIDA HISPIDA*) UNDER THE ENDANGERED SPECIES ACT

Submitted to the U.S. Secretary of Commerce acting through the National Oceanic and Atmospheric Administration and the National Marine Fisheries Service

by

The State of Alaska
Arctic Slope Regional Corporation
Iñupiat Community of the Arctic Slope
North Slope Borough

March 26, 2019

PETITIONERS

We respectfully submit this petition to delist the Arctic subspecies of ringed seal (*Phoca hispida hispida*) to the National Marine Fisheries Service ("NMFS") for consideration pursuant to Section 4 of the Endangered Species Act ("ESA").

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PETITIONERS

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PETITIONERS

We respectfully submit this petition to delist the Arctic subspecies of ringed seal (*Phoca hispida hispida*) to the National Marine Fisheries Service ("NMFS") for consideration pursuant to Section 4 of the Endangered Species Act ("ESA").

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PETITIONERS

We respectfully submit this petition to delist the Arctic subspecies of ringed seal (*Phoca hispida hispida*) to the National Marine Fisheries Service ("NMFS") for consideration pursuant to Section 4 of the Endangered Species Act ("ESA").

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The State of Alaska, North Slope Borough, Arctic Slope Regional Corporation, and Iñupiat Community of the Arctic Slope (collectively, the "Petitioners") submit this petition to delist the Arctic subspecies of ringed seal (*Phoca hispida hispida*), currently a threatened species, to NMFS pursuant to Section 4 of the ESA.

The Arctic subspecies of ringed seal is the most abundant marine mammal in the Arctic, with a population size numbering in the millions. NMFS listed the Arctic ringed seal as a threatened species on December 28, 2012, based on a speculative conclusion that "[d]iminishing ice and snow cover are the greatest challenges to persistence of all of the ringed seal subspecies."[1] This threat to the ringed seal's persistence was anticipated to manifest itself within a foreseeable future extending to the end of the century. However, new data and new analyses of previously available data demonstrate that the original listing decision was in error. The Arctic ringed seal does not meet the criteria for threatened status and should be delisted.

At the time of the listing decision, NMFS lacked the requisite scientific data to establish either the potential effects of projected habitat declines on the overall population status of the subspecies, or that the population is likely to decline within the timeframe specified to the point that it will become in danger of extinction.[2] Since the 2012 listing decision, new scientific information confirms that the population of Arctic ringed seals remains high and, while sea ice coverage has been declining in the Arctic for several decades, the population remains healthy. In addition, using a foreseeable future to 2055 is a more scientifically defensible timeframe than the 2100 time period used by NMFS when listing the species. A foreseeable future extending to 2055 is based on three generations of the Arctic ringed seal and reflects the period for which reliable predictions may be made regarding climate-related effects. Within this foreseeable future, there is currently no information demonstrating that the magnitude of effects associated with projected habitat declines, or any other identifiable threat, is sufficient to make the subspecies likely to become in danger of extinction. **For these reasons, as described further herein, delisting the Arctic ringed seal is warranted.**

Continuation of the Arctic ringed seal listing, demonstrably based on erroneous information, has significant consequences for the Alaska Native people and for the State of Alaska. To maintain their traditional ways of life, Alaska Natives depend on the use of their ancestral lands, waters, and subsistence species free from unnecessary restrictions on community and economic development, subsistence uses, and other activities. The listing decision also impacts the State of Alaska's natural resource management and economic development interests and the revenues provided for the Alaska Permanent Fund. In addition to these impacts, the continued listing of a species with a robust population size and a lack of reliably predictable threats is inconsistent with, and undermines the integrity of, the ESA. Therefore, it is important

[1] NMFS, 77 Fed. Reg. 76,706, 76,711 (Dec. 28, 2012).

[2] This petition is not stating that the listing decision was erroneous because it should have been based on "quantitative data that [was] not available." *Alaska Oil & Gas Ass'n v. Ross*, 722 Fed. Appx. 666, 668 (9th Cir. 2018). To the contrary, new information and additional analysis of then-available data demonstrate that the scientific basis for the listing determination was erroneous and that the Arctic ringed seal is not in danger of extinction within the foreseeable future.

to delist the Arctic ringed seal to accurately reflect that the subspecies is not likely to become in danger of extinction within a future period that is reasonably foreseeable.

The Petitioners request that NMFS make a determination within 90 days as to whether this petition presents substantial scientific or commercial information indicating that the petitioned delisting of the Arctic ringed seal may be warranted. **NMFS should find that delisting may be warranted, and should propose to delist the Arctic subspecies of ringed seal within 12 months of its receipt of this petition.**

2. SPECIES AND HABITAT DESCRIPTION

Currently, NMFS recognizes the following five subspecies of ringed seals: (1) *Phoca hispida hispida*, the Arctic subspecies that occupies the Arctic Ocean and Bering Sea; (2) *Phoca hispida botnica*, the subspecies that occurs in the Baltic Sea; (3) *Phoca hispida ochotensis*, the subspecies that occurs in the Sea of Okhotsk; (4) *Phoca hispida ladogensis*, the subspecies that occurs in the freshwater Lake Ladoga; and (5) *Phoca hispida saimensis*, the subspecies that occurs in the freshwater Lake Saimaa.[3] For the Arctic subspecies of ringed seal, which is the focus of this petition, it is possible that genetic substructure may be found in the future due to the large number of individuals and its very large distribution. However, no evidence of this hypothesized genetic substructure has been found to date.

Ringed seals are the smallest of the ice seal species and can live to be more than 35 years old.[4] Of the ringed seal subspecies, the Arctic ringed seal has the largest population, numbering in the millions.[5] This subspecies occupies the entire circumpolar Arctic and large areas of the subarctic, including the Labrador Sea, Hudson Bay, and the Bering Sea (see Figure 1 below). In Alaska, the Arctic ringed seal is found year-round in the Bering, Chukchi, and Beaufort Seas. There are no comprehensive estimates of abundance for ringed seals in United States waters off Alaska. However, aerial surveys conducted in 2012 and 2013 yielded a partial estimate of 470,000 individuals, which includes an estimate of 300,000 individuals for portions of the Chukchi and Beaufort Seas plus 170,000 for the U.S. portion of the Bering Sea.[6] Data on the population trends of the Arctic ringed seal remain unavailable.

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[3] NMFS listed the Lake Saimaa subspecies, which occurs only in eastern Finland, as endangered in 1993. NMFS, 58 Fed. Reg. 26,920 (June 7, 1993). NMFS listed the Arctic, Okhotsk and Baltic subspecies as threatened and the Ladoga subspecies as endangered in 2012. NMFS, 77 Fed. Reg. at 76,706.

[4] Alaska Department of Fish and Game ("ADF&G") unpublished data from the subsistence harvest; Kelly et al. 2010 at 17.

[5] NMFS, 77 Fed. Reg. at 76,716 ("There are no specific estimates of population size available for the Arctic subspecies, but most experts postulate that the population numbers in the millions.").

[6] Conn et al. 2014 at 1289 (Fig. 8).

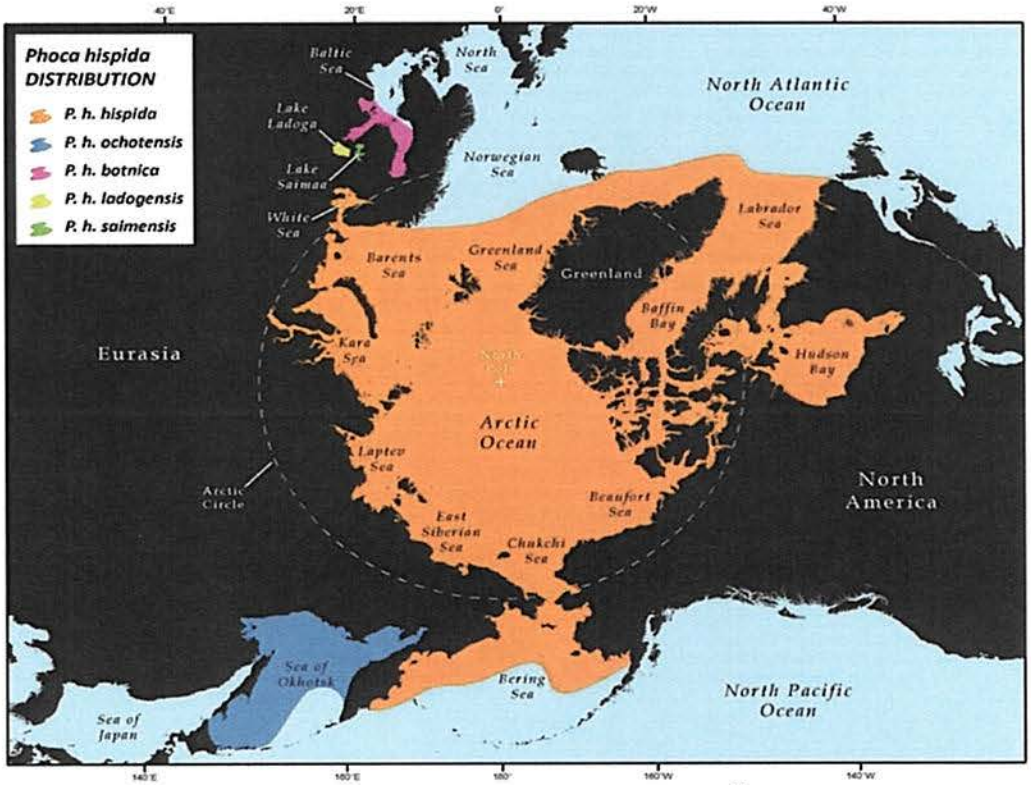

Figure 1. Distribution of the five subspecies of ringed seal.[7]

Arctic ringed seals generally prefer ice-covered waters and remain in contact with sea ice most of the year. Ringed seals are capable, however, of living under solid ice more than 2 meters thick all winter by maintaining breathing holes with their claws.[8] Ringed seals generally use sea ice, when it is available, as a platform for pupping and nursing in late winter to early spring, for molting in late spring to early summer, and for resting at other times of the year. Arctic ringed seals are thought to rarely haul out on land, but regularly occur in open, ice-free water hundreds of miles from land or ice, and can remain pelagic for the summer.[9]

Currently, Arctic ringed seals in Alaska are known to ovulate at age 4,[10] to successfully give birth at 5-7 years, and to have a generation time of approximately 12 years.[11] They produce one pup per year, with little sign of senescence in older females. Ringed seal pups are typically born in March or April in lairs that are excavated on top of the ice, under drifted snow near a breathing hole (used for access in and out of the lair), and are weaned in 5-7 weeks.[12] The ringed seal is the only ice seal species that uses subnivean (under snow) lairs, which are thought to be

[7] Kelly et al. 2010 at 9.

[8] Smith and Stirling 1975 at 1299.

[9] Crawford et al. 2012 at 245 (Fig 1c).

[10] Crawford et al. 2015 at 141.

[11] Generation time is defined as the average time between two consecutive generations.

[12] Mating occurs about a month after pups are born, but before they are weaned. Frost and Lowry 1981 at 39.

important to protect pups from extreme cold and from predators; other ice seals (e.g., bearded, spotted, and ribbon seals) pup on top of the ice.

Conditions adequate for subnivean lair formation occur where drifting snow accumulates in areas of elevated ice, such as pressure ridges, in the lee of prevailing wind patterns. Studies in the 1970s-90s, when temperatures were colder in the Arctic during the pupping period, showed that snow depth over birth lairs was 45 cm or more;[13] however, 20–30 cm may be sufficient to adequately protect pups from predation.[14] More recent studies have not been conducted to see if these snow depths are still available and the extent to which they are used by seals when present. The Okhotsk subspecies does not utilize subnivean lairs at present,[15] presumably because temperatures are warm enough and predation levels low enough that lairs are not required to sustain that population. Recent observations indicate that Arctic ringed seals in the Kotzebue Sound region may sometimes give birth on the surface of the sea ice.

Satellite telemetry studies demonstrate that Arctic ringed seals are capable of extensive movements throughout their range. For example, ringed seals tagged in the Canadian Beaufort Sea moved westward across the Beaufort Sea into the Chukchi and Bering Seas, generally remaining over the Beaufort Sea shelf within 100 km of shore.[16] Satellite telemetry has also shown that Arctic ringed seal adults and subadults in the Chukchi and Bering Seas use different habitats during winter. Subadults winter near the ice edge in the Bering Sea, while adults winter in the heavier ice closer to shore in the northern Bering and Chukchi Seas. Better foraging conditions, along with no need to maintain breathing holes in the broken ice, may explain the apparent subadult preference for the ice edge, while breeding responsibilities may induce adults to winter in more stable ice where territories can be maintained.[17] Most Arctic ringed seals that winter in the Bering and Chukchi Seas are thought to migrate north in spring as the seasonal ice melts and retreats, and then to spend summers in the pack ice of the northern Chukchi and Beaufort Seas, as well as in areas of nearshore ice remnants in the Beaufort Sea.

The diet of Arctic ringed seals is diverse, and includes a variety of prey species that span several trophic levels. A study of stomach contents from ringed seals harvested in Alaska found that the diet is composed of fish, including cod (Arctic and saffron cod, and walleye pollock), rainbow smelt, herring, sculpins, snailfish, pricklebacks, and flatfish.[18] Ringed seals also prey on invertebrate species, including shrimp, amphipods, and mysids.[19] In general, the ringed seal diet appears to vary across regions based on differences in prey availability, prey preferences, and oceanographic conditions.

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[13] *E.g.*, Smith and Stirling 1975 at 1302, Lydersen and Gjertz 1986 at 59, Furgal et al. 1996 at 862.

[14] Kelly et al. 2010 at 110.

[15] *Id.* at 111.

[16] Harwood et al. 2012 at 36 (Fig. 1).

[17] Crawford et al. 2012 at 249.

[18] Quakenbush et al. 2011 at 23; Crawford et al. 2015 at 138.

[19] Quakenbush et al. 2011 at 23-24; Crawford et al. 2015 at 138.

Currently available information demonstrates that ringed seals possess a high degree of resilience and adaptive capacity. The species has existed for millions of years, and has survived previous periods of widespread and prolonged changes in sea-ice cover. For the Arctic ringed seal, the extremely large numbers (millions for this subspecies range-wide) contribute to high genetic diversity.[20] The subspecies occupies an extremely large range within the northern hemisphere, which encompasses a variety of marine habitats and ice concentrations. During the spring and summer, Arctic ringed seals are highly mobile and have been observed to regularly move from the Canadian Beaufort Sea to the Bering Sea. The subspecies is adapted to widely variable ice conditions, ranging from solid ice more than 2 meters thick to completely open water far (hundreds of miles) from land. There also is recent evidence of Arctic ringed seals in Svalbard using terrestrial haul out sites (mudflats, rocks, and coastlines) during summer months, even when some ice is present.[21] Terrestrial haul-out behavior also occurs in the Baltic, Saimaa, and Ladoga subspecies.[22]

As previously noted, female ringed seals produce one pup annually for the majority of their lives, and a single female could produce 30 pups in her lifetime. Depending on ice conditions in a particular region, Arctic ringed seals may exhibit varied pupping dates (between February and April) and duration of the nursing period (3 to 9 weeks). During the recent period of declining sea ice and warmer temperatures (2003-2012), Arctic ringed seals grew faster and had thicker blubber, and female age at maturity decreased by 2 years.[23] Compared to an earlier, colder period (1975-1985), these results suggest that current conditions provide a favorable environment for ringed seal growth and reproduction.

3. REGULATORY HISTORY

In response to a petition to list ribbon seals under the ESA, NMFS exercised its discretion to also initiate a status review of ringed, bearded, and spotted seals on March 28, 2008. On May 28, 2008, NMFS received a petition to list these species as threatened or endangered under the ESA, asserting that seals were threatened by "global warming which is resulting in the rapid melt of the seals' sea-ice habitat."[24] In response, NMFS made a finding that the petition presented sufficient scientific or commercial information to suggest that listing of the three species under the ESA may be warranted, and convened biological review teams to prepare species status reviews to determine whether each of the species should be listed.

Following completion of the ringed seal status review, on December 10, 2010, NMFS proposed to list the Arctic subspecies of ringed seal as threatened based on a foreseeable future extending to 2100.[25] The status review projected that, within the century, snow cover likely will

[20] Lang et al. 2017.

[21] Lydersen et al. 2017 at 2.

[22] Kelly et al. 2010 at 10.

[23] Crawford et al. 2015 at 139-41.

[24] NMFS, 73 Fed. Reg. 51,615, 51,617 (Sept. 4, 2008).

[25] NMFS, 75 Fed. Reg. 77,476 (Dec. 10, 2010). This determination of the foreseeable future was based on climate projections from the Intergovernmental Panel on Climate Change's ("IPCC") Fourth Assessment Report ("AR4") that both NMFS and the U.S. Fish and Wildlife Service ("USFWS") had previously determined were too unreliable,

become inadequate to allow for use of subnivean lairs over substantial portions of the Arctic ringed seal's range.[26] The status review concluded that the greatest threat to the Arctic ringed seal would be increased hypothermia due to decreasing accumulation and duration of snow cover.[27] The second greatest threat would be increased predation, also associated with diminished snow cover.[28] In assessing the impact of these threats on the subspecies, the status review recognized that the "demographic, ecological, and evolutionary responses of ringed seals to threats from a warming climate are, in most cases, difficult to predict" due to a lack of information on the population and its resilience to climate change.[29]

NMFS solicited independent peer review of the scientific data and assumptions related to the listing determination for the ringed seal. Two of the three peer reviewers questioned the magnitude and immediacy of the threats posed to Arctic ringed seals by the projected changes in habitat and disagreed with NMFS's conclusion that the Arctic ringed seal should be listed as a threatened species.[30] Due to the "substantial disagreement" expressed by the peer reviewers regarding the sufficiency and accuracy of model projections, as well as analyses of future sea-ice and on-ice snow cover, NMFS extended the deadline for the final listing determination by six months and solicited additional independent peer review.[31] As with the previous peer review, two of the three reviewers stated that the available data on the subspecies and snow-cover projections do not support listing the Arctic ringed seal.[32]

Nevertheless, on December 28, 2012, NMFS published the final rule listing the Arctic ringed seal as threatened.[33] NMFS concluded that "[d]iminishing ice and snow cover are the greatest challenges to persistence of all of the ringed seal subspecies."[34] NMFS determined that, with snow cover forecasted to be inadequate for the formation and occupation of birth lairs over most of the subspecies' range, it is likely that by the end of the century Arctic ringed seals will

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uncertain, and variable to support a foreseeable future extending beyond mid-century. USFWS, 73 Fed. Reg. 28,212, 28,239 (May 15, 2008) (polar bear) (also noting that this timeframe corresponds to three polar bear generations); NMFS, 73 Fed. Reg. 79,822, 79,823 (Dec. 30, 2008) (ribbon seal); NMFS, 75 Fed. Reg. 65,239, 65,240 (Oct. 22, 2010) (spotted seal).

[26] Kelly et al. 2010 at 185.

[27] *Id.* at 193.

[28] *Id.*

[29] *Id.* at 43.

[30] NMFS, 77 Fed. Reg. at 76,719. The peer reviewers who disagreed with NMFS's decision to list the Arctic ringed seal were Mike Hammill (Canadian Department of Fisheries and Oceans) and Lori Quakenbush (ADF&G).

[31] NMFS, 76 Fed. Reg. 77,466 (Dec. 13, 2011).

[32] NMFS, 77 Fed. Reg. at 76,720. The peer reviewers who concluded that the listing decision lacked a scientific basis were David Barber (University of Manitoba, Centre for Earth Observation Science) and Becky Sjare (Canadian Department of Fisheries and Oceans).

[33] *Id.* at 76,706.

[34] *Id.* at 76,711. The Final Rule acknowledges that there will be little or no decline in ice extent in April and May in the majority of the range of the Arctic ringed seal (e.g., the East Siberian, Chukchi, Beaufort, Kara-Laptev, and Greenland Seas, the Central Arctic, Baffin Bay, and the Canadian Arctic Archipelago), and only a moderate decline in June through the end of the century. *Id.* at 76,708.

persist in only a few isolated portions of their range.[35] NMFS acknowledged that data were not available "to make statistically rigorous inferences how Arctic ringed seals will respond to habitat loss over time,"[36] and that the agency "currently ha[s] no mechanism to detect even major changes in ringed seal population size."[37] Instead, NMFS based its listing determination on a "formalized" numerical scoring system that rated the severity of the demographic risks to each subspecies, notwithstanding the absence of demographic data needed as a basis for predicting the level and severity of demographic risks.

NMFS's final rule to list the Arctic ringed seal was challenged in the U.S. District Court for the District of Alaska. In March 2016, the District Court held that, given the lack of evidence upon which the listing was based, NMFS's decision to list the Arctic ringed seal as threatened was arbitrary, capricious, and an abuse of discretion.[38] The District Court vacated the listing of the Arctic ringed seal and remanded the decision to NMFS to correct the substantive deficiencies.[39] Following an appeal, on February 12, 2018, the United States Court of Appeals for the Ninth Circuit reversed and remanded the District Court's decision.[40] The Ninth Circuit concluded that NMFS's finding that the Arctic ringed seal was likely to become endangered within the foreseeable future was supported by the administrative record for the 2012 final rule.[41] During the appeal, NMFS stated to the Court of Appeals that "this listing determination is not necessarily set in stone and may be subject to review or reconsideration based on the best available science and the agency's lawful interpretation of the relevant statutes and regulations."[42]

The best science now available demonstrates that the Arctic subspecies of ringed seal does not meet the criteria for threatened status; therefore, it should be delisted.

4. DELISTING REQUIREMENTS

Section 4 of the ESA authorizes NMFS to remove a species from the list of threatened and endangered species.[43] When considering whether to delist a species, NMFS will determine

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[35] *Id.* at 76,716.

[36] *Id.* at 76,728.

[37] *Id.*

[38] *Alaska Oil & Gas Ass'n v. Nat'l Marine Fisheries Serv.*, 2016 WL 1125744 (D. Ak., March 17, 2016).

[39] *Id.* at *15. In particular, the District Court stated that "it appears that no significant threat to the Arctic ringed seal is contemplated until sometime after 2050, but somewhere around 2090-2100. Even as to that date, NMFS acknowledges that it lacks any reliable data as to the actual impact on the ringed seal population as a result of the loss of sea-ice." *Id.* at *14.

[40] *Alaska Oil & Gas Ass'n v. Ross*, 772 Fed. Appx. 666 (9th Cir. 2018).

[41] *Id.* at 669 (in reaching its decision, the Ninth Circuit acknowledged that it was bound to follow the decision of a prior panel).

[42] Reply Brief for the Federal Appellants at 1, *Alaska Oil & Gas Ass'n v. Ross*, 772 Fed. Appx. 666 (9th Cir. 2018) (No. 16-35380).

[43] 16 U.S.C. § 1533(a)(2)(B), (b)(3).

whether it remains threatened or endangered 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) over-utilization for commercial, recreational, scientific, or educational purposes;
> (3) disease or predation;
> (4) the inadequacy of existing regulatory mechanisms; or
> (5) other natural or manmade factors affecting the species' continued existence.[44]

The ESA requires that NMFS make all delisting determinations "solely on the basis of the best scientific and commercial data available."[45]

Based on this review, NMFS will delist a species if the available data substantiates that the listed species is no longer threatened or endangered for one of the following three reasons: (1) extinction; (2) recovery; or (3) the original data for classification in error.[46] The regulations provide that the "original data for classification in error" criterion applies when "[s]ubsequent investigations may show that the best scientific or commercial data available when the species was listed, or the interpretation of such data, were in error."[47] Thus, the delisting of a species is warranted when, as here, new information or a reanalysis of the original information demonstrates that the scientific basis for the listing determination was erroneous, and that the species is not in danger of extinction now or in the foreseeable future.[48]

The ESA authorizes any interested person to submit a written petition to NMFS requesting the delisting of a threatened or endangered species.[49] Within 90 days of receipt of a petition, to the maximum extent practicable, NMFS must make a finding as to whether the petition presents "substantial scientific or commercial information indicating that the petitioned action may be warranted."[50] NMFS has defined "substantial scientific or commercial information" as referring to:

> credible scientific or commercial information in support of the petition's claims such that a reasonable person conducting an impartial scientific review would

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[44] *Id.* § 1533(a)(1); *see also* 50 C.F.R. §§ 424.1 l(c)-(d); *Friends of Blackwater v. Salazar*, 691 F.3d 428, 432 (D.C. Cir. 2012) (ESA section 4(c) "makes clear that a decision to delist 'shall be made in accordance' with the same five factors").

[45] 16 U.S.C. § 1533(b)(1)(A); 50 C.F.R. § 424.11(d).

[46] 50 C.F.R. § 424.11(d).

[47] *Id.* § 424.11(d)(3).

[48] In their recent proposed rule, NMFS and USFWS anticipate revising the delisting criteria to clarify that a delisting decision is based on an application of the five-factor analysis set forth in ESA section 4(a)(1). The current reason for delisting when the "original data for classification in error" would be satisfied if NMFS determines that the species currently does not meet the definition of an endangered or threatened species. USFWS & NMFS, 83 Fed. Reg. 35,193, 35,196 (July 25, 2018).

[49] 16 U.S.C. § 1533(b)(3)(A); 50 C.F.R. § 424.14(a).

[50] 16 U.S.C. § 1533(b)(3)(A); 50 C.F.R. § 424.14(h).

> conclude that the action proposed in the petition may be warranted. Conclusions drawn in the petition without the support of credible scientific or commercial information will not be considered "substantial information."[51]

When NMFS has already conducted a finding on, or review of, the listing status of the petitioned species, NMFS "will evaluate any petition received thereafter . . . to determine whether a reasonable person conducting an impartial scientific review would conclude that the action proposed in the petition may be warranted despite the previous review or finding."[52] NMFS has explained that this determination is satisfied if, for example, the petition provides new information or a new analysis or interpretation not previously considered in the final agency action.[53]

As the courts have explained, the "substantial scientific or commercial information" standard for a 90-day "may be warranted" determination "is not a rigorous one."[54] The standard "is not overly-burdensome, does not require conclusive information, and uses the 'reasonable person' to determine whether the substantial information has been presented."[55] If there is conflict in the scientific evidence, NMFS "must credit the supporting evidence unless that evidence is unreliable, irrelevant, or otherwise unreasonable to credit."[56]

Following a determination that a petitioned action "may be warranted," NMFS is then required to promptly commence a review of the status of the species at issue.[57] Within 12 months of receiving the petition to delist, NMFS is required to make one of the following findings: (1) the petitioned action is not warranted; (2) the petitioned action is warranted, in which case NMFS shall publish a proposed rule to implement the action; or (3) the petitioned action is warranted but precluded by pending proposals regarding other species' listing status.[58] A finding that the petitioned action "may not be warranted," is "not warranted," or is "warranted" but "precluded" is subject to judicial review.[59]

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[51] 50 C.F.R. § 424.14(h)(1)(i).

[52] *Id.* § 424.14(h)(1)(iii).

[53] USFWS & NMFS, 81 Fed. Reg. 66,462, 66,480 (Sept. 27, 2016) ("new" means that the information was not considered in the prior determination or the petition presents a different interpretation or analysis of that data).

[54] *Buffalo Field Campaign v. Zinke*, 2018 WL 646887, at *2 (D.D.C. Jan. 31, 2018).

[55] *Moden v. U.S. Fish and Wildlife Serv.*, 281 F.Supp.2d 1193, 1204 (D. Or. 2003) (characterizing the standard as "non-stringent"); *see also Ctr. For Biological Diversity v. Morgenweck*, 351 F.Supp.2d. 1137, 1140-41 (D. Colo. 2004) (90-day finding is subject to a "lesser standard"); *Humane Soc'y v. Pritzker*, 75 F.Supp.3d 1, 14 (D.D.C. 2014) (requirement for "conclusive evidence" applied an inappropriately high standard of evidence).

[56] *Buffalo Field Campaign*, 2018 WL 646887, at *5.

[57] 16 U.S.C. § 1533(b)(3)(A).

[58] 16 U.S.C. § 1533(b)(3)(B)(i)-(iii); 50 C.F.R. § 424.14(h)(2).

[59] 16 U.S.C. § 1533(b)(3)(C)(ii).

5. JUSTIFICATION FOR PETITIONED ACTION

A. Subsequent Investigations Demonstrate that the Foreseeable Future in NMFS's 2012 Listing Decision Was in Error

To retain the Arctic ringed seal's threatened status, NMFS must find that the subspecies is currently "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."[60] In turn, an "endangered species" is one that "is in danger of extinction."[61] Therefore, to be properly classified as threatened, NMFS must determine that the Arctic ringed seal will likely be on "the brink of extinction" within the foreseeable future specified.[62]

NMFS's determination in the listing decision that the foreseeable future extended to 2100 was in error. While the term "foreseeable future" is not yet defined within the ESA, NMFS has explained that it is required to "consider the status of the species both in the present and through the foreseeable future" to determine whether the Arctic ringed seal qualifies as threatened.[63] This inquiry depends on "*both* the foreseeability of threats to the species *and* foreseeability of the species' response to those threats."[64] Simply identifying the loss of suitable habitat is not sufficient to uphold a listing determination.[65] While NMFS is not required to have "quantitative data" on the timing and extent of any population decline,[66] the foreseeable future extends only so far as NMFS can reasonably rely on predictions about the future in making determinations about the conservation status of the Arctic ringed seal.[67]

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[60] *Id.* § 1532(20).

[61] *Id.* § 1532(6).

[62] *In re Polar Bear Endangered Species Act Listing & § 4(d) Rule Litig.*, 794 F. Supp. 2d 65, 89 & n.27 (D.D.C. 2011), *aff'd on other grounds*, 709 F.3d 1 (D.C. Cir. 2013).

[63] NMFS, 77 Fed. Reg. at 76,728.

[64] *Id.* at 76,707; *see also* USFWS & NMFS, 83 Fed. Reg. at 35,196 ("Analysis of the foreseeable future should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics.").

[65] *Defenders of Wildlife v. Norton*, 258 F.3d 1136, 1143 (9th Cir. 2001) ("it simply does not make sense to assume that the loss of a predetermined percentage of habitat or range would necessarily qualify a species for listing."); *Ctr. for Biological Diversity v. Lubchenco*, 758 F. Supp. 2d 945, 955 (N.D. Cal. 2010) ("[A] downward trend in habitat by itself is not sufficient to establish that a species should be listed under the ESA.").

[66] *Alaska Oil & Gas Ass'n v. Ross*, 772 Fed. Appx. at 668.

[67] *Bennett v. Spear*, 520 U.S. 154, 176 (1997) ("[t]he obvious purpose of the requirement that each agency 'use the best scientific and commercial data available' is to ensure that the ESA not be implemented haphazardly, on the basis of speculation or surmise."); *see also* Office of the Solicitor, U.S. Department of the Interior, *The Meaning of "Foreseeable Future" in Section 3(20) of the Endangered Species Act* at 9 (Jan. 16, 2009) ("[t]he word 'likely' in the definition of 'threatened species' also supports the need for reliability rather than speculation. One may speculate about many possible outcomes, but one cannot determine that a given outcome is more likely than not without the ability to make reliable predictions.") (emphasis added); USFWS & NMFS, 83 Fed. Reg. at 35,196 ("to determine that a species is likely to become an endangered species in the foreseeable future, the Services must be able to determine that the conditions potentially posing a danger of extinction are probable. The Services will avoid speculating as to what is hypothetically possible.") (emphasis added).

In the 2012 listing decision, NMFS based its foreseeable future on the IPCC AR4 projections of climate-related habitat decline through the end of the century, but lacked the requisite scientific data to make reliable predictions about how the Arctic ringed seal would respond to this threat.[68] While NMFS relied upon scientific studies documenting localized impacts due to inadequate snow cover for lair formation,[69] there was no corresponding data demonstrating an effect on the overall population status of the of the Arctic ringed seal subspecies throughout its range. NMFS acknowledged that "[d]ata were not available to make statistically rigorous inferences how Arctic ringed seals will respond to habitat loss over time."[70]

Since the ringed seal listing decision, new information and scientific methodologies have been developed that further demonstrate NMFS cannot simply rely upon the duration of climate projections alone to establish the foreseeable future.[71] In 2017, USFWS declined to list the Pacific walrus, another ice-dependent Arctic marine mammal, as a threatened species.[72] While USFWS considered the more recent climate projections contained in the IPCC's Fifth Assessment Report ("AR5"), which also extend to the end of the century like the IPCC AR4 projections utilized in the ringed seal listing decision, USFWS determined that the foreseeable future was limited to 2060.[73] USFWS explained that it utilized ice-modeling projections at 15-year increments (one Pacific walrus generation length) to 2060 and then at 2100.[74] USFWS concluded that it could more reliably forecast Pacific walrus's population-level responses to environmental change up to 2060 (three generation lengths).[75] Based on observations of the response of Pacific walrus to the effects of climate change within the past decade, USFWS noted that the species appears to possess relatively high degrees of resiliency, representation, and redundancy which are likely the most realistic information to use when evaluating the future response of the species.[76] When considering sea ice projections for 2100, USFWS acknowledged that these forecasts were "highly uncertain,"[77] and that it had little confidence in its ability to predict behavioral and physiological adaptions and the consequences for Pacific walrus reproduction and survival that far into the future.[78] Therefore, USFWS concluded that,

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[68] NMFS stated that it "primarily evaluated important habitat features" as the basis for listing the Arctic ringed seal. NMFS, 77 Fed. Reg. at 76,708.

[69] *Id.* at 76,709-10.

[70] *Id.* at 76,728.

[71] As USFWS recently explained, "the time horizon for such analyses does not necessarily dictate what constitutes the 'foreseeable future' or set the specific threshold for determining when a species may be in danger of extinction." USFWS, 83 Fed. Reg. 14,958, 14,979 (April 6, 2018).

[72] USFWS, 82 Fed. Reg. 46,618, 46,644 (Oct. 5, 2017). Like the Arctic ringed seal, USFWS identified the future effects of climate change (sea-ice loss) as the most significant threat to the Pacific walrus. *Id.* at 46,643.

[73] *Id.* at 46,643-44.

[74] MacCracken et al. 2017 at 85.

[75] *Id.*

[76] *Id.*; USFWS, 82 Fed. Reg. at 46,643.

[77] MacCracken et al. 2017 at 158.

[78] *Id.* at 85.

beyond 2060, the impacts of the effects of climate change and other stressors on the Pacific walrus population "are based on speculation, rather than reliable prediction."[79]

The Petitioners note that a recent publication, Reimer et al., relies on demographic modelling parameters in an effort to explore the effects of future ice and snow forecasts on the population size and structure of ringed seals in a discrete area of eastern Canada through 2100.[80] Based on an acknowledged lack of baseline population estimates and reliance on unsubstantiated assumptions, this study should not be considered as the best available science when assessing the listing status of the Arctic ringed seal. First, the use of limited, harvest-based data from Amundsen Gulf and Prince Albert Sound, Canada is not reflective of the population size and structure of the ringed seal subspecies throughout the Arctic. Second, the modelling results are negatively influenced by the exclusive use of Representative Concentration Pathway ("RCP") 8.5, the worst-case emissions scenario, as the primary framework in an effort to provide an "optimistic detection baseline."[81] Third, the findings of this paper, and another study focused on ringed seals in Hudson Bay,[82] are not corroborated by data collected since 2012 from the more productive Bering and Chukchi Seas off Alaska which demonstrate that the response of the Arctic ringed seal to environmental conditions is currently positive.[83] Finally, both Canadian papers recognize that the lowest ringed seal productivity occurred during late sea ice break-up years. In contrast, sea ice is currently breaking up earlier and there are a high proportion of pups surviving past weaning, indicating that snow accumulation remains sufficient for lair formation or that ringed seals are successfully producing pups without lairs.

NMFS should adopt USFWS's methodology from the Pacific walrus decision when determining the foreseeable future for the Arctic ringed seal because it reflects the best available science regarding the analysis of the effects of climate change on an Arctic marine mammal. Applying the three-generation approach to the Arctic ringed seal, which has a generation time of approximately 12 years, would yield a foreseeable future that extends to about 2055. As explained in Section B(1) below, this also corresponds to the time period when the IPCC AR5 climate projections are most reliable, with the least amount of variability between projection scenarios. Similarly, as the USFWS did in the Pacific walrus decision, NMFS should rely on the scientific research that has become available since the 2012 listing decision to inform and assess the resiliency and response of the Arctic ringed seal to projected climate change effects within this time period. These data demonstrate that Arctic ringed seals are more resilient than

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[79] USFWS, 82 Fed. Reg. at 46,644. The USFWS concluded that, "while the Pacific walrus will experience a future reduction in availability of sea ice, resulting in reduced resiliency and redundancy, we are unable to reliably predict the magnitude of the effect and the behavioral response of the Pacific walrus to this change, and we therefore do not have reliable information showing that the magnitude of this change could be sufficient to put the subspecies in danger of extinction now or in the foreseeable future. At this time, sufficient resources remain to meet the subspecies' physical and ecological needs now and into the future. Therefore, we find that listing the Pacific walrus as an endangered or threatened species under the Act is not warranted at this time." *Id.*

[80] Reimer et al. 2019 at 2.

[81] *Id.* at 19.

[82] Ferguson et al. 2005 at 130-31.

[83] Bryan et al. 2019.

previously assumed by NMFS, and are generally healthier during a period of warmer temperatures than in previous cooler periods.[84]

Finally, although the IPCC AR5 projections extend to 2100, there are no data available to allow NMFS to reliably predict the magnitude of any climate-related effects or the corresponding responses of the Arctic ringed seal that far into the future. The available data do not allow NMFS to determine the responses of Arctic ringed seals through 2100, and the data similarly do not allow for an assessment of whether any climate-related impacts would be sufficient to cause the subspecies to become in danger of extinction beyond 2055. As a result, the time period for projections about effects to habitat from climate change and the responses of the Arctic ringed seal to those potential effects does not extend beyond 2055.

B. Subsequent Investigations Demonstrate that NMFS Erred in Projecting the Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range (Listing Factor A)

(1) New Information from IPCC AR5 Supports Revised Assessment of Habitat Threats

Since the 2012 listing of the Arctic ringed seal, the Coupled Model Intercomparison Project Phase 5 ("CMIP5") produced simulations of future climate for the IPCC's AR5. These modeling projections of future sea ice and snow cover conditions reflect considerable divergence after mid-century, which is more pronounced in high-latitude areas. Due to the high degree of uncertainty associated with long-term climate projections, habitat conditions can only be reliably projected during the time period when there is a negligible difference between the projection scenarios (i.e., 2036-2055). In addition, there is new information demonstrating that the 2012 listing decision overestimated the magnitude of future declines in snow cover.

The IPCC's AR5 climate projections involve using different scenarios expressed as RCPs, which represent four possible futures, based on economic activity and regulatory frameworks and their influence on greenhouse gas emissions. Specifically, the RCPs represent the cumulative impact on radiative forcing ($W\ m^{-2}$) linked to increased greenhouse gasses by the year 2100, relative to pre-industrial radiative forcing. The four scenarios used most often are RCP2.6, RCP4.5, RCP6.0, and RCP8.5, with the number representing the increase in radiative forcing and not surface temperature. RCP2.6 represents the development of greener technologies under a more strictly regulated policy environment, and RCP8.5 represents the continuation of current growth trends, with little technological development and little regulation.

Due to the significant variability between the RCP scenarios, particularly in high-latitude areas, the IPCC AR5 projections cannot reliably predict habitat conditions beyond the middle of this century. The near-term (2016-2035) projections of climate under a moderately forced scenario (RCP4.5) show modest warming of surface temperature when compared to 1986-2005 means, under which most areas of the globe (including the Alaska region) would experience a

[84] Crawford et al. 2015 at 139-41.

temperature increase of less than 2° C in the winter and summer seasons.[85] By mid-century (2036-2055), the difference between RCP2.6 and RCP8.5 model projections in the Alaska region is about 1.0-1.5° C.[86] Extending farther into the future, long-term climate projections show much larger variability in projected surface temperature changes by the late 21st century period (2081-2100). For the Alaska region, the IPCC AR5 projects surface temperature increases with a spread in range from about 2°C (under RCP2.6), to 5-7°C (under RCP8.5).[87] These data demonstrate that there is considerable variability in future climate scenarios, and that there is greater uncertainty in any projection of high-latitude surface temperatures compared to the rest of the globe, especially for the late 21st century. The higher end projections are consistent with those used in the more recent national assessment.[88]

Moreover, projections of future habitat conditions will also be informed by the selection of the appropriate RCP scenario. In the listing analysis for the Arctic ringed seal, NMFS assumed that a status quo GHG emissions scenario would continue to occur, which would correspond to projections under RCP8.5 of the IPCC AR5.[89] However, contrary to the RCP8.5 scenario, new information demonstrates that emission rates will not continue unabated in the future. The latest published research indicates that international and domestic policy commitments will result in the climate system following a trajectory more closely corresponding to the RCP4.5 scenario.[90]

When assessing the foreseeability of climate-related threats to the Arctic ringed seal, NMFS can only utilize the IPCC AR5 projections for a duration that allows reliable predictions to be made about future habitat conditions. While this will be dictated in part by selecting the appropriate RCP scenarios, NMFS must also determine the extent to which the conditions posing a danger of extinction are probable. Given the substantial divergence of RCP scenarios in the future, NMFS can only reasonably rely on the RCP projections to the temporal extent that there is no significant variability between the predicted climate-related habitat conditions. As explained above, the RCP modeling scenarios are relatively consistent through mid-century (2036-2055), which establishes the maximum possible duration of the foreseeability of the threat.[91]

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[85] IPCC 2013 at 982 (Fig. 11.10). Notably, the standard deviation of the model projected temperature increase is as large as the model projected temperature increases themselves, indicating very low confidence in the projected values for surface temperature. For example, in the Alaska region, fewer than 90% of the model projections under this scenario agree on the sign of the temperature change.

[86] *Id.* at 1006 (Fig. 11.24b).

[87] *Id.* at 1059 (Fig. 12.9), 1063 (Fig. 12.11).

[88] Markon et al. 2018 at 1192.

[89] NMFS 2016 at 3. The RCP8.5 scenarios show the most extreme surface temperature increases as being due to the least "favorable" set of socioeconomic conditions and, as such, represents an upper bound for surface temperature projections.

[90] Salawich, R. et al. 2017 at 115.

[91] The identification of a threat is not solely determinative of the duration of the foreseeable future. NMFS must explain the extent to which it can reasonably determine that both the future threats and the species' responses to those threats are probable. USFWS & NMFS, 83 Fed. Reg. at 35,195.

In addition, notwithstanding the constraints on foreseeability, new information demonstrates that the 2012 listing decision overestimated the magnitude of future declines in snow cover.[92] While the relevant IPCC AR5 models appear to do an adequate job of representing snow cover for the period 1980-2005, for the Alaska region, the models may overestimate snow cover in the fall season and underestimate snow cover in the spring season.[93] Extending into the future, changes in seasonal snow cover for the period 2081-2100 mainly reflect a shorter duration in the snow-cover season for the Northern Hemisphere overall.[94] During the winter, snow cover may actually be thicker due to increased precipitation amounts, or it may be less thick in places where more of the winter season precipitation falls as rain. The spring season (March-April) shows snow cover losses ranging from as low as 3%, using the RCP2.6 scenarios (range 3-11%), to 33%, using the RCP8.5 scenarios (range 17-33%).[95] The mid-range RCP4.5 scenarios show a spring season snow-cover loss of 10-20%. A more recent paper, focusing on snowfall equivalent ("SFE") in the State of Alaska, shows annual increases for the interior and northern areas of up to 11% during the 2020s for the RCP4.5 scenarios, and these values are not much different for the RCP8.5 scenarios.[96] Many areas (such as the North Slope) that show increases in SFE during the 2020s still show increases in SFE by the 2080s.[97] Finally, the largest projected decreases in SFE take place in the early (September-November) and late snow seasons (March-May).[98] During the winter season (December-February), there will be little to no decreases in the projected SFE or snow cover under more optimistic projection scenarios, and any winter decreases in SFE will be smaller than spring or fall under the least optimistic projection scenarios.[99]

(2) New Information Demonstrates that Ringed Seals Are Not Likely to be in Danger of Extinction Due to Changes in Habitat

NMFS's decision to list the Arctic ringed seal was predicated upon the assumption that climate-related habitat declines would cause the subspecies to become in danger of extinction. However, new information demonstrates that the subspecies has not been adversely affected by climate-related habitat conditions. The Arctic environment has experienced declining sea ice and warmer temperatures in recent decades. The fastest sea-ice loss in the Alaska region is occurring in late summer and autumn, decreasing at 3.5-4.1% per decade since 1979.[100] This region has also experienced a lengthening of the sea-ice melt season since 1979 (by about 20-30

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[92] Snow cover takes into account snow depth, snow water equivalent, snow depth and roughness length, and orography. Nitta, T. et al. 2014 at 3319. Thus, snow cover is empirically related to snow depth among other factors.

[93] Thackeray, C.W. et al. 2015.

[94] IPCC 2013 at 1092.

[95] *Id.*

[96] Littell, J.S. et al. 2018 at 7.

[97] *Id.*

[98] *Id.*

[99] *Id.*

[100] USGCRP 2017 at 305.

days).[101] In some areas of the Bering Sea, snow depths are currently assumed to be insufficient for ringed seal lair formation and therefore pup survival.[102] However, observations indicate that ringed seals in the Kotzebue Sound region may sometimes give birth on the surface of the sea ice. In addition, the observed changes in sea ice extent and duration have not resulted in detectable corresponding reductions in ringed seal population size or effects to ringed seal population health,[103] contradicting the assumptions made in the listing decision.

New population data demonstrates that the Arctic ringed seal population remains at high levels, and do not reflect a climate-related population decline. Aerial surveys of ringed seal populations in Alaska waters estimated that there were 170,000 ringed seals in the U.S. portion of the Bering Sea.[104] This study noted that the actual number of ringed seals in this area is likely to be higher by a factor of two or more because the survey did not account for seals in the water or for seals in areas that were not covered by the survey (i.e., seals on shorefast ice).[105] These same surveys also estimated more than 300,000 ringed seals in the U.S. portions of the Chukchi and Beaufort Seas. Actual numbers are likely to be higher because surveys in the Beaufort Sea were limited to within 40 km of shore.[106] None of the current global estimates of Arctic ringed seal abundance are below 2 million, and they range up to 7 million.[107]

The Arctic ringed seal population remains healthy despite observed changes in habitat. New studies since the listing decision demonstrate that ringed seals in the Bering and Chukchi Seas have not exhibited declines in body condition, growth, or pregnancy rate, and the age at maturity is younger than in previous decades.[108] These observations are all indications of a positive response to environmental conditions.[109] In addition, these studies provide an index for assessing pup survival in changing sea-ice conditions. The results demonstrate that the proportion of pups occurring in the harvest is high, and that pups are surviving to weaning in current ice and snow conditions.[110] These studies also indicate that: (1) the 2012 listing decision was based on erroneous assumptions because there is no direct correlation between observed habitat declines and detrimental effects on the health of the Arctic ringed seal population; and (2) ringed seals have greater resilience to environmental changes than anticipated. ADF&G and the

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[101] *Id.* at 307.

[102] Kelly et al. 2010 at 84.

[103] Crawford et al. 2015 at 133.

[104] Conn et al. 2014 at 1289.

[105] *Id.*

[106] Muto et al. 2017 at 64.

[107] We note that the 2016 IUCN Assessment suggests that the Arctic ringed seal population is 1,450,000. Lowry, L. 2016 at 4. However, this estimate does not reflect the total population size because it is for mature individuals only, and does not include pups and juveniles. In a stable population, about 54% of the individuals are pups, 29% are juveniles, and 17% are mature adults. Extrapolating from the IUCN Assessment to reflect this life stage distribution would yield a total population estimate of 8.5 million ringed seals.

[108] Crawford et al. 2015 at 133.

[109] A study of Arctic ringed seals in Hudson Bay, where significant reductions and sea ice extent and snow depth have occurred, indicates that the population was growing in the 2000s. Chambellant et al. 2012 at 267.

[110] Crawford et al. 2015 at 141.

North Slope Borough continue to monitor these population health indices, which indicate that the response of the subspecies to environmental conditions is currently positive. Because these studies can also detect when the subspecies' response becomes negative, a new assessment of the Arctic ringed seal population size and structure could be conducted at that time.

(3) New Information Demonstrates that the Effects of Ocean Acidification on Arctic Ringed Seals Cannot be Reliably Predicted

In its 2012 listing decision, NMFS noted that a secondary concern is the modification of habitat by ocean acidification, which may alter Arctic ringed seal prey populations and other important aspects of the marine ecosystem.[111] NMFS also recognized that there is limited understanding of planktonic and benthic calcifers in the Arctic, which means that future changes regarding these organisms will be difficult to detect and evaluate.[112]

New information since the listing decision indicates that the waters of the Arctic and adjacent seas remain vulnerable to ocean acidification. However, there is a significant degree of uncertainty regarding the impacts of ocean acidification on Arctic ringed seals and other species, and the magnitude of any potential impacts on the species at issue—or their responses—is unknown. As the USFWS summarized in its May 2017 Species Status Assessment for the Pacific Walrus:

> The extended open water season projected for the Bering and Chukchi seas . . . will increase the potential for CO2 absorption in the region over the next century (Mathis et al. 2015, p. 123). However, increases in production via phytoplankton photosynthesis and warmer ocean temperatures may mitigate undersaturation to some extent (Bates and Mathis 2009, p. 2451; Cai et al. 2010, p. 556). Thus, researchers emphasize uncertainty on the magnitude, spatial extent, and temporal scale at which undersaturation may occur in the Arctic (Steinacher et al. 2009, p. 530). Qi et al. (2017, p. 197) concluded that if trends observed from 1994-2010 continued, the entire Arctic Ocean would be undersaturated in aragonite in about 20 years to a depth of 250 m. However, spatial and temporal variation is also likely to persist and changes in ocean circulation patterns could reverse the trend (Qi et al. 2017, p. 197).
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> Mathis et al. (2015, p. 126) used the observed range of variability in aragonite saturation to estimate when conditions may become detrimental to marine calcifiers in the Bering and Chukchi seas. Those model projections indicate that aragonite saturation will fall below minimum levels of natural variability based on the average for 2012 by 2044 in the Bering Sea and 2027 in the Chukchi Sea, and below the minimum observed for any month in 2012 by 2085 and 2059, respectively (Mathis et al. 2015, p. 132). The projected years when aragonite saturation reaches the <1 threshold are 2062 for the Bering Sea and 2033 for the

[111] NMFS, 77 Fed. Reg. at 76,708.

[112] *Id.* at 76,710-11.

> Chukchi Sea. Aragonite undersaturation states will likely be reached sooner in the Chukchi Sea and may occur by 2027 (Mathis et al. 2015, p. 132).
>
> The best available information suggests that many calcifying invertebrates will be negatively impacted by [ocean acidification], but the magnitude of that impact is unknown. Many factors influence the severity of [ocean acidification] impacts on different species and life stages, including previous exposure to acidified seawater, natural variation in aragonite saturation, and available food resources.[113]

At this time, based on the best available information, there is no evidence demonstrating that ocean acidification is a threat to Arctic ringed seals. Based on the stomach contents of harvested seals, the diet of ringed seals in Alaska reflects a broad variety of prey species, including fish—cod (Arctic and saffron cod, and walleye pollock), rainbow smelt, herring, sculpins, snailfish, pricklebacks, and flatfish—and invertebrates such as shrimp, amphipods, and mysids.[114] The breadth of the ringed seal's diet increases the likelihood that the species will be resilient to changing environmental conditions and potential shifts in prey populations, which will moderate any impacts associated with ocean acidification. Based on existing information, it is not possible to make reliable predictions about the effects of ocean acidification on the Arctic ringed seal population within the foreseeable future.

C. New Information Confirms that Overutilization for Commercial, Recreational, Scientific, or Educational Purposes Is Not a Threat to the Arctic Ringed Seal (Listing Factor B)

In 2012, NMFS concluded that there was "no evidence that overutilization of ringed seal is occurring at present."[115] NMFS noted then that subsistence harvest of Arctic ringed seals is substantial in some regions, but that harvest levels seem sustainable. NMFS also noted that recreational, scientific, and educational uses of ringed seals are minimal and are not expected to increase in the foreseeable future. The commercial harvest of ringed seals is prohibited in United States waters.

New information through 2018 on the number of Arctic ringed seals harvested for subsistence purposes continues to demonstrate that harvest is not a threat to the species. Ringed seals are an importance subsistence resource for coastal Alaska Natives. Recent analyses by the Alaska Department of Fish and Game for 55 villages in Western and Northern Alaska estimated that the subsistence harvest is well below the sustainable harvest level for Arctic ringed seals in U.S. waters.[116] Therefore, the newest information confirms that overutilization is not a threat to the species.

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[113] MacCracken et al. 2017 at 101-02 (internal citations in original).

[114] Quakenbush et al. 2011 at 23; Crawford et al. 2015 at 138.

[115] NMFS, 77 Fed. Reg. at 76,711.

[116] The maximum estimated potential biological removal ("PBR") level was calculated to be 2.5 percent using abundance estimates of 300,000 in a portion of the Chukchi and Beaufort Seas and 170,000 in the U.S. portion of the Bering Sea for a total of 470,000 ringed seals. Conn et al. 2014 at 1289; Muto et al. 2017 at 64. Levels of PBR of 3.0 percent or below are considered sustainable. Nelson et al. In review.

D. No Evidence that Disease or Predation Pose a Threat to the Arctic Ringed Seal (Listing Factor C)

The listing of the ringed seal was not based on threats related to disease or predation. In 2012, NMFS stated that it "consider[ed] the potential threats to ringed seals from disease as low."[117] In 2011, elevated numbers of sick or dead ringed seals were observed in the Arctic and Bering Strait regions, which led to NMFS denoting it as an "unusual mortality event."[118] However, disease surveillance efforts in 2012-2013 detected few new cases, and no specific cause for the disease has been identified.[119] The nationwide Working Group on Marine Mammal Unusual Mortality Events closed this pinniped unusual mortality event in June 2018 because the criteria under which it was declared are no longer occurring. There is no current evidence that disease is a threat to the species.

Ringed seals are prey for several species, including polar bears, wolves, foxes, gulls, and ravens. In 2012, NMFS concluded that the threat to ringed seals from predation was moderate, but was expected to increase as snow and sea ice conditions change with a warming climate.[120] While predation of ringed seals is expected to continue as part of natural ecosystem functions, there is no information indicating a future increase in the likelihood or severity of ringed seal predation. Therefore, predation does not pose a threat to the Arctic ringed seal.

E. Regulatory Mechanisms Adequately Address Threats to the Arctic Ringed Seal (Listing Factor D)

In 2012, NMFS concluded that current regulatory mechanisms do not effectively regulate greenhouse gas emissions ("GHG") emissions.[121] Since that time, there have been significant new efforts to address GHGs and climate change at both international and domestic levels. For example, the Paris Agreement to address global GHG emissions was ratified and entered into force in November 2016. The central goal of the Agreement is to keep any increase in global temperature this century below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5°C. Pursuant to the Agreement, 181 parties (comprising 209 countries) have submitted nationally determined contributions that reflect reduced GHG emissions targets.[122] Domestically, a wide range of policies have been adopted at the state and regional levels to reduce GHGs, develop clean energy resources, promote alternative fuel vehicles, and promote more energy-efficient buildings and other applications. To date, twenty states and the District of Columbia have adopted GHG emissions targets.[123]

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[117] NMFS, 77 Fed. Reg. at 76,711.

[118] *Id.*

[119] Muto et al. 2017 at 67.

[120] NMFS, 77 Fed. Reg. at 76,711.

[121] *Id.* at 76,712.

[122] http://www4.unfccc.int/ndcregistry/Pages/All.aspx.

[123] https://www.c2es.org/content/state-climate-policy/.

Delisting the Arctic ringed seal under the ESA would not result in the removal of regulatory protections. The subspecies will continue to be protected under the Marine Mammal Protection Act ("MMPA"), which provides necessary comprehensive protections, including a moratorium on commercial and recreational harvest of the subspecies, with the exception of subsistence harvest,[124] and a broad prohibition on the "take" of Arctic ringed seals.[125] While the MMPA provides for two types of incidental take or harassment authorization, the authorizations are limited to a "small number" of marine mammals and are issued only if there will be a "negligible impact" on the species and no "unmitigable adverse impact" on the availability of the species for Alaska Native subsistence use.[126] These authorizations also will include measures to effectuate the least practicable impact on the species, its habitat, and its availability for subsistence uses, along with requirements for monitoring and reporting of takes.

In addition, through a co-management agreement with NMFS, the Ice Seal Committee ("ISC") conserves Arctic ringed seals by identifying and promoting the protection of habitat areas that are important for pupping, feeding, migrating, and other purposes. The ISC also monitors the Alaska Native subsistence harvest by recommending hunting guidelines, and by monitoring and reporting harvested seals as funding allows. Finally, the ISC also identifies industrial and commercial operations that may adversely affect ringed seal populations, and provides recommendations on how those effects may be minimized.

Through recently enacted climate regulatory mechanisms, the potential climate-based threats to the Arctic ringed seal that were identified at the time of listing have been reduced. Furthermore, following delisting, the existing non-ESA regulatory mechanisms will continue to apply and will adequately protect the Arctic ringed seal population.

F. Other Natural or Manmade Factors Are Not Affecting the Arctic Ringed Seal's Continued Existence (Listing Factor E)

In 2012, NMFS concluded that the threats posed by pollutants, oil and gas activities, fisheries, and shipping "do not individually or collectively place the [Arctic ringed seal] at risk of becoming endangered in the foreseeable future."[127] As discussed in the listing decision, projected reductions in sea-ice extent and duration may provide additional opportunities for oil and gas exploration and development and increased shipping traffic within the range of the

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[124] 16 U.S.C. § 1371.

[125] The term "take" is defined as "harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." *Id.* § 1362(13). The term "harassment" is further defined as any act of pursuit, torment or annoyance, which has "the potential to injure a marine mammal" or "the potential to disturb a marine mammal . . . by causing disruption of behavioral patterns, including but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." *Id.* § 1362(18). For comparison, under the ESA, "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19). For marine mammals, the two statutes provide similar protections, but the MMPA is generally considered to be more protective than the ESA.

[126] *Id.* § 1371(a)(5).

[127] NMFS, 77 Fed. Reg. at 76,714.

Arctic ringed seal.[128] There is no new information, however, indicating that any of these factors constitute a threat to the species.

6. CONCLUSION

Both the information newly available since the time of listing and a reanalysis of the original information demonstrate that the scientific basis for listing the Arctic ringed seal as a threatened species was erroneous. In particular, the snowfall data NMFS relied upon in its decision was speculative and unlikely to be accurate. NMFS also lacked sufficient scientific data to demonstrate a negative effect on the overall population status of the subspecies or that the population is likely to decline such that it will be in danger of extinction by 2100. New scientific data confirm that population levels of Arctic ringed seal remain in the millions. These data suggest that Arctic ringed seals are more adaptable and resilient to climate change than NMFS considered in its listing decision. While sea-ice coverage has been declining Arctic-wide since at least 1979, new scientific studies demonstrate that the population remains healthy, and that Arctic ringed seals have adjusted to changes in diet, are growing faster, and appear to be weaning more pups compared to the historical period.

Based on the best scientific and commercial data currently available, and for the reasons discussed above, delisting of the Arctic ringed seal is warranted. The projected threats associated with a climate-related decline in habitat and the corresponding effects to the Arctic ringed seal population can only be reliably projected to approximately 2055. Within this foreseeable future, there is no information demonstrating that the magnitude of effects to the species associated with projected habitat alterations is sufficient to put the Arctic ringed seal in danger of extinction. Similarly, while ocean acidification may pose a threat to prey species, there is no evidence that this is a threat to the Arctic ringed seal subspecies. Finally, a review of the most current information shows there is no new information suggesting that the other ESA criteria (overutilization, disease or predation, inadequacy of regulatory mechanisms, and other natural or manmade factors) not considered threats by NMFS in 2012 now pose a significant threat to the Arctic ringed seal.

Based on the substantial scientific or commercial information presented in this petition, the Petitioners request that NMFS make the requisite determination that delisting the Arctic ringed seal may be warranted, proceed to conduct a status review, and expeditiously publish proposed and final rules to delist the subspecies.

7. NOTICE TO STATE AGENCIES

Pursuant to 50 C.F.R. § 424.14(b), the Petitioners are required to provide notice to the State agency responsible for the management and conservation of fish, plant, or wildlife resources in each State where the species that is the subject of the petition occurs. ADF&G is the State agency responsible for the management and conservation of fish, plant, or wildlife resources in Alaska, which is the only State where the Arctic ringed seal currently occurs.

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[128] *Id.* at 76,712-14. Commercial fishing is currently prohibited in U.S. waters north of the Bering Strait. In 2017, nine countries and the European Union agreed not to conduct commercial fishing in the Central Arctic Ocean for at least the next 16 years.

ADF&G is participating as a petitioner, and believes that the petition has merit and provides substantial scientific or commercial information demonstrating that the delisting of the Arctic ringed seal is warranted.

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