List of Subjects in 14 CFR Part 71

Airspace, Incorporation by reference, Navigation (air).

The Amendment

In consideration of the foregoing, the Federal Aviation Administration amends 14 CFR part 71 as follows:

PART 71—DESIGNATION OF CLASS A, B, C, D, AND E AIRSPACE AREAS; AIR TRAFFIC SERVICE ROUTES; AND REPORTING POINTS

■ 1. The authority citation for 14 CFR part 71 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g); 40103, 40113, 40120; E.O. 10854, 24 FR 9565, 3 CFR, 1959–1963 Comp., p. 389.

§ 71.1 [Amended]

■ 2. The incorporation by reference in 14 CFR 71.1 of FAA Order JO 7400.11G, Airspace Designations and Reporting Points, dated August 19, 2022, and effective September 15, 2022, is amended as follows:

Paragraph 6011 United States Area Navigation Routes

* * * * *

T–377 Annette Island, AK (ANN) to Biorka Island, AK (BKA) [New]		
Annette Island, AK (ANN)	VOR/DME	(Lat. 55°03′37.47″ N, long. 131°34′42.24″ W)
INEPE, AK	WP	(Lat. 55°35′25.84″ N, long. 133°24′52.15″ W)
FOROP, AK	WP	(Lat. 56°05′08.84″ N, long. 134°21′39.59″ W)
Biorka Island, AK (BKA)	VORTAC	(Lat. 56°51′33.87″ N, long. 135°33′04.72″ W)

* * * * *

Issued in Washington, DC, on October 17, 2022.

Scott M. Rosenbloom,

Manager, Airspace Rules and Regulations.

[FR Doc. 2022–22781 Filed 10–25–22; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF HOMELAND SECURITY

Coast Guard

33 CFR Part 100

[Docket No. USCG–2022–0757]

Special Local Regulations; Marine Events Within the Seventh Coast Guard District

AGENCY: Coast Guard, Department of Homeland Security (DHS).

ACTION: Notification of enforcement of regulation.

SUMMARY: The Coast Guard will enforce a special local regulation for the Race World Offshore (RWO), Offshore World. During the enforcement period, no person or vessel may enter, transit through, anchor in, or remain within the regulated area without permission from the Captain of the Port Key West or a designated representative.

DATES: The regulations in 33 CFR 100.701 will be enforced for the location in Table 1 to § 100.701, Section (b), Item No. 4, from 10 a.m. until 4 p.m., on November 9, 11, and 13, 2022.

FOR FURTHER INFORMATION CONTACT: If you have questions about this notification of enforcement, call or email Lieutenant junior grade Hailye Reynolds, Sector Key West Waterways Management Division, Coast Guard; phone 305–292–8768, email *SKWWaterways@uscg.mil.*

SUPPLEMENTARY INFORMATION: The Coast Guard will enforce special local regulations in 33 CFR 100.701, Table 1 to § 100.701, Section (b), Item No. 4, for the RWO Offshore World Championship regulated area from 10:00 a.m. to 4:00 p.m. on November 9, 11, and 13, 2022. This action is being taken to provide for the safety of life on navigable waterways during this 3-day event. The regulation for this marine event within the Seventh Coast Guard District, § 100.701, Table 1 to § 100.701, Section (b), Item No. 4, specifies the location of the regulated area for the RWO Offshore World Championship which encompasses a portion of the Atlantic Ocean located southwest of Key West, Florida. During the enforcement period, all persons and vessels, except those persons and vessels participating in the high-speed boat races, are prohibited from entering, transiting through, anchoring in, or remaining within the regulated area without obtaining permission from the Captain of the Port Key West or a designated representative.

In addition to this notification of enforcement in the **Federal Register**, the Coast Guard plans to provide notification of this enforcement period via the Local Notice to Mariners, marine information broadcasts, or both.

Dated: October 20, 2022.

Jason Ingram,

Captain, U.S. Coast Guard, Captain of the Port Key West.

[FR Doc. 2022–23249 Filed 10–25–22; 8:45 am]

BILLING CODE 9110–04–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–HQ–ES–2021–0043; FF09E21000 FXES1111090FEDR 232]

RIN 1018–BF35

Endangered and Threatened Wildlife and Plants; Threatened Species Status for Emperor Penguin With Section 4(d) Rule

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine threatened species status under the Endangered Species Act of 1973 (Act), as amended, for the emperor penguin (*Aptenodytes forsteri*), a flightless bird species from Antarctica. This rule adds the species to the List of Endangered and Threatened Wildlife. We also finalize a rule issued under the authority of section 4(d) of the Act that provides measures that are necessary and advisable to provide for the conservation of this species.

DATES: This rule is effective November 25, 2022.

ADDRESSES: The final rule is available on the internet at *https://www.regulations.gov* under Docket No. FWS–HQ–ES–2021–0043. Comments and materials received, as well as supporting documentation we used in preparing this rule, are available for public inspection at *https://www.regulations.gov* under Docket No. FWS–HQ–ES–2021–0043.

FOR FURTHER INFORMATION CONTACT: Elizabeth Maclin, Chief, Branch of Delisting and Foreign Species, Ecological Services Program, U.S. Fish and Wildlife Service, MS: ES, 5275 Leesburg Pike, Falls Church, VA 22041–

3803 (telephone 703–358–2171). Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species warrants listing if it meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become endangered within the foreseeable future throughout all or a significant portion of its range). If we determine that a species warrants listing, we must list the species promptly and designate the species' critical habitat to the maximum extent prudent and determinable. We have determined that the emperor penguin meets the definition of a threatened species; therefore, we are listing it as such. Designating a species as an endangered or threatened species can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process.

What this document does. This rule lists emperor penguin (*Aptenodytes forsteri*) as a threatened species. This document also finalizes a rule issued under the authority of section 4(d) of the Act that provides measures that are necessary and advisable to provide for the conservation of emperor penguin.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that climate change (Factors A and E) presents the most substantial threat facing the emperor penguin. Other stressors on the species include tourism and research, contaminants and pollution, and commercial Antarctic krill fisheries (Factor E), but these stressors are not considered to be driving factors of the emperor penguin's viability now or in the foreseeable future.

Previous Federal Actions

On August 4, 2021, we published in the **Federal Register** (86 FR 41917) a proposed rule to list the emperor penguin as a threatened species under the Act (16 U.S.C. 1531 *et seq.*) with a rule issued under section 4(d) of the Act (''4(d) rule'') that provides measures that are necessary and advisable to provide for the conservation of emperor penguin. Please refer to that proposed rule for a detailed description of previous Federal actions concerning this species.

Summary of Changes From the Proposed Rule

In this final rule, we make no substantive changes from the August 4, 2021, proposed rule (86 FR 41917) after considering the comments we received during the comment period.

Summary of Comments and Recommendations

In the August 4, 2021, proposed rule (86 FR 41917), we requested that all interested parties submit written comments on the proposal by October 4, 2021. We also contacted appropriate Federal agencies, scientific experts, and other interested parties and invited them to comment on the proposal. We did not receive any requests for a public hearing. All substantive information we received during the comment period has either been incorporated directly into this final determination or is addressed below.

Peer Reviewer Comments

As discussed in Supporting Documents, below, we received comments from six peer reviewers. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the information contained in the SSA report. The peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions to improve the final SSA report. Peer reviewer comments are addressed in the following summary and were incorporated into the final SSA report as appropriate.

Comments from peer reviewers provided general technical corrections, provided updates on the status of the species or sea-ice conditions at breeding colonies, and clarified processes that affect sea-ice conditions and variability around Antarctica. The most substantial comment from peer reviewers was that comparing the existing low-, moderate-, and high-emissions scenarios from the published literature could be difficult because the projections of the emperor penguin population used different modeling techniques to simulate the sea-ice conditions. Therefore, the SSA report includes an addendum with additional simulations of the emperor penguin population under existing Intergovernmental Panel on Climate Change (IPCC) climate-change scenarios using the Community Earth System Model to compare low-, moderate-, and high-emissions scenarios using the same modeling techniques (*see* Jenouvrier *et al.* 2021).

Public Comments

We also considered all comments and information we received from the public during the comment period for the proposed listing of the emperor penguin. We did not consider comments that were outside the scope of this rulemaking.

Issue: Best Available Science

Comment (1): One commenter shared their view that the Service, in listing the emperor penguin under the Act, is taking an advocacy position and using the species as a poster child for climate change. The commenter went on to suggest that emperor penguin populations are not in jeopardy and will not be so until well into the future.

Response: Because the Service was petitioned to evaluate the status of the emperor penguin under the Act, we must respond to the petition according to the requirements in the Act and our implementing regulations. In doing so, we evaluated the best scientific and commercial information available on the present and future status of the emperor penguin and its habitat as required by the Act. In making a determination as to whether a species meets the Act's definition of an endangered or threatened species, section 4(b)(1)(A) of the Act states that the Secretary shall make the determination ''solely'' on the basis of the best scientific and commercial data available. Other considerations cannot, by law, enter into the determination.

The emperor penguin is currently in high condition with high resiliency, redundancy, and representation. Emperor penguin breeding colonies are distributed around the continental coastline of Antarctica with no indication that their distribution is presently decreasing. The satellite record over 40 years (from 1979 to 2018) reveals that the sea-ice extent in the Southern Ocean is currently within its natural range of variability. Thus, we determined that the emperor penguin is not endangered. However, we determined that the emperor penguin is likely to become endangered in the

foreseeable future in a significant portion of its range, primarily because of climate change and the negative effect warming temperatures are projected to have on the fast ice that emperor penguins require for breeding. Therefore, our review of the best available scientific and commercial information indicates that the emperor penguin meets the Act's definition of a threatened species.

Comment (2): One commenter stated that the best available science we used as our basis to propose to list the emperor penguin as a threatened species under the Act is the same that we used in our previous not-warranted finding on December 18, 2008 (73 FR 77264). The commenter further stated that the only difference in our analysis is our ability to now assess emperor penguin colony size using high-resolution satellite imagery.

Response: Since our 2008 assessment of the emperor penguin's status, a substantial amount of new scientific information has become available. The use of satellite imagery has greatly increased the ability to assess emperor penguin colony sizes and locations. Additionally, between the not-warranted finding published on December 18, 2008 (73 FR 77264), and the proposed rule published on August 4, 2021 (86 FR 41917), climate-change modeling has advanced, as has the ability of experts to estimate future impacts and risks of climate change. Experiments, observations, and models used to estimate future impacts and risks from climate change have improved. For Antarctica, newer generations of climate models continue to improve in their ability to represent historical sea-ice conditions, thus increasing confidence in model projections. Published literature modeling the effects of climate change on emperor penguins, as well as research regarding the emperor penguins' life history, dispersal capabilities, genetic distribution, and loss or movement of colonies has also become available (*e.g.,* Jenouvrier *et al.* 2012, 2014, 2017, 2020; Ainley et al. 2010; Younger *et al.*, 2015, 2017; LaRue et al. 2015; Cristofari et al. 2016). Therefore, we included new data in our analysis of the emperor penguin that was not available or considered in the previous not-warranted finding (73 FR 77264; December 18, 2008).

Comment (3): One commenter stated that the decision to list the emperor penguin is based on conjecture. The commenter also stated that the last demographic data collected on the emperor penguin occurred at one colony (low latitude Pointe Géologie) more than 20 years ago, no demographic data have been added since that time, and only a few additional studies have contributed to what we know of the foraging range and sea-ice habitat association of the species and of the species' diet.

Response: In accordance with section 4 of the Act, we are required to use the best scientific and commercial data available when listing a species under the Act. The best available information incorporates demographic parameters from the population at Pointe Géologie in Terre Adélie. This colony was monitored from 1952–2000. Therefore, even though the demographic data may have been collected 20 years ago, that almost 50 years of monitoring generated the longest data set available on an Antarctic marine predator (Barbraud and Weimerskirch 2001, p. 183). Because the vast majority of colonies have not been visited, are not practical to visit, and likely will not be visited or be part of long-term studies, demographic parameters must be based on a reasonable extrapolation of the data from Pointe Géologie to conduct a population viability analysis, given the absence of demographic data from the vast majority of other colonies.

Comment (4): One commenter disputed our assessment that there has only been a slight increase in Antarctic sea ice observed because millions of square kilometers of sea ice have been added to the Southern Ocean since 1979, when satellites first began to monitor sea-ice extent.

Response: The species status assessment (SSA) report includes data that analyzed the changes of sea ice over a 40-year timeframe, from 1979–2018 (Parkinson 2019, p. 14414). According to that analysis, the yearly sea-ice extent in the Southern Ocean, which includes the low sea-ice years, has a small, but statistically insignificant, positive trend over the 40 years from 1979–2018 (11,300 +/− 5,300 square kilometers per year (km^2/y)). Additionally, the SSA report includes the graphical representations and a brief description for each of the five sectors around Antarctica in which the long-term trend and yearly averages of sea ice (km^2/year) are described (*see* Parkinson 2019, pp. 14416–14421). The data used to assess the sea ice come from a 40-year multichannel passive-microwave satellite record that analyzed the changes in the extent and distribution of Antarctic sea ice. This resulted in a 40-year record covering all seasons of the year and observation of large-scale changes in the Southern Ocean sea-ice cover that would not be feasible without the satellite passive-microwave data (Parkinson 2019, pp. 14414–14415).

Comment (5): One commenter said that statements about melting sea ice endangering the emperor penguin are misleading because wind determines the amount of sea ice in the Southern Ocean, and wind strength has been growing, leading to annual sea ice expansion. The commenter went on to suggest that emperor penguins evolved to live in an unstable habitat, and indications suggest the species has an unparalleled adaptability for change.

Response: While climate change is the primary threat to the emperor penguin's long-term viability, we recognize that the emperor penguin's habitat is affected by multiple factors and complex interactions between the ocean and atmosphere that affect Antarctic sea ice—it is not as simple as ''melting sea ice.'' The SSA report discusses the relationship between wind and sea-ice formation (fast ice and pack ice), wind and polynya formation and persistence, wind affecting ice thickness and stability, and instances of early break up of sea ice as it relates to emperor penguin colonies. Because the resiliency of the emperor penguin at each colony is tied to the sea-ice conditions at a particular colony, estimates of sea-ice condition and the emperor penguin population are directly related. Therefore, sea ice serves as a proxy measure of all important habitat factors for the species. Emperor penguins are highly adapted for their marine environment, have existed over millennia, and have survived previous glacial and inter-glacial periods. However, the adaptive capacity of emperor penguins is unknown. Some colonies have been temporarily located on ice shelves as opposed to typical fast ice colonies, but the species has so far shown little evidence of adaptive capacity (Younger *et al.* 2015, p. entire).

Comment (6): One commenter implied that two of the six colonies that were documented to have moved in recent years (LaRue *et al.,* 2015) did so because they are located in the immediate neighborhood of two major national research bases with associated human activity and disturbance (Dumont d'Urville and Halley Bay).

Response: We are not aware of any information to indicate that human activity at the national research bases caused emperor penguins to move from the Halley Bay colony and the Dumont d'Urville Station in Terre Adélie (Pointe Géologie) colony to other nearby colonies. As the comment indicates, six documented cases exist of an entire breeding colony moving or new colonies being established for various reasons (LaRue *et al.,* 2015, p. 115). The movement of emperor penguins from

the Pointe Géologie colony is likely due to an abnormally warm period and the lowest sea-ice extent recorded at this location, which caused the population to decline by 50 percent (Barbraud and Weimerskirch 2001, p. 183; Jenouvrier *et al.,* 2012, p. 2766). The population has stabilized since the decline and exists as a smaller population size compared to pre-decline population size.

The loss of the Halley Bay colony was tied to poor sea-ice conditions in 2016. Sea ice broke out early and resulted in total breeding failure. Emperor penguins have not successfully bred at this colony since, because sea ice that has reformed has not been strong enough, and storm events occur in October and November that blow out the sea ice early (Fretwell and Trathan 2019, p. 3; British Antarctic Survey 2019, unpaginated). The Halley Bay location may remain an unfavorable breeding location for some time because sea-ice conditions are unsuitable for breeding and the Brunt Ice Shelf is likely to calve or break off in the future (Fretwell and Trathan 2019, p. 6; NOAA 2019, unpaginated). Breeding pairs have increased at nearby Dawson-Lambton colony because some Halley Bay colony penguins relocated due to the unfavorable habitat conditions (Fretwell and Trathan 2019, p. 3).

Comment (7): A commenter stated that the Service should consider the first installment of the IPCC's Sixth Assessment Report (AR6) as the ''best available science.'' The commenter stated that the data in AR6, the release of which post-dates publication of the August 4, 2021, proposed rule, warrant reconsideration of the Service's assessments and findings that support the proposed rule because AR6 has a wider range of climate sensitivity than Coupled Model Intercomparison Project (CMIP) phase 5 (CMIP5) models, a higher average climate sensitivity than CMIP5, and the best estimates with a greater degree of confidence.

Response: We acknowledge continued advancements in experts' ability to estimate future impacts and risks of climate change, with increasing understanding across sectors and regions using Global Circulation Models. Compared to CMIP5, the projections of regional sea-ice distribution in the models have slightly improved, and the inter-model spread in projected mean sea-ice area has decreased using CMIP phase 6 (CMIP6) (Roach *et al.*, 2020, p. 6). However, issues remain, such as underestimating summer minimum sea-ice area and a larger inter-annual variability than historically observed, as well as many individual models simulating implausible mean sea-ice area. Overall, the projected rate of change in sea-ice area is similar across the three CMIP generations (CMIP phase 3 (CMIP3), CMIP5, and CMIP6), and there is moderately higher confidence in simulations of the Antarctic climate in newer CMIP generations (CMIP6 compared to CMIP3; Roach et al. 2020, p. 6). As of March 2021, most Global Circulation Model outputs were available for the CMIP6 coordinated experiment, published results of which are featured as part of AR6. However, the analysis in the SSA report used sea-ice projections under CMIP5 simulations, which was the best available information at the time we published the August 4, 2021, proposed rule. The simulations using CMIP5 not only projected the rate of change in Antarctic sea ice, but also modeled the species' response to the projected changes in sea ice (Jenouvrier et al. 2017, 2019, 2020). We do not yet have models of the species response using data from CMIP6. Thus, the output from CMIP5 model projections that we used in our analysis, which includes the species response, is the more appropriate choice for this listing determination.

Comment (8): A commenter claimed that certain published literature was not considered in the proposed rule and stated that this omission warrants reconsideration of the Service's analysis and findings. The literature includes the following: Jenouvrier *et al.* (2021), Jenouvrier *et al.* (2020), Trathan et al. (2015), and Klein *et al.* (2018).

Response: All of the relevant information from these publications was considered, and the relevant information from these publications is cited in the SSA report. The SSA report provides the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies.

Comment (9): Two commenters stated that the best available science supports an end-of-century (2100) foreseeable future for purposes of assessing the likelihood that the emperor penguin will become endangered.

Response: We looked at climate-change projections through the end of century in our analysis. In the SSA report, when applying data that considered multiple future-emissions scenarios to a listing context, the projections of the size of the global emperor penguin population begin to diverge around 2050, and by 2100, there is substantial uncertainty regarding the size of the global population, as evidenced by a difference of almost 150,000 pairs between the highest and lowest scenarios. Most of the difference between the current climate and the change in climate projected at the end of the century that will affect emperor penguin's viability will be determined by decisions made by policymakers today and during the next few decades. At this time, the uncertainty regarding the decisions that will be made by policymakers in the next few decades results in substantial variation between the projections of the emperor penguin populations at late century. Therefore, in this evaluation we identified mid-century (2050) as the foreseeable future for the threat of climate change because that is the period over which the projections about sea ice and the future condition of emperor penguins are sufficiently reliable to provide a reasonable degree of confidence in them, in light of the conservation purposes of the Act (see discussion of foreseeable future under Summary of Biological Status and Threats, below). Finally, changing the foreseeable future from 2050 to the end of the century (2100) would not change our finding that the emperor penguin is a threatened species under the Act.

Issue: Antarctic Treaty System

Comment (10): The United States, as a Party to the Antarctic Treaty, should propose the emperor penguin as a ''specially protected species.''

Response: This issue is outside the scope of this rulemaking.

Issue: Section 7(a)(2) of the Act

Comment (11): Some commenters stated that section 7(a)(2) consultation is required for activities related to harvest of krill and fish caught near Antarctica in the Commission for the Conservation of Antarctic Marine Living Resources (Commission; CCAMLR) region and for seismic surveys within penguin habitat.

Response: Whether consultation is required for activities that relate to the harvest of krill and fish or seismic surveys will depend on the application of our Section 7 implementing regulations to the facts and circumstances of the proposed action. An ''action'' that is subject to the consultation provisions of section 7(a)(2) is defined in our implementing regulations at 50 CFR 402.02 as all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. With respect to the emperor penguin, actions that may require consultation under section 7(a)(2) of the Act include harvesting Antarctic marine living resources and scientific research activities. The National Science

Foundation and National Marine Fisheries Service are the lead Federal agencies for authorizing these activities in Antarctica that may affect the emperor penguin. Given the existing conservation measures of the ACA, AMLRCA, and CCAMLR that are implemented for these activities, and obligations of the United States under the Antarctic Treaty System, we do not anticipate adverse effects to the emperor penguin (*see* discussion of section 7 under Available Conservation Measures, below).

Activities relating to harvest and importation of krill and conducting seismic activities are authorized and permitted by other Federal agencies, namely the National Marine Fisheries Service and National Science Foundation. The National Marine Fisheries Service may issue authorizations for scientific research involving the catch of fish, krill, or other taxa. They have not done so in many years. However, in the event such research is authorized, existing permit requirements are in place such that the equipment is unlikely to affect emperor penguins. Additionally, the National Marine Fisheries Service may issue permits for harvesting or transshipping any Antarctic marine living resource, along with a high-seas fishing permit. They have not issued these permits in many years and do not anticipate doing so in the near future. However, in the instance that permits for these activities are issued, the National Marine Fisheries Service must determine that certain conditions are met, including ensuring that the activities do not violate the Convention on the Conservation of Antarctic Marine Living Resources (Convention) or any conservation measures in force with respect to the United States. These permits would also require compliance with any U.S. obligations under CCAMLR conservation measures.

We are not aware of any seismic activities in Antarctica that may affect emperor penguins. The National Science Foundation is the Federal agency that manages the U.S. Antarctic Program and manages a permit system, in coordination with appropriate agencies, and issues permits under the Antarctic Conservation Act of 1978 (ACA; 16 U.S.C. 2401 *et seq.*) for certain, otherwise prohibited activities. Permits under the ACA may be issued only: (1) For the purpose of providing specimens for scientific study or scientific information; (2) for the purpose of providing specimens for museums, zoological gardens, or other educational or cultural institutions or uses; or (3) for unavoidable consequences of scientific activities or the construction and operation of scientific support facilities (see 16 U.S.C. 2404(e)(2)). Seismic surveys that may affect emperor penguins falls under the third condition (*e.g.,* scientific studies) and would require a permit.

In the 4(d) rule, we provide exceptions for certain otherwise prohibited activities that are permitted by the National Science Foundation. Importing Antarctic marine living resources and conducting seismic surveys would require authorizations and permits from the National Marine Fisheries Service and National Science Foundation, respectively. In the event such activities are authorized, the activity is anticipated to occur over a relatively brief time with negligible likelihood of interactions with emperor penguins. Additionally, these authorizations and permits are expected to have no measurable effects on emperor penguins because of existing processes and permit requirements in place under the ACA, AMLRCA, the Convention, and CCAMLR. Interactions with emperor penguins will be reported if they occur.

Issue: 4(d) Rule

Comment (12): One commenter recommended that the 4(d) rule include additional protective regulations to address climate change driven by greenhouse gas (GHG) emissions, which, the commenter stated, is the primary threat to emperor penguin survival and recovery.

Response: Our 4(d) rule applies all the section 9(a)(1)(A) prohibitions to emperor penguin, with certain narrowly tailored exceptions that are unrelated to GHG emissions. The commenter is correct that the threat of climate change driven by GHG emissions is the primary threat to emperor penguin survival and recovery, and that 4(d) of the Act requires the Secretary to issue such regulations as she deems necessary and advisable to provide for the conservation of the species. However, based on the best scientific data available we are unable to draw a causal link between the effects of specific GHG emissions and take of the emperor penguin in order to promulgate more specific regulations under 4(d).

Comment (13): One commenter recommended that the 4(d) rule incorporate all of the prohibitions against ''take'' found in section 9 of the Act in order to address all future threats to emperor penguins that were identified, specifically from fishing, shipping, resource exploitation, and other commercial activities.

Response: The 4(d) rule does prohibit take of emperor penguins. The 4(d) rule prohibits any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to the emperor penguin, except as otherwise authorized or permitted: Importing or exporting; take; possession and other acts with unlawfully taken specimens; delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; and selling or offering for sale in interstate or foreign commerce. The prohibition of take of emperor penguins applies to any person under the jurisdiction of the United States within the United States, the territorial sea of the United States, or upon the high seas. The 4(d) rule provides certain exceptions to the prohibitions, and authorizes permits in some circumstances to allow otherwise prohibited take, as discussed in the proposed rule and in this final rule below (*see* Provisions of the 4(d) Rule, below).

Issue: Paris Agreement

Comment (14): One commenter stated that the proposed rule fails to consider the Paris Agreement as a ''regulatory mechanism'' or a ''conservation measure'' under the Act.

Response: The Paris Agreement is an international treaty on climate change. It was adopted by 196 Parties at the Conference of the Parties (CoP) 21 to the United Nations Framework Convention on Climate Change in Paris, on December 12, 2015, and entered into force on November 4, 2016. The United States officially rejoined the agreement on February 19, 2021. In our August 4, 2021, proposed rule (86 FR 41917), we considered scenarios simulated to reach the goals of the Paris Agreement (where the global temperature stabilizes below 2.0 degrees Celsius (°C), and preferably at 1.5 °C, above preindustrial levels by the end of the century) as our reasonable best-case scenario of the global emperor penguin population projected into the future. In this way, our analysis analyzed the effect of the Paris Agreement as a conservation measure and regulatory mechanism.

Comment (15): One commenter stated that because of the likelihood that global policymakers will take no action to reduce GHG emissions, the Service should consider the ''worst-case scenarios'' (global warming in excess of 4.3 °C) when analyzing climate-change effects on the emperor penguin using an end-of-century foreseeable future.

Response: We considered multiple future projections of emperor penguins and sea-ice habitat based on emissions scenarios analyzed under the Coupled Model Intercomparison Project (CMIP), which is the primary source of climate information used to project impacts of GHG emissions. Therefore, to assess the current and future conditions of the emperor penguin, and to account for uncertainty in modeled projections, we considered projections that included low- and moderate-emissions scenarios, as well as a high-emissions scenario that simulated global warming up to 4.8 °C. While some experts argue for differential likelihoods for individual scenarios in published literature, each scenario pathway trajectory through 2100 is plausible (Terando *et al.* 2020, pp. 10–11).

Issue: Critical Habitat

Comment (16): One commenter asked if critical habitat will be designated for the emperor penguin.

Response: No critical habitat will be designated for the emperor penguin. Under our regulations at 50 CFR 424.12(g), we do not designate critical habitat within foreign countries or in other areas outside of the jurisdiction of the United States.

Supporting Documents

A species status assessment (SSA) report was prepared for the emperor penguin, which represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species. We sought the expert opinions of six independent and knowledgeable specialists regarding the SSA report and received responses from all six reviewers. These peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions to improve the SSA report. We also considered all comments and information we received from the public during the comment period for the proposed listing of emperor penguin.

I. Final Listing Determination

Background

A thorough review of the taxonomy, life history, and ecology of the emperor penguin is presented in the SSA report (version 1; Service 2021, pp. 2–27; available at *https://www.regulations.gov* under Docket No. FWS–HQ–ES–2021–0043).

The emperor penguin is endemic to Antarctica, and the tallest and heaviest of all living penguin species. The species breeds mainly on fast ice, which is sea ice attached or ''fastened'' to the coast, and has a pan-Antarctic distribution, meaning the species occurs around the entire continental coastline of Antarctica. Given the influence that weather and climate have in affecting the extent and duration of sea ice where the emperor penguin breeds and, relatedly, prey abundance around Antarctica, climate change is the most substantial potential threat facing the species.

As of 2020, 61 emperor penguin breeding colonies are extant. Of the 66 total known colonies, 4 were not extant or not visible in the 2019 satellite imaging, 1 colony is extirpated, and 11 of the colonies were newly discovered or rediscovered in 2019. The global population comprises approximately 270,000–280,000 breeding pairs or 625,000–650,000 individual birds. Sea ice surrounding Antarctica is described within five sectors (Weddell Sea, Indian Ocean, Western Pacific Ocean, Ross Sea, and Bellingshausen Sea-Amundsen Sea) (see figure 1, below), which may approximately correspond to the known genetic variation among colonies and the Southern Ocean as a whole. The Ross Sea and Weddell Sea sectors contain the highest abundance of birds relative to the other three sectors.

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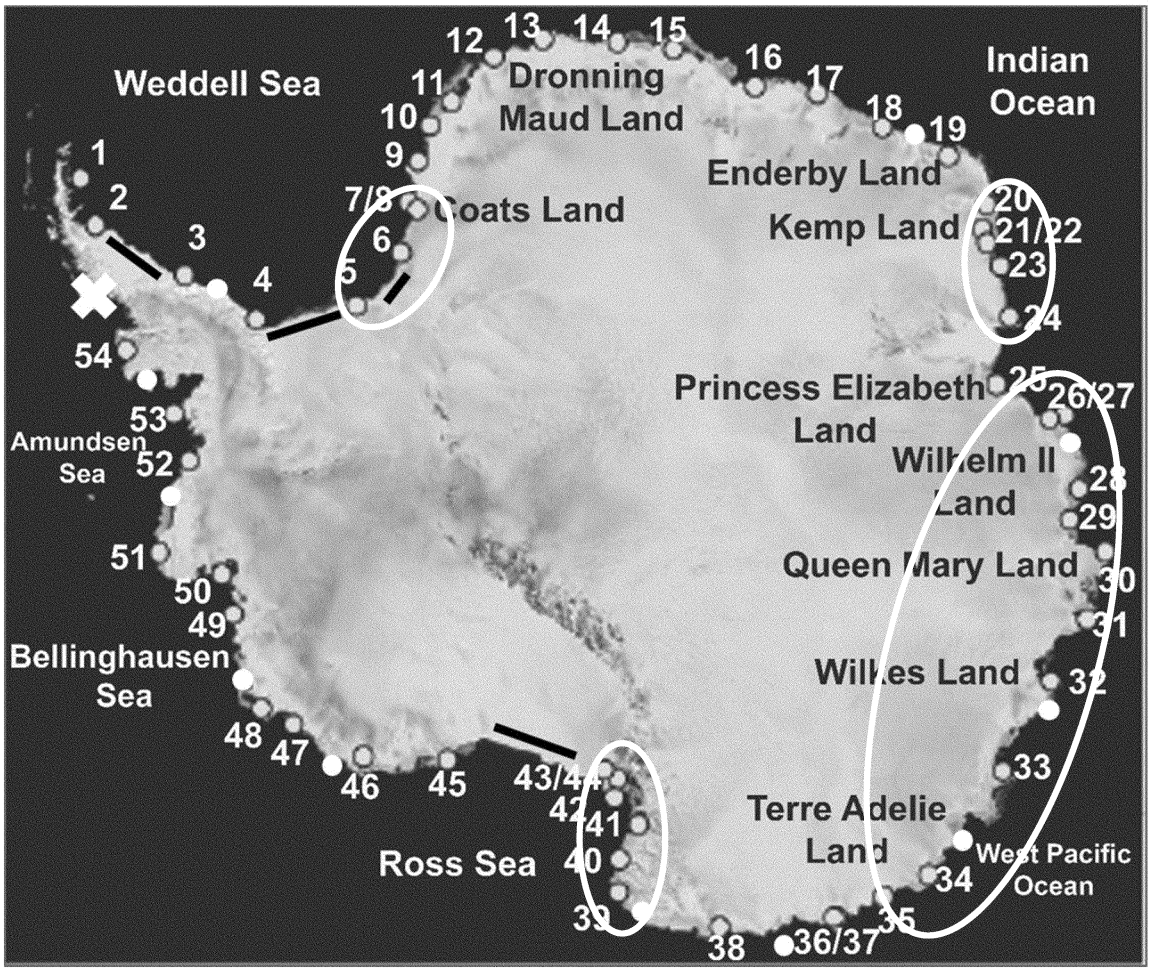

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Figure 1. Distribution of known emperor penguin breeding colonies as of 2020 (numbered dots), including four colonies that were not extant in 2019 (7, 15, 18, 37) and the extirpated Dion Islets colony with approximate location on the peninsula (marked as X). The unnumbered white dots with approximate locations are 11 colonies that were discovered or rediscovered in 2019. Black lines are the fronts of large ice shelves and probably unsuitable habitat. Four white ovals approximately represent the four known metapopulations (Credit for data and figure: Fretwell and Trathan 2009; Fretwell et al. 2012, 2014; Fretwell and Trathan 2020; Wienecke 2011; Ancel et al. 2014; LaRue et al. 2015; Younger et al. 2017; Jenouvrier et al. 2020; also *see* figures 2.1 and 2.10 in Service 2021).

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for threatened and endangered species. In 2019, jointly with the National Marine Fisheries Service, the Service issued final rules that revised the regulations in 50 CFR parts 17 and 424 regarding how we add, remove, and reclassify threatened and endangered species and the criteria for designating listed species' critical habitat (84 FR 45020 and 84 FR 44752; August 27, 2019). At the same time the Service also issued final regulations that amended the Service's general protective regulations to no longer automatically apply to species listed as threatened species after September 26, 2019 the prohibitions that section 9(a) of the Act applies to endangered species (collectively, the 2019 regulations).

As with the proposed rule, we are applying the 2019 regulations for this final rule because the 2019 regulations are the governing law just as they were when we completed the proposed rule. Although there was a period in the interim—between July 5, 2022, and September 21, 2022—when the 2019 regulations became vacated and the pre-2019 regulations therefore governed, the 2019 regulations are now in effect and govern listing and critical habitat decisions (*see Center for Biological Diversity* v. *Haaland,* No. 4:19–cv–05206–JST, Doc. 168 (N.D. Cal. July 5, 2022) (*CBD* v. *Haaland*) (vacating the 2019 regulations and thereby reinstating the pre-2019 regulations)) and *In re: Cattlemen's Ass'n,* No. 22–70194 (9th Cir. Sept. 21, 2022) (staying the vacatur of the 2019 regulations and thereby reinstating the 2019 regulations until a pending motion for reconsideration before the district court is resolved)). However, given that litigation remains regarding the court's vacatur of those 2019 regulations, we also undertook an analysis in a separate memo of whether the decision would be different if we were to apply the pre-2019 regulations. We hereby adopt the analysis in the separate memo, and we conclude that, for the reasons stated in the memo analyzing the 2019 and pre-2019

regulations, the final rule would have been the same if we had applied the 2019 or pre-2019 regulations. The analysis based on the 2019 and pre-2019 regulations is included in the decision file for this decision.

The Act defines an ''endangered species'' as a species that is in danger of extinction throughout all or a significant portion of its range, and a ''threatened species'' as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term ''threat'' to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term ''threat'' includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term ''threat'' may either encompass—together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an ''endangered species'' or a ''threatened species.'' In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, and then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an ''endangered species'' or a ''threatened species'' only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

Foreseeable Future

The Act does not define the term ''foreseeable future,'' which appears in the statutory definition of ''threatened species.'' Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term ''foreseeable future'' extends only so far into the future as the Services can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. ''Reliable'' does not mean ''certain''; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define the foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and 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. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

We considered time horizons at mid-century, late-century, and end-of-century (2050, 2080, 2100) for analyzing the future condition of emperor penguins. When applying the best available information to a listing context in considering what the foreseeable future for emperor penguins is, the projections of the global emperor penguin population begin to diverge around 2050. At 2050, population projections from all scenarios are within 50,000 breeding pairs of each other (see figure A2 in the SSA report (Service 2021, p. 83)). The differences in population estimates increases to approximately 150,000 breeding pairs by 2100, with the scenario based on representative concentration pathway (RCP) 8.5 predicting near extinction while the scenarios based on the Paris Accord commitments predict gradual declines that do not fall under 135,000 breeding pairs. Thus, after 2050, the variation in population size based on plausible global emissions trajectories results in too much uncertainty for the Service to make reliable predictions on whether the emperor penguin's response to the threat of climate change will result in the species being in danger of extinction.

Climate change is the most substantial threat to emperor penguins in the future because of an increase in air and sea temperatures that negatively affects sea-ice habitat and, relatedly, prey abundance in Antarctica. Most of the difference between the present climate and the climate at the end of the century and beyond will be determined by decisions made by policymakers today and during the next few decades (Terando *et al.,* 2020, p. 15). At this time, we have little clarity on what decisions will be made by policymakers in the next few decades. Thus, we determined the projections of sea-ice conditions and the response of emperor penguins at the late-century and end-of-century (2080 and 2100) time horizons to be too uncertain to make reasonably reliable predictions. In contrast, at the 2050 time horizon the Service's projections about sea-ice conditions and the response of emperor penguins have sufficient certainty to provide a reasonable degree of confidence, in light of the conservation purposes of the Act. Therefore, in this evaluation, we identified mid-century (2050) as the foreseeable future for the threat of climate change because that is the period over which we can make reliable predictions about the threats and the species' response to those threats. ''Reliable'' does not mean ''certain''; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions. Under this approach, since climate change and the related threats that it triggers—such as increases in air and sea temperatures that negatively affect sea-ice habitat and prey abundance in Antarctica—are still the most substantial threat to emperor penguins in the future, we evaluate how far into the future we can make reliable predictions about climate change, related increases in air and sea temperatures, consequent reductions in prey, and the responses of emperor

penguins to these threats. Most of the difference between the present climate and the climate at the end of the century and beyond will be determined by decisions made by policymakers today and during the next few decades (Terando *et al.* 2020, p. 15). At this time, we have little clarity on what decisions will be made by policymakers in the next few decades. We determined that the projections of sea-ice conditions and the response of emperor penguins at the late-century and end-of-century (2080 and 2100) time horizons are too uncertain for us to make reliable predictions. In contrast, at the 2050 time horizon, the Service can reasonably determine that both the future threats and the species' response to those threats are likely. Therefore, we identified mid-century (2050) as the foreseeable future for the threat of climate change because that is the period over which we can make reliable predictions as to sea ice and the future condition of emperor penguins. As noted above, the analysis based on the 2019 and pre-2019 regulations, including our foreseeable future analysis, is included in the decision file for this decision.

Analytical Framework

The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent a decision by the Service on whether the species should be listed as an endangered or threatened species under the Act. It does, however, provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS–HQ–ES–2021–0043 on *https://www.regulations.gov.*

To assess the emperor penguin's viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decision.

Summary of Biological Status and Threats

In this discussion, we review the biological condition of the species and its resources, and the threats that influence the species' current and future condition, to assess the species' overall viability and the risks to that viability.

Species Needs/Ecological Requirements

Emperor penguins rely on annual, stable fast ice to form breeding colonies; pack ice (belt of sea ice comprising ice floes of varying sizes that drifts in response to winds, currents, or other forces) and polynyas to forage; sufficient prey resources year-round; and areas of sea ice to haul out, molt, rest, and avoid predation.

The species hunts opportunistically and shifts foraging strategies relative to prey abundance and distribution. The life histories of emperor penguins and their primary prey species (*e.g.,* Antarctic silverfish and Antarctic krill) are tied to the sea-ice environment, and reproductive success of emperor penguins is highly dependent on foraging success. Thus, the interaction of demographic processes of reproduction and survival drives the population dynamics of emperor penguins, which are all related to the sea-ice environment.

Factors Influencing Viability of Emperor Penguins

Based on the emperor penguin's life history and habitat needs, climate change presents the most substantial threat facing emperor penguins. Other stressors on the species include tourism and research, contaminants and pollution, and commercial Antarctic krill fisheries, but these stressors are not considered to be driving factors of the emperor penguin's viability now or in the future. For a full description of our evaluation of the effects of these stressors, refer to the SSA report (Service 2021, pp. 27–45).

Climate Change

The Antarctic continent has seen less uniform temperature changes over the past 30–50 years, compared to the Arctic, and most of Antarctica has yet to see dramatic warming (Meredith *et al.* 2019, p. 212). The Antarctic Peninsula is one of the fastest warming places on Earth, warming 2.5 °C (4.5 °F) since 1950 (Meredith *et al.* 2019, p. 212). However, warming has slowed on the peninsula since the late-1990s; this variability is within the bounds of large natural decadal-scale regional climate variability (Turner *et al.* 2016, p. 7; Stroeve 2021, pers. comm.). In East Antarctica, no clear trend has emerged, although locations where some research stations occur appear to be cooling slightly (NSIDC 2020, unpaginated). The magnitude of climate change into the future depends in part on the amount of heat-trapping gases emitted globally and how sensitive Earth's climate is to those emissions, as well as any human responses to climate change by developing adaptation and mitigation policies (NASA 2020, unpaginated; IPCC 2014a, p. 17). Refer to the SSA report (Service 2021, pp. 28–40) and the August 4, 2021, proposed rule (86 FR 41917) for general climate-change-related information.

Sea ice is sensitive to both the atmosphere and ocean; thus, it is an important indicator of polar climate changes (Hobbs *et al.* 2016, p. 1543). Given the influence that weather and climate have in affecting the extent and duration of sea ice and, relatedly, prey abundance around Antarctica, climate change is a substantial threat facing emperor penguins. Changes in sea-ice conditions, due to climate change, are projected to affect the emperor penguin's long-term viability at breeding colonies throughout the species' range. Different aspects of atmospheric circulation influence the annual sea-ice extent around Antarctica (Turner *et al.* 2015, pp. 5–8). Thus,

climate change is not projected to have a uniform effect on the sea ice around the continent (Ainley *et al.* 2010, p. 56; Jenouvrier *et al.* 2014a, entire). Because sea ice in some regions of Antarctica is projected to be more affected than in other regions, emperor penguins and their breeding habitat around the continent will be affected at different magnitudes and temporal scales.

Unique to Antarctica is calving of huge, tabular icebergs, a process that can take a decade or longer by which pieces of ice break away from the terminus of a glacier (NSIDC 2020, unpaginated). On a stable ice shelf, iceberg calving is a near-cyclical, repetitive process producing large icebergs every few decades, which is part of the natural system and not a good indicator of warming or climate change (NSIDC 2020, unpaginated). However, warmer temperatures can destabilize this system, and rapid ice-shelf collapse attributed to warmer air and water temperatures, as well as increased melt on the ice surface, can affect emperor penguins, which mostly breed on fast ice at continental margins. Generally, catastrophic ice-shelf collapse or iceberg calving could cause mortality of chicks and adults, destroy a breeding colony resulting in total breeding failure, and prevent adult penguins from reaching their feeding ground affecting survival and reproductive success. For example, in March 2000, an iceberg from the Ross Ice Shelf calved and lodged near the Cape Crozier and Beaufort Island colonies in the Ross Sea, which caused habitat destruction, mortality of adults and chicks, and blocked access to foraging areas (Kooyman *et al.* 2007, p.31). The effect would depend on the time of year (season) and the breeding colony's proximity to a collapsing ice shelf or calving iceberg (Fretwell and Trathan 2019, pp. 3–6; Kooyman *et al.* 2007, pp. 31, 36–37). If a catastrophic event occurs, emperor penguins have been known to try to return to that same breeding location or relocate to another nearby site. This could result in a loss of at least one breeding season for those birds because they may not find an alternate site that season.

The effect of climate change on prey abundance, relative to changes in sea ice, for emperor penguin and other marine life in the Southern Ocean could be substantial. However, the effect of climate change on Southern Ocean pelagic primary production is difficult to determine given insufficient time series data (less than 30 years) to attribute a climate-change signature and effects may be due to a combination of climate change and natural variability (Meredith *et al.* 2019, p. 230; Ainley *et al.* 2010, p. 63). Nevertheless, the emperor penguin's primary prey species are positively tied to local sea-ice conditions, and because the penguin's breeding success is highly dependent on its foraging success, subsequent distresses to the food web because of changes in sea ice increase the risk to emperor penguins over the long term.

Current Condition

The current condition of emperor penguin is based on population abundance (*i.e.,* number of breeding pairs) at each colony and the global abundance distributed throughout the species' range. The resiliency of each emperor penguin colony is tied to local sea-ice conditions because the species depends on sea ice that offers a breeding platform to complete its annual breeding cycle and promotes primary production. As sea ice melts in the summer, it releases algae and nutrients into the water that stimulate phytoplankton blooms, which play a key role in the Southern Ocean food web (Hempel 1985, in Flores *et al.* 2012, p. 4). Therefore, the estimates of sea-ice condition and the emperor penguin population are directly related, and sea ice serves as a proxy measure of all important habitat factors for the species. Sea ice surrounding Antarctica is described within five sectors (Weddell Sea, Indian Ocean, Western Pacific Ocean, Ross Sea, and Bellingshausen Sea-Amundsen Sea) (see figure 2, below), which may approximately correspond to the known genetic variation among colonies and the Southern Ocean as a whole.

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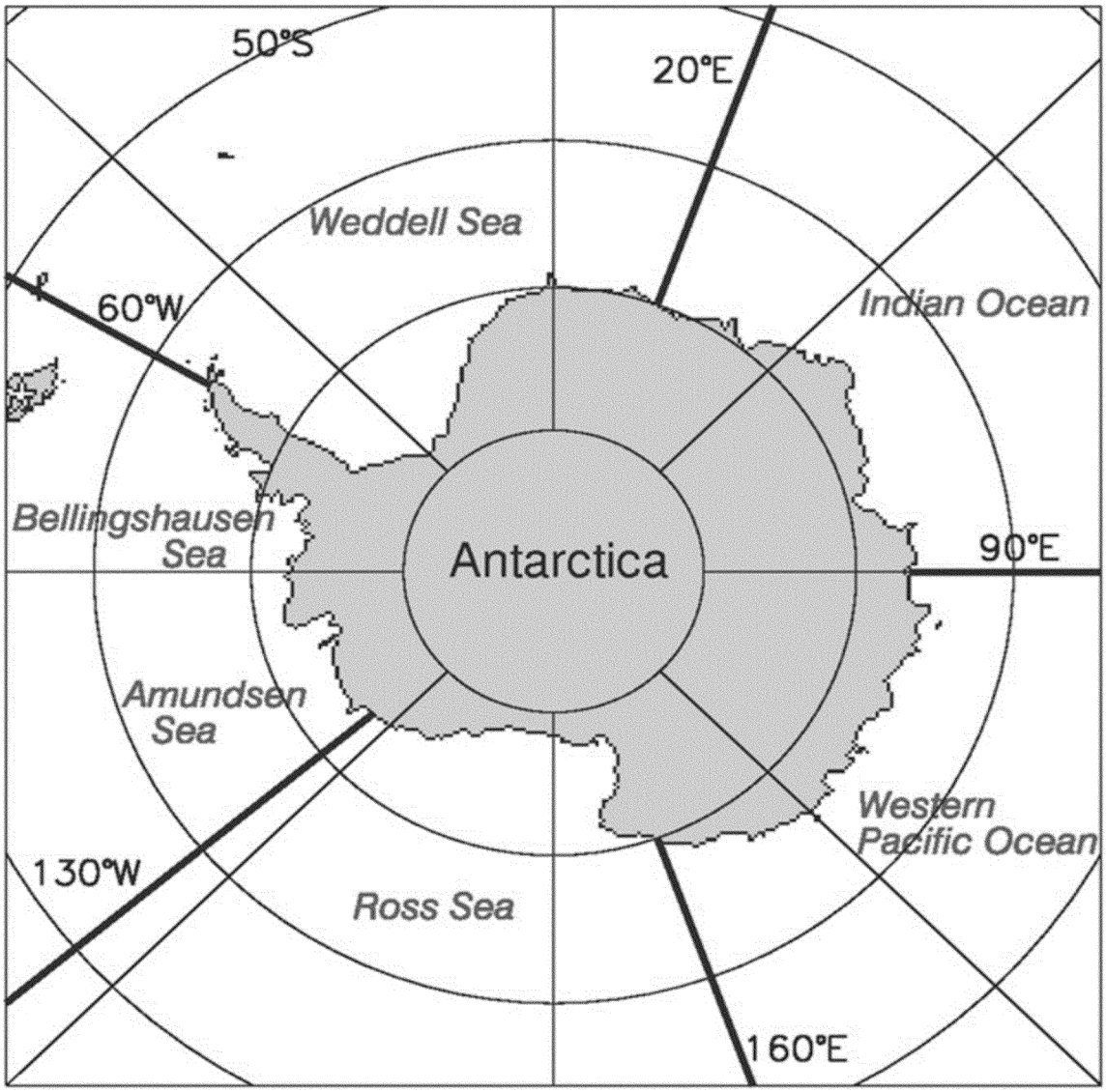

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Figure 2. Image showing the five sectors of Antarctica: Weddell Sea (60 °W–20 °E), Indian Ocean sector of the Southern Ocean (20 °E–90 °E), Western Pacific Ocean sector of the Southern Ocean (90 °E–160 °E), Ross Sea (160 °E–130 °W), and the Bellingshausen Sea-Amundsen Sea (130 °W–60 °W).

Of the 66 total known colonies in 2020, 61 emperor penguin breeding colonies are extant, 4 were not extant or not visible in the 2019 satellite imaging, 1 colony is extirpated, and 11 of the colonies were newly discovered or rediscovered in 2019. The global population comprises approximately 270,000–280,000 breeding pairs or 625,000–650,000 individual birds. The Ross Sea and Weddell Sea sectors contain the highest abundance of birds relative to the other three sectors.

In the Southern Ocean, sea-ice extent undergoes considerable inter-annual variability, with much greater inter-annual variability regionally than for the Southern Ocean as a whole (Parkinson 2019, p. 14414). Sea-ice extent in the Southern Ocean is currently within its natural range of variability. Over the 40 years from 1979 to 2018, the yearly sea-ice extent in the Southern Ocean has a small, but statistically insignificant, positive trend. However, this overall increase masks larger and sometimes opposing regional differences in trends (Turner *et al.* 2015, pp. 1–2; Parkinson 2019, p. 14419). The greatest increase in sea-ice extent has been in the Ross Sea sector, with smaller increases in the Weddell Sea and along the coast of East Antarctica, and a decrease in the Bellingshausen Sea and Amundsen Sea in West Antarctica (Turner *et al.* 2015, p. 9; Holland 2014, in Meredith *et al.* 2019, p. 214; Parkinson 2019, entire). The satellite record reveals that the gradual, decades-long overall increase in Antarctic sea-ice extent reversed in 2014, with subsequent rates of decrease in 2014–2018. All sectors, except the Ross Sea, have experienced at least one period since 1999 when the yearly average sea-ice extent decreased for 3 or more consecutive years only to rebound again, and eventually reach levels exceeding the sea-ice extent preceding the 3 years of decreases. Therefore, recent decreases in sea ice may not indicate a long-term negative trend (Parkinson 2019, p. 14420).

Emperor penguins may have difficulties finding food in years of low sea ice, which may increase adult mortality and reduce breeding success. Currently, prey abundance appears not to be a limiting factor for emperor penguins.

The emperor penguin currently has high resiliency, redundancy, and

representation. Sixty-one breeding colonies are distributed around the coastline of Antarctica with no indication that their distribution has decreased or is presently decreasing. The number of known breeding colonies has increased over time, because the use of satellite imagery has improved the ability to locate colonies and roughly estimate population sizes at colonies. Catastrophic events may include iceberg calving, ice-shelf disintegration, and storm events. However, if a catastrophic event occurs, it only affects a small proportion of the total breeding colonies at any one time, and the displaced penguins try to return to that same breeding location or relocate to another nearby colony. Breeding colonies within the four known metapopulations have some degree of connectivity among metapopulations and very high connectivity between breeding colonies within each of the metapopulations. Two of the four metapopulations are in East Antarctica (Mawson Coast and Amanda Bay/Point Géologie metapopulations), while the other two are the Weddell Sea metapopulation and the Ross Sea metapopulation (Younger *et al.* 2017, p. 3892). There has been no loss of the known metapopulations.

Future Condition

The interaction of demographic processes of reproduction and survival drives the population dynamics of the emperor penguin, which are all related to the sea-ice environment. Therefore, to project the long-term viability of emperor penguin, the sea-ice extent and/or concentration and how it relates to the emperor penguin's long-term demographics has been modeled under different climate-change scenarios (Ainley *et al.* 2010, entire; Jenouvrier *et al.* 2009, 2012, 2014, 2017, 2020). The research into emperor penguin populations and their habitat conditions uses an ensemble of climate models based on changes in sea ice into the future that is founded on standard climate modeling efforts (*e.g.,* Ainley *et al.* 2010; Jenouvrier et al. 2009, 2012, 2014, 2017, 2020; Melillo *et al.* 2014).

The future scenarios for population projections of emperor penguins are based on climate-change-model projections following available IPCC scenarios using Global Circulation Models driven by Special Report on Emissions Scenarios (SRES) and by RCP scenarios.

Modeling efforts projected sea-ice conditions and the emperor penguin's response under low-, moderate-, and high-emissions scenarios. The Paris Agreement set a goal to limit global warming to below 2 °C and preferably to 1.5 °C, compared to pre-industrial levels (United Nations 2021, unpaginated). The Paris Agreement goals (low-emissions scenario) do not represent or equate to any RCP scenario; they are uniquely designed to meet the global-temperature-change targets set in the Paris Agreement (Sanderson and Knutti 2016, in Jenouvrier *et al.* 2020, p. 1; Sanderson et al. 2017, p. 828). The global temperature is likely to increase 0.3–1.7 °C under RCP 2.6, and 1.0–2.6 °C under RCP 4.5 (IPCCb 2019, p. 46). Therefore, based strictly on the projected increase in global temperature, the Paris Agreement goals would fall within the projected range of RCP 2.6 and RCP 4.5 projections. Thus, we view the two projections aligned with the Paris goals collectively as one low-emissions scenario. We also evaluated two moderate-emissions scenarios: one in which the global temperature is projected to increase up to 2.6 °C under RCP 4.5, and a second in which the global temperature is projected to increase up to 3.2 °C by the end of the century (SRES A1B). Finally, we evaluated a high-emissions scenario (RCP 8.5) where global temperature is projected to increase up to 4.8 °C (IPCC 2019b, p. 46).

Given the complexities of Global Circulation Models and advancements in technology, models typically build upon previous efforts. The modeling for the global population of emperor penguins and sea-ice conditions was initially run under scenario SRES A1B in Coupled Model Intercomparison Project phase 3 (CMIP3) using the best available information of the population and demographics at the time. SRES A1B in CMIP3 is consistent with RCP 6.0 in phase 5 (CMIP5; Melillo *et al.* 2014, p. 755). As newer models were developed, and experts learned more about emperor penguin dispersal behavior and discovered more colonies that increased the global population size, the modeling efforts were refined to account for additional colonies and inter-colony dispersal behaviors. Additionally, the most recent projections for the emperor penguin include simulations that account for extreme or catastrophic events occurring in Antarctica (Jenouvrier *et al.* 2021, in litt.).

The Community Earth System Model Large Ensemble project was used in the most recent modeling efforts to simulate the sea-ice conditions, building upon the initial efforts of the moderate-emissions scenario SRES A1B, which used models that contributed to CMIP3. The Community Earth System Model contributed to CMIP5 and was included in the IPCC fifth assessment report (Jenouvrier *et al.* 2020, pp. 3–4). The sea-ice models relied on for the SSA report represent the best available scientific data.

The demographic parameters for emperor penguin used for all colonies are based on, and extrapolated from, the population at Pointe Géologie in Terre Adélie (*see* figure 1 (above), colony #35) because the vast majority of colonies have not been visited and likely will not be visited or be part of long-term studies. Sea-ice condition is projected to decrease in Antarctica, and emperor penguins will likely need to disperse or attempt to disperse as colonies are disrupted or lost due to sea-ice instability. The simulations in the latest models include emperor penguin dispersal behaviors and extreme or catastrophic events, and we find including these additional demographic factors is an improvement because they represent natural and observed parts of the emperor penguin's relationship to the sea-ice environment. See the SSA report for a more thorough discussion of the demographic uncertainties in century-scale projections of climate change as they relate to emperor penguins (Service 2021, pp. 56–57, 80–82).

Low-Emissions Scenario

Under the low-emissions scenario, the median global population of emperor penguins is projected to decline by 26 percent under Paris 1.5, and by 27 percent under Paris 2.0 by 2050. At that point, approximately 185,000 breeding pairs would remain. However, the declines would not occur equally around the continent. Colonies in the Ross Sea and Weddell Sea are likely to experience more stable conditions. Colonies in the Ross Sea are projected to increase from their current size by 2050, as penguins from other areas with less suitable habitat migrate to the Ross Sea. Colonies in the Weddell Sea are projected to increase initially; however, by 2050, the population is projected to be slightly smaller than the current population size in this sector. Colonies in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors are projected to decline the most. By 2050, colonies within these three sectors are projected to decline by at least 50 percent, but the vast majority are projected to decline by more than 90 percent.

Moderate-Emissions Scenarios

For simulations under one of the moderate-emissions scenarios, SRES A1B in CMIP3, the population growth rate is projected to be slightly positive

until 2050, while the median global population is projected to decline by 19 to 33 percent by 2100 (Jenouvrier *et al.* 2014a, p. 716; Jenouvrier *et al.* 2014b, p. 28). We note this projection is at 2100, and we do not have an estimate of the global population or population size within each sector at 2050. Under the other moderate-emissions scenario, RCP 4.5, the global population is projected to decline by 33 percent by 2050 (to approximately 167,000 breeding pairs; Jenouvrier *et al.* 2021, in litt.). Similar to the projections under the low-emissions scenario, the declines are not equal around the continent. The Ross Sea and Weddell Sea experience the smallest decrease in breeding pairs. However, even high-latitude colonies in the Ross Sea and Weddell Sea are not immune to changes in sea-ice condition under this scenario (Jenouvrier *et al.* 2014, entire; Schmidt and Ballard 2020, pp. 183–184). The vast majority, and possibly all, colonies in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors are projected to decline by more than 90 percent. Two important differences in the results of the two moderate-emissions scenarios are noteworthy: the projections under SRES A1B were modeled using a different model and method than all the other scenarios, and the projections under RCP 4.5 include demographic factors of dispersal and extreme events while SRES A1B projections do not. Dispersal behaviors may accelerate, slow down, or reverse the anticipated rate of population decline of emperor penguins, compared to the population projection without dispersal considered, but this does not change the overall conclusion that the global population will decline. Extreme events are projected to increase the magnitude of decline throughout the species' range.

High-Emissions Scenario

Under the high-emissions scenario, RCP 8.5, the global population of emperor penguins is projected to decline 47 percent by 2050 (to approximately 132,500 breeding pairs; Jenouvrier et al. 2021, in litt.). Similar to the low- and moderate-emissions scenarios, the declines are not equal around the continent. However, the population decline is greater in magnitude under the high-emissions scenario. The few colonies that are projected to remain occur in the Ross Sea and Weddell Sea. The breeding colonies in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors are projected to decline by more than 90 percent.

Resiliency, Redundancy, and Representation

The two most resilient sectors of Antarctica are first the Ross Sea and then the Weddell Sea under every emissions scenario. The breeding colonies in these sectors are projected to have the highest resiliency because these areas are likely to have the most stable long-term sea-ice conditions. The breeding colonies in the Indian Ocean sector are projected to be the least resilient, and experience the largest population declines and sea-ice decrease and variability under every scenario. The Bellingshausen Sea-Amundsen Sea sector is also projected to have low resiliency. Projected declines in the Western Pacific Ocean sector are more complex and vary according to emissions scenario; however, the colonies in this sector also markedly decline. Under the high-emissions scenario RCP 8.5, the vast majority of breeding colonies throughout the range decline significantly by 2050, resulting in the Ross Sea and Weddell Sea serving as the last refuges for the species.

Redundancy is higher under the low-emissions scenario than under the moderate- and high-emissions scenarios because more colonies remain extant under the low-emissions scenario. Under the high-emissions scenario, the colonies in the three least resilient sectors (Indian Ocean, Bellingshausen Sea-Amundsen Sea, and the Western Pacific Ocean) are predicted to decline substantially, if not disappear entirely, whereas under the other emissions scenarios some colonies are predicted to decline less appreciably in East Antarctica and in West Antarctica depending on the scenario. Including extreme events into the simulations increases the magnitude of declines at breeding colonies throughout the range under every scenario.

Representation is similar to redundancy in that it decreases as the distribution of the species declines. The emperor penguin is predicted to lose genetic diversity under every scenario because the overall population abundance is projected to decline. Under the low-emissions scenario with projections that do not include dispersal or extreme events, no known metapopulations are lost, although colonies that make up the two metapopulations in East Antarctica are projected to decline. However, when including dispersal and extreme events, both of the metapopulations in East Antarctica along with many other colonies in East Antarctica and in the Bellingshausen Sea-Amundsen Sea sector for which genetics have not been analyzed are projected to decline by more than 90 percent by 2050.

Projections under the moderate-emissions scenarios show a similar pattern with an increase in magnitude of decline, which would also likely result in the loss of the two metapopulations in East Antarctica. Emperor penguins may migrate to the Ross Sea or Weddell Sea, where some habitat is projected to remain suitable as habitat quality declines in the other sectors. However, the colonies that remain will likely reach carrying capacity, and some colonies provide little potential for population expansion (Jenouvrier *et al.* 2014, p. 716).

Under the high-emissions scenario, the emperor penguin would increasingly lose genetic diversity, because of declines not only in the Mawson Coast and Amanda Bay/Point Géologie metapopulations, but also in the Weddell Sea and Ross Sea sectors, which account for the other two known metapopulations. Colonies within these two metapopulations would decrease in redundancy over time, thus reducing the genetic variation within the two metapopulations. The Ross Sea may be the last stronghold for the species, but even the number of breeding colonies in the Ross Sea have the potential to decline under the high-emissions scenario. Therefore, the genetic diversity of emperor penguins will substantially decrease under the high-emissions scenario because the vast majority of all colonies are likely to decline by more than 90 percent, or disappear entirely.

Summary

The emperor penguin is currently in high condition because the species has high resiliency, redundancy, and representation. Sixty-one breeding colonies are distributed around the coastline of Antarctica with no indication that there has been a decrease in their range or distribution. Colony size naturally fluctuates, and reproductive success varies from year to year at breeding colonies in relation to both biotic and abiotic factors, but emperor penguins have high survival rates and reproductive success. Genetic analysis has identified four known metapopulations of emperor penguins, with many areas of Antarctica not yet analyzed.

Sea-ice extent in the Southern Ocean is currently within its natural range of variability. The yearly sea ice extent in the Southern Ocean has a small positive but statistically insignificant trend over the 40 years from 1979 to 2018, although the overall increase masks

larger, opposing regional differences in trends. The emperor penguin's main prey resources are directly related to sea-ice conditions. Currently, prey abundance appears not to be a limiting factor for emperor penguins.

The Antarctic continent has seen less uniform temperature changes over the past 30 to 50 years, compared to the Arctic, and most of Antarctica has yet to see dramatic warming. Weather and climate are projected to affect the extent and duration of sea ice and, relatedly, prey abundance in Antarctica. Therefore, climate change presents the most substantial threat facing emperor penguins in the future. Antarctica will be profoundly different in the future compared with today, but the degree of that difference will depend on the magnitude of global climate change. The magnitude of climate change into the future depends in part on the amount of heat-trapping gases emitted globally and how sensitive the Earth's climate is to those emissions, as well as any human responses to climate change by developing adaptation and mitigation policies.

Under all scenarios, sea-ice extent and the global population of emperor penguins are projected to decline in the future; however, the degree and speed of the decline varies substantially by scenario. Accordingly, the resiliency, redundancy, and representation of the emperor penguin will also decrease across all scenarios. The rate and magnitude of decline of the sea-ice conditions and the number of breeding pairs and colonies of emperor penguins varies between scenarios, temporally and spatially. Breeding colonies in the Ross Sea and Weddell Sea sectors, the current strongholds for the species, are projected to retain the most resiliency and have the most stable sea-ice conditions into the future, relative to the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors. The projected decline in the global population of emperor penguins is much less under the low-emissions scenario (*i.e.,* the scenarios that model the Paris Accord) than under the high-emissions scenario (*i.e.,* RCP 8.5). Similarly, redundancy and representation are higher under the low-emissions scenarios compared to the high-emissions scenario because more colonies are projected to be extant. Redundancy and representation decline at a faster rate than resiliency because the Ross Sea and Weddell Sea sectors contain at least half the global population, have a greater initial population abundance compared to the other three sectors, and are projected to have higher-quality sea-ice habitat over a longer time period. These two sectors, and particularly the Ross Sea, are strongholds for the species under every scenario, as the other sectors markedly decline because sea-ice conditions deteriorate.

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species. To assess the current and future condition of the species, we undertake an iterative analysis that encompasses and incorporates the threats individually and then accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative-effects analysis.

Conservation Efforts and Regulatory Mechanisms

Antarctica is designated as a natural reserve devoted to peace and science under the Protocol on Environmental Protection to the Antarctic Treaty (Protocol) that was signed in 1991, and entered into force in 1998 (Secretariat of the Antarctic Treaty 2020, unpaginated). The Protocol includes annexes with measures to minimize effects to the Antarctic environment from conduct related to activities in Antarctica such as national program operations, scientific research, tourism, and other nongovernmental activities. The Antarctic Treaty System (see United States Treaties and Other International Agreements (UST): 12 UST 794; Treaties and Other International Acts Series (TIAS): TIAS 4780; and the United Nations Treaty Series (UNTS): 402 UNTS 71), first signed in 1959 by 12 nations, regulates international relations with respect to Antarctica. Fifty-four countries have acceded to the Treaty, and 29 of them participate in decision making as Consultative Parties. Protection of the Antarctic environment has been a central theme in the cooperation among Parties (Secretariat of the Antarctic Treaty 2020, unpaginated).

Under the Protocol, certain protected areas have been established to protect outstanding environmental, scientific, historic, aesthetic, or wilderness values, any combination of those values, or ongoing or planned scientific research. Additionally, marine-protected-area boundaries may include ice shelves, adjacent fast ice, and pack ice, and potentially afford more complete protection for emperor penguins at their breeding site and while feeding or molting at sea than protected areas that are land-based (Trathan *et al.* 2020, p. 7). To date, seven active breeding sites are protected within protected areas and seven are protected by the Ross Sea region marine protected area, including three colonies that are also in protected areas (Trathan *et al.* 2020, p. 8) The management plans for these areas explain specific concerns about emperor penguins (Secretariat of the Antarctic Treaty 2020, unpaginated).

In the United States, the Antarctic Conservation Act of 1978 (ACA; 16 U.S.C. 2401 *et seq.*) also provides for the conservation and protection of the fauna and flora of Antarctica (defined to mean the area south of 60 °S latitude (16 U.S.C. 2402(2))), and of the ecosystem upon which those fauna and flora depend, consistent with the Antarctic Treaty System and the Protocol. The ACA's implementing regulations (45 CFR part 670) include provisions relating to the conservation of Antarctic animals, including native birds such as emperor penguins.

Additionally, the Convention on the Conservation of Antarctic Marine Living Resources (Convention) (33 UST 3476; TIAS 10240), which establishes the Commission for the Conservation of Antarctic Marine Living Resources (Commission; CCAMLR), provides for the conservation, including rational use, of marine living resources in the Convention area. The Commission was established in 1982, with the objective of conserving Antarctic marine life, in response to increasing commercial interest in Antarctic krill resources and a history of over-exploitation of several other marine resources in the Southern Ocean (Commission 2020, unpaginated). Twenty-five countries plus the European Union are party to the Convention, with another 10 countries also having acceded (Commission 2020, unpaginated). The United States implements the Convention through the Antarctic Marine Living Resources Convention Act of 1984 (16 U.S.C. 2431 *et seq.*) (AMLRCA). Under the AMLRCA, among other prohibitions, it is unlawful to: (1) Engage in harvesting or other associated activities in violation of the provisions of the Convention or in violation of a conservation measure in force with respect to the United States; and (2) ship, transport, offer for

sale, sell, purchase, import, export, or have custody, control or possession of, any Antarctic marine living resource (or part or product thereof) harvested in violation of a conservation measure in force with respect to the United States (16 U.S.C. 2435).

The regulatory mechanisms and conservation efforts focus on the native marine and terrestrial resources of Antarctica. The existing mechanisms minimize environmental impacts to emperor penguins from national program operations, scientific research, tourism, and other nongovernmental activities in Antarctica. None of the existing regulatory mechanisms addresses the primary and unique nature of the threat of climate change on emperor penguins; however, we recognize the value these regulatory mechanisms and conservation efforts play in helping to conserve the species.

Determination of Emperor Penguin's Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines an ''endangered species'' as a species in danger of extinction throughout all or a significant portion of its range, and a ''threatened species'' as a species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of endangered species or threatened species because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we find that climate change presents the most substantial threat to emperor penguin's viability. No other stressors are drivers of the species' viability.

The emperor penguin is currently in high condition because the species has high resiliency, redundancy, and representation. Emperor penguin breeding colonies are distributed around the continent (see figure 1, above) with no indication that their distribution or genetic or ecological diversity is presently decreasing. Sixty-one breeding colonies are extant. The global population comprises approximately 270,000–280,000 breeding pairs or 625,000–650,000 individual birds, with the greatest abundance in the Ross Sea and Weddell Sea sectors. Emperor penguins have high survival and reproductive success, and genetic analysis has identified four known metapopulations of emperor penguins. Finally, the species is not subject to any imminent threats that would otherwise render it in danger of extinction.

The sea-ice conditions in Antarctica are described within five sectors (Weddell Sea, Indian Ocean, Western Pacific Ocean, Ross Sea, and Bellingshausen Sea-Amundsen Sea), and colonies within these sectors may approximately correspond to the genetic variation of the four known metapopulations (*see* figures 1 and 2, above). Sea-ice condition in the Southern Ocean serves as a proxy measure of all important habitat factors for emperor penguins. Sea-ice extent is currently within its natural range of variability. The yearly sea-ice extent in the Southern Ocean has a small positive, but statistically insignificant, trend over the 40 years from 1979 to 2018, although the overall increase masks larger, and sometimes opposing, regional differences in trends. The emperor penguin's main prey resources (Antarctic silverfish and Antarctic krill) are directly related to the extent and duration of sea-ice conditions. Currently, foraging success and prey availability appear not to be limiting factors for emperor penguins throughout their range.

Thus, after assessing the best available information, we determined that the emperor penguin is not currently in danger of extinction throughout all of its range because the current condition of the species is high, and we do not anticipate that any combination of threats could imminently change that situation. We then turned our attention to determining whether the emperor penguin is likely to become in danger of extinction throughout all of its range within the foreseeable future.

We determined that the foreseeable future is 2050 for this rulemaking (*see Foreseeable Future,* above). The Ross Sea and Weddell Sea sectors currently contain the greatest abundance of emperor penguin breeding pairs and are projected to be the most resilient sectors within the foreseeable future, relative to the Indian Ocean, Western Pacific Ocean, and Bellingshausen Sea-Amundsen Sea sectors. The resiliency of penguin colonies in the Ross Sea and Weddell Sea sectors is sufficient to ensure that the species as a whole is not in danger of extinction in the foreseeable future. Redundancy and representation decline at a faster rate than resiliency as the colonies in the other sectors (Indian Ocean, Western Pacific Ocean, and Bellingshausen Sea-Amundsen Sea) markedly decline because sea-ice conditions are projected to deteriorate more rapidly in those areas. Assessing the results of the projections for all scenarios shows that the majority of the remaining global population would be in the Weddell Sea and Ross Sea sectors, which contain two of the four known metapopulations (Weddell Sea and Ross Sea metapopulations) and are the two most resilient sectors.

The global population at 2050 is projected to decline between 26 percent (to approximately 185,000 breeding pairs) and 47 percent (to approximately 132,500 breeding pairs) under the low- and high-emissions scenarios, respectively. The global population would be large enough and retain sufficient viability so that the species would not be in danger of extinction by 2050, because the breeding pairs remaining include at least 50 percent of the global breeding pairs, even under the high-emissions scenario. That said, the distribution of the species will be reduced by 2050 because most, and possibly all, colonies and breeding pairs will be limited to the Weddell Sea and Ross Sea sectors; almost the entire decline of breeding pairs is because of the loss of breeding colonies in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors. However, enough breeding colonies would be extant in the Weddell Sea and Ross Sea to withstand localized stochastic and catastrophic events. The ecological diversity of emperor penguins will be reduced because the decrease in distribution of breeding colonies results in the loss of the colonies that make up the two metapopulations in East Antarctica (Mawson Coast and Amanda Bay/Point Géologie metapopulations), and many other colonies in East Antarctica and in the Bellingshausen Sea-Amundsen Sea sector for which breeding colony genetics have not been analyzed. The genetic diversity from those two metapopulations would be maintained but is likely to shift to the Weddell Sea and Ross Sea sectors because emperor penguins from East Antarctica and the Bellingshausen Sea-Amundsen Sea sector are likely to disperse to the Weddell Sea and Ross

Sea sectors, which contain the other two metapopulations with genetic and ecological diversity and are the strongholds for the species. The Weddell Sea and Ross Sea sectors are projected to contain the vast majority, and possibly all, the remaining breeding colonies at 2050. The emperor penguin will decrease in resiliency, representation, and redundancy compared to current conditions. However, the global population size at 2050 will be sufficiently large, and enough colonies will be extant in the Weddell Sea and Ross Sea, such that the species as a whole will not likely be in danger of extinction.

Thus, after assessing the best available information, we conclude that the emperor penguin is not likely to become in danger of extinction within the foreseeable future throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. We determined that the emperor penguin is not in danger of extinction or likely to become so within the foreseeable future throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered or likely to become so within the foreseeable future in a significant portion of its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant; and (2) the species is in danger of extinction in that portion, or likely to become so in the foreseeable future. Depending on the case, it might be more efficient for us to address the ''significance'' question or the ''status'' question first. We can choose to address either question first. Regardless of which question we choose to address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

For the emperor penguin, sea-ice conditions in Antarctica are described in five sectors, which also may approximately correspond to the known genetic variation among breeding colonies. Emperor penguins are distributed around the entire coastline of Antarctica, and we assessed the status of the species in relation to the five sectors. Therefore, to assess the significance and status questions, we consider emperor penguins to occur within five sectors.

We now consider whether there are any significant portions of the species' range where the species is endangered or likely to become so in the foreseeable future. In undertaking this analysis for the emperor penguin, we chose to first address the status question—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species is endangered or threatened.

For emperor penguin, we considered whether the threat of climate change is geographically concentrated in any portion of the species' range at a biologically meaningful scale. Climate change is not projected to have a uniform effect around the entire continent of Antarctica; the rate and magnitude of decline of sea-ice conditions and breeding colonies vary temporally and spatially. It is in this context that we considered the concentration of threats of climate change to the emperor penguin.

We found that climate change is projected to substantially affect the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors under every modeled emissions scenario within the foreseeable future. The Ross Sea and Weddell Sea sectors are considered strongholds for the species now and into the foreseeable future because they have the most stable long-term sea-ice condition. However, projections under low-, moderate-, and high-emissions scenarios result in a substantial decline of the breeding colonies and sea-ice condition in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors. By 2050, the colonies within these three sectors decline rather quickly and are projected to decline by at least 50 percent, with the vast majority projected to decline by more than 90 percent under every scenario.

Currently, breeding colonies are distributed along the entire coastline of Antarctica with no gaps larger than 500 kilometers (311 miles) between colonies, except in front of large ice shelves (*see* figure 1, above). By 2050, the global population of emperor penguins is projected to decline between 26 percent (to approximately 185,000 breeding pairs) and 47 percent (to approximately 132,500 breeding pairs); however, almost the entire decline of global breeding pairs is because of the loss of breeding colonies in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors. This results in a substantial decline of the population and distribution of breeding colonies in these three sectors. Therefore, because climate change is projected to affect the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors of the species' range more than the Ross Sea and Weddell Sea sectors, resulting in a substantial decline of the breeding colonies in these three sectors, the species may be in danger of extinction or likely to become so within the foreseeable future in this portion of its range.

We first considered whether the species was endangered in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean portion of the species' range. The emperor penguin is currently in high condition throughout its range (*see Status Throughout All of Its Range,* above). Therefore, the emperor penguin within these three sectors of its range is also currently in high condition, and the best scientific and commercial data available indicates that this portion of its range currently has sufficient resiliency, redundancy, and representation to be secure in its current state. The species is not subject to any imminent threats in this portion of its range that would otherwise render it in danger of extinction. Therefore, the emperor penguin is not currently in danger of extinction (endangered) in that portion of its range.

However, while the divergence in global population projections between the scenarios becomes more evident around 2050, under every scenario the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors are projected to substantially decline within the foreseeable future. The decline in the global population is almost entirely attributed to the decline of sea-ice conditions and loss of breeding colonies in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors. By 2050, breeding colonies within these three sectors decline by at least 50 percent, with the vast majority projected to decline by more than 90 percent. Therefore, the emperor penguin in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors will have minimal to no resiliency, distribution of breeding colonies, or genetic and ecological diversity because very few colonies and breeding pairs are projected to remain in this portion of the species' range by 2050. Thus, the species is likely to become in danger of extinction within the foreseeable future in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors.

We then proceeded to ask the question whether the portion of the range including the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors is significant. We assessed whether this portion of the species' range is biologically significant by considering it in terms of the portion's contribution to resiliency, redundancy, or representation of the species as a whole.

The Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors account for 40 to 50 percent of the global population, approximately 60 percent of the species' range and total number of known breeding colonies, and 50 percent of the known genetic diversity. Ecological diversity between breeding colonies in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors include breeding location (sea ice vs. ice shelf), distance to open water, exposure to katabatic winds (cold, dense air flowing out from interior Antarctica to the coast), and amount of snowfall. Breeding colonies within the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors provide connectivity between colonies within the metapopulations and among the metapopulations in different sectors. Currently, it is likely that all breeding colonies are connected because the average distance between colonies of 311 kilometers +/− 176 kilometers, with no gaps between colonies throughout the species' range greater than 500 kilometers except in front of large ice shelves, is well within the distance that emperor penguins can travel/disperse. The fact that emperor penguins travel widely as juveniles, move among breeding colonies, and share molting locations indicates that dispersal between breeding colonies provides gene flow among colonies (Thiebot *et al.* 2013, entire; Younger *et al.* 2017, p. 3894). If there were minimal to no breeding colonies (as projected) in the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors, the distance between colonies would substantially increase and reduce the probability that all colonies are connected and provide gene flow among colonies. Additionally, the diversity of the species and its habitat would substantially decrease because the vast majority of colonies that would remain (as projected) would only be in the Ross Sea and Weddell Sea sectors. The Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors contribute significantly to the emperor penguin's global population size (resiliency), global distribution around the entire coastline of Antarctica (redundancy), and genetic and ecological diversity (representation) of the species as a whole, and the conservation of the species would suffer the loss of these significant contributions if these sectors were lost. We conclude that the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors collectively constitute a significant portion of the range of the emperor penguin.

Therefore, having determined that the Indian Ocean, Bellingshausen Sea-Amundsen Sea, and Western Pacific Ocean sectors (or portion of the species' range) do indeed meet both prongs of the significant-portion-of-its range analysis (1) the portion is significant; and (2) the species is, in that portion, likely to become in danger of extinction within the foreseeable future), we conclude that the emperor penguin is likely to become in danger of extinction within the foreseeable future within a significant portion of its range. This is consistent with the courts' holdings in *Desert Survivors* v. *Department of the Interior,* No. 16–cv–01165–JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018), and *Center for Biological Diversity* v. *Jewell,* 248 F. Supp. 3d 946, 959 (D. Ariz. 2017).

Determination of Status

Our review of the best available scientific and commercial information indicates that the emperor penguin meets the Act's definition of a threatened species. Therefore, we are listing the emperor penguin as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

Available Conservation Measures

The purposes of the Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in the Act. Under the Act there are a number of steps available to advance the conservation of species listed as endangered or threatened species under the Act. As explained further below, these conservation measures include: (1) recognition, (2) recovery actions, (3) requirements for Federal protection, (4) financial assistance for conservation programs, and (5) prohibitions against certain activities.

First, recognition through listing results in public awareness, as well as in conservation by Federal, State, Tribal, and local agencies, foreign governments, private organizations, and individuals. Second, the Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species.

Third, our regulations at 50 CFR part 402 implement the interagency cooperation provisions found under section 7 of the Act. Under section 7(a)(1) of the Act, Federal agencies are to use, in consultation with and with the assistance of the Service, their authorities in furtherance of the purposes of the Act. Section 7(a)(2) of the Act, as amended, requires Federal agencies to ensure, in consultation with the Service, that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification of its critical habitat.

A Federal ''action'' that is subject to the consultation provisions of section 7(a)(2) is defined in our implementing regulations at 50 CFR 402.02 as all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. With respect to the emperor penguin, actions that may require consultation under section 7(a)(2) of the Act include harvesting Antarctic marine living resources and scientific research activities. The National Science Foundation and National Marine Fisheries Service are the lead Federal agencies for authorizing these activities in Antarctica that may affect the emperor penguin. With existing conservation measures of the ACA, AMLRCA, and CCAMLR that are implemented for these activities, and obligations of the United States under the Antarctic Treaty System, adverse effects to the emperor penguin are not anticipated. Additionally, no critical habitat will be designated for this species because, under 50 CFR 424.12(g), we will not designate critical habitat within foreign countries or in other areas outside of the jurisdiction of the United States.

Fourth, section 8(a) of the Act (16 U.S.C. 1537(a)) authorizes the provision of limited financial assistance for the development and management of programs that the Secretary of the Interior determines to be necessary or useful for the conservation of endangered or threatened species in foreign countries. Sections 8(b) and 8(c) of the Act (16 U.S.C. 1537(b) and (c)) authorize the Secretary to encourage

conservation programs for foreign listed species, and to provide assistance for such programs, in the form of personnel and the training of personnel.

Finally, the Act puts in place prohibitions against particular actions. When a species is listed as endangered, certain actions are prohibited under section 9 of the Act and are implemented through our regulations in 50 CFR 17.21. For endangered wildlife, these include prohibitions under section 9(a)(1) on import; export; delivery, receipt, carriage, transport, or shipment in interstate or foreign commerce, by any means whatsoever and in the course of commercial activity; or sale or offer for sale in interstate or foreign commerce of any endangered species. It is also illegal to take within the United States or on the high seas; or to possess, sell, deliver, carry, transport, or ship, by any means whatsoever any endangered species that have been taken in violation of the Act. It is also unlawful to attempt to commit, to solicit another to commit or to cause to be committed, any of these acts. Exceptions to the prohibitions for endangered species may be granted in accordance with section 10 of the Act and our regulations at 50 CFR 17.22.

The Act does not specify particular prohibitions and exceptions to those prohibitions for threatened species. Instead, under section 4(d) of the Act, the Secretary, as well as the Secretary of Commerce depending on the species, was given the discretion to issue such regulations as deemed necessary and advisable to provide for the conservation of such species. The Secretary also has the discretion to prohibit by regulation with respect to any threatened species any act prohibited under section 9(a)(1) of the Act. Exercising this discretion, the Service has developed general prohibitions in the Act's regulations (50 CFR 17.31) and exceptions to those prohibitions (50 CFR 17.32) that apply to most threatened wildlife species. Under 50 CFR 17.32, permits may be issued to allow persons to engage in otherwise prohibited acts for certain purposes.

Under section 4(d) of the Act, the Secretary, who has delegated this authority to the Service, may also develop specific prohibitions and exceptions tailored to the particular conservation needs of a threatened species. In such cases, the Service issues a 4(d) rule that may include some or all of the prohibitions and authorizations set out in 50 CFR 17.31 and 17.32, but which also may be more or less restrictive than the general provisions at 50 CFR 17.31 and 17.32. For emperor penguin, the Service has determined that a 4(d) rule is necessary and advisable.

As noted above, the 2019 regulations are in effect. Under the 2019 regulations, 17.31(a) only applies to those wildlife species listed as threatened on or prior to September 26, 2019. The 4(d) rule for the emperor penguin—which, as described further below, contains specific prohibitions and exceptions tailored to the particular conservation needs of this threatened species—would be authorized under the 2019 regulations. As noted above, the analysis based on the 2019 and pre-2019 regulations, including our 4(d) rule analysis, is included in the decision file for this decision.

As explained below, the 4(d) rule for the emperor penguin will, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export; deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of commercial activity; or sell or offer for sale in interstate or foreign commerce any emperor penguins. It will also be illegal to take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or to attempt any of these) within the United States or on the high seas; or to possess, sell, deliver, carry, transport, or ship, by any means whatsoever any emperor penguins that have been taken in violation of the Act. It will also be unlawful to attempt to commit, to solicit another to commit or to cause to be committed, any of these acts. Certain exceptions apply to agents of the Service and State conservation agencies.

Additional exceptions are also provided in the 4(d) rule for activities permitted under the Antarctic Conservation Act of 1978, as amended (16 U.S.C. 2401 *et seq.*), and its implementing regulations (45 CFR part 670), including for take and possession of emperor penguins within Antarctica, and for import and export of emperor penguins between the United States and Antarctica. An exception is also provided for interstate commerce from public institutions to other public institutions, specifically museums, zoological parks, and scientific or educational institutions that meet the definition of ''public'' at 50 CFR 10.12.

We may issue permits to carry out otherwise prohibited activities involving endangered and threatened wildlife species under certain circumstances. Regulations governing permits for threatened species are codified at 50 CFR 17.32, and general Service permitting regulations are codified at 50 CFR part 13. With regard to threatened wildlife, a permit may be issued for the following purposes: For scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act. The Service may also register persons subject to the jurisdiction of the United States through its captive-bred-wildlife (CBW) program if certain established requirements are met under the CBW regulations (50 CFR 17.21(g)). Through a CBW registration, the Service may allow a registrant to conduct the following otherwise prohibited activities under certain circumstances to enhance the propagation or survival of the affected species: take; export or re-import; deliver, receive, carry, transport, or ship in interstate or foreign commerce, in the course of a commercial activity; or sell or offer for sale in interstate or foreign commerce. A CBW registration may authorize interstate purchase and sale only between entities that both hold a registration for the taxon concerned. The CBW program is available for species having a natural geographic distribution not including any part of the United States and other species that the Service Director has determined to be eligible by regulation. The individual specimens must have been born in captivity in the United States. The statute also contains certain exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a listing on proposed and ongoing activities within the range of the species. The discussion in this preamble regarding protective regulations under section 4(d) of the Act complies with our policy.

II. Final Rule Issued Under Section 4(d) of the Act

Background

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as she deems necessary and advisable to provide for the conservation of species listed as threatened. The U.S. Supreme Court has noted that statutory language like ''necessary and advisable'' demonstrates

a large degree of deference to the agency (see *Webster* v. *Doe,* 486 U.S. 592 (1988)). Conservation is defined in the Act to mean 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 the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. Thus, the combination of the two sentences of section 4(d) provides the Secretary with broad discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife or include a limited taking prohibition (see *Alsea Valley Alliance* v. *Lautenbacher,* 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council* v. *National Marine Fisheries Service,* 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see *State of Louisiana* v. *Verity,* 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, ''once an animal is on the threatened list, the Secretary has an almost infinite number of options available to [her] with regard to the permitted activities for those species. [She] may, for example, permit taking, but not importation of such species, or [she] may choose to forbid both taking and importation but allow the transportation of such species'' (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Exercising this authority under section 4(d), we have developed a rule that is designed to address the emperor penguin's specific threats and conservation needs. Although the statute does not require us to make a ''necessary and advisable'' finding with respect to the adoption of specific prohibitions under section 9, we find that this rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the emperor penguin.

As discussed above under Summary of Biological Status and Threats, and Determination of Emperor Penguin's Status, we have concluded that the emperor penguin is likely to become in danger of extinction within the foreseeable future primarily due to climate change. Under this 4(d) rule, certain prohibitions and provisions that apply to endangered wildlife under the Act's section 9(a)(1) prohibitions will help minimize threats that could cause further declines in the species' status. The provisions of this 4(d) rule promote conservation of emperor penguins by ensuring that activities undertaken with respect to the species by any person under the jurisdiction of the United States are also supportive of the conservation efforts undertaken for the species in Antarctica. The provisions of this 4(d) rule are one of many tools that we will use to promote the conservation of emperor penguins.

Provisions of the 4(d) Rule

Climate change is the greatest threat affecting the status of the emperor penguin. However, other activities, including tourism, research, commercial krill fisheries, and activities that could lead to marine pollution, also may affect emperor penguins. These other factors all have minor effects on emperor penguins, and regulating these activities could help conserve emperor penguins and decrease synergistic, negative effects from the threat of climate change. Thus, the 4(d) rule provides for the conservation of the species by regulating and prohibiting the following activities, except as otherwise authorized or permitted: importing or exporting; take; possession and other acts with unlawfully taken specimens; delivering, receiving, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; or selling or offering for sale in interstate or foreign commerce.

Under the Act, ''take'' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these words have been further defined in regulations at 50 CFR 17.3. Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. The Act's prohibitions on take apply to take within the United States, within the territorial sea of the United States, or upon the high seas.

As noted previously, the U.S. Antarctic Conservation Act of 1978 (ACA; 16 U.S.C. 2401 *et seq.*) provides for the conservation and protection of the fauna and flora of Antarctica, and of the ecosystem upon which such fauna and flora depend, consistent with the Antarctic Treaty System and the Protocol. The ACA's implementing regulations (45 CFR part 670) include provisions relating to the conservation of Antarctic animals, including native birds such as emperor penguins. The National Science Foundation is the lead agency that manages the U.S. Antarctic Program and administers the ACA and its implementing regulations at 45 CFR part 670.

Under the ACA, certain activities are prohibited related to flora and fauna in Antarctica. Of particular relevance to emperor penguins, the ACA prohibits take of any native bird within Antarctica without a permit. The term ''native bird'' under the ACA means ''any member, at any stage of its life cycle (including eggs), of any species of the class Aves which is indigenous to Antarctica or occurs there seasonally through natural migrations, and includes any part of such member'' (16 U.S.C. 2402(9); 45 CFR 670.3). Emperor penguins are designated as native birds under the ACA (45 CFR 670.20). To ''take'' under the ACA means ''to kill, injure, capture, handle, or molest a native mammal or bird, or to remove or damage such quantities of native plants that their local distribution or abundance would be significantly affected'' or to attempt to engage in such conduct (16 U.S.C. 2402(20); 45 CFR 670.3). The ACA also makes it unlawful for any person, unless authorized by a permit, to receive, acquire, transport, offer for sale, sell, purchase, import, export, or have custody, control, or possession of, any native bird, native mammal, or native plant which the person knows, or in the exercise of due care should have known, was taken in violation of the ACA (16 U.S.C. 2403(b)(5)).

A permit system managed by the National Science Foundation, in coordination with appropriate agencies, issues permits under the ACA for certain, otherwise prohibited activities such as take, import, and export. Permits authorizing take of emperor penguins under the ACA may be issued only: (1) For the purpose of providing specimens for scientific study or scientific information; (2) for the purpose of providing specimens for museums, zoological gardens, or other educational or cultural institutions or uses; or (3) for unavoidable consequences of scientific activities or the construction and operation of scientific support facilities (16 U.S.C. 2404(e); 45 CFR 670.17(a)).

Additionally, ACA permits shall ensure, as far as possible, that (1) no more native mammals, birds, or plants are taken than are necessary to meet the purposes set forth above; (2) no more native mammals or native birds are taken in any year than can normally be replaced by net natural reproduction in the following breeding season; (3) the variety of species and the balance of the natural ecological systems within Antarctica are maintained; and (4) the authorized taking, transporting, carrying, or shipping of any native mammal or bird is carried out in a humane manner (16 U.S.C. 2404(e); 45 CFR 670.17(b)). Specific requirements also apply to permits for proposed imports and exports of emperor penguins (*see* 45 CFR part 670, subpart G). While we have found above that these current efforts alone will be inadequate to prevent the species from likely becoming in danger of extinction within the foreseeable future due to the unique nature of the threat of climate change, we also recognize the value these management efforts play in helping to conserve the species.

The ACA applies to the area south of 60 °S latitude, which encompasses Antarctica and the entire distribution of emperor penguins. Many provisions under the ACA are comparable to similar provisions in the Act, including with regard to take, prohibitions on activities with unlawfully taken specimens, and prohibitions on import and export. As discussed above, for decades the ACA has provided significant conservation benefits and protections to the emperor penguin through its regulation of these activities with emperor penguin. Accordingly, we provide exceptions from permitting requirements under the Act for certain otherwise prohibited activities with emperor penguins that are authorized by permit or regulation by the National Science Foundation under the ACA. Specifically, we provide exceptions for take in Antarctica, import to the United States from Antarctica, and export from the United States to Antarctica when these activities are authorized under an ACA permit issued by the National Science Foundation.

These exceptions will not apply where there is a violation of the ACA; thus, a violation of the ACA will also be a violation of the Act under the 4(d) rule. For example, for import to the United States from Antarctica where the ACA requires an import permit, the import of an emperor penguin without an ACA permit will fail to meet the regulatory exception; therefore, the import will be prohibited by both the ACA and the Act under the 4(d) rule. A permit under the Act will be required for the import and export of any emperor penguins for any other purpose (*e.g.,* import from or export to another country, or import or export of a captive-bred emperor penguin). Accordingly, all imports and exports of emperor penguins will be prohibited unless authorized by an ACA permit, a permit under the Act, or for law enforcement purposes. Exceptions will also apply to take of emperor penguins if the activity meets the ACA regulatory exceptions for emergency circumstances (45 CFR 670.5(a) and (c)), to aid or salvage a specimen (45 CFR 670.5(b) and (c)), or for law enforcement purposes (including the import or export of emperor penguins for law enforcement purposes; 45 CFR 670.9).

The 4(d) rule also provides an exception for interstate commerce from public institutions to other public institutions, specifically museums, zoological parks, and scientific or educational institutions meeting the definition of ''public'' at 50 CFR 10.12. The majority of records of import of emperor penguins into the United States have been for this very purpose. Demand for emperor penguins held at or captive-bred by these types of public institutions in the United States is not substantial, nor is it likely to pose a significant threat to the wild population in Antarctica. As defined in our regulations, ''public'' museums, zoological parks, and scientific or educational institutions are those that are open to the general public and are either established, maintained, and operated as a governmental service or are privately endowed and organized but not operated for profit.

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32. With regard to threatened wildlife, a permit may be issued for the following purposes: For scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act. As noted above, we may also authorize certain activities associated with conservation breeding under captive-bred wildlife registrations. We recognize that captive breeding of wildlife can support conservation, for example by producing animals that could be used for reintroductions into Antarctica, if permitted under the ACA. We are not aware of any captive breeding programs for emperor penguins for this purpose. The statute also contains certain exemptions from the prohibitions, which are found in sections 9 and 10 of the Act. This 4(d) rule applies to all live and dead emperor penguin parts and products, and supports conservation management efforts for emperor penguins in the wild.

Required Determinations

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*) need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of references cited in this rulemaking is available on the internet at *https://www.regulations.gov* and upon request from the Branch of Delisting and Foreign Species (*see* **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Branch of Delisting and Foreign Species.

Signing Authority

Martha Williams, Director of the U.S. Fish and Wildlife Service, approved this action on September 20, 2022, for publication. On October 19, 2022, Martha Williams authorized the undersigned to sign the document electronically and submit it to the Office of the Federal Register for publication as an official document of the U.S. Fish and Wildlife Service.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Plants, Reporting and recordkeeping requirements, Transportation, Wildlife.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

■ 2. Amend § 17.11, in paragraph (h), by adding an entry for ''Penguin, emperor'' to the List of Endangered and Threatened Wildlife in alphabetical order under Birds to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
*	*	*	*	*
BIRDS				
*	*	*	*	*
Penguin, emperor	*Aptenodytes forsteri*	Wherever found	T	87 FR [Insert **Federal Register** page where the document begins], October 26, 2022; 50 CFR 17.41(m).[4d]
*	*	*	*	*

■ 3. Amend § 17.41 by adding reserved paragraphs (g) through (l) and adding paragraph (m) to read as follows:

§ 17.41 Special rules—birds.

* * * * *

(g)–(l) [Reserved]

(m) Emperor penguin (*Aptenodytes forsteri*).

(1) *Prohibitions.* The following prohibitions that apply to endangered wildlife also apply to the emperor penguin. Except as provided under paragraph (m)(2) of this section and §§ 17.4 and 17.5, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.21(b) for endangered wildlife.

(ii) Take, as set forth at § 17.21(c)(1) for endangered wildlife.

(iii) Possession and other acts with unlawfully taken specimens, as set forth at § 17.21(d)(1) for endangered wildlife.

(iv) Interstate or foreign commerce in the course of commercial activity, as set forth at § 17.21(e) for endangered wildlife.

(v) Sale or offer for sale in foreign commerce, as set forth at § 17.21(f) for endangered wildlife.

(vi) Sale or offer for sale in interstate commerce, as set forth at § 17.21(f) for endangered wildlife.

(2) *Exceptions from prohibitions.* In regard to the emperor penguin, you may:

(i) Sell, offer for sale, deliver, receive, carry, transport, or ship in interstate commerce live emperor penguins from one public institution to another public institution. For the purposes of this paragraph, ''public institution'' means a museum, zoological park, and scientific or educational institution that meets the definition of ''public'' at 50 CFR 10.12.

(ii) Take emperor penguins within Antarctica as authorized under implementing regulations for the Antarctic Conservation Act of 1978 (16 U.S.C. 2401 *et seq.*), either in accordance with the provisions set forth at 45 CFR 670.5 or 670.9, or as authorized by a permit under 45 CFR part 670.

(iii) Import emperor penguins into the United States from Antarctica or export emperor penguins from the United States to Antarctica as authorized under implementing regulations for the Antarctic Conservation Act of 1978 (16 U.S.C. 2401 *et seq.*), either in accordance with the provisions set forth at 45 CFR 670.9, or as authorized by a permit under 45 CFR part 670.

(iv) Conduct activities as authorized by a permit under § 17.32.

(v) Take, as set forth at § 17.21(c)(2) through (4) for endangered wildlife.

(vi) Possess and engage in other acts with unlawfully taken wildlife, as set forth at § 17.21(d)(2) for endangered wildlife.

(vii) Conduct activities as authorized by a captive-bred wildlife registration under § 17.21(g) for endangered wildlife.

Madonna Baucum,

Chief, Policy and Regulations Branch, U.S. Fish and Wildlife Service.

[FR Doc. 2022–23164 Filed 10–25–22; 8:45 am]

BILLING CODE 4333–15–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 635

[Docket No. 220523–0119; RTID 0648–XC431]

Atlantic Highly Migratory Species; Atlantic Bluefin Tuna Fisheries; Closure of the General Category October Through November Fishery for 2022

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

ACTION: Temporary rule; closure.

SUMMARY: NMFS closes the General category fishery for large medium and giant (*i.e.,* measuring 73 inches (185 cm) curved fork length or greater) Atlantic bluefin tuna (BFT) for the October through November subquota time period. This action applies to Atlantic Tunas General category (commercial) permitted vessels and highly migratory species (HMS) Charter/Headboat permitted vessels with a commercial sale endorsement when fishing commercially for BFT. This action also waives the previously scheduled restricted-fishing days (RFDs) for the remainder of the October through November subquota time period. With the RFDs waived during the closure, fishermen aboard General category permitted vessels and HMS Charter/Headboat permitted vessels may tag and release BFT of all sizes, subject to the requirements of the catch-and-release and tag-and-release programs. On December 1, 2022, the fishery will reopen automatically.