

MARINE MAMMAL COMMISSION  
4340 East-West Highway, Room 700  
Bethesda, MD 20814-4447

7 November 2008

Ms. Kaja Brix, Assistant Regional Administrator  
Protected Resource Division  
National Marine Fisheries Service  
Alaska Regional Office  
P.O. Box 21668  
Juneau, Alaska 99802-1668

Dear Ms. Brix:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the 4 September 2008 *Federal Register* notice (73 Fed. Reg. 51615) announcing a 90-day finding on a petition to list three ice seal species— ringed seal (*Phoca hispida*), bearded seal (*Erignathus barbatus*), and spotted seal (*Phoca largha*)—as threatened or endangered under the Endangered Species Act. The National Marine Fisheries Service has found that listing may be warranted, has initiated status reviews of the three species, and is soliciting pertinent scientific and commercial information.

The Endangered Species Act sets forth the requirements for listing, and the Commission uses them to guide its recommendations regarding the Service's listing analyses. Meeting those requirements will be extremely challenging for the species under consideration. Nonetheless, the Service must address each of the listing criteria to ensure that their analyses are comprehensive and anticipatory, and therefore provide the best possible basis for decision making under existing circumstances.

To elaborate a little, the Service has largely overlooked these ice seals until quite recently. The best available knowledge of the species is therefore inadequate in many respects (e.g., understanding their status, biology, ecology, and vulnerability to human-related threats). The analyses conducted to inform listing decisions also will suffer from considerable uncertainty regarding the seals and the individual and cumulative effects of various risk factors, both now and in the foreseeable future. Despite these uncertainties, or perhaps because of them, the Service must take a hard, detailed look at the existing information on these species, identify and weigh the various sources of risk, and recommend appropriate, precautionary steps at both national and international levels to assure the species' long-term persistence.

The Commission would be pleased to consult on the necessary analyses if the Service chooses to seek outside input during the analysis phase. In the meantime, recognizing that some analyses will need to be based on assumptions and models rather than empirical data, the Commission offers the following recommendations and rationale to facilitate the status reviews.

## **RECOMMENDATIONS**

The status reviews for the three ice seal species must consider a broad range of issues related to five listing factors set forth in the Endangered Species Act. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service—

- analyze habitat changes relative to the unique life history characteristics and seasonal habitat requirements of each of the three ice seal species, evaluate the ability of each ice seal species to adapt in the face of changing conditions, and identify limits to behavioral adaptation to determine whether the present or threatened destruction, modification, or curtailment of its range places at risk the continued existence of any of the species now or in the foreseeable future;
- analyze in detail the potential for overutilization—primarily for subsistence purposes—and how it will ensure that such harvests do not become a factor that increases the risk of extinction of any of these three species;
- consider how these three species might be affected by increasing exposure and susceptibility to disease, changing trophic food web relationships, and changing ecological interactions as the Arctic climate warms;
- conduct a thorough review of regulatory mechanisms to address the effects of climate change, setting the stage for proposing concerted action in this area, should any or all of these species be listed as threatened or endangered; and
- characterize and evaluate the predicted increase in human activities in the ranges of the three ice seal species which may threaten ice seal species now or in the foreseeable future.

## **RATIONALE**

The Endangered Species Act specifies the five factors that are to be considered in listing decisions. As climate change is the primary threat to the ice seal species under consideration, the most important of these listing factors is likely to be the first, which pertains to the seals' habitat. Nonetheless, the other factors also must be considered and may become more or less important as the Arctic changes physically, chemically, and ecologically, and as human activities in the Arctic increase in association with those changes. To be comprehensive the Service will need to evaluate those factors in the context of the natural and life history traits of the affected seals, their ability to compensate for habitat changes by altering their behavior, and the rate at which such changes will be necessary for the species to persist.

### **The present or threatened destruction, modification, or curtailment of the range**

Analysis of the long-term impacts of climate change on the distribution, extent, and quality of sea- and shore-fast ice throughout the year, is central to understanding whether these species will be able to find suitable conditions for breeding, molting, and feeding in the foreseeable future. Each of these species is uniquely adapted to the ice and associated oceanographic and meteorological conditions. Changes in those conditions will have direct influence on survival and reproduction, the vital rates that ultimately determine population status.

Changing habitat conditions will require behavioral responses and the fundamental question is whether these species can adapt at a pace and to an extent that allows them to persist through the foreseeable future. For example, early northward retreat of spring sea ice in the shallow areas of the

Chukchi Sea may impact the feeding energetics of the bearded seal, which is a benthic forager. Bearded seals depend on haul-out and resting substrate during the feeding period, and as the ice moves north beyond their shallow-water foraging ranges they may be forced to swim great distances to find suitable ice or shore haul-outs between feeding bouts, or they may lose haul-out opportunities entirely. Those seal species with more pelagic foraging habitats may not be affected in the same manner, but may be affected by reductions in ice edge productivity as the ice recedes. With regard to breeding and pupping, late ice formation, early breakup of shore-fast ice, and increased precipitation, have already impacted ringed seal denning behavior along the shore-fast ice of the Beaufort Sea, threatening female reproductive success and pup survival. Similar conditions have been reported in other portions of the ringed seal range (e.g., Baltic Sea, Gulf of Finland). In some seasons and in some areas populations may be able to adapt to loss of sea-ice haul-out substrate by using coastal or island terrestrial haul-outs, but this may bring increased risk from land-based predators and require longer travel to feeding areas. For these reasons the Marine Mammal Commission recommends that the Service analyze habitat changes relative to the unique life history characteristics and seasonal habitat requirements of each of the three ice seal species, evaluate the ability of each ice seal species to adapt in the face of changing conditions, and identify limits to behavioral adaptation to determine whether the present or threatened destruction, modification, or curtailment of its range places at risk the continued existence of any of the species now or in the foreseeable future.

### **Overutilization for commercial, recreational, scientific, or educational purposes**

The petitioners identify areas where these three seal species are hunted and used for subsistence purposes, but do not identify this factor as a major threat to these species. However, as conditions change, these seals may become more vulnerable to overharvest. The Alaska Native communities that depend on subsistence also may be placed at considerable disadvantage. Managing the take of seals while also protecting the interests of the affected Alaska Natives will require well-coordinated co-management efforts under section 119 of the Marine Mammal Protection Act. For the purposes of this status review, the Marine Mammal Commission recommends that the National Marine Fisheries Service analyze in detail the potential for overutilization—primarily for subsistence purposes—and how the Service will ensure that such harvests do not become a factor that increases the risk of extinction of any of these three species.

### **Disease and Predation**

Changing climate may alter the distribution and prevalence of disease and bring new diseases into arctic ecosystems. Exposure to disease may increase if the seal species change their distribution or if disease vectors increase their range or virulence. Similarly, susceptibility to new diseases may increase if the seals are exposed to new diseases or diseases not previously encountered or if their health and condition compromise their immune function (Burek et al. 2008). The Service's review should consider the impacts of disease on these ice-seal species and possible exacerbation of those impacts if the seals are stressed by other risk factors.

The review also should examine whether environmental changes are altering predator-prey relationships. Climate change may affect the ability of the seal species to find food (e.g., arctic cod) at critical periods of their annual life cycle. Species with specific prey requirements are likely to be particularly sensitive to trophic changes in Arctic food webs. The review also considers whether these species may be more vulnerable to predation as ice conditions and the availability of secure haul-outs change. Hauling out on land, for example, will likely increase the vulnerability of the seals to predators such as polar bears, arctic foxes, and predatory birds (e.g., glaucous gulls), as well as to a suite of land-based predators that normally do not come into contact with ice seal species (e.g., grizzly bears, wolves). In U.S. waters such changes are already being observed in ringed seal denning areas along the North Slope of Alaska and in bearded seal and spotted seal pupping areas in the Bering Sea.

The review also must consider changes in other ecological relationships, as may occur if sub-arctic species move into the Arctic as temperature increases and ice habitat declines. Interactions with the harbor seal (*Phoca vitulina*) and sea lion species may lead to competition for resources. Further, the prey base will almost certainly change with changing oceanographic conditions.

For all these reasons, the Marine Mammal Commission recommends that the National Marine Fisheries Service consider how these three species might be affected by increasing exposure and susceptibility to disease, changing trophic food web relationships, and changing ecological interactions as the Arctic climate warms.

### **The inadequacy of existing regulatory mechanisms**

Under section 117 of the Marine Mammal Protection Act the Service is required to conduct periodic assessments of each marine mammal stock that occurs in waters under U.S. jurisdiction. The stock summary table (Appendix 2) in the 2007 Alaska Marine Mammal Stock Assessment Technical Memorandum indicates that much of the data required in section 117 for Alaska stocks of bearded seal, ringed seal, and spotted seal are not available; that is, the Service has not been able to study and manage these species under current conditions. The lack of information highlights the need to consider the adequacy of existing regulatory mechanisms. For these species, the primary concern may not be the existing regulatory mechanisms per se, but rather inadequate implementation of the existing regimes.

Both U.S. and foreign authorities are involved in the management and conservation of these species and all must be considered in this review. Doing so will require consideration of the regulatory mechanisms available at tribal, state, national, and international levels to control or limit human takes of seals, as well as the various authorities responsible for managing those activities that emit greenhouse gases into the environment. As determined for the polar bear, these emissions are the primary cause of the climatic changes leading to changing habitat and ecosystem conditions for ice seal species.

Arguments put forth by the Department of the Interior have sought to avoid agency responsibility for addressing the incremental impacts of individual emitters of greenhouse gases.

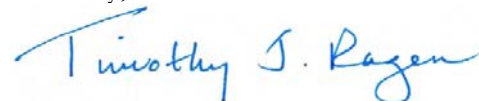
These are the same types of arguments that have been used historically against regulating a suite of activities that have been deemed to be harmful if not regulated. Nonetheless, such activities have ultimately been addressed by society through regulatory measures (e.g., littering, speeding, building in certain areas, dumping garbage, disposing toxic substances, mining minerals, drilling for oil, cutting forests, and so on). We do not see a rational justification for excluding regulation of the sources of climate change from the responsibility of agencies under the Endangered Species Act, and therefore believe the Service must examine the adequacy of existing regulatory mechanisms to mitigate the threat climate change poses to potentially listed species. For these reasons, the Marine Mammal Commission recommends that the Service conduct a thorough review of regulatory mechanisms to address the effects of climate change, setting the stage for proposing concerted action in this area, should any or all of these species be listed as threatened or endangered.

#### **Other natural or man-made factors affecting the continued existence of the species**

With the forecasted changes in climate and ice conditions, increased human activities are predicted for Arctic regions. The status review should consider the likelihood of impacts from increased vessel traffic, including, for example, the impact of ice-breaking in support of industrial activities, which may impact pupping areas; increased marine transport activities, especially associated with opening of the northwest and northeast passages; increased oil and gas exploration and development, including contamination and changing noise conditions in the marine environment; and interactions with new fisheries activities that may arise. Coastal development is expected to accompany the increase in other Arctic activities with the reduction of seasonal ice. Harbors for fishing vessels, and coast guard capability are likely to be developed, and with increased marine transport, offshore development and potential for access to seabed territory, security issues are likely to bring more military presence to the arctic region. Tourist activities such as cruise ship tours will be attracted by the ability to reach the North Pole in the open water season and to transit the northwest and northeast passages. Tourism interests also will find new previously inaccessible marine access points to land-based sites, e.g., the Brooks Range and cultural or archeological attractions. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service characterize and evaluate the predicted increase in human activities in the ranges of the three ice seal species which may threaten ice seal species now or in the foreseeable future.

Please contact me if you wish to discuss the Commission's recommendations.

Sincerely,

A handwritten signature in blue ink that reads "Timothy J. Ragen". The signature is written in a cursive, flowing style.

Timothy J. Ragen, Ph.D.  
Executive Director