Senate Committee on Commerce, Science, and Transportation

Written Questions for the Record from Senator Dan Sullivan to Dr. Andrew Read

Nomination of Dr. Andrew Read to be a Member of the Marine Mammal Commission

July 21, 2015

1. The Marine Mammal Protection Act (MMPA) has now been in place for more than four decades. Given your experience in the field of marine mammal science and conservation, what do you think are the most successful, and least successful, provisions in the MMPA?

In my view, the most successful provisions of the MMPA have been: (1) the focus on maintaining marine mammal stocks in a favorable conservation status, described in the Act as not permitting them to diminish below their 'optimum sustainable population' level; and (2) the moratorium on taking, which protects individual marine mammals from harm. Section 2 of the Act notes that "certain species and population stocks of marine mammals are, or may be, in danger of extinction or depletion as a result of [human] activities." The MMPA, buttressed by additional protection from the Endangered Species Act, has successfully prevented the extirpation of any marine mammal population in the United States since it was enacted. In addition, countless thousands of individual whales, dolphins, porpoises, seals, sea lions, and manatees have been protected from harm since 1972, just as intended by those who crafted the legislation. As a consequence, many marine mammal populations, particularly seals and sea lions, have recovered to or near their carrying capacities. The fact that elephant seals and gray seals are now common sights along the coasts of California and Massachusetts, respectively, is a testament to the success of the statute.

The regulatory focus of the MMPA is on marine mammals in U.S. waters, but its conservation goals apply to marine mammals worldwide. Some of the most critical issues in marine mammal conservation occur in the waters of other nations and on the high seas. One provision of the MMPA that has not been implemented is the requirement that countries exporting fisheries products to the United States provide reasonable proof that the products were captured using fishing methods that do not result in the incidental mortality or serious injury of marine mammals in excess of U.S. standards set under the MMPA. This requirement is designed to provide a level playing field for American fishermen and to ensure that fisheries products imported into the United States are captured using sustainable practices. If confirmed as Chairman of the Commission, I look forward to working with the National Marine Fisheries Service (NMFS) and the State Department on this provision, and with the U.S. Agency for International Development and other agencies to pursue improved scientific understanding and the conservation of marine mammals in other countries and on a multilateral basis.

2. Do you think there should be any changes made to the role of the Marine Mammal Commission?

The Commission's role is to provide independent, science-based advice that reflects the policy guidance provided by Congress in the MMPA and related statutes. I believe this role should remain unchanged, but the way that the Commission carries out its responsibilities should continue to evolve. The seven primary duties assigned to the Commission under Section 202 of the MMPA are broad in range and scope. Clearly, Congress anticipated that new challenges would arise in future years and would need to reflect increasing scientific knowledge about marine mammals, the roles they play in their ecosystems and the threats they face. Therefore, the legislative language allows for flexibility in the Commission's role.

3. Do you think the Marine Mammal Protection Act is working well as it relates to economic and subsistence opportunities for Alaska Natives?

Yes. As you know, Section 101(b) of the MMPA provides an exemption that allows Alaska Natives to take marine mammals for subsistence and for purposes of creating and selling authentic native articles of handicrafts and clothing. The only limitations on take under that Section are that the taking be for one of the specified purposes and that it be accomplished in a non-wasteful manner. Section 101(b) allows for NMFS or the Fish and Wildlife Service (FWS) to regulate the taking of depleted species and stocks by Alaska Natives only when necessary for the conservation of the species or stock. Taking under that provision has only been regulated on one occasion, for Cook Inlet beluga whales. Thus, to a very large extent, Alaska Natives have been able to pursue unimpeded opportunities for subsistence hunting and the continuation of so-called "cottage industries," as Congress intended when it included this exemption in the Act in 1972.

Fishing is another important economic activity for many Alaska Natives. As with other commercial fishermen, Alaska Natives are covered by the incidental take provisions of MMPA Section 118. All Alaska fisheries have been placed in either Category II (those that occasionally result in the killing or serious injury of marine mammals) or Category III (those that have only a remote possibility of killing or seriously injuring a marine mammal). Fishermen participating in Category II fisheries are required to register with NMFS and, by doing so, secure authorization to take marine mammals incidental to their fishing operations, provided that they report injuries and mortalities to NMFS and abide by any applicable take reduction plan. To date, no take reduction plans are in place for any Alaska fishery. Fishermen participating in Category III fisheries need not register but must report any incidental injuries or mortalities to NMFS. It does not appear that the MMPA has resulted in the restriction of economic opportunities for Alaska Natives related to commercial fishing.

The MMPA imposes potential hurdles on other economic opportunities (e.g., oil and gas exploration and development, port construction, etc.), only if the activity will result in the taking of marine mammals. If there is a sufficient possibility that marine mammals will be taken, the entity engaged in that activity generally applies for an incidental taking authorization. Such authorizations ensure that the activity will not have adverse effects on marine mammal species and stocks or on the availability of marine mammals for subsistence hunters. Some

authorizations impose restrictions, such as requiring the temporary shutdown of activities if marine mammals are observed within a certain distance, or time and area closures to avoid whale hunting seasons, but I am not aware of any instance when an economic activity in Alaska was unable to secure an incidental take authorization that prevented it from being conducted.

4. When making decisions, the MMPA implementing agencies can be faced with scientific uncertainty and incomplete data. In your view, what are the key policy objectives that should guide the implementing agencies in such situations? Do you believe it is appropriate to deny an MMPA incidental take permit application for the sole reason that the best available data are incomplete or uncertain?

In general, the key policy objectives of the MMPA are laid out in Section 2 of the Act and reflected its other provisions. For instance, Section 2 specifies that the primary objective of the Act is "to maintain the health and stability of the marine ecosystem" and that, whenever consistent with this objective, it should be the goal to maintain marine mammals at their optimum sustainable population. The Act further provides that marine mammal species and stocks "should not be permitted to diminish below the point at which they cease to be a significant functioning element in the ecosystem of which they are a part." The Act also highlights the need "to protect essential [marine mammal] habitats...from the adverse effects of man's actions."

To a large extent, these policies are implemented through the MMPA's moratorium on taking marine mammals, which applies unless authorized through one of the Act's exemptions or authorizations. Several types of authorizations exist, which vary by activity and the type of taking. The specifics of each type of exception and its placement of the burden of proof vary and reflect the policy choices of Congress. These are the policies that guide the formulation of recommendations by the Commission and should also govern decisions made by the action agencies.

In the case of incidental take authorizations, Congress placed the burden of proof on the action proponents (i.e., the applicant and the regulatory agency) to demonstrate that any authorized taking will: (1) have a negligible impact on the affected marine mammal species or stock; and (2) will not have an unmitigable adverse impact on the availability of these marine mammals for use by Alaska Native subsistence hunters. If the scientific uncertainty and data gaps are substantial and significant enough that they undercut the regulatory agency's ability to make and adequately support the required findings, then it is appropriate to deny the authorization. If the uncertainties and data gaps are less critical, then it may be possible to issue an authorization, despite imperfect information.

5. Courts have held that the "small numbers" requirement applicable to incidental take authorizations under Section 101(a) of the MMPA is to be determined relative to the overall population size for the marine mammal species or stock at issue. From a scientific perspective, what do you think should be the guideline for determining whether the amount of marine mammals authorized for incidental take constitutes a "small number"?

I find this a difficult question to answer, because the statute gives little guidance in how to interpret the term "small numbers." Much of my personal experience working in the field of marine mammal management and conservation has dealt with interactions with fisheries, in which we have a clear standard, the Zero Rate Mortality Goal (ZMRG), interpreted by the Service as 10% of the Potential Biological Removal (PBR) level. ZMRG, however, applies to the number of serious injuries and mortalities experienced by the stock in question, so it is not an appropriate standard in the case of incidental take authorizations under Section 101(a).

So, to me, this seems to be more of a legal issue than a scientific one. It is my understanding that the courts have issued multiple rulings interpreting the incidental take requirements of Section 101(a)(5) of the MMPA. Those courts invalidated the regulatory definitions of "small numbers" adopted by NMFS and FWS as impermissibly conflating the small numbers and negligible impact requirements. The Ninth Circuit Court of Appeals ruling in *Center for Biological Diversity* v. *Salazar*, found that:

> The Service need not quantify the number of marine mammals that would be taken under the regulations, so long as the agency reasonably determines through some other means that the specified activity will result in take of only "small numbers" of marine mammals. The Service can analyze "small numbers" in relation to the size of the larger population, so long as the "negligible impact" finding remains a distinct, separate standard.

I have also been advised that, although the appellate court found this to be a permissible construction of the statutory provisions, it did not determine that it was the only, or necessarily the best, interpretation. So, it is my understanding that the Services may use a standard that interprets small numbers in terms of the expected take relative to population size, but they are not required to do so.

To answer your question, therefore, from a scientific perspective I believe that the term "small numbers' should be considered in the context of the marine mammal stock under consideration, including its size, conservation status, life history, and the existence of other stressors. This is the same conclusion reached by the National Research Council in its 2003 report:

> Effects that can be dramatic, even lethal, at the level of the individual may have negligible consequences at the population level if, for example, small numbers of a large healthy population are affected. Conversely, effects that may seem insignificant for the well-being of individuals could have important conservation consequences for populations that are depleted or under stress.

Thus, I believe that "small numbers" of a large, healthy population of seals or sea lions may not be the same as "small numbers" of an endangered whale facing multiple stressors.

6. As you know, many Alaska Natives depend on marine mammals for their nutritional and cultural well-being. Congress has repeatedly recognized the critical nature of their dependence on marine mammals: in the language of Section 101(b) of the MMPA, in the "no unmitigable adverse impact" language of paragraphs 101(a)(5)(A) and (D), and

in the explicit inclusion of the Alaska Nanuuq Commission in the MMPA's Title V. Furthermore, Congress has instructed the MMC to balance all recommendations concerning conservation initiatives with recommendations regarding measures to protect the livelihoods of Alaska Natives from possible adverse results of those conservation initiatives. Many Alaska Natives feel that, throughout its history, the MMC has placed a very heavy emphasis on marine mammal conservation with little regard for the impacts of federal regulatory actions on the wellbeing and subsistence livelihoods of Alaska Native residents. As the Chair of the MMC, what would you do to steer the Commission's actions and recommendations in a direction that balances my constituents' subsistence needs with the goal of marine mammal conservation?

Section 202(a)(7) of the MMPA directs the Commission to make recommendations to NMFS, FWS, other federal agencies, and Congress that further the policies of the Act, including its provisions for the protection of Alaska Natives whose livelihood may be adversely affected by actions taken under the Act. Throughout its history, the Commission has supported Native subsistence rights as reflected under the MMPA's provisions and has advocated on behalf of Alaska Native interests.

As far as I know, there is only one instance in which the Commission has advocated for regulating Native harvest under Section 101(b) of the Act, that being the case of the Cook Inlet beluga whale, a need that Congress also recognized when it passed special legislation (see Section 3022 of Public Law 106-31 and Section 627 of Public Law 106-553) independently allowing for the imposition of harvest limits. The Commission also carefully reviews all incidental taking proposals under MMPA Section 101(a)(5) for activities in Alaska and comments accordingly when it thinks that those activities would have adverse effects on the availability of marine mammals for subsistence harvest.

As discussed below in my response to Question 9, the Commission has long supported efforts on behalf of the Alaska Eskimo Whaling Commission (AEWC) to secure hunting authorizations from the International Whaling Commission (IWC) for bowhead whales. In fact, one of the current Commissioners, Dr. Michael Tillman, a member of the Tlingit Indian Tribe of Southeast Alaska, chairs the IWC's Aboriginal Subsistence Whaling Working Group (ASWWG) and is one of the strongest advocates on behalf of Alaska Native interests.

Other efforts by the Commission also reflect special concern for the welfare of Alaska Natives and protection of their subsistence livelihoods. These include: (1) a 2008 workshop on how to improve co-management efforts in Alaska; (2) a follow-up workshop on improving federal-tribal consultations involving Alaska Natives, and a subsequent grant to the Environmental Law Institute to work with Alaska Natives to develop model procedures; and (3) a 2009 Conservation of Arctic Flora and Fauna (CAFF) workshop sponsored by the Commission and the FWS to develop a framework for monitoring Arctic marine mammals, again with considerable input from Alaska Native representatives. Reports from all of these workshops are available on the Commission's web site.

If confirmed, I will make it a priority to discuss these issues with your Alaska Native constituents and to work with the other Commissioners, the Committee of Scientific Advisors,

and the Commission staff to seek additional ways, within the constraints of the statutory provisions you cite, to accommodate their concerns.

7. Well-informed, unbiased federal decisions regarding human interactions with marine mammals requires robust, apolitical scientific research and analysis. Please explain what steps you, as the Chair of the Marine Mammal Commission, would take to ensure that all actions and recommendations of the MMC provide a solid foundation for well-informed, unbiased federal decisions.

As Chair, I would ensure that the Marine Mammal Commission continues to provide an independent review of all significant federal decisions regarding human interactions with marine mammals. The Commission is statutorily required to provide a review of such actions, and federal agencies are required to respond to the recommendations of the MMC. The roles of the three Commissioners and the nine members of the Committee of Scientific Advisors are critical in ensuring that the Commission provides a well-informed, critical review of these federal decisions.

8. Alaska Native residents of Arctic coastal communities have a wealth of understanding of the Arctic ecosystem and of the health and behavior of Arctic marine mammals. This direct experience is sometimes referred to as "Traditional Knowledge." In some instances this knowledge has proven to be more robust and accurate than knowledge gained through "western science" methods. As a Commissioner of the MMC, how would you incorporate reference to "Traditional Knowledge" in your recommendations to federal agencies?

Alaska Native residents have, for thousands of years, lived alongside and harvested marine mammals and, as a result, have acquired unique knowledge about these animals and their habitats. Their familiarity with these species and habitats has made Alaska Native residents uniquely situated to notice changes in the status and role of marine mammals in this ecosystem. Such valuable information supplements our often limited scientific knowledge of the Arctic marine environment. Therefore, I believe that Traditional Knowledge is a valuable source of information and should be considered by decision-makers together with information derived from traditional scientific methods. I also note that the Commission has, since the 1980s appointed a Special Advisor on Native Affairs, a position currently held by Ms. Vera Metcalf of the Alaska Walrus Commission in Nome, Alaska. Ms. Metcalf is also a member of the Indigenous People's Council for Marine Mammals (IPCoMM), and reviews the recommendations issued by the Commission, particularly those of special interest to Alaska Natives.

9. In the case of Western Arctic bowhead whales, local hunters acting through the Alaska Eskimo Whaling Commission have a long history of successful federal-local co-management of the bowhead whale subsistence hunt. This federal-local relationship is critical to the continued social health of our Arctic communities, as it involves residents in decisions that have an important effect in their lives. The NOAA-AEWC Cooperative Agreement also removes the threat of criminal sanctions for violations of whaling regulations by AEWC whaling captains, another important factor promoting

social health in remote hunting communities. Finally, this co-management arrangement is a major contributor to the impressive recovery of the bowhead whale population. Please provide your thoughts on the benefits of federal-local co-management with Alaska Native Marine Mammal Organizations.

In my view, the Cooperative Agreement between NOAA and the AEWC has been a model of successful cooperation between the federal government and Alaska Natives. In fact, I highlight this case study in my teaching as the best example of co-management of a marine mammal subsistence harvest. Several factors contribute to this success, including: the close working relationship between NOAA and the AEWC; an adequate level of funding; the involvement of the local government entity in providing additional support, such as research; and a clear-cut regulatory structure under authorizations issued by the International Whaling Commission and the Whaling Convention Act.

The success of this cooperative agreement prompted Congress to add Section 119 to the MMPA in 1994, which provides the framework for cooperative agreements between the federal management agencies and other Alaska Native Organizations (ANOs). Several cooperative agreements between NMFS or FWS and various ANOs have been concluded since then, some more successfully than others. A general benefit has been improved cooperation and communication between management agencies and ANOs. However, consistent success has been hampered to some extent by the funding available, particularly as the number of ANOs has grown, and the inability of management agencies and ANOs to enter into harvest management agreements, even when they believe that such agreements would promote the conservation of marine mammals and safeguard future hunting opportunities.

When I served on the Committee of Scientific Advisors, the Commission advocated for increased funding to support the cooperative efforts of federal agencies and ANOs, something I still support. As reflected by the success of the NOAA-AEWC agreement, there is much to be gained through adequately funded cooperative programs. During my tenure on the Committee, the Commission also worked with IPCoMM, the Alaska Federation of Natives, NMFS, and FWS to craft a legislative proposal that would expand Section 119 of the MMPA to enable federal agencies and ANOs to establish enforceable harvest management agreements. Such an amendment still seems like a good idea and one that I encourage you and your colleagues to reconsider.

10. The AEWC also has a long history of co-management in the context of balancing offshore oil and gas development with subsistence activities through the Open Water Season Conflict Avoidance Agreement (CAA). Again, this initiative contributes to social health by enabling local residents to participate in decisions regarding whether, and how, offshore activities are integrated into their lives and economy. Please provide your thoughts on federal recognition and reliance on this form of local engagement.

I strongly support the development of Conflict Avoidance Agreements (CAAs) to ensure that potential conflicts between Arctic offshore oil and gas exploration and development and subsistence hunting activities are managed with the full engagement of Alaska Native hunter groups. Whalers in Barrow, Alaska, and other Arctic communities who are members of the

AEWC, have jointly entered into CAAs with oil and gas companies and seismic operators to minimize disturbance of the spring and fall bowhead whale subsistence hunts. The agreements, negotiated and revised annually, specify areas and times in which the parties agree that oil and gas activities should be curtailed or modified to avoid disturbing marine mammals before a hunt. The agreements also require the use of village-based communication centers to relay information between hunters and industry regarding planned operations and marine mammal presence and movements.

CAAs have been successful at avoiding conflicts with bowhead whales, but they do not address conflicts with other species, such as beluga whales or walruses. Nor do they address conflicts with human activities other than oil and gas operations, such as shipping, which are becoming more frequent in the Arctic. The hunters have therefore recommended that CAAs, or similar agreements, be expanded to include species other than bowhead whales and to address other potentially harmful activities in the Arctic. To that end, the AEWC has been active in organizing the Arctic Marine Mammal Coalition, an *ad hoc* coalition of five hunter/co-management groups established in 2012, to facilitate communication between local communities and the U.S. Coast Guard regarding impacts of increasing vessel traffic in the Arctic.

The Marine Mammal Commission has consistently supported the mitigation and monitoring measures outlined in CAAs in its comment letters and in discussions with industry and the regulatory agencies. The Commission has recommended that the National Marine Fisheries Service and the Bureau of Ocean Energy Management incorporate seasonal restrictions on seismic and drilling activities and other provisions of CAAs into the mitigation and monitoring requirements of G&G permits, MMPA incidental take authorizations, and associated Plans of Cooperation. These documents have the advantage of being enforceable under federal law, unlike CAAs. The Commission has also recommended that the U.S. Coast Guard continue to consult with Alaska Native communities on subsistence use in the Arctic and adopt vessel routing and other measures that will minimize conflicts between shipping and subsistence activities.

11. In your view, which human activities pose the greatest threat to marine mammal stocks/populations in U.S. waters? Identify the types of recommendations you, as a Commissioner of the MMC, would offer to address these issues.

In my view, the greatest threat to marine mammal populations in the U.S. and elsewhere remains mortality in commercial fishing operations. As I have noted elsewhere, we have made great strides in reducing the magnitude of this mortality, but several populations continue to be threatened by accidental entanglement and entrapment in fishing gear. Notable among these is the endangered population of North Atlantic right whales, which continues to experience entanglement in several fisheries along the Atlantic coast. As a Commissioner, I would urge the National Marine Fisheries Service to consider new management approaches to some of these long-standing issues and to expand its funding for work on potential solutions, particularly research projects that combine the efforts of fishermen and researchers. Your question is focused on threats to marine mammals in U.S. waters, but the bycatch of marine mammals in fisheries is generally recognized as the greatest threat to marine mammals worldwide. As reflected in my answer to Question #1, I would also work with other agencies to ensure that we use all available

tools to address the unsustainable bycatch of marine mammals by foreign fishing vessels, including the import provisions of the MMPA and opportunities for capacity building.

12. Arctic residents increasingly face the need to adapt to changing subsistence harvest opportunities and variations in species availability. I am hearing from my constituents that rigid federal regulations severely limit their ability to adapt to the transformations they are experiencing. It is increasingly clear that regulatory flexibility is necessary. Please provide your thoughts on what role you believe the Marine Mammal Commission might play in helping federal decision-makers begin to conceive a regulatory standard that would allow for greater flexibility in the context of marine mammal conservation and subsistence uses.

I appreciate the difficulties faced by subsistence hunters in a changing Arctic. Marine mammal species composition, distribution, and abundance are changing rapidly and this rate of change is predicted to increase in the decades to come. The environment, and particularly sea-ice conditions, is changing in ways that may make it difficult, dangerous, or impossible for hunters to access traditional hunting areas. One of Commission's mandates is to further the interests of Alaska Native communities as they relate to the harvest of marine mammals for subsistence purposes, so it should be particularly aware of the effects of these changing conditions in the Arctic.

I am unaware of specific challenges faced by subsistence hunters that are attributable to federal regulations which impose limits on subsistence hunting opportunities or limit a hunter's ability to adapt to changing conditions in the Arctic. It is my understanding that, with a few exceptions, there are no regulations that constrain the taking of marine mammals by Alaska Natives for subsistence and handicraft purposes, provided that the taking is for a subsistence purpose or for the purpose of creating and selling authentic articles of handicrafts and clothing, and is accomplished in a non-wasteful manner.

As far as I am aware, there are only three instances when additional regulatory requirements have been established that further constrain subsistence hunting opportunities. The first is for bowhead whales, which are regulated under both the MMPA and the Whaling Convention Act and are subject to authorizations issued by the International Whaling Commission. The Marine Mammal Commission has long supported measures to allow the continued subsistence hunting of bowhead whales by the AEWC, including inclusion of a provision that allows hunters to carry over a certain number of unused strikes from one year to the next. The carry-over provision affords some flexibility that enables hunters to respond to inter-annual variability in hunting opportunities.

The second marine mammal for which subsistence hunting is regulated is the Cook Inlet beluga whale. Hunting limits were adopted by NMFS using the heightened procedures of formal rulemaking - a rigorous process presided over by an independent Administrative Law Judge. In that instance, the Commission supported hunting regulations given that: (1) overharvest during the 1990s had reduced the population by more than half in less than a decade; (2) the population was designated as depleted and subsequently listed as endangered; and (3) the population continued to experience a decline, despite very low harvest rates since 1999.

The final instance involves the Chukchi Sea polar bear population. The Commission worked closely with the Fish and Wildlife Service, the Department of State, the Alaska Nanuuq Commission, and others to negotiate the U.S-Russia Polar Bear Agreement. All participants in those negotiations supported the adoption of enforceable harvest limits given uncertainty about the level of unauthorized hunting occurring in Russia and associated conservation concerns. The Agreement, which mandates the adoption of sustainable annual harvest limits, was unanimously approved by the Senate in 2003. Congress demonstrated further support for the Agreement when it passed implementing legislation in 2006. This Agreement was crafted with an unprecedented level of involvement by Alaska Native representatives, who took a leading role before the Senate in advocating for its implementation.

Notably, one of the U.S. Commissioners on the U.S.-Russia Polar Bear Commission must be an Alaska Native. Further, under Title V of the MMPA, the United States may vote on any issue before the Commission, including the adoption of harvest limits, only if there is no disagreement between the two U.S. Commissioners. Essentially, therefore, the Alaska Native Commissioner has veto power over the adoption of any action with which he or she disagrees. I have been advised that the Marine Mammal Commission supported the adoption of a flexible harvest regime patterned on the carryover provision for bowhead whales to account for different hunting conditions in different years. However, the Commission has questioned whether allowing hunters to borrow hunting opportunities from future years is consistent with the terms of the Agreement.

I would be interested in hearing more from you and your constituents about this issue, particularly which specific federal regulations they find to be inflexible and limiting hunting opportunities. I am committed to listening to and working with Alaska Natives to try to address these concerns, but it is difficult to define the explicit role of the Commission at this stage, given that the vast majority of subsistence hunts for marine mammals are not subject to agency regulations. I note in closing that I support the Commission's plans to hold its 2016 Annual Meeting in Alaska. This will provide an excellent opportunity to address these and other concerns of Alaska Natives.

13. As the Arctic experiences changes in sea ice coverage, many predicted that "ice dependent" marine mammal species would be negatively affected, including predictions of inevitable population declines that in some cases have already led to Endangered Species Act listings. However, research reports and local observations are not providing verification of these predictions in all cases, including in the case of Chukchi Sea polar bears.

    - Please give a summary of your understanding of current, relevant research.

The best available scientific information indicates that, on average, global temperatures are increasing and, as a result, sea-ice patterns are changing. The extent of sea-ice coverage, the duration of coverage, and the thickness of ice are all declining. These trends have been modeled to predict future ice conditions in different Arctic areas under various plausible scenarios. Marine mammal biologists use these sea-ice predictions to inform their analyses of the likely impact of anticipated climate change on Arctic marine mammals.

When the FWS listed the polar bear as threatened under the ESA, it relied on several analytical tools to look at future ice conditions and extrapolated the likely impact on polar bears based on observations of well-studied populations that are experiencing declines in sea ice and, as a result, are showing signs of nutritional or other stress. Based on those analyses, the FWS predicted the likely impact on polar bears in four different "ecoregions" where sea ice persistence was expected to differ over the next 45 years. The 45-year time frame was chosen because it represents three generations of polar bears and because the sea-ice projections became less reliable beyond 50 years. Applying the available sea-ice models, and based on what was known about the response of polar bear populations to sea-ice loss, the FWS predicted that carrying capacity for polar bears in the Polar Basin Divergent Ice eco-region (which includes the Chukchi Sea stock) would decline by 19 to 35 percent within 45 years. By modeling likely polar bear trends under a variety of plausible sea ice projections, the FWS concluded that polar bears in the Divergent Ice eco-region would be on a trend towards extirpation in the next 45 to 75 years.

In conjunction with the recently released draft polar bear conservation management plan, the U.S. Geological Survey (USGS) updated the model used and the analyses conducted in 2008. The predicted impacts on polar bear populations varied according to the greenhouse gas emission scenario used and the resulting speed with which sea-ice conditions are expected to change. The most dire outcome was projected for the Divergent Ice ecoregion, "which transitioned from a dominant probability of "decreased in the early century (2020-2030) to 'greatly decreased' at mid-century (2045-2055), under both" unabated and stabilized greenhouse gas emissions scenarios. Looking at different greenhouse gas emissions scenarios, the USGS concluded that "[t]he long-term persistence of polar bears will require stabilizing the projected loss of sea ice habitat, which can best be maintained by maintaining [greenhouse gas] emissions consistent with or below the RCP 4.5 (stabilized emission pathway) trajectory."

The effects of sea-ice loss and associated ecosystem changes on other marine mammal species will vary by species and population, by geography, and by each species' natural history. For example, the vulnerability of a marine mammal species to climate change will depend on its level of sea ice-dependence - we refer generally to *ice obligate* species (such as walruses, bearded, and ringed seals) and *ice associated* species (bowhead whales, beluga whales, and narwhals) in seeking to assess their vulnerabilities to sea-ice loss. Uncertainties remain as to precisely how each species and populations will respond, but there is general agreement in the scientific community that long-term changes in sea-ice conditions are occurring and soon will result in ice-free conditions for much of the year. These changes to Arctic ecosystems have the potential to have severe adverse consequences for several species, particularly ice obligate marine mammals.

- In instances where predicted declines appear not to have materialized, how would you factor this current state of knowledge into your recommendations, as an MMC Commissioner, in the context of federal decisions where Alaska Native subsistence livelihood will be affected and federal decisions related to economic development activities?

As with all matters before the Marine Mammal Commission, I would seek to ensure that any recommendations made were based on the best available scientific information. As noted in my response to question 8, this would include evaluation of information collected using conventional

scientific methods as well as traditional knowledge. I would also want to understand the basis of any conflicting messages from different sources of information.

In the case of Chukchi Sea polar bears, which you gave as an example, I would first try to reconcile the available information. Long-term data sets demonstrate that average global temperatures have been rising over the past several decades and that sea-ice coverage and persistence have been declining. For example, NOAA's Arctic Report Card indicates that the September sea ice minimum declined 13% per decade from 1981 to 2010, with ice coverage in all the years since 2001 below the average for this 30-year period. There also is compelling evidence linking these observed trends with increasing greenhouse gas levels. Given current and anticipated levels of greenhouse gas emissions, the models and conclusions reached by the USGS in its recent analysis make good scientific sense. There are sure to be inter-annual variation in sea ice conditions, and perhaps even short-term reversals in recent trends, but the weight of scientific evidence suggests that long-term trends in sea-ice loss will continue. It also makes sense that ice-dependent species such as polar bears will be adversely affected by substantial loss of their most important habitat, something that has been borne out by studies of well-studied polar bear subpopulations.

If the predicted declines have not materialized, I would want to understand why. For Chukchi Sea polar bears, the prediction is that significant adverse effects attributable to climate change may not be fully manifested for 40 or 50 years. I would first consider whether the predicted changes have not yet been observed simply because it is too early in the projected decline to detect them. I also would look at the types of information leading to one conclusion or another. For Chukchi Sea polar bears, there is no reliable abundance estimate and no reliable information on the trend of the population. As I understand it, the conclusion that this stock is stable is based on studies looking at body condition and cub production. These parameters may be appropriate proxies for overall population health, but I would want to know, among other things, where those bears were sampled and whether these results were representative of the population as a whole. To the extent that local observations were supporting one conclusion or another, I would want to know when and where those observations were being made. Might they reflect a shift in distribution (e.g., as polar bears spend more time on land or congregate around human habitations as potential food sources) rather than be an indicator of population stability? Finally, I would seek to understand any anomalous conclusions. That is, if two populations are experiencing similar rates of sea-ice loss but have different population trajectories, what factors might contribute to those differences.

14. The MMC often comments on proposed ESA listings or critical habitat designations. What do you think the MMC's role should be in ESA decision-making? Please explain.

One of the seven duties of the Commission listed in Section 202(a) of the MMPA is to "recommend to the Secretary such revisions of the endangered species list and threatened species list published pursuant to Section 4(c)(1) of the Endangered Species Act of 1973, as may be appropriate with regard to marine mammals…." In meeting this responsibility, the Commission has recommended listing actions on its own initiative, and provided comments and recommendations on listing proposals submitted by others. The Commission's duties do not specifically require the Commission to comment on critical habitat designations, but doing so

seems to fit squarely within its responsibility to provide recommendations regarding the protection and conservation of marine mammals. It also seems consistent with the overall policies of the MMPA, one of which is to protect essential marine mammal habitats. As such, the Commission comments on proposed critical habitat designations. The Commission has considerable expertise in matters related to the status of marine mammals, the threats they face, and their habitat needs, so it seems reasonable that it should work closely with NMFS or the FWS in reviewing listing proposals and critical habitat designations. If confirmed, I will strive to ensure that the Commission's recommendations are well crafted, well supported, and compelling to those responsible for making the decisions.

15. Do you believe that the MMPA, as currently implemented by NMFS, provides an accurate mechanism for determining whether fisheries are having acceptable levels of impact on marine mammal stocks? Please explain. As part of your answer to this question, please specifically address your views on the adequacy of the "potential biological removal" formula and NMFS's mechanisms for determining the amount of "serious injury and mortality" by fisheries.

Yes, I believe that Sections 117 and 118 of the MMPA provide an accurate and effective mechanism for determining which commercial fisheries are having an adverse impact on marine mammal populations. In particular, the Potential Biological Removal formula provides a transparent and efficient means of determining when serious injury and mortality are likely to affect the status of marine mammals, using data that are readily available. Prior to the amendments of 1994, such determinations required a cumbersome and imprecise procedure to determine whether fisheries mortality would reduce a population to or maintain it below its optimum sustainable population level and often relied on information that was difficult or impossible to obtain. Furthermore, I believe that the approach taken by NMFS, which typically involves placing observers on a sample of fishing vessels, generally allows for an unbiased estimation of the degree of serious injury and mortality. Of course, as noted by the General Accountability Office in its 2008 report (and in frequent recommendations made by the Marine Mammal Commission) there is room for improvement in the implementation of the stock assessment process and particularly in obtaining reliable estimates of incidental serious injuries and mortalities, given current observer coverage levels.

16. Do you believe that the MMPA, as currently implemented by NMFS, has acceptable mechanisms for addressing marine mammal incidental take by fisheries that are deemed too high under the MMPA? Please explain. As part of your answer to this question, please also explain your views on the sufficiency or insufficiency of the MMPA's take reduction planning processes.

In general, I believe that the Take Reduction Process is an effective and equitable means of reducing the mortality of marine mammals in commercial fisheries to below Potential Biological Removal levels. Take Reduction Teams bring together representative stakeholders in a consensus-driven process that allows potential mitigation measures to be evaluated and, in doing so, affords space for dialogue, negotiation, and agreement. Again, there are several areas in which the implementation of this procedure could be improved by NMFS, but I believe that the

overall model of a negotiated rulemaking process is effective and perhaps one that should be emulated by other resource management agencies.

17. Please explain your views on how the conservation of marine mammal stocks/populations can be accommodated in the context of economically important development initiatives.

I believe it is possible to ensure conservation of marine mammals while at the same time allowing for economically important development in the marine and coastal environment. Thanks to the provisions of the MMPA, we have seen the recovery of many populations of marine mammals at the same time as our coastal economies have continued to thrive and grow. The key is finding the appropriate balance of mitigating measures for human activities that allow for healthy marine mammal populations and marine ecosystems. As our science advances, we can better assess and predict the impacts of human activities, including how best to minimize those impacts. I have written recently about our need to predict the growth of marine mammal populations so that we can better plan to mitigate potential conflicts with human uses of coastal habitats. As a Commissioner, I would advocate that management agencies engage in such planning as early in the recovery process as possible.

18. The Administration has included areas in the Atlantic Ocean, the Beaufort Sea, and the Chukchi Sea in the 2017-2022 Draft Proposed Plan for OCS oil and gas leasing. Do you believe the MMC plays or should play a role in the Administration's decisions regarding offshore oil and gas leasing? If so, please explain that role.

The Commission regularly reviews and comments on Bureau of Ocean Energy Management (BOEM) proposed oil and gas activities in all U.S. federal waters, also referred to as the U.S. Outer Continental Shelf (OCS). Offshore oil and gas activities have the potential to affect marine mammals and their habitat and, therefore, are appropriately within the Commission's oversight responsibilities. The Commission comments pertain to specific areas that BOEM should consider exempting from lease sales to minimize adverse effects on vulnerable marine mammals or, in the case of the Arctic planning areas, Alaska Native communities that depend on marine mammals for subsistence.

The Commission's comments on the 2017-2022 Draft Proposed Program recommended the deferral of the Cook Inlet and Arctic (Beaufort and Chukchi Seas) planning areas to allow time for additional data collection and for industry to demonstrate its ability to produce oil and gas safely on current leases and respond effectively to oil spills. If lease sales were to go forward, the Commission recommended that BOEM exclude certain areas from leasing to protect environmentally sensitive areas and important subsistence hunting areas. The Commission also expressed concerns regarding the lack of information on the potential impacts of oil and gas activities on offshore marine mammals in the Mid- and South Atlantic planning areas and on the potential scale of oil and gas resources in this area relative to other planning areas. The Commission recommended that, if a lease sale were to go forward, BOEM use a geographically targeted, task force approach to select potentially suitable oil and gas lease areas in the Atlantic aimed at minimizing interactions with marine mammals and conflicts with other human uses of the marine environment.

The Commission also comments on and promotes environmental studies designed to improve understanding of the potential effects of oil and gas activities on marine mammals, and facilitates efforts to identify, prioritize, and address information needs related to oil and gas development by convening of workshops and meetings. For example, in April 2015, the Commission and several federal agency, academic, and non-governmental organization partners convened the Gulf of Mexico Marine Mammal Research and Monitoring Meeting in New Orleans to: (1) provide an overview of marine mammal stocks and human activities; (2) review marine mammal research and monitoring programs; (3) identify high priority marine mammal data needs for the next decade; (4) identify potential funding sources and opportunities for marine mammal research and monitoring stemming from the Deepwater Horizon oil spill and other initiatives; and (5) discuss options for collaborations to facilitate long-term research planning, information sharing, and capacity building.

Finally, the Commission comments on mitigation and monitoring measures that it believes should be incorporated into geological and geophysical (G&G) permits, leasing documents, and Marine Mammal Protection Act incidental take authorizations to minimize impacts to marine mammals.

19. Around the same time in March 2015 that your MMC Chair nomination package was being delivered to Congress, you signed a letter to President Obama – in your professional capacity as a Duke University professor – opposing geological and geophysical (G&G) seismic exploration because it "poses an unacceptable risk of serious harm to marine life at the species and population levels." The Senate is now being asked to entrust you with a leadership position over a federal oversight agency that holds notable sway over federal policies, plans, and permitting decisions related to marine mammals.

    - Do you disagree with the National Research Council, the statements of Dr. Bill Brown (Chief Environmental Office for BOEM), and an extensive scientific record, which all find that G&G seismic activities do not pose biologically significant threats of harm to marine mammal populations? If you disagree, what evidence is there for "increasing mortality and morbidity" and population level impacts? If you agree, why did you sign the letter?

This question addresses the important issue of the effects of seismic G&G activities on marine mammals. That such activities do affect individual marine mammals is well established in the scientific literature. Peer-reviewed scientific studies have documented adverse effects on marine mammals from elevated levels of noise in the oceans. With this as background, it is important to note that BOEM was careful to phrase its statement as "To date, there has been no documented scientific evidence of noise from air guns used in geological and geophysical (G&G) seismic activities adversely affecting animal *populations*." Dr. Brown further notes that this conclusion "…refers to effects on population sustainability, rather than effects on individual animals. We know from studies by BOEM and others that marine mammals can react to sound, sometimes moving away and sometimes changing their vocalizations." These responses, such as changes in vocalization rates, can affect essential behaviors that are linked to vital rates. So, to my mind

(and the other leading scientists who signed the letter) the question is not whether there are effects of G&G seismic activities on individual marine mammals – plainly there are – but whether these demonstrated changes in behavior are likely to have a population-level impact. This is, of course, the critically important line of research, known as the *Population Consequences of Acoustic Disturbance*, initially recommended by the National Research Council in 2005 and since pursued by the Office of Naval Research, working with academic scientists and researchers from other federal agencies. Furthermore, as noted by Dr. Brown, "BOEM does not and should not assume that lack of evidence for adverse population-level effects of air gun surveys means that those effects may not occur." So, I find myself in agreement with both the National Research Council and Dr. Brown. We all agree that there is a clear need for further research on population-level impacts. At the same time, however, there is ample evidence that increased levels of noise in the ocean can adversely affect individual marine mammals and, potentially, marine mammal populations.

- If you think seismic should be stopped for evaluating hydrocarbon resource potential, do you think it should it also be stopped for scientific research and renewable energy siting and construction purposes?

It is important to note that in our letter to President Obama, we did not, and I do not, categorically object to the use of seismic surveys to evaluate potential hydrocarbon resources. Instead, we concluded that BOEM had under-estimated the potential effects of multiple, sometimes overlapping seismic G&G activities along the Atlantic coast. We pointed out that the cumulative effects of these activities had not been considered fully, nor had sufficient precautionary measures been identified to protect highly vulnerable populations, such as the endangered North Atlantic right whale. We respectfully urged the President to reject the BOEM analysis and to not proceed with issuing licenses for the full suite of planned activities until these factors had been considered fully.

In response to the question, I believe academic seismic surveys and those used for siting renewable energy and construction purposes should undergo the same level of scientific and regulatory scrutiny as G&G seismic are required to undertake. Furthermore, there should be a full analysis of the *cumulative effects* of these activities on affected populations of marine mammals. Finally, I believe that scientific seismic surveys represent an important, but untapped, opportunity to conduct further research into the effects of airguns on marine mammals in a relatively controlled setting.

- Do you think it would be appropriate for you to use your position as MMC Chair to advance your professional views that G&G seismic should not proceed? If yes, why? If not, how would you ensure that MMC recommendations and policy contributions are based on the best available scientific record, and not influenced by any desires to prevent certain uses or resource development activities?

As discussed above, the referenced letter from concerned scientists did not oppose conducting G&G seismic activities *per se*, just at the level being proposed, without better information on the cumulative effects of these activities. As noted elsewhere in my responses to these questions, as a Commissioner, I would strive to ensure that the Marine Mammal Commission continues to

provide an unbiased, critical and science-based evaluation of federal agency decisions regarding the potential effects of human activities on marine mammal populations. This holds true for seismic activities.

20. Leveraging federal research dollars with funding from other agencies, industry, foundations, and non-governmental organizations is widely discussed but perhaps underutilized. Given your experiences managing research programs, what are the risks and benefits of this approach? How would you construct a policy at MMC to address any issues and facilitate these kinds of partnerships?

I believe that the Commission can and should seek to improve the effectiveness of scarce research funding by leveraging public-private partnerships. In this way, the Commission can work to ensure adequate research funding, full data access and sharing, and the open communication of scientific results. One example of such an approach is the Smart Gear special prize for reducing marine mammal bycatch. The Smart Gear program is designed to provide incentives to fishermen and their collaborators in developing workable solutions to address the issue of bycatch (accidental capture) in fishing operations. The Commission was able to secure funding from an NGO and the fishing industry, together with government funds (NMFS and the Commission) to cover this special prize in the latest round of the competition.

I would like to see the Commission seek additional federal and private sector funding to support the many worthy projects submitted for funding each year through the Commission's research proposal process, which greatly exceed the available funds each fiscal year. Many excellent projects are left unfunded, and I believe the Commission can design a process to work with partners in seeking support for projects supporting a joint need.

The greatest potential risk with private sector funding is the appearance of any impropriety in terms of which projects are funded and the reporting of the final results. To ensure there is no bias, the Commission would need to keep a "firewall" between the consideration of scientific merit of the various proposals and the decisions on funding. The Commission would also want to establish an independent peer review process for reviewing the final report of such research.

21. As you know, a significant part of the MMC's scientific capabilities are rooted in the contributions of its Committee of Scientific Advisors (CSA), a body that reviews and contributes to MMC comments on every federal activity under MMPA. As a former CSA member and nominated MMC Chair, do you believe the CSA has effective structure and processes in place, or are there ways for it to be more effective?

The CSA has functioned successfully over the course of my association with the Commission. In my experience, each member brings a particular background and expertise to the Commission. Together with those of the Commissioners and staff, the expertise and wealth of experience of CSA members ensure that the Commission's products are of a very high standard. It is the quality and relevance of those products that substantially contribute to creating the excellent reputation the Commission has for scientific accuracy and integrity, policy acumen, and impartiality.

As in any organization, there is always the possibility for improvement. Members of the CSA are chosen primarily for their scientific credentials, and yet are called on to provide input on Commission products that address marine mammal management and policy issues. The CSA members ensure that the Commission's recommendations in those areas are firmly rooted in the best available science and that the scientific ramifications of management and policy options are fully understood. Nonetheless, expanding the advice available to the Commission to include individuals whose primary expertise is in resource management or policy, social science, or economics could add to the scope and quality of Commission products.

The CSA makes a significant contribution to the Commission, but there are ways in which it could augment that contribution. For example, in certain circumstances, CSA members could represent the Commission in certain scientific and policy fora and thus greatly increase the reach and contribution of the Commission to the marine mammal community.

22. The CSA should reflect the best scientific thinking in all fields related to marine mammals. How would you craft a policy for selecting CSA participants and ensuring effective membership and participation?

I agree that the Commission should strive to have the best scientific minds available on the Committee of Scientific Advisors to provide independent advice on the broad suite of issues it addresses. I believe that the existing process, in which the Commission periodically solicits recommendations from the public, considers the types of expertise that it is likely to need given ongoing and emerging issues, seeks to fill any identified gaps, and generates its own list of potential candidates, works reasonably well. The Commission seeks expertise across a broad spectrum of disciplines, species, and geographic areas. The Committee is subject to the Federal Advisory Committee Act and strives to meet the diversity and other requirements applicable under that statute. Further assurance of a high level of competence is provided by the statutory appointment process through which prospective members as vetted by the Chairman of the Council on Environmental Quality, the Secretary of the Smithsonian, the Director of the National Science Foundation, and the Chairman of the National Academy of Sciences. I believe that the existing process has resulted in high quality appointments and do not envision any drastic changes.

- How long should CSA member hold their positions?

Currently, members serve an initial three-year term, with the possibility of reappointment. Certain members, who are particularly knowledgeable across a wide range of issues or who have expertise in a specialized disciple that is especially pertinent to the Commission's work, may serve longer than others. Having served on the Committee for five years I understand the value in gaining new perspectives that comes from having fairly regular turnover. At the same time, I appreciate the learning curve experienced by new members and the need to retain some members with a longer-term institutional memory of persistent issues.

- Is it appropriate for CSA to have members that are employed by the agencies that ultimately carry out permitting decisions – so they are, in effect, advising their own agencies?

In some cases scientists who work for the federal government are the leading experts in their fields. I do not believe they should be denied membership on the Committee solely because they are federal employees. That being said, the Commission is acutely aware of the issues associated with appointing agency employees. All members of the Committee serve as special government employees and are subject to federal ethics laws. The Commission uses financial disclosure reports to screen for impermissible conflicts of interest. It also considers matters related to the appearance of potential conflicts of interest. Because federal members generally do not have a financial stake in agency actions, the Commission's review focuses on appearance issues. Agency members are disqualified from participating in any matter in which they are personally involved in their agency capacity. In addition, they are recused from participating in any issue related to the particular part of the agency that they work for. For instance, an employee of the Alaska Fisheries Science Center would be recused from participating in the review of a research proposal or permit application submitted by a colleague at the National Marine Mammal Laboratory. Depending on the facts of a particular situation, the recusal may be broader. This parallels the recusals applicable to academic members of the Committee.

- Should qualified marine mammal scientists be barred from CSA participation if they carry out research being funded by regulated industries, such as commercial fisheries or oil and gas?

As mentioned above, Committee members are special government employees subject to federal ethics laws. As such, they are precluded from participating in particular matters in which they or certain other parties with whom they have a covered relationship have a financial interest. For example, a member with holdings in an energy-sector mutual fund likely would be disqualified from participating in issues related to oil and gas development. In addition, just as with federal employees on the Committee, the Commission needs to assess participation in matters that might create the appearance of a conflict of interest. If there are conflicts or appearance issues, the CSA member needs to be disqualified from participating in the matter, unless a waiver is issued in consultation with the Office of Government Ethics. It may be that for some prospective members, the extent of disqualifications is significant enough that they would be unable to provide input on the issues that are most pertinent to their area of expertise without a waiver. Clearly, as Chair, I would need to be attuned not just to the need for expert advice, but also to the need to preserve public trust in the independence and integrity of the Commission.

23. It is my understanding that on June 29, 2015, you participated in a meeting with BOEM whereby, according to a BOEM social media posting, you and your colleagues presented suggestions and recommendations to the Director of BOEM that included a proposed reduction of potential seismic surveying in portions of the Mid and South Atlantic region. As you know, seismic surveying is a critical part of developing information about what lies beneath the seabed, including potential hydrocarbon resources. BOEM Director Abigail Hopper noted that, “your passion is clear” on this issue. If confirmed, how would you, as Chair of the MMC, anticipate employing your recent advocacy to advance an agenda that would limit potential seismic surveying in the Atlantic? In addition, do you think it is an appropriate role of the MMC to engage in decisions regarding offshore energy leasing, and if so, can you cite the relevant statutory authority that you view as providing this authority?

Yes, I participated in this meeting via teleconference, together with several other leading scientists and BOEM staff, including Director Hopper. We presented three recommendations to the Director and her staff: (1) minimize the total amount of energy used in seismic activities planned for the Mid- and South Atlantic regions, which could be achieved by revising the surveyed areas to better reflect the potential lease sites and eliminating duplicative surveys; (2) protect some important and vulnerable species and their habitats from the potential effects of seismic G&G surveys; and (3) develop a comprehensive monitoring and research program to better understand the potential effects of these activities on affected populations. In response, Director Hopper thanked us for bringing concrete recommendations for mitigation, rather than simply opposing the use of seismic surveys. These recommendations are consistent with measures the Marine Mammal Commission, in consultation with its Committee of Scientific Advisors, has already identified as appropriate mitigation strategies in the Atlantic and elsewhere.

The primary statutory authority that provides authority for the Marine Mammal Commission to make such recommendations to BOEM is the Marine Mammal Protection Act, Section 202(a), particularly paragraphs (2), (4), and (7).