UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910

THE DIRECTOR

DEC 2 0 2019

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Megan J. Peterson, PhD
Co-Chair Alaska Scientific Review Group
10293 Somerset Dr.
Truckee, CA 96161

Dear Dr. Peterson:

Thank you for the letter to Chris Oliver, Assistant Administrator for Fisheries, transmitting recommendations from the February 2019 meeting of the Alaska Scientific Review Group (SRG). We strive to have a response prepared within 60 days of receipt of the SRG's recommendations and appreciate your understanding that our delay was to ensure that all recommendations were addressed.

The SRG has made many valuable recommendations to help guide NOAA Fisheries' marine mammal science and management, which are addressed in the enclosure. We appreciate the continued service and contributions by members of the Alaska SRG in providing advice and support to NOAA Fisheries in accordance with the Marine Mammal Protection Act. We look forward to our continued partnership to improve the science supporting the conservation of marine mammals.

Sincerely,

Francisco Werner, Ph.D.
Director of Scientific Programs and Chief Science Advisor

Samuel D. Rauch III
Deputy Assistant Administrator for Regulatory Programs

Enclosure

cc: Chris Oliver, Assistant Administrator for Fisheries
David Detlor, Acting Director, Office of Science and Technology
Donna Wieting, Director, Office of Protected Resources

Responses to the Recommendations of the Alaska Regional Scientific Review Group

1. Subsistence harvest data

Currently, reported ice seal harvest is presented as a minimum total within the SARs for both ringed and bearded seals, resulting in a gross underestimate of the total harvest. For example, the minimum number of bearded seals harvested in Utqiagvik (Barrow) was 1,070 in 2014. In other years, no information is available from Utqiagvik and the harvest is assumed to be zero. Although this results in a valid minimum estimate, we think it much more likely that bearded seal harvest continues in years when no data are collected. As currently written, the SARs state that minimum harvest is 555 bearded seals and 860 ringed seals. Recent work (Nelson et al. *In Press*) suggests that the true harvest is much greater than reported in the SARs. Using a sampling framework, the study concluded that approximately 6,707 bearded seals and 6,454 ringed seals are harvested annually in Alaska. **We recommend that NMFS adopt a sampling approach designed to statistically estimate the harvest of ice seals. Specifically, we recommend that NMFS adopt an approach similar to Nelson et al. (*In Press*) to estimate ice seal harvest. While the general modeling approach and assumptions may need to be modified and/or improved, ice seal harvest data are available through the Ice Seal Committee, and this information could be used to reduce uncertainty in ice seal harvest estimates in SARs.**

Response: NMFS agrees that this new analysis provides the best estimate of subsistence harvest for the four species of ice-associated seals and will incorporate the estimates of harvest of these species from Nelson et al. (2019) in the draft 2020 Stock Assessment Report.

2. Standardizing Nmin and Rmax

A review of the Alaska SARs (and a comparison with SARs from other SRG) shows a lack of consistency in the calculation of Nmin and Rmax across stocks when the default approaches or values are not being used. For instance, Rmax is sometimes calculated from life-history parameters, and at other times it is the maximum observed growth rate in published literature. The decision to use a published value rather than the default is not always explained consistently, even though the GAMMS caution: "Substitution of other values for these defaults should be made with caution, and only when reliable stock-specific information is available on Rmax." **In light of the SRG's recognition of the need for consistency in the estimation and application of Nmin and Rmax across the different SARs, the SRG requests a review from NMFS on how both these parameters have been estimated for each Alaska stock, with a focus on explaining cases in which default values are not being used, and suggests efforts towards a standardized set of guidelines beyond the recommendations already present in the GAMMS.**

Response: NMFS strives to use the best available information on a marine mammal stock in the Stock Assessment Reports so the approach to calculating Nmin and identifying Rmax will vary between stocks. The Alaska Fisheries Science Center (AFSC) will double check that each SAR explains any deviations from default values. The AFSC will provide a summary of Nmin, Rmax, and reasons for deviations from default values at the 2020 SRG meeting.

3. Alaska harbor porpoise and small-boat fisheries-marine mammal interaction data

The estimated fishery-related mortality for the Southeast Alaska harbor porpoise stock has been close to its Potential Biological Removal (PBR) level for a number of years, in large part due to interactions with regional gillnet fisheries. Considering mounting concerns over the status of harbor porpoise in Alaska, **the AKSRG recommends harbor porpoise research continue to be a priority, including delineating stock structure, estimating the abundance of stocks, and documenting M&SI for each stock. The AKSRG notes that more information will need to be gathered on small boat/gillnet fisheries potentially interacting with harbor porpoise in Southeast Alaska Inside Waters to assist with improving estimates of human-caused M&SI for that stock.**

Response: NMFS agree that mortality and serious injury of harbor porpoise are of concern for some fisheries in Alaska. Without estimates of harbor porpoise abundance and stock structure, it is not possible to assess the population-level impacts of mortality and serious injury to different stocks. In 2019, the AFSC conducted a vessel-based abundance survey in the inside waters of Southeast Alaska and collected new information to better evaluate harbor porpoise stocks in this area. We expect AFSC to present preliminary results at the 2020 SRG meeting.

4. Estimating marine mammal bycatch

The level of observer coverage varies widely across Alaska commercial state and federal fisheries. A substantial portion of fleet landings is not monitored in the state. Ratio estimators are typically used to estimate marine mammal bycatch or interactions. However, ratio estimators are based on the assumption that bycatch is proportional to a proxy of fishing effort (e.g. tons landed), however, spatial trends and/or zero values can confound these results (that may in fact not be linear). Because most marine mammal species are rarely or sporadically caught and because observer coverage is quite low in some fisheries (e.g. Southeast Alaska gillnet), the relationship between marine mammal bycatch/interactions and fishing effort can be highly uncertain. A Bayesian modeling approach, as described by Jannot et al. 2018 and Martin et al. 2015, used by the U.S. West Coast Groundfish Fisheries, may better account for spatial and temporal trends and uncertainty in marine mammal bycatch in some Alaska fisheries. These methods have been used with other rare bycatch species, including cetaceans, sea turtles and sharks. **The AKSRG recommends that NMFS explore new approaches for estimating bycatch and/or M&SI in partially observed fisheries in Alaska, with attention to the approach taken in the U.S. West Coast fisheries.**

Response: NMFS agrees that a model-based approach could be a useful alternative to ratio-estimation for the purposes of estimating bycatch when observer coverage is incomplete. The AFSC will consider this approach in the future. In particular, a hierarchical model may provide a more robust representation of uncertainty given the ability to explicitly distinguish between error related to modeling the ecological process (i.e., the true number of marine mammal mortalities) and error that arises from imperfect observations of that process (i.e., incomplete observer coverage). The approach developed by Martin et al. (2015) and subsequently used by Jannot et al. (2018) does this in spirit, but it combines ecological and observational processes in an ad hoc manner that does not allow uncertainty to propagate through the model components. Moreover, their approach assumes an unconventional error structure such that uncertainty in bycatch increases with fishing effort (e.g., number of sets, total landings, etc.) regardless of observer coverage. A better specification might

rather assume uncertainty increases as observer coverage decreases. Nevertheless, a hierarchical model that rigorously accounts for multiple sources of uncertainty and relies on appropriate error structures could be developed and applied to existing bycatch data sets. Even though spatio-temporal patterns could theoretically be incorporated into a model like this, it may not be practical given the limited information available in rare marine mammal bycatch events.

Jannot, J. E., K. A. Somers, V. Tuttle, J. McVeigh, J. V. Carretta, and V. Helker. 2018. Observed and Estimated Marine Mammal Bycatch in U.S. West Coast Groundfish Fisheries, 2002–16. U.S. Department of Commerce, NWFSC Processed Report 2018-03. https://doi.org/ 10.25923/fkf8-0x49

Martin, S. L., Stohs, S. M. and Moore, J. E. (2015), Bayesian inference and assessment for rare-event bycatch in marine fisheries: a drift gillnet fishery case study. Ecological Applications, 25: 416-429.

5. State-managed fishery marine mammal interaction data

It is unclear how bycatch and M&SI data from state-managed fisheries are incorporated in SARs. However, state-managed fisheries occur in some regions with a significant degree of overlap with strategic marine mammal stocks, such as harbor porpoise or AT1 killer whales. **We request NMFS inform the AKSRG and describe in SARs how they incorporate M&SI in addition to entanglement data and standardize this approach to the extent possible going forward, with special attention to fisheries that overlap with strategic and/or declining marine mammal stocks.**

Response: NMFS obtains some of our information on mortality and serious injury incidental to state-managed fisheries from observer programs, which have been implemented intermittently for 1-2 years in different state fisheries. The SARs include information on bycatch from observer programs implemented for the following state-managed fisheries: Bristol Bay salmon set gillnet, Bristol Bay salmon drift gillnet, Alaska Peninsula/Aleutian Islands salmon set gillnet, Alaska Peninsula/Aleutian Islands salmon drift gillnet, Kodiak Island salmon set gillnet, Cook Inlet salmon drift gillnet, Cook Inlet salmon set gillnet, Prince William Sound salmon drift gillnet, Yakutat salmon set gillnet, and Southeast Alaska salmon drift gillnet. In addition to the requirement for fishermen to report mortalities and injuries pursuant to the MMPA, opportunistic reports are also used to provide information on the minimum level of mortality and serious injury incidental to state fisheries. These reports are dependent on the number of people calling in reports for an area, so more information is available in a place that is more heavily populated, like Southeast Alaska, than in areas that have low population density, like Norton Sound. The AFSC and Alaska Regional Office would be willing to provide a presentation to the SRG on this issue at the 2020 SRG meeting if this is of interest to the SRG.

6. Summarizing Mortality and Serious Injury (M&SI) by fishery in SARs and Appendices

Data on marine mammal-fisheries interactions, observer coverage rates, and marine mammal stock range overlap with fisheries are limited in most SARs and difficult to review efficiently across marine mammal stocks and target fisheries. **The AKSRG requests that NMFS add a table to each SAR that includes each fishery that potentially interacts with the marine mammal stock in question. We request that the table includes (1) the proportion of the marine mammal stock's range that overlaps each fishery, (2) if each fishery is monitored for bycatch of marine mammals, (3) what proportion of the fishery is monitored, and (4) the M&SI for each fishery. In the text, SARs should clearly provide information on the survey design used when fisheries are monitored for M&SI.**

Response: We are reviewing the information that must be included in appendices for the Stock Assessment Reports. The AFSC will consider the SRG's request for this table in the context of that discussion and will advise the SRG of how NMFS will proceed at that time. In the meantime, much of the information requested by the AKSRG is already available in the SARs, SAR Appendices, and MMPA List of Fisheries. The SARs provide estimates of M&SI in each fishery with observed marine mammal bycatch and cited references provide information on the survey designs of the monitoring programs (e.g., Breiwick 2013, Manly 2015). SAR Appendix 6 provides the percent annual observer coverage in each observed Alaska fishery and the List of Fisheries provides summary information for each listed fishery, including the number of participants and the marine mammal species recorded as incidentally taken. In addition, the AKR developed descriptions for each Category II Alaska fishery, linked from the List of Fisheries Summary Tables webpage (https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables), that summarize current and historical information on the fisheries and marine mammal interactions.

NMFS agrees that it is important to identify the fisheries that potentially interact with each marine mammal stock, which may inform our priorities for observing fisheries. However, the AFSC lacks specific information on the spatial and temporal distribution of some marine mammal stocks and the geographic extent of fishing effort, such that we cannot accurately estimate the proportion of a marine mammal stock's range that overlaps with each fishery. Even if the AFSC were able to make such estimates, the proportion of overlap may not be an informative predictor of the rate of bycatch or consequences to the population.

Breiwick, J. M. 2013. North Pacific marine mammal bycatch estimation methodology and results, 2007-2011. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-260, 40 p.

Manly, B. F. J. 2015. Incidental takes and interactions of marine mammals and birds in districts 6, 7, and 8 of the Southeast Alaska salmon drift gillnet fishery, 2012 and 2013. Final Report to NMFS Alaska Region. 52 p.

7. Review of scientific work pertaining to the Cook Inlet stock of beluga whales

Although new research has been conducted on this stock in recent years, including a re-analysis of abundance surveys, this information was not presented at the 2019 AK SRG meeting, nor included in the SAR for Cook Inlet belugas. **The AKSRG requests a detailed presentation of scientific work pertaining to beluga whales in the Threatened Cook Inlet stock and that the SAR is updated accordingly.**

Response: The AFSC will provide an update on Cook Inlet beluga whale research to the SRG at the 2020 SRG meeting.

8. Humpback whale stock structure

North Pacific whale populations have been divided into new Distinct Population Segments (DPS) under the Endangered Species Act (ESA). However, humpback stocks in the Pacific Ocean under the Marine Mammal Protection Act (MMPA) remain unchanged (under review); existing MMPA stocks are not coincident with the new ESA defined DPS. **The AKSRG requests that NMFS: 1) give a presentation on the current humpback stock redefinition process, and 2) provide guidance on how the AKSRG can provide scientific advice on how to update the current SARs in the absence of new stock delineations.**

Response: NMFS has developed a Procedural Directive for reviewing and designating stocks and issuing stock assessment reports under the MMPA. In addition to detailing NMFS overall process for designating stocks, this directive details how the agency considers designating stocks when Distinct Population Segments have been defined under the ESA and includes a description of how the SRGs are involved in the stock designation process. We will share it with the SRGs and provide additional information at the 2020 Alaska SRG meeting.

9. North Pacific right whales

The North Pacific right whale is in danger of extinction and data limited. Research on this endangered population should be a NMFS priority. **The AKSRG requests that NMFS identify specific actions, such as processing of existing acoustic data or maintenance of critical monitoring stations that could provide scientific data on the endangered North Pacific right whale in a cost-effective manner.**

Response: The AFSC will provide an update on Eastern North Pacific right whale research to the SRG at the 2020 Alaska SRG meeting.

10. General policy information requests

The AKSRG requests that NMFS PR headquarters present a seminar to the AKSRG at the 2020 meeting detailing their three new draft policies/guidelines on: (1) criteria for negligible impacts from fisheries, (2) internal policies for designating new stocks, and (3) guidelines for non-lethal deterrents (draft rule planned for fall 2019).

Response: NMFS is developing a Procedural Directive related to determining negligible impact under MMPA section 101(a)(5)(E) and has recently finalized a procedural directive for reviewing and designating stocks and issuing stock assessment reports under the MMPA. Once final, these will be shared with the SRGs. As it relates to non-lethal deterrents, we continue to develop a proposed rule and the associated analyses to implement MMPA section 101(a)(4) for safely deterring marine mammals. We are happy to provide an update on these efforts at the February 2020 meeting.