National Marine Fisheries Service Memorandum for the Record:
Management Considerations in Designating Demographically Independent Populations as Stocks under the Marine Mammal Protection Act

Memo to Record

To: The Record

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Subject: Evaluation of stock designation for demographically independent populations within the currently designated Southeast Alaska harbor porpoise stock.

Purpose: The National Marine Fisheries Service (NMFS) process for designating stocks under the Marine Mammal Protection Act (MMPA) is described in *Reviewing and Designating Stocks and Issuing Stock Assessment Reports under the Marine Mammal Protection Act* (NMFS 2019). In most cases, if sufficient evidence exists to delineate demographically independent populations (DIPs), they should be designated as stocks and assessed as such in Stock Assessment Reports (SARs). As noted in NMFS (2019), in practice there may be some situations (anticipated to be relatively few) where it would be impractical, or there are insufficient data or analytical tools, to assess and manage a stock at the DIP level (see NMFS (2019) for examples). In addition, when Distinct Population Segments (DPSs) have been established under the Endangered Species Act (ESA), it may be pragmatic to designate a stock comprising more than one DIP of a single DPS.

The purpose of this memorandum is to document the collective consideration by NMFS' Alaska Fisheries Science Center (AFSC), Alaska Regional Office (AKRO), Office of Protected Resources (OPR), and Office of Science and Technology (OST) staff of how to designate stocks

relative to identified DIPs within the Southeast Alaska harbor porpoise stock. In some cases, this may involve considering stock designation of "units" that have not been definitively delineated as DIPs. For example, when a newly delineated DIP from within an existing stock is being considered for stock designation, the remaining marine mammals in the stock may or may not be understood to constitute one or more DIPs depending on the available data and analyses.

Current Stock Designation(s): The Southeast Alaska harbor porpoise stock is described as harbor porpoise occurring from Dixon Entrance to Cape Suckling, Alaska, including offshore, coastal, and inland waters. Since 2015, the SARs for the three Alaska harbor porpoise stocks (Southeast Alaska, Gulf of Alaska, and Bering Sea stocks) have noted that in areas outside of Alaska, studies of harbor porpoise distribution have indicated that stock structure is likely more fine-scaled than is reflected in the Alaska SARs and, should new information on harbor porpoise stocks become available, the harbor porpoise SARs will be updated.

Demographically Independent Populations/Units Under Consideration:
Zerbini et al. (2022) delineated two DIPs and identified one unit within the Southeast Alaska harbor porpoise stock: the Northern Southeast Alaska (N-SEAK) Inland Waters DIP, the Southern Southeast Alaska (S-SEAK) Inland Waters DIP, and the Yakutat/Southeast Alaska (Y-SEAK) Offshore Waters unit. As discussed in Zerbini et al. (2022), the Y-SEAK Offshore Waters unit may contain multiple DIPs, but the information is insufficient or unavailable to delineate DIPs within this unit at this time.

Relevant Regional Office(s), Science Center(s), and Headquarters Office(s): AKRO, ASFSC, OPR, OST.

Process by which stock designation was considered: A working group of staff from the Alaska Fisheries Science Center's Marine Mammal Lab (MML) and a genetics expert from the Northwest Fisheries Science Center held teleconferences and email discussions between October 2020 and November 2021 regarding population structure within the Southeast Alaska harbor porpoise stock. Based on these discussions, the working group developed a NOAA Technical Memorandum documenting the available evidence to delineate DIPs (Zerbini et al. 2022), following the DIP Delineation Handbook (Martien et al. 2019). The Technical Memorandum draws conclusions regarding the presence of DIPs that can be delineated at this time, and the potential DIP(s) that may exist within the stock but for which the available information is not sufficient to support the delineation at this time. In this case, N-SEAK and S-SEAK Inland Waters DIPs can be delineated at this time; the remaining harbor porpoise within the currently designated Southeast Alaska harbor porpoise stock may comprise one or more additional DIPs, which cannot be delineated at this time, so are considered to be the Y-SEAK Offshore Waters unit.

The working group presented the preliminary results of the DIP evaluation to AKRO, OPR, and OST by teleconference in January 2021, and continued the discussion of stock designation by email through December 2021. This Memo to Record documents recommendations from those discussions.

Questions to Consider for Stock Designation (from NMFS 2019, Section B):

1. Is it feasible to manage each DIP/unit being considered as a single stock? For example:
    a. Is there an abundance estimate for each DIP/unit that could be used for calculating the PBR level?
    b. Is there a way to attribute takes to each DIP/unit other than allocating each take to all possible DIPs in the area?
    c. Are there any other potential analytical or practical barriers that would limit our ability to manage each DIP/unit?

It is feasible to manage each DIP or unit as a single stock.

Abundance

Data from a 2019 vessel survey in inland waters of Southeast Alaska were used to generate estimates of abundance for the N-SEAK and S-SEAK Inland Waters DIPs (Zerbini et al. In review), from which estimates of PBR could be computed. However, because there is no recent estimate of abundance for Yakutat or the Gulf of Alaska outer coast and offshore waters, PBR for the Y-SEAK Offshore Waters unit may be considered undetermined.

Attributing Human-Caused Mortality and Serious Injury

At this time, there is no evidence that the DIPs/unit overlap geographically, so human-caused mortality/serious injury (M/SI) could be assigned to a DIP/unit based on location. One source of M/SI is the Southeast Alaska commercial salmon drift gillnet fishery. In 2012-2013, the Alaska Marine Mammal Observer Program documented harbor porpoise interactions in the fishery within the Alaska Department of Fish and Game's (ADF&G) commercial fishing districts 6, 7, and 8 in inland waters of Southeast Alaska. The observed M/SI and resulting estimates were first assigned to the Southeast Alaska harbor porpoise stock in the 2015 SAR (Manly 2015, Muto et al. 2016). The boundary between the N-SEAK and S-SEAK Inland Waters DIPs corresponds with the boundary between ADF&G fishing district sub-areas 8A and 8B (which together comprise fishing district 8). Going forward, the estimated M/SI for sub-area 8A could be assigned to the N-SEAK Inland Waters DIP, while the estimated M/SI for fishing districts 6, 7, and sub-area 8B would be assigned to the S-SEAK Inland Waters DIP. Likewise, M/SI from other human causes would be assigned to the relevant DIP/unit where the M/SI occurs, if determinable (such as via Alaska Marine Mammal Stranding Network records).

Other Potential Analytical or Practical Barriers

The connectivity (dynamics and exchange) between harbor porpoise in Yakutat Bay and coastal and offshore habitats and those from inland waters cannot be determined with available data. Once new information is available to evaluate the connectivity, a re-assessment of these boundaries would be warranted. While this does not limit our ability to manage the DIPs/unit as individual stocks at this time, it does present the possibility that, if there is substantial exchange between harbor porpoise in inland waters and coastal/offshore waters, and the inland waters DIPs should be considered to be part of larger populations, we could be too conservative in our management of the inland waters DIPs.

2. Is there a reason to believe that human-caused serious injury/mortality or threats differ significantly among DIPs/unit in the area?

Entanglement in fishing gear, particularly gillnet and other net fisheries, is the threat most likely to result in M/SI of harbor porpoise. Variation in fishery effort, gear type, and distribution, and/or variation in the localized abundance of harbor porpoise relative to fishing locations, may result in differential effects to harbor porpoise among the separate DIPs/unit. However, based on the available data, there is no reason to believe that such effects are significantly different among DIPs/unit in this area.

3. What are the conservation and management benefits and risks of managing each DIP/unit as individual stocks versus together as a single stock?

Managing the DIPs/unit separately would allow more targeted management of threats, particularly gillnet fishery interactions in SEAK inland waters. Managing the DIPs/unit separately would also highlight the lack of information on animals in the Y-SEAK Offshore Waters unit, particularly the lack of a recent abundance estimate outside of SEAK inland waters. However, for the time being, PBR for the Y-SEAK Offshore Waters unit may be considered unknown, which could limit our ability to manage that unit.

If the DIPs/unit remain a single stock, the available abundance estimate for SEAK inland waters could be considered the estimate for the whole stock, despite only representing a portion of the stock range, because the Yakutat area has not been surveyed recently. In this case, the M/SI from the Yakutat area would be counted against a PBR generated from an abundance estimate for a portion of the range (a large underestimate for the whole stock), potentially leading to an inappropriate stock-wide strategic designation.

4. Have Distinct Population Segments (DPSs) for the species to which the DIPs/units belong been recognized under the ESA? (note from NMFS 2019: NMFS should align stock designations with DPSs established under the ESA unless there is compelling reason not to. For species that are listed under the ESA, only DIPs/units from the same ESA-listed DPS should be combined.)

No.

5. Do members of the DIP/unit overlap in space and time with members of at least one other DIP/unit of the same species? For migratory marine mammals, the evaluation should focus on overlap in the breeding ground(s). In cases where DPSs have been established under the ESA, the same species here refers to all animals within a single DPS.

There is no evidence indicating that members of the DIPs/unit overlap in space and time with members of any other harbor porpoise DIP/unit. However, the connectivity between the inland waters DIPs and the offshore unit needs further investigation.

Other Management Considerations: Southeast Alaska harbor porpoise interactions in the commercial AK Southeast salmon drift gillnet fishery and AK Yakutat salmon set gillnet fishery are NMFS' highest priority for establishing a new Take Reduction Team (TRT) under MMPA section 118. Designating the N-SEAK and S-SEAK Inland Waters DIPs and the Y-SEAK Offshore Waters unit as separate stocks would allow NMFS to focus its management efforts on the fisheries and stock(s) with the greatest conservation need.

Conclusion: Based on the evaluation of the information presented in Zerbini et al. (2022) and the consideration of the questions posed above, consensus was reached to recommend the designation of three stocks that together comprise the currently designated Southeast Alaska harbor porpoise stock: the Northern Southeast Alaska Inland Waters stock, the Southern Southeast Alaska Inland Waters stock, and the Yakutat/Southeast Alaska Offshore Waters stock. As further information and analyses become available in the future, these stock designation recommendations may be revisited. Official stock designation decisions are made by the NMFS' Assistant Administrator in final stock assessment reports, following publication of the draft stock assessment reports and consideration of public comment.

References:

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 pp. Available online: https://www.fisheries.noaa.gov/resource/document/incidental-takes-and-interactions-marine-mammals-and-birds-districts-6-7-and-8 .

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NMFS. 2019. Reviewing and designating stocks and issuing stock assessment reports under the Marine Mammal Protection Act. National Marine Fisheries Service Procedure 02-204-03.

Zerbini, A. N., K. M. Parsons, K. T. Goetz, R. P. Angliss, and N. C. Young. 2022. Identification of demographically independent populations within the currently designated Southeast Alaska harbor porpoise stock. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-448.

Zerbini, A. N., K. T. Goetz, K. Forney, and C. Boyd. In review. Estimating abundance of a cryptic cetacean in a complex environment: harbor porpoises (*Phocoena phocoena*) in inland waters of Southeast Alaska. Frontiers in Marine Science.

Attachment:

Zerbini, A. N., K. M. Parsons, K. T. Goetz, R. P. Angliss, and N. C. Young. 2022. Identification of demographically independent populations within the currently designated Southeast Alaska harbor porpoise stock. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-448.