Minutes from the Alaska Scientific Review Group Inter-sessional Call on Humpback Whales
NMFS Alaska Fisheries Science Center, Seattle, WA
May 6, 2022

This report summarizes the 2022 inter-sessional call on humpback whales of the Alaska Scientific Review Group (AK SRG), held virtually on May 6, 2022. This document is intended to summarize the main points of discussion and does not attempt to record everything that was said during the meeting.

Attendees

AK SRG Members: Beth Concepcion, Donna Hauser, Eric Regehr, Kate Stafford, Megan Williams (AK SRG Co-Chair), Thomas Doniol-Valcroze

NMFS:

- *Alaska Fisheries Science Center (AFSC)*: LTJG James Freed, Nancy Friday, Nancy Young, Paul Wade, Robyn Angliss
- *Pacific Islands Fisheries Science Center (PIFSC)*: Erin Oleson
- *Alaska Regional Office (AKRO)*: Suzie Teerlink
- *Office of Protected Resources (OPR)*: Eric Patterson
- *Office of Science and Technology (OST)*: Zachary Schakner

General Topics

Megan Williams welcomed everyone to the meeting, thanked attendees for joining and reviewing the stock assessment reports (SARs), and provided some general meeting guidance. Nancy Young reviewed the meeting agenda and provided some additional announcements for the SRG.

Eric Patterson provided a refresher on the status and decision points in NMFS' process for revising the North Pacific humpback whale stock designations. He briefly explained the steps in NMFS' policy for reviewing and designating stocks, the need for reconciliation between the Marine Mammal Protection Act (MMPA) stocks and the Endangered Species Act distinct population segments (DPSs), NMFS' identification of demographically independent populations (DIPs) within the DPSs, and NMFS' identification of stocks, which are reflected in the draft SARs. He summarized that NMFS will incorporate SRG feedback into the draft SARs before continuing with the normal SAR process.

Humpback SAR reviews

Western North Pacific (WNP) SAR

Williams gave an overview of the WNP SAR. She mentioned that the stock is composed of two "units" but there is not enough information available to assess them separately. She also highlighted that the estimate for N_{MIN} was difficult for her to digest because there were a few variations of abundance estimates presented. She noted that the SAR language could be clearer about which analyses were used to construct N_{MIN} in most of the humpback whale SARs, but this one, in particular, was the most

challenging. She also pointed out the low PBR and expressed concern regarding how NMFS is doing the proration. Williams said that SAR laid out that the stock is endangered and the upper 95% confidence limit of the movement probability was used as the proration factor, but the justification for using the point estimates of movement probabilities for other stocks could be laid out more clearly. Kate Stafford asked why the stock was considered to be endangered; Patterson responded that the ESA listing determinations are described in detail in the final rule designating the DPSs (81 FR 62259, August 8, 2016) and noted that NMFS does not typically provide much detail on ESA determinations in MMPA SARs. Stafford stated that it would be helpful for the general public to summarize the justification for the designation in the SAR, and Williams agreed.

Thomas Doniol-Valcroze noted that the N_{MIN} section references a "multi-strata Asia wintering area estimate," but that phrase is not included in the Population Size section, so it isn't clear what estimate that is. Oleson clarified that it refers to Wade's (2021[1]) multi-strata analysis and noted that the overall N_{MIN} of 1,077 comes from the combined estimate of 1,380 (CV=0.271) and the US-only N_{MIN} of 110 comes from the estimate of 162. Doniol-Valcroze suggested that the best abundance estimate be repeated in the N_{MIN} paragraph, along with the N_{MIN} calculations. Williams agreed. She also pointed out the mix of older and newer data and requested that the SAR make it more clear which survey years are being used in the abundance analyses.

Eric Regehr asked for clarification on how the movement probabilities are used in a multi-state model for prorating abundance among different summering and wintering areas, noting that if whales can move to different areas each migration, estimating one-year transition probabilities may not be appropriate. Wade replied that humpback whales have strong maternal fidelity to wintering and feeding areas (as supported by genetics and photo-identification work), and animals tend to go back to the same wintering grounds year after year. He mentioned that in his paper (Wade 2021[1]), although not laid out in detail, a non-Markov memory model wins on AIC value comparison, and he can estimate probabilities of animals returning to the same wintering area, as well as the probability of moving to a different wintering area. The estimated probabilities of whales switching or "straying" to a different area are generally low in all cases, although there are so few examples of such "straying" in the dataset that the estimates are not very precise or robust. Conversely, the estimates of fidelity (i.e., returning to an area seen in before) are generally all quite high.

Stafford asked why 7% was selected as the growth rate over the other rates presented in the text and noted that the choice of this parameter has a big effect on PBR. Oleson replied that she chose 7% because it has been used historically in the WNP humpback SAR and is the average among the different growth rates observed. She stated that they could explore something else if desired, such as the 10% rate suggested by Stafford, but given the lack of data, it is difficult to justify increasing the growth rate.

[1] Wade, P.R. 2021. Estimates of abundance and migratory destination for North Pacific humpback whales in both summer feeding areas and winter mating and calving areas. International Whaling Commission Report SC/68c/IA/03.

Williams asked whether Japanese bycatch data would be available going forward, and Oleson and Wade replied that Japan may not be reporting bycatch since they withdrew from the IWC. Wade noted that bycatch data are still being collected in Japan, though it may not be accessible.

Williams asked if other transboundary stocks handle bycatch the same way, in that takes from non-US commercial fisheries count directly against PBR. Oleson was aware of examples in the Atlantic where catch data from Canadian fisheries was included in the SAR but noted that this was new for Pacific humpback whales. Stafford asked how the US manages transboundary stocks where PBR is not being exceeded in US waters but is being exceeded outside of US waters. Patterson acknowledged that it is a tricky situation and that the GAMMS tries to clarify how to handle these situations. He mentioned that NMFS tries to manage at the important biological level and that they have tools to cooperate with international partners such as the MMPA imports rule but since the US cannot impose regulatory measures in foreign fisheries, NMFS relies on collaborations with foreign governments to deal with these situations. Williams expressed additional concerns about conservation concerns for transboundary stocks and how the whales are prorated. She stated that there needs to be biological samples (e.g. bycatch) for any takes in US waters; however, Suzie Teerlink replied that there often is no animal sample available when animals are entangled and die in pot gear. Teerlink acknowledged that they try to get samples or photos when possible but noted that some entanglements are not accessible to disentanglement efforts. Young added that although SWFSC has tried, NMFS is not yet able to assign to a stock based on genetic samples only unless genetic samples from that stock are already available.

Regehr asked about the consistency between SARs regarding the use of older data. He noted that for the WNP SAR, the abundance estimate was considered valid, while for the Mexico-North Pacific SAR, the same SPLASH data were considered to be too old. Oleson said that the SPLASH data are all that is available to assess the WNP stock and that it is better to compute a PBR based on available data than to have no PBR. Very limited, newer data exist from the Marianas Archipelago, but those are not as comprehensive as the SPLASH data. Wade then mentioned that the GAMMS state that abundance estimates become obsolete after eight years unless there is evidence the population has not declined. For the Mexico-North Pacific stock, not much work has been done in the Revillagigedos Islands, where most of the stock winters, and there does not appear to be a pressing management need to identify a PBR. Doniol-Valcroze followed up and said that he does not have an issue with older data being used, but he is concerned about the inconsistency between the SARs and the same wording being used to justify different conclusions. Wade acknowledged his concerns and pointed to some text about the effects of the marine heatwave that could justify the different conclusions. Doniol-Valcroze acknowledged that the arguments are there in the text but reiterated that the wording should be more consistent across the SARs. Williams added that she was having to toggle between different sections of the SAR to pair up the survey years with the different calculations and so the SAR could be made clearer if calculations indicated the survey year of the data being used, which Wade accepted.

Hawaii-North Pacific SAR

Williams summarized the SAR and had no specific questions about it. Regehr asked about the justification for using the upper 95% confidence interval on movement probabilities for prorating M/SI

of the WNP stock (which is mentioned in each of the Alaska SARs). Teerlink replied that the approach comes from AKRO's guidance for partitioning takes under the ESA, in which a more conservative estimate is used for the endangered stocks, and this approach was carried over to the MMPA SARs to be consistent. Regehr expressed concern about that being a "double whammy," suggesting that such conservatism for ESA-listed stocks is already accounted for in the choice of 0.1 as the recovery factor in the PBR calculation. Teerlink replied that the population's ESA status affords them some additional conservation measures where possible and that the new way of apportioning M/SI is actually less conservative than the approach used in previous SARs, in which M/SI in areas where the WNP and Central North Pacific humpback stocks overlapped were assigned as a take for each stock. Regehr acknowledged that this is an Agency decision, but he is nervous when conservative factors are implemented at various places in the analysis and tend to "snowball." Williams countered Regehr's concern to which Regehr stated that it would be helpful if the SAR clearly explained and referenced materials on the decisions that the Agency made to provide justification for them. Later on, Teerlink circled back to this discussion and brought up the point that the mortality estimates are all underestimates and that it is on NMFS to compensate for that, acknowledging that they must be cautious with that.

Doniol-Valcroze commended the efforts involved in the completion of the recent winter survey in Hawaii and the new data that are available. He highlighted and appreciated the new, more reliable minimum population estimate and PBR. He then presented a density map of the British Columbia (BC) offshore strata of whales and was curious about the delineation between northern and southern strata for BC in the SPLASH study. Wade replied that during SPLASH there was a hiatus in whale distribution about halfway along Vancouver Island; however, he noted the hiatus is no longer as distinct. Doniol-Valcroze explained that they are seeing a lot more humpback whales in southern BC near Swiftsure Bank and offered to participate in a more formal analysis of the north and south BC partition.

Mexico-North Pacific SAR

Doniol-Valcroze's main comment regarding the different conclusions between the WNP and the Mexico-North Pacific SARs about whether the 2004-2006 SPLASH abundance estimates were still considered reliable for use in calculating N_{MIN} and PBR was previously raised during the WNP SAR discussion. He asked about options for getting an abundance estimate for the stock. First, he asked whether the movement probability data from the summering areas could be used to back-calculate the proportion of whales in Alaska that belong to this stock. Wade replied that it could be done, but the model did not previously split Mexico into two regions (although his new 2022 working paper submitted to the IWC Scientific Committee does so, it is still based on the 2004-2006 SPLASH data). Doniol-Valcroze then asked about any recent survey data, to which Wade stated there has not been any recent data from the Bering Sea and there is recent data from only a portion of the Gulf of Alaska. Wade mentioned that perhaps they could use an approach similar to what is being done in the mainland Mexico SAR, in which the ratio of the abundance of whales on the U.W. West Coast versus in Mexico is used to estimate the proportion going to Central America. He said that they could look at the PacMAPPS Gulf of Alaska survey when the abundance estimate is calculated.

Williams pointed out that there was no bycatch data available for Mexico in the SAR and asked whether NMFS considered conducting a bycatch risk assessment. Young replied that she is not aware of efforts to do so, but pointed out that the West Coast humpback SARs cut PBR in half to represent the portion of time spent in US waters. Regehr noted that the WNP SAR's PBR section mentions the assumption that the stock spends half its time outside of US waters and wondered if that approach is being taken consistently in other SARs. Wade replied that they did that for the mainland Mexico stock and what used to be the CA/OR/WA stock. Wade explained that it is a simple situation where the entire stock summers in US waters and winters outside of US waters and so they split it 50/50. He also pointed out that the Hawaii stock is not as clean-cut since wintering grounds are in the US only but there are US and non-US (BC) summering grounds. He stated that they did not know how to implement an approach that was consistent with the Mexico-West Coast SAR and so they decided to leave PBR as is, but they welcome any feedback. Doniol-Valcroze commented that he is facing a similar issue in Canada with calculating PBR as part of the requirements of the MMPA Imports Rule, to which Wade said they could cut PBR based on the time spent in Canadian waters. Regehr argued that this approach is not taken for other species that are cross-boundary such as walrus, polar bear, and ringed seal, and wanted to know if there should be consistency. Wade said that they are trying to be consistent and that they try to follow the guidance in the GAMMS, but they are open to having the SRG point out where it is inconsistent or how it can be improved. Williams highlighted that this is an important issue to track moving forward for other SARs as well, and if bycatch data is not being received from Japan and Korea, they will need to rethink how PBR is calculated. Stafford added that now that the revised SARs exist, the SRG will be able to suggest some of those edits going forward.

General Discussion

Williams stated that overall, the three SARs look great and the SRG looks forward to helping refine these into the future. She requested any additional comments be sent to Young and asked if there were any other cross-SAR issues to mention, or anything specific to the two West Coast SARs. Doniol-Valcroze asked if the text in the West Coast SARs should be revised to more specifically describe why a different approach was used for prorating abundance and M/SI compared to the three Alaska SARs. He said it is fine if they use a different approach if it is based on the best available information, but said that the SAR needs to explain the logic of doing things differently.

Regehr complimented Wade on his multi-state model and offered recommendations for improvements, such as addressing discrepancies between abundance estimates for wintering and summering areas by adding a mechanistic demographic model inside the model such that changes in abundance have to be linked to vital rates in the model or adding an unobservable state where animals are moving temporarily or permanently. Wade stated some of his collaborators have suggested similar improvements but he does not have the resources or time to write custom code to implement the changes. He thinks it is a good approach and has seen similar approaches in avian migration data. He also pointed out that the IWC assessment model developed by Andre Punt will accomplish some of these goals, such as ensuring summer and winter abundance are equal; that model is not fully integrated, but accomplishes much of the same outcome by fitting a population model to all the available data.

Williams asked about the next steps for the SARs, particularly whether the humpback SARs would be revised again next year. Young stated that NMFS has not yet determined which SARs will be revised next year, but will consider the SRG's recommendations/requests. Patterson noted that the SARs could be improved even without new data but agreed with Young that they can review them again if SRG recommends it. Wade mentioned that there might be new data coming from HappyWhale that, once available, may be enough to revise the SARs. Angliss then commented that there may be a new abundance estimate from the recent PacMAPPS survey available by next year.

Williams stated that the SRG is working on pulling comments together and the meeting concluded.