

**Pacific Scientific Review Group  
Conference Call / Webinar  
Monday, 27 Oct 2014**

**-- Call Summary --**

**1. Introduction and logistics (*Forney/Scott*)**

Karin Forney and Michael Scott welcomed and thanked the call participants, and gave an overview of the call logistics. There are four topics for Scientific Review Group (SRG) review and input on the call today.

**2. Pacific Islands Serious Injury Determinations (*Bradford*)**

Amanda Bradford compiled a spreadsheet with details on the serious injury determinations that was sent to the SRG on October 22. The SRG was concerned that there seemed to be a lack of understanding by crew and observers of what to do when cetaceans are caught. Changes with respect to animal handling implemented under the Take Reduction Plan have resulted in some variability in crew responses but PIRO Observer Program staff and Bradford are carefully monitoring the interactions. It is difficult to evaluate progress at this time, because takes are rare, but there are active discussions about this within PIRO and PIFSC.

Bradford provided a brief overview of the interactions and serious injury determinations, and SRG members agreed with the determinations. Terry Wright noted that he would like to see further research whether a hook in the mouth is really a serious injury, as it is scored under the current guidelines. Hannah Bernard inquired whether there was anything we can learn from interactions with successful dehookings. Bradford confirmed that this was the goal, but clarified that dehookings are very rare because animals often cannot be brought close enough to the vessel to attempt dehooking. It seems that some of the species are a bit calmer and easier to deal with (*e.g.*, beaked whale, *Kogia*) than others, and it also depends on where the animal is hooked (*e.g.*, fluke *vs.* mouth). Bradford will continue to evaluate these interactions as sample sizes increase.

**3. False killer whale stock structure (*Bradford*)**

Bradford presented information on new telemetry and sighting data, additional analyses, and proposed new false killer whale stock boundaries. During 2014, PIFSC established a working group to review the information and develop alternative stock boundary revisions for SRG review. Bradford noted that two criteria were identified that should be met by the revised boundaries: 1) they should reflect all the available data and 2) they should be as simple as possible.

Main Hawaiian Islands (MHI) Stock: There are some uncertainties about the full range of this stock because telemetry data are only available for two of the three clusters (Clusters

1 and 3), and the range of Cluster 2 is poorly known. The offshore range of MHI false killer whales appears to be greater on the leeward side (115km) of the MHI than the windward side (52 km). Bradford noted that several options were explored, including empirically-derived boundaries based on spatial extent or density, but for a variety of reasons the working group determined that a data-defined boundary was premature. Bradford then described two alternative stock boundaries options, for SRG review. The options were developed using a minimum convex polygon (MCP) of a radial distance around the main Hawaiian Islands, along with an uncertainty buffer of some form. This process resulted in a simple shape with greater offshore extent on the leeward side. The first MCP option was based on a 52-km radius (based on the maximum windward distance from shore from the satellite tracks), joined to an additional 30-km buffer around the most distant windward false killer whale location, to account for the identified high-use area north of Molokai and Maui. The second MCP option was based on the 52-km island MHI radius, buffered by an additional 20km (“72-km radius”) to distribute the uncertainty more broadly around the MHI.

The SRG and Bradford agreed that one goal was to reduce the frequency with which new boundaries need to be drawn when new data become available. Kathy Ralls noted that the 72-km radius would be more robust to the addition of future data points, but said the 52km radius + 30km point buffer seemed adequate. Bernard noted that the movements of animals may depend on tagging location, particularly with respect to windward/leeward occurrence. Wright questioned whether there was adequate scientific support for the leeward/windward differences in offshore distribution, and suggested that a buffer around the MCP created just from known false killer whale locations would be better, adding a fixed percent of the maximum distance to buffer the MCP. Erin Oleson responded that this would be exactly opposite to the goal of having a wider buffer where uncertainty is greater (e.g., on the windward side of the Big Island). Chris Boggs pointed out that having to change the boundaries frequently creates problems for the statistical estimation of bycatch. The group had some discussion about how the shapes were derived, and how they are justified. The SRG proposed creating a table with goals and checking off or adding comments to explain why the alternatives were not considered as good. It was noted that more data on Cluster 2 are needed; Oleson indicated that research is ongoing, but progress is slow.

Following the discussion, most SRG members supported the 72-km boundary because it had a simpler rationale and would be most robust to future data points. One member preferred a boundary derived only from the known locations.

Pelagic Stock: The new data show that false killer whales from this stock can be found inshore of the previous inner boundary in the MHI (40 km from shore), as close as 11 km from shore of the Big Island, although this is thought to be infrequent based on stock-specific sighting rates. Pelagic false killer whales show greater use of shallow (<2000m) waters around the Northwestern Hawaiian Islands (NWHI) than in the MHI, and therefore, the working group decided not to have an inner pelagic stock boundary around the NWHI. For the MHI, the working group examined a variety of measures based on depth and distance from shore, and considered boundaries that might include a low

probability of pelagic false killer whale occurrence closer to shore. After considering several alternatives, the working group decided to apply a distance-from-shore boundary of 11 km around the MHI (to include the full extent of documented pelagic false killer whales).

The northern pelagic false killer whales were tagged in the NWHI, and the more southern animals were tagged off Kona at about 14-km distance from shore. It was noted that stock boundaries are intended to capture general patterns of occurrence, not all possible locations, and that individuals from other stocks may also occasionally be found outside of their described stock range. The SRG had no objections to the proposed boundary for pelagic stock false killer whales.

NWHI stock: Bradford reviewed the additional data showing a greater eastward extent than previously recorded based on one sighting of NWHI false killer whales off Oahu (out of approximately 60 false killer whale sightings from dedicated surveys and reports from tour-operators in that area), plus some movement outside of current boundary. There are no documented records of NWHI false killer whales for the westernmost half of the current stock range, but analyses are ongoing to develop an acoustic classifier that may allow identification of stock identity for the ‘unknown’ false killer whales that have been acoustically detected in this area.

Based on all the new data, the working group developed three potential stock boundary options, which deal differently with the Oahu sighting. All three options shrink the western boundary, where no NWHI false killer whale sightings have been confirmed, based on habitat features (primarily depth), and expand the boundary north and south where telemetry positions were recorded outside the existing stock boundary. Ralls and Bernard were concerned about cutting off the western-most islands/atolls without any true knowledge whether NWHI false killer whales would occur out there. Ralls inquired whether it is now more difficult to adapt boundaries as new information comes in (since we have been doing this regularly as we have learned more). Boggs mentioned that it complicates the 5-year estimation of abundance and bycatch, and for obtaining permits for operation of fisheries. Oleson confirmed that boundaries can adapt as new information becomes available, but the abundance estimates have to be re-estimated whenever the stock range changes. The working group tried to find a suitable compromise between recognizing that there are habitat differences and not drawing the boundaries too tight or too broadly.

Bernard and Ralls thought that there was not sufficient justification to reduce the western boundary extent and preferred keeping it as is, especially since there are other island-associated species present (spinner and bottlenose dolphins) and there has been limited survey effort in the westernmost NWHI. Oleson, Forney, and Boggs clarified that the issue is how the animals are using their (island-associated) habitat, and where those habitats are distributed. Several SRG members expressed support for keeping the current, larger boundary because there was not sufficient information on which to base a change, while one member expressed support for the reduced western boundary extent given that there are no documented records of NWHI false killer whales beyond there.

The SRG suggested adding some language to the SAR explaining the uncertainty and limited sampling, and creating a table with pros and cons for each boundary decision.

Following further discussion regarding the sighting and telemetry data, spatial heterogeneity of effort, ongoing efforts to develop an acoustic classifier, and the strength or weakness of support for a change at this time, the SRG agreed to keep the western boundary as is, but the SAR or supporting document should explain that animals have not been observed there with limited effort, and provide a rationale for this decision. The SRG members considered the one Oahu sighting a very rare event, and recommended keeping the current eastern extent of the stock boundary. The mid-range expansion to include documented locations north and south of the current boundary was accepted by the SRG without objection.

In conclusion, the SRG supported the 72-km MHI false killer whale radial stock boundary, accepted the proposed pelagic stock boundary revisions (all waters around the NWHI and only waters outside of 11 km from the MHI), and supported a NWHI stock boundary that was widened in the mid-section to account for new telemetry records, but did not modify the western or eastern extent. Bradford noted that this will yield four separate areas of overlap between two false killer whale stocks, which will impact bycatch estimation.

#### **4. False killer whale longline bycatch prorating (*Bradford/Oleson*)**

Oleson provided an overview of past bycatch prorating methods that were based on a logistic decay function (developed by Marti McCracken and reviewed at previous SRG meetings), changes in the fishery, and new approaches considered for prorating in the new overlap zones. The working group proposed a simpler approach that apportions takes to stock overlap zones based on the ratio of average stock densities rather than a logistic decay function. This method assumes that the total density in the overlap zones is additive across stocks, or that relative densities are constant. It was questioned whether the proportional assignment based on average stock density is appropriate, given that insular stock false killer whales are less likely to be offshore. Oleson noted that the estimates under the proposed approach are not substantively different than those using the previous, more complex approach that accounted for distance from shore. The SRG was supportive of simplifying the bycatch estimation process as described by Oleson, but noted that they would like to see something in writing describing the advantages and disadvantages of each option and the rationale for the selected method.

#### **5. Species-specific prorating of whale entanglements and ship strikes along the U.S. West Coast (*Carretta*)**

The motivation for this study is the large number of *unidentified* whales (20% of records) in the West Coast ship strike and entanglement observations. Jim Carretta developed non-parametric predictive algorithms to assign species for unidentified whale records to gray and humpback whales, the most commonly entangled species, based on known cases. The model included month, location, and interaction type (pot/trap, gillnet,

debris), and it correctly predicted 80% of cases where species was known. The plan is to complete the study and publish a peer-reviewed paper, and then include the prorated estimates in the SAR for these two species.

Carretta will also apply this method to ship strikes. John Calambokidis wondered why only two whale species were included, and Carretta said that these two species represent most of the documented entanglements. Sample sizes for other species (minke and sperm whales) are still too small; as a result, they often get assigned a near-zero probability in the models. Calambokidis noted that any prorating is better than what has been done in the past, but wondered if simple percentages would give similar results. Carretta indicated that the results might converge with large sample sizes, but humpbacks are more prone to pot/trap gear than gray whales, possibly because of seasonality, distribution, or morphology. The SRG recommended that a simple proration should be used if there is not enough data for a model.

In conclusion, the SRG agreed with this approach.

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Call participant list:

Michael Scott (SRG Chair)  
Hannah Bernard (SRG)  
Robin Brown (SRG)  
John Calambokidis (SRG)  
Mark Fraker (SRG)  
Jim Harvey (SRG)  
Kathy Ralls (SRG)  
Terry Wright (SRG)

Karin Forney (NMFS-SRG Liaison)  
Erin Oleson (PIFSC)  
Amanda Bradford (PIFSC)  
Chris Boggs (PIFSC)  
Nancy Young (PIRO)  
Jim Carretta (SWFSC)  
Kristy Long (F/PR)  
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