

## APPENDIX A.

**False Killer Whale Take Reduction Team Recommendations - November 2020**  
**Revised December, 2020**

In April 2018 the False Killer Whale Take Reduction Team met in person to discuss the effectiveness of current management measures under the False Killer Whale Take Reduction Plan and the regulations implementing the Plan, as well as what amendments, if any, to the plan might be appropriate. The Team failed to reach consensus at that meeting and at several subsequent telephonic meetings. At the most recent of such meetings, in October 2020, the Team concluded that a consensus on recommendations for changes to management measures would not be reached. Nevertheless, the Team was able to reach agreement on several non-regulatory measures that addressed training, analysis and research to be recommended to NMFS. The recommended measures are not a consensus recommendation to amend the Plan. The Team recommends that NMFS undertake the following actions:

- 1) Crew Training. The Team encourages NMFS, in coordination with the Hawaii Longline Association, to promptly train deckbosses and crews (in addition to the owners and operators) in marine mammal handling and release. Deckboss and crew training must be (i) provided in the languages spoken by the crews being trained and (ii) made reasonably available by NMFS in a manner that allows all crews to participate and does not impact fishing operations. NMFS's training program must account for the fact that crew changes occur frequently in the fishery and that it may not always be possible for all crew on board a vessel to be trained before the vessel leaves on a fishing trip. The intent of this recommendation is to require NMFS to develop and implement an effective deckboss and crew training program, not to prevent vessels from fishing because some deckbosses and crew members are not yet trained. The Team intends for this recommendation to be prioritized first and recommends that NMFS address it promptly.
- 2) Depredation Research. The Team recommends that NMFS devote substantial effort and resources to the conduct and support of investigation and research regarding FKW depredation on longline gear, with the goal of identifying mechanisms to reduce and avoid such depredation without causing any significant economic impacts to the fishery. Such research should include but not be limited to investigation into the acoustics of fishing gear and vessel operations, false killer whale hearing and behavior, and gear-based deterrents; it should not include investigation into the use of acoustic harassment devices [given the low probability of success and the potential for impacts on non-target species]. If successful mechanisms or practices to avoid or minimize depredation can be developed and implemented in the Hawaii-based deep-set longline fishery, then those mechanisms or practices stand a better chance of providing direct economic incentive for adoption in international fisheries than do gear-based measures that are not aimed at reducing depredation.
- 3) Post-Hooking Mortality Research. The Team recommends that NMFS devote substantial

effort and resources to conduct and support research dedicated to quantifying and assessing post-release FKW mortality. This research should build on current research on the insular FKW population, including but not limited to, obtaining information on FKW interactions with near-shore fisheries and using mark-recapture data to chart health outcomes from those interactions. This research should also examine hook degradation rates to determine survival duration after hook interactions in dead and stranded odontocetes, survival duration after hook interactions in dead and stranded odontocetes, and injury healing rates in captive animals. In addition to this research, NMFS should support a workshop to review available information on the impact of injuries and survival potential. This research and workshop should specifically be aimed at informing NMFS's Policy for Distinguishing from Serious and Non-Serious Injuries and, relatedly, the content of trainings provided by NMFS to the fleet. For example, this Team has long debated whether FKW health is most benefitted by guidelines that encourage crew to reduce the amount of gear left on an animal (*i.e.*, cutting the line at the hook) or guidelines that encourage crew to apply significant tension in order to straighten hooks to release the animals. Research is needed to inform this important question. Additionally, the Team recommends that NMFS, if and when it updates its Policy for Distinguishing Serious from Non-Serious Injuries, provide meaningful transparency to interested members of the public and gather comprehensive information on which the review may be based. Such steps may include webinars and information-sharing workshops for interested members of the public (e.g., fishermen, veterinarians, scientists, conservationists), and should begin early in the review process. Team members should be invited to listen during workshops and webinars if held.

4) Data Synthesis: The FKW TRT recognizes that correctly designed studies employing synthesis science, including meta-analysis, mega-analysis) and data fusion, due to larger sample sizes plus the number of independent studies, can provide estimates with increased precision and accuracy over single studies, with increased statistical power to detect real effects. By synthesizing estimates from a mixture of independent, small and context-specific studies, pooled estimates from a synthesis of accumulated evidence are generalizable and hence relevant over diverse settings. Benefits of fisheries data synthesis include:

- Combines all known relevant data into a single coherent modelling framework
- Increases precision by combining sample sizes for many (underpowered) studies
- Uses robust and reproducible statistical procedures to synthesis those data
- Helps to evaluate the uncertainty of the conclusion based on the evidence
- Communicates clearly any conclusion that can validly be drawn from the evidence
- Helps resolve controversies that arise when various study results conflict
- Robust and cost-effective way to support informed management decision making
- Identifies knowledge gaps and helps plan future management-focused research
- Supports evidence-based fishery interventions for threatened species

The FKW TRT therefore recommends conducting data synthesis when possible (e.g., when sample sizes of compiled studies support robust meta-analysis). This includes conducting synthesis science to assess potentially significant explanatory factors for bycatch risk, escapement rates and post-release mortality, such as the effects of weak hooks and other modifications to fishing methods and gear, on target species catch rates and odontocete escapement rates, and use the findings to inform decisions on the management of false killer whale interactions in Hawaii's longline fisheries.