False Killer Whale Take Reduction Team Meeting
March 28-31, 2023: Honolulu, Hawai'i

KEY OUTCOMES MEMORANDUM

I. OVERVIEW

The National Marine Fisheries Service (NMFS or Agency) convened a meeting of the False Killer Whale Take Reduction Team (FKWTRT or Team) on March 28-31 in Honolulu, Hawai'i. The meeting followed a series of small, topic-specific TRT work group meetings held late 2022-early 2023 and a full-Team report back during a March 10 webinar. NMFS also held informational webinars on a new pelagic FKW abundance estimate (for a revised management area that includes space both inside and outside the EEZ) on February 28 and March 23. These discussions built upon Team meeting discussions in November 2022 related to potential amendments to the Take Reduction Plan (TRP).

The in-person meeting focused on the following objectives:

- Explore potential measures to reduce false killer whale mortality and serious injury for the pelagic FKW stock below the potential biological removal level (PBR) in the Hawaiian deep-set longline fishery
- Identify Team consensus recommendations (i.e., receiving unanimous support) [1] to amend the current TRP
- Elicit Team views on the merits of including shortline fishery within the scope of the TRP

This meeting summary is presented in five main sections: Overview, Participants, Background, Meeting Materials, Key Themes and Discussions, Public Comments, and Next Steps. There are also three appendices:

- March 10 webinar slide deck of the TRT work group updates
- Consolidated consensus recommendations and other proposed ideas considered
- Individual proposals emailed to NMFS FKWTRT Program Coordinator per NMFS request

II. PARTICIPANTS

The in-person meeting was attended by 22 Team members or their alternates: Robin Baird, Lars Bejder, (Alternate), Hannah Bernard, Kevin Brindock (Alternate), Roger Dang, Jane Davenport, Eric Gilman, Dawn Golden, Dennis Heinemann, Asuka Ishizaki, Eric Kingma, (Alternate), Kristy Long, Sean Martin (Alternate), Kristen Monsell (Alternate), Jonathan Moribe, John Myking, Tory O'Connell Curran, Aude Pacini, Andy Read, Jeannine Rossa, Matt Seeley (Alternate), and Ryan Steen.

Elena Duke, TRT Program Coordinator with the NMFS Pacific Islands Regional Office (PIRO), and Erin Oleson and Amanda Bradford with the NMFS Pacific Islands Fisheries Science Center (PIFSC or Science Center) also joined the Team in its discussions. In addition, about 10 people, including staff from PIFSC, PIRO (Protected Resources Division [PRD] and Sustainable Fisheries Division [SFD]), NOAA Office of General Counsel, NMFS Office of Law Enforcement (OLE), State of Hawai'i, and members of the public attended all or part of the meeting and provided input and guidance, as appropriate. Bennett Brooks and Stephanie Horii with the Consensus Building Institute served as the neutral facilitators.

[1] If consensus cannot be reached, the Team shall advise the secretary on the range of possibilities and the views of both the majority and minority. 16 USC 1387(f)(7)(A)(ii).

III. BACKGROUND

The March 28-31 meeting was designed to build off the following earlier discussions:

November 2022 Meeting

NMFS convened the Team for an in-person meeting November 7-10, 2022, in Honolulu to begin considering potential TRP amendments. The meeting focused on reviewing and considering potential implications of the latest data and studies related to FKW interactions, assessing the effectiveness of the current TRP, brainstorming possible management measures, and identifying information needs to support the March 28-31 discussions and consensus recommendations for NMFS consideration. (Refer to the November 7-10, 2022, Key Outcomes Memo for further details.)

Work Groups (late 2022 - early 2023)

Several work groups formed per the November meeting discussion and were charged with delving into a set of issues in preparation for the March meeting:

- ***Fighting Line Work Group***. Goal: Develop prototype fighting line with integrated line cutter (as possible); test before the in-person meeting as time allows
- ***Gear Modification/Handling and Training Work Group***. Goal: Review recently updated handling guidelines and develop comments/suggestions informed by interaction reports, experience to date, and any gear modifications suggested by the Fighting Line Work Group
- ***Electronic Monitoring Work Group***. Goal: Better understand and outline objectives, concerns, considerations, and approaches tied to potentially incorporating electronic monitoring into the Take Reduction Plan; as appropriate, develop a straw proposal for consideration by the Team at its spring meeting. (The group also helped coordinate a guest speaker, Lotte Kindt-Larsen from the Technical University of Denmark, to speak about EM at the February 28 FKW TRT webinar.)
- ***Southern Exclusion Zone (SEZ) Work Group***. Goal: Assess all aspects of SEZ to date; consider merits of alternative measures (e.g., dynamic closure models)
- ***Deterrents Work Group***. Goal: Explore potential measures to avoid /deter marine mammal depredation
- ***Shortline Work Group***. Goal: Better understand the nexus between current longline measures and shortline fisheries; consider the need to broaden Team charge to include shortline fisheries

Work Groups met periodically between December and March. Work Groups reported back to the full Team during a webinar on March 10, covering issues discussed, key learnings, and suggestions for next steps as applicable. Refer to **Appendix 1** for the March 10 slide deck content for the work group updates.

Assessment Webinars (Feb-Mar 2023)

At the November meeting, PIFSC staff shared an update on the 2023 Hawaiian Islands Cetacean and Ecosystem Assessment Survey (HICEAS) for updating FKW abundance. Previously, the pelagic FKW stock had been assessed based on the US Exclusive Economic Zone (EEZ), where sufficient data were available; however, available data indicate that pelagic FKW distribution extends beyond the EEZ, where bycatch associated with the HI deep-set longline fleet also occurs. NMFS had been working on using a published species distribution model (SDM) of false killer whales in the central Pacific to better assess pelagic FKW abundance and impacts of bycatch beyond the EEZ.

NMFS considered several approaches for defining a management area that it believed would allow for a more comprehensive assessment of pelagic FKW abundance and bycatch. One of the earlier approaches under consideration used the fishery area to define the management area. NMFS presented this approach to the TRT (Feb 28 webinar) and Pacific Scientific Review Group (SRG) (early March). These discussions illuminated several concerns with using a fishing area-based approach, such as adequately accounting for dynamic fishing area boundaries and for areas used by pelagic FKWs where fishing doesn't occur. Therefore, NMFS opted to use a management area based on biological data (e.g., satellite telemetry, genetic samples, survey sightings, and observed bycatch) that also included a 35 km buffer (to account for the spatial spread of pelagic FKW groups). In this new zone, pelagic FKW abundance is estimated to be 5,528 (coefficient of variation [CV]=0.35) whales. PBR is calculated using a recovery factor of 0.4 based on the high level of uncertainty for bycatch rates outside the EEZ as a result of unknown foreign fleet impacts. With this abundance estimate and recovery factor, the updated PBR is 33 whales. The 5-year (2017-2021) average annual mortality and serious injury (M&SI) rate in the Hawaiian deep-set longline fishery for the new management area is 47 FKWs. The approach, abundance estimates and recovery factor underwent peer review by the Pacific Scientific Review Group (PSRG) at their meeting in early March of 2023 prior to the TRT meeting. Given how close this updated assessment was developed prior to the in-person meeting, PIFSC quickly notified the Team of the updated approach, invited Team members to observe the public portions of the PSRG meeting and hosted (and recorded) a brief webinar on March 23 to explain the updated approach and provide an opportunity for Team members' questions and comments. Key points from the Team's discussion of the updated assessment are provided below.

IV. MEETING MATERIALS

A number of meeting materials were provided to support the group's discussions. Meeting materials were sent out ahead of time to Team members as much as possible; otherwise, additional materials (including studies and presentation slides) were made available to Team members during the meeting. Materials provided included the following:

- Meeting Agenda
- Information on the current TRP and Take Reduction Program
- Previous related meeting materials (e.g., November 2022 KOM and March 10 materials)
- Guidelines for Assessing Marine Mammal Stocks (GAMMS) as revised in 2023
- FKW updated abundance assessment information
- Hawaiian longline effort data and observer coverage
- Electronic Monitoring resources
- Fighting Line Device (FLD) resources
- Protected Species (including FKW) interactions summary and maps
- Protected Species (PS) Workshop Handling materials
- NMFS Office of Law Enforcement (summary of 2019 actions)
- PIFSC responses to TRT requests for information
- Other relevant literature
- TRT recommendations (drafted by TRT members and modified during the meeting)

V. KEY THEMES and DISCUSSIONS

Below is a summary of the main topics and issues discussed. This summary is not intended to be a meeting transcript. Instead, it provides an overview of the main topics covered, the primary points and options raised in the discussions, and the next steps.

A. Agenda and Meeting Design

The meeting began with brief welcoming remarks by D. Golden, PIRO Assistant Regional Administrator for Protected Resources. Facilitator B. Brooks reviewed the meeting's objectives, the week's meeting agenda, and ground rules.

B. Brooks explained the week's approach toward building a consensus package:

- Day 1: Understand Team charge and the full range of options on the table; identify initial areas of possible agreement
- Day 2: Begin building an outline of potential elements to include in a consensus package; encourage drafting initial language for possible consensus recommendations
- Day 3: Continue identifying areas of agreement; frame any divergent views; conduct initial and subsequent tests for consensus; continue drafting language for possible consensus recommendations
- Day 4: Final test for consensus; discussion on other items (e.g., research recommendations and the shortline fishery)

Below is a brief synopsis of the various updates and informational items shared at the meeting. Again, the in-person meeting built upon previous presentations and discussions: the November 2022 in-person meeting, different FKW work groups (that met in December 2022-March 2023 and provided an update at a March 10 webinar), and abundance assessment webinars (held on February 28 and March 23).

B. Informational Items

FKW Abundance and Management Area Update

E. Oleson provided a brief overview of her March 23 presentation to remind the Team that in the newly defined management area (based on available biological data): the pelagic FKW abundance is estimated to be 5,528 (CV=0.35); PBR is calculated using a recovery factor of 0.4; PBR is 33 whales; and the 5-year (2017-2021) average annual M&SI rate in the Hawaiian deep-set longline fishery for the new management area is 47 FKWs.

Team Discussion

- Group discussion centered primarily on how to use this new information for the week's conversations. As was discussed at the March 23 webinar, Team members expressed frustration that the updated figures were provided so close to the meeting date, as it did not allow the Team to consider the implications of the updated assessment as part of its Work Group discussions. Industry Team members voiced strong objections to the updated approach, suggesting it was, among other things, premature to have the Team use this information as the basis for its deliberations before it has been included in an updated Stock Assessment Report (SAR) that has gone through the public review/comment process. Industry Team members also stated they felt that the new approach unlawfully skews the fishery's impact by comparing all fishery M&SI against only a subsection of the pelagic stock. NMFS described the PSRG review process and endorsement that had just occurred (and that was open to Team members to observe). NMFS staff also said that this information is the best synthesis of available biological data on Hawaii pelagic false killer whales to inform the Team's deliberations. NMFS explained the Agency expects to include these estimates in the next draft SAR for public comment consistent with MMPA section 117 and it is appropriate that the Team consider this information now when deliberating on recommendations to amend the FKWTRP.
- While industry members agreed to engage constructively in Team discussions, they emphasized that - given their objections - they would not consider reaching consensus on measures

intended to address the much larger gap between the updated PBR and M&SI estimate. Other members stated that the Team can and should still discuss potential measures and develop recommendations for NMFS, knowing that the SAR will be updated before the final TRP amendment and that the public will have opportunities to comment on both the draft SAR and the draft amendment.

- Overall, Team members broadly agreed that an assessment of the full range of the pelagic stock is still necessary to accurately understand the relative magnitude of potential fishing impacts (domestic and foreign fleets).

Additional discussions on this topic are covered elsewhere in this summary.

Enforcement

Take Tomson, NMFS Office of Law Enforcement (OLE), presented an overview of OLE Pacific Island Division activities related to FKW. He explained OLE's jurisdictional authorities and responsibilities and which laws they enforce. OLE conducts substantial protected resources monitoring and enforcement with humpback whales, monk seals, spinner dolphins, sea turtles, etc. OLE also patrols, conducts vessel inspections and investigations, and owns/manages the US vessel monitoring system (VMS). They partner with other states and territories where they have joint enforcement agreements. He shared older maps of the Hawai'i longline fleet and foreign fleets where they can detect VMS signals (i.e., within 100 nautical miles of the EEZ). He pointed to significant foreign fleet activity at the boundaries, implying high foreign fleet activity extended beyond the VMS-tracking edges.

Team Discussion

- A Team member asked whether OLE uses other data sources, such as Global Fishing Watch data. OLE staff said there have been discussions exploring these options.
- There was a concern over OLE's capacity to manage such an enormous swath of ocean. OLE acknowledged these challenges and noted they collaborate with others, such as the Coast Guard, to help monitor VMS and address any violations.

Team Charge

D. Golden articulated the Agency's charge to the TRT for the week's meeting discussions. She acknowledged the Team's frustration with the Team receiving the new management area delineation and the resulting PBR/M&SI estimates so close to the meeting. She noted the new information has been a challenge for NMFS to quickly process as well but emphasized that the information is the best available science and an important and necessary basis for the Team's deliberations. She charged the Team to develop recommendations for amending the Plan that will meet MMPA goals (bringing M&SI below PBR in the near-term and approaching a zero mortality and serious injury rate [also referred to as Zero Mortality Rate Goal, ZMRG, in the longer term) while also minimizing impacts to the industry to the extent possible. As part of this charge, she instructed that the Team use the new PBR estimate presented by NMFS. NMFS stated the information presented on the new abundance estimates and PBR will be in the next draft SAR and available for public notice and comment per section 117 of the MMPA, and the SAR with the new abundance estimates will be final before NMFS will publish a proposed rule to amend the FKW TRP. She underscored that significant revisions to the Plan are needed to reduce M&SI below PBR. She further emphasized the opportunity for the Team to deliberate as a group to identify recommendations that are implementable, capable of garnering Team consensus, and likely able to help the Agency meet its MMPA mandate.

Team Discussion

- Much of the discussion focused on whether the Team should develop recommendations that meet the short-term goal (reduce M&SI below PBR within six months of the new regulation) or the longer-term ZMRG goal. NMFS encouraged the Team to focus on reducing M&SI below PBR, keeping in mind the longer-term goal, which does call for considering the economics of the fishery, existing technology, and existing fishery management plans.
- Several Team members noted that the Team now faces a significantly more challenging task given that the gap between M&SI and the new PBR is larger than the previous estimates. Some members, however, noted that the longer-term goal of ZMRG (and the failure of measures to-date to meaningfully reduce M&SI) already suggested the Team would need to consider a new suite of measures.
- NMFS walked through the process and likely timing for both reviewing the updated SAR and developing a final rule for any TRP amendment(s):
    - Updating the SAR will include a public comment period.
    - The final updated SAR will likely be available while NMFS is in the process of drafting the new rule (which also has a public comment period).
    - Once the rule is finalized, the short-term goal is to reduce M&SI below PBR within six months of implementing the updated TRP measures (meaning the 6-month timeframe is triggered once the rule takes effect). The longer-term goal is to reduce M&SI to insignificant levels (i.e., 10% of PBR per the ZMRG) within five years of implementation (taking into account the economics of the fishery, existing technology, and existing fishery management plans).
- NMFS reminded the Team that NMFS must develop a plan amendment that will reduce M&SI to below PBR within 6 months of implementation, irrespective of whether the TRT is able to reach consensus on how to do so.

C. Effective Take Reduction Plan

What Makes an Effective Take Reduction Plan?

In plenary and cross-caucus small groups, the Team identified a range of characteristics of a wise plan (the following outlines the range of ideas shared at the time, many of which were broadly supported but do not represent formal TRT agreement):

- **Meets MMPA goals:**
    - Long-lasting effects
    - Hierarchy of measures: avoid ≥ minimize ≥ mitigate
    - Functional TRP relies on a functional TRT
- **Be responsive to change:**
    - Be both broad and focused/specific as appropriate
    - Contingency tools (e.g., backstop)
    - Transferable (e.g., foreign fleet)
    - Surveillance (monitoring and learning). Continue to gather information and evaluate effectiveness to be adequately responsive to changes. Explore ways to be more efficient (remote or automatic monitoring/detection)
- **Implementable for meaningful change:**
    - Viable (e.g., adequately funded, feasible for the fleet)
    - Broadly applicable/transferable
    - Foster certainty to better ensure successful implementation (rely on measures with more certain effectiveness; reduce reliance on in-the-moment decision-making)
    - Buy-in is crucial (crew training)
    - Support non-mitigation measures that help indirectly reduce M&SI (e.g., EM)

- Enforceable & sufficient surveillance (compliance). e.g., Coast Guard knows what to look for (clear standards, specificity)

Past and Present TRP Measures

E. Duke reviewed the current TRP measures that have been implemented to date, including regulatory measures such as gear requirements (e.g., circle hooks ≤4.5 mm wire diameter and stronger monofilament leaders and branchlines ≥2 mm diameter), the establishment of two longline management areas/exclusion zones, and measures to improve captain/crew response (e.g., placards posted onboard vessels, expanded Protected Species Workshop to include crew training, etc.). Non-regulatory measures include expedited FKW injury determination within the EEZ, increased precision of bycatch estimates, specific changes to observer training, reconvening the team at regular intervals, and processing 2010 HICEAS data.

B. Brooks presented a brief overview of the range of potential measures the Team has considered in its discussions to date. These include handling gear (e.g., fighting line device) and gear modifications (e.g., weaker hooks, stronger branchlines, etc.), handling (updating handling recommendations, expanding and improving training for handling, etc.), electronic monitoring (supporting the federally funded EM program, technical aspects), closures (e.g., modifying or eliminating the SEZ), effort reductions, deterrents (e.g., vessel signature, discards, etc.), and connection to shortline fishery (e.g., better understanding the fishery and considering including in scope of TRP).

Updates Related to Potential Measures

On Day 1, the Team received updates from E. Kingma on the Fighting Line Device (FLD) development; A. Bradford reported back from the Science Center on the hypothetical impact the FLD might have on M&SI, and R. Baird gave an update on camera development. Later E. Oleson presented information to help analyze changes in HI longline effort and bycatch.

Fighting Line Device (FLD) and Potential Impacts on M&SI Estimates

E. Kingma shared the latest developments of a "fighting line device" (FLD), a new tool intended to enable crew a safer method for straightening the hook and/or allowing easier access to cut the line closer to the animal. J. Myking worked with other fishermen to develop and test FLD prototypes with the intention that the device (shown in the center of the following image) would slide down the line, get caught on the leaded swivel, and create a tension point closer to the hook (i.e., below the branchline) from which the hook can be straightened (or the line can be cut close to the animal leaving minimal trailing gear). The FLD would also reduce flyback, a major safety concern for the crew onboard.

E. Kingma showed a video to the group that displayed the device in action. He emphasized that the use of this device would first require crew training. The fishermen have also been exploring

alternative prototypes with a cutter that would slide down the line, but further work is needed before such a device would be ready for consideration. They see a long-handled cutter as currently the best option if the hook cannot be straightened.

A. Bradford followed with a spreadsheet calculation tool developed per Team members' request to assist in exploring hypothetical effects of the FLD on M&SI reduction, using information from past FKW interactions. She caveated that because the device was still under development, the spreadsheet cannot definitively predict how successful the FLD will be; rather, the calculator can help estimate how successful the FLD *needs to be* to impact M&SI. Under the most ideal conditions (e.g., FKW is mouth-hooked, FLD was deployed appropriately, the hook straightened, and no gear was left on the FKW), the calculator tool indicated applying the FLD could potentially have a significant impact in reducing M&SI. However, she cautioned the Team to consider the rarity of ideal conditions and that FLD effectiveness remains uncertain. She encouraged the Team to explore the calculation tool on their own as they continue to consider other measures during the week.

Team Discussion

- The group asked several questions to better understand the potential FLD application. Industry members noted that they have tested the FLD with several sharks; fishermen are still fine-tuning handling (e.g., best angle to create adequate tension), but the latest prototype has shown major promise in straightening hooks and reducing flyback safety risk. Industry reiterated that crew training will be important.
- The discussion illuminated a larger question: at what point might handling cause more harm to the animal? Determining what is best for the animal's welfare informs gear configuration and handling. If the hook is ingested, then the crew should aim to cut the line as close to the hook as possible rather than straighten the hook (e.g., Team members had concerns about the trailing line entangling the goosebeak). However, the crew would still need to bring the animal closer to the vessel to see where the animal is hooked (and if the hook has been ingested). A. Bradford said there are a few instances of ingested hooks documented in the interaction reports. While there are more reports where the hook was documented to be in the mouth (i.e., not ingested), she caveated that most reports are inconclusive as to whether the hook was in the mouth or ingested.
    - The group flagged this animal welfare issue as a topic warranting additional discussion. On the last day of the meeting, the TRT suggested forming a work group to further explore this topic.
    - Several Team members noted that this issue has been raised at various times during the history of the Team because there is a divergence of opinion among Team members as to whether a single hook with no trailing gear left on a FKW causes the animal to be "likely" to die (i.e., result in M&SI). Those Team members again emphasized the need to further assess the effects of releasing a FKW with only a single hook (and no trailing gear) intact. They pointed out that current serious injury guidelines are seen as a disincentive by some Team from seriously considering handling methods aimed at quickly releasing a hooked animal with as little gear as possible (rather than attempting to bend the hook out of the animal).
    - A team member reviewed the recent five years of observer data and noted a higher proportion of interactions with hooks visible around the mouth in 2021-2022, which may be a result of crew changing handling practices following the change of leader material from wire to mono.

- There was a concern that the "fighting line device" term implies the crew should always aggressively try to straighten the hook, which may cause more harm to the animal in some scenarios. Industry indicated they prefer the "fighting line" as it is a familiar term to fishermen and would likely contribute to faster learning and adoption.

Camera Development
R. Baird shared updates to a prototype camera system he is working on that could be attached to gear to better visualize FKW interactions (e.g., get a better idea of where the animal is hooked). His goal is to capture imagery on 4 or 5 interactions with tuna or other large megafauna to judge its effectiveness and determine what else is needed in development. He would like to deploy it and complete some trial runs.

Measuring Effort
Per TRT members' request, E. Oleson shared a spreadsheet and figures tracking changes in fishing effort in the Hawaiian deep-set longline fishery to help explore any relation between observed FKW interactions and estimated M&SI. Effort has varied over the years but overall it has increased (30% increase in the number of hooks from 2012 to 2021). Generally, this equates to 1 take (i.e., 1 FKW interaction) per million hooks in the most recent 5-year period (2017-2021). She noted that effort can be plotted in different ways depending on the Team's needs.

Team Discussion
The group briefly considered how to interpret the effort information. A couple of members speculated that animal behavior may be contributing to increasing interaction rates (as the depredation behavior could be spreading across social groups). Other members suggested that the FKW pelagic population could be increasing, which is the perception of fishermen based on their on-the-water experience.

D. Key Discussion Points: Deep-Set Longline Fishery

Overarching Themes
The Team met in several configurations of plenary and cross-caucus small group breakouts (with optional and informal within-caucus meeting opportunities during breaks or before/after the meetings each day). Team members were also encouraged to draft proposed recommendations outside the meeting time, then bring them back to the plenary for the whole Team to discuss and consider for consensus recommendations to NMFS.

Below summarizes the key themes that emerged during the Team meeting. Additional details about the Team's discussions regarding potential measures, proposals considered, consensus recommendations, and divergent perspectives are captured in the following sections and in the appendices.

Abundance Assessment
The Team agreed that the timing for receiving the updated abundance estimate (and resulting PBR estimate) so close to the meeting made Team discussions very challenging. Some Team members voiced strong objections to the new assessment, in part because they felt that the new pelagic FKW management area still did not reflect the full stock distribution and the new area skews the impact of the fishery by comparing all fishery M&SI against a PBR based on only a subsection of the full pelagic stock. A few Team members indicated using the new abundance estimate to inform TRT recommendations felt premature without more time to vet the data and an updated finalized SAR (that has gone through a public comment process). Other Team members, while acknowledging the

timing for the new estimates was not ideal and still did not capture the full stock abundance, said this updated approach was still better than the current approach (i.e., using the EEZ boundary). To several Team members, using biological data to delineate the pelagic FKW management area seemed more justifiable than using the longline fishery area. Several felt the new PBR and M&SI highlighted the magnitude of the problem and urgency to develop significant measures in the near term and make meaningful steps toward the MMPA's long-term goal of approaching ZMRG. Others cautioned against prematurely adopting draconian measures that may have inadvertent consequences and suggested that the fishery's M&SI rate may be below a PBR if NMFS conducted surveys to determine exact boundaries of pelagic stock abundance.

Overall, while the Team had divergent views on whether the new approach was a step in the right direction or not, the group broadly supported and emphasized the need for a full stock assessment to accurately compare M&SI from the Hawaiian longline fishery and M&SI from the foreign fleet against a full PBR for the stock.

Dealing with Uncertainty

There was general agreement that the Team's task is made more difficult by key uncertainties related to ensuring successful TRP implementation and a meaningful reduction in false killer whale M&SI. The group identified major information gaps such as:

- Full pelagic stock distribution and abundance
- Activity and impacts of other fisheries (e.g., foreign fleet and shortline fishery)
- FKW behavior (attraction to vessels, social learning, nature of its interaction with gear, effective deterrent strategies)
- Understanding where the gear system and/or handling of gear need modifications to ensure the hook is the weakest point (where does the line break)
- Determining the most effective handling of gear (e.g., FLD) and terminal gear configuration (e.g., weaker hook, modified leader line, etc.) and developing effective handling guidance
- Animal welfare (e.g., at what point is it more harmful to attempt straightening the hook? What are the effects of releasing an animal with a single hook and no trailing gear?)

Team members made a substantial effort to explore potential measures despite these information gaps and vet ideas that would contribute to the TRP's success (e.g., reduce M&SI, ensure successful implementation, reduce uncertainty over time, and be adaptable and responsive to change). Team members suggested monitoring strategies for gathering more/better information to help evaluate the effectiveness of TRP measures (e.g., modifying observer program data collection procedures, accelerating EM implementation, etc.). They also identified strategies that would foster better and consistent implementation (e.g., training crew in addition to captain and deck boss, improving high seas surveillance, etc.). That said, the Team reiterated the critical need to accelerate collaborative research to address these major uncertainties.

MMPA Comparability

The Team had strong concerns with foreign fleet activity and potential impacts on the TRP's effectiveness (e.g., measures like effort controls on the Hawai'i longline fleet may lead to the foreign fleet filling in the gap - spatial and/or market - thereby negating conservation benefits and hurting the US fleet economically). The group had several questions about the MMPA Import Rule and the Comparability Finding process. Countries wishing to export fish and fish products to the US must apply for a comparability finding demonstrating that their regulatory program is comparable in effectiveness to the US program. The TRP cannot impose management measures on foreign fleets;

however, NMFS can use the TRP to inform its Comparability Finding process. The full Team supported leveraging the MMPA Import Rule to ensure foreign fleets that export to the US have a regulatory program that is comparable in effectiveness to the US regulatory program.

The group briefly considered strategies that could support utilizing the Import Rule, such as adopting transferable measures (e.g., gear and handling), rather than closures that cannot be imposed on foreign fleets. There were differing perspectives on whether the MMPA Import Rule would reduce FKW bycatch in foreign fleets. Some Team members pointed to successes with import requirements for foreign shrimp fisheries to have conservation measures for sea turtles comparable to those required of U.S. shrimp fisheries. Other Team members expressed skepticism (e.g., other priorities may take precedence in diplomatic negotiations, countries may choose to export elsewhere, etc.). Due to the various uncertainties, the Team identified foreign fleet activity and potential impacts as one of the top information gaps and issues of concern.

Types of Measures

The following broad types of measures were discussed at length over the course of the meeting. While these do not reflect the full range of measures considered (a more comprehensive listing of specific measures is further described in the following Measures section below), they do provide an overview of the types of measures under discussion.

- ***Deterrents.*** On Day 1, the group briefly discussed deterrents but quickly dismissed the topic as not being a viable alternative at this time to substantially reduce M&SI below PBR, given the state of existing technology. While the Team then focused their deliberations on other strategies, they did feel strongly that research should continue to explore deterrents to depredation.
- ***Gear handling and/or modifications***. Team members broadly agreed on the need for a better way to ensure the hook is the weakest point of the line, though they had differing views on the potential for gear modifications or handling alone to reduce M&SI below PBR. Recent Team deliberations have centered on exploring alternative gear handling/modifications (and combinations thereof) that could help minimize opportunities for FKW getting hooked, ensure the hook is the weakest point in the terminal gear, and ensure handling could be implemented safely (detailed gear handling/modifications are further described in the Measures section below). Team members spent considerable time at the in-person meeting discussing terminal gear configurations/handling (particularly handling the FLD) and flagged several issues warranting further consideration. While the group had differing perspectives on imposing gear changes such as a weaker hook, FLD, stronger branchline, and shorter mainlines, there was general support for strengthening the leader line. In addition, multiple Team members cautioned against overly prescriptive gear specifications (e.g., using only certain materials) in the new TRP rule; they encouraged the TRP to allow adequate flexibility for innovation.
- ***Training and handling guidelines***. There was broad support for developing clear handling guidelines for any new gear and/or updating existing guidance for effective and efficient implementation. Additionally, regardless of gear handling/modifications, the group broadly supported expanding and improving training, which could significantly contribute to reducing M&SI. Team members flagged shortcomings with current training methods. Therefore, the Team suggested expanding the training to the crew (not just the captain and/or deck boss); providing materials in multiple languages and other accessible educational resources; and creating dockside hands-on training opportunities.
- ***Fishing effort controls***. There were strongly divergent opinions regarding measures centered on reducing fishing effort. Given the gap between M&SI and PBR, lack of information on efficacy of

new gear handling/modifications, and uncertainty of foreign fisheries bycatch, several Team members saw effort reductions as the only way to meet the MMPA mandate of reducing M&SI within six months. These Team members proposed multiple ways in which the Agency could implement effort reduction. Some called for effort-control measures to be established immediately upon final rule implementation (with the possibility of scaling back once other measures such as gear handling/modifications prove successful); others suggested effort-control measures might instead be used as a backstop in case other measures prove insufficient. Several other Team members cautioned strongly against any consideration of effort controls, noting the uncertainty associated with whether effort reduction would result in intended reduction in false killer whale interactions, potential for unintended consequences (e.g., less-regulated foreign fleets could replace the gaps in effort, thereby negating the conservation benefit or possibly further worsening the issue), and impacts to the industry.

- ***Backstops***. Several Team members advocated for a backstop to ensure M&SI does not exceed PBR. Team members suggested multiple backstop configurations (e.g., quota system, closures, or move-on rules) that could be triggered prior to exceeding PBR. Some recommended the Agency take more definitive and proactive measures to reduce M&SI rather than waiting to deploy them as a backstop. As noted elsewhere, several other Team members stated their firm opposition to hard caps or closures based on PBR, raising concerns about substantial impacts on the Hawaiian longline fishery and unintended consequences (e.g., foreign fleet seizing the market gap) and what they see as the uncertain conservation benefits of fishery closures and hard caps.

Measures Discussed

During and in advance of the March 28-31 meeting, the Team considered a wide range of potential measures for the Hawaiian longline fishery that fall generally into the following categories (several of which are interrelated):

- Deterrents
- Gear Handling and/or Modifications
- Handling Guidelines and Training
- Effort Controls
- Area Closures
- Monitoring, Evaluation, and Adaptation
- Other Issues (e.g., full stock assessment, foreign fleet, etc.)

These measures are summarized below; they may not represent full team support. Team consensus recommendations are noted where they occurred. Refer to **Appendix 2** for the full language for TRT consensus recommendations.

Deterrents

The work group that discussed deterrents collectively reached out to other researchers that may be developing new deterrent methods for depredation. At the March 10 webinar, the work group shared their findings, noting that they had not found viable ideas for the TRT to consider as specific recommended measures, but flagged deterrents and depredation as continued topics of interest. TRT members identified several areas to further explore, particularly to support research efforts to better understand what might attract FKW to vessels (e.g., discards, acoustic signatures, etc.). TRT members were encouraged to work with E. Duke to continue to track and keep each other informed about new developments related to deterrents and depredation.

> Consensus Recommendation [Acoustic Monitoring] – Although deterrents and depredation were not discussed at length during the March 28-31 meeting, the Team did develop a consensus recommendation encouraging and continuing the acoustic monitoring research being led by Erin Oleson.

Gear Handling and/or Modifications

Team discussions delved into several specific gear handling (namely the fighting line device) and gear modifications, particularly to better understand terminal gear handling and configurations. The Team did not draft any consensus recommendation proposals for specific gear handling/modifications; however, the group supported and encouraged continued innovation and exploration. The following summarizes Team discussions on specific gear handling and/or modification strategies:

- ***Fighting Line Device.***
    - Several Team members thought the fighting line device prototype could be very effective in straightening hooks, particularly combined with proper training and other gear modifications as needed (e.g., potentially a stronger leader line). The FLD is intended to facilitate hook straightening by applying tension closer to the hook to reduce breakage at other points (i.e., branchline, weighted swivel, and crimps). The FLD may reduce flyback safety risks for the crew and can also be used on sharks, which will allow crew to practice proper use and handling of protected species with the device.
    - The Team commended fishermen for their creative innovation and encouraged continued testing of new tools and methods like the FLD (and possibly including a line-cutter). Several Team members (industry, WPRFMC, and several researchers) advocated adopting the FLD as a key measure for reducing M&SI; others expressed discomfort with relying on largely untested methods and indicated a preference for more certain approaches like effort controls. Those supporting effort reduction stated that effort controls could be relaxed in response to proven success by other measures like the FLD.
- ***Line-cutter***. Generally, the group agreed: if the hook cannot be straightened and/or cutting the line may be a better option (e.g., for the animal's welfare), the goal should be to cut the line as close to the animal as possible (minimize trailing gear that could loop around the goosebeak) and without causing further injury. Fishermen have been working on a line-cutter that could be paired with the FLD but have not developed a viable option to date; they recommended a long-handled line-cutter as the best currently available option.
- ***Mainline***. The group considered reducing the length of the mainline to shorten the haul time and limit the number of hooks; however, fishermen shared concerns that reducing the mainline to less than about 40 miles would have too much of an economic impact on the fishery. NMFS also indicated that reducing mainline length may have unintended consequences such as fishermen setting multiple sets just below the mainline length restriction, which may result in more gear in the water. Others expressed skepticism that enforcing mainline length was even feasible or that shortened mainline lengths would reduce FKW interactions.
- ***Hooks***. Some Team members continued to advocate for weaker hooks (≤4.2 mm) for more assurance that the hook will straighten; others opposed weaker hooks because fishermen are already losing target catch with the 4.5 mm hook.
- ***Branchlines.*** A few Team members stated they would still like stronger branchlines in combination with other measures (e.g., weaker hook) to ensure the hook is the weakest point in the terminal gear, which may be particularly important before the crew can apply the FLD. Other Team members voiced strong concerns with the stronger branchlines (heavier, costlier, and greater safety risk of flyback), and further suggested that the FLD (possibly coupled with a

braided leader line) would negate the need for stronger branchlines because it applies tension near the hook at the leader and below the branchline.

- ***Leader line***
    - ***Length.*** The group had extensive discussions about leader line length. A standardized leader line length could theoretically help the crew determine if the hook had been ingested (therefore, the crew might aim to cut the line rather than straighten the hook); however, several Team members were skeptical of the crews' ability to identify hook ingestion (given distance and often nighttime fishing) to make much of a difference to the animal's welfare. There were additional concerns that a shorter leader line would not fish as well (target catch could see the gear).
    - ***Strength***. Team members generally supported exploring a stronger leader line to ensure the hook becomes the weakest point in the terminal gear. The group discussed different materials (e.g., a braided nylon leader line or bloodline). Braided nylon is more static than monofilament (lower flyback risk) and easier for tying knots; however, its flexibility creates a higher risk of wrapping around the goosebeak. Conversely, a bloodline is much stiffer but harder to tie knots. The group also briefly considered a looped leader line that could be cut easily and avoid leaving trailing gear.

Handling Guidance and Crew Training

- The group noted that current handling and release guidelines are vague and need improvements, but these specifics cannot be developed until several key uncertainties are resolved (more definitive gear specifications, crew safety needs, animal welfare considerations, etc.). The group briefly discussed individual vessel-based handling incentives to encourage better crew response; however, there were concerns that this may penalize vessels for "bad luck conditions" outside of their control.
- The Team highlighted the need for crew training in addition to captains or deck bosses. Training the crew empowers them to respond to a hooked animal quickly and appropriately without relying on the captain's presence and instructions. Additionally, a "tell-show-do" approach to training better ensures trainees apply what they have learned (i.e., present the information, demonstrate application, and oversee actual application).

> Consensus Recommendation [Crew Training] - The Team felt training needs to be significantly improved and expanded to the crew. The Team identified specific components for more effective training and response.

Effort Controls

The Team discussed a range of effort caps, reductions, and backstops, although there were strongly divergent opinions. As previously mentioned, several Team members (from the conservation caucus, MMC, and some researchers) felt strongly that effort controls are necessary to ensure a reduction in M&SI below PBR within six months of TRP rule implementation and make meaningful progress toward the longer-term goal of reaching ZMRG. Several other Team members (from the industry, WPRFMC, and some researchers) stated their view that effort controls are premature and need to be more thoroughly studied given the complex nature of the fishery. Fishing caucus members further emphasized their strong resistance to effort control-related measures. The Team did not articulate specific proposals for effort controls given the divergent opinions; however, there was general openness to continued analyses to better understand the options and impacts (direct and unintended). The following

summarizes Team report-outs from breakout group discussions on specific effort control strategies; the group discussed several of these strategies in plenary, but not in great detail:

- ***Capping effort***. Several Team members suggested capping effort using the current effort as the baseline and limiting new entrants (e.g., buying back latent permits). If NMFS allows new entrants from latent permits, they suggested NMFS should amend effort reduction to compensate for more vessels such that overall effort does not increase. Various Team members raised implementation and feasibility concerns (e.g., funding for buy-backs).
- ***Hook limits***. Several Team members suggested various hook limits: fleetwide limits seemed too difficult to implement (fishery too large and diverse); vessel limits per year seemed to offer more flexibility for when and where to fish; vessel limits per trip seemed the most implementable and enforceable (e.g., limit boxes of hooks).
- ***Set limits***. Several Team members suggested also discussed limiting sets: fleetwide set limits also seemed too difficult to implement for this large and diverse fishery; vessel limits could have promise (e.g., use a certificate system that vessels could sell/trade such that overall effort remained the same) but would be complicated and potentially burdensome to implement.
- ***Rolling closures***. Generally, the group felt a widespread closure for a relatively brief period of time (e.g., 3 months) would not be effective enough to reduce M&SI below PBR, and extended closures raised substantial concerns (e.g., potential economic impacts on the fishery, foreign fleet substitution, etc.). There was some interest in rolling closures (e.g., certain vessels would not fish for a designated time); however, Team members questioned how to ensure effort does not just increase during fishing months to compensate.
- ***Move-on rule***. The group briefly considered a move-on approach; however, because FKW interactions are widespread, several Team members felt a move-on strategy would be difficult to implement and overly penalize the Hawaiian longline fleet. Additionally, several Team members noted that false killer whales are likely to follow vessels over large distances. Previous research (Fader et al. 2021) also showed the space and time would be too much to be practical, especially in light of how fast and far FKW travel.

Among the subset of Team members who supported effort controls, there was a generally shared view that giving industry flexibility to determine how to minimize potential negative impacts offers several benefits (e.g., captains may choose different strategies to reduce their risk of FKW interactions).

Area Closures

- ***Southern Exclusion Zone.*** Team conversations about the Southern Exclusion Zone were fairly limited during the meeting given the shift to the new management area beyond the EEZ. Broadly, however, Team members saw the Plan's reliance on the SEZ as somewhat obsolete. Environmental groups and the MMC suggested the SEZ would be better replaced by other conservation measures able to serve more reliably as a backstop and ensure the fishery does not exceed PBR. Several members of the Team proposed the SEZ be eliminated since they felt it does not provide a conservation benefit, especially if the agency is moving to a new management area with new stock boundaries for pelagic false killer whales. Team members also pointed out the information presented to the Team on the management area (that includes areas inside and outside the EEZ) will be in the next draft SAR. Several Team members also suggested that the SEZ closure is better replaced by a measure that can be applied to foreign fleets.
- ***Other closures.*** Other forms of closures (e.g., dynamic closures, closures around high-risk FKW interaction hot spots, and EEZ-wide) were briefly mentioned in initial discussions, but many TRT members said these were not viable options likely to garner broad TRT support. A few TRT

members felt that closures inherently would reduce effort and FKW interaction risk; however, other TRT members raised doubts this would result in meaningful conservation benefits (as effort - and likely the associated M&SI - would just shift elsewhere).

Monitoring, Evaluation, and Adaptation

- ***Electronic monitoring***. There was broad support for advancing the adoption and implementation of electronic monitoring in the longline fleet. Given that a federally funded pilot EM program already exists and a WPRFMC-led steering committee charged with outlining EM implementation exists, the Team focused on defining potential EM Program objectives that support TRP goals: improve the certainty of FKW bycatch and depredation estimates (and explanatory predictors of post-release survival); gather information on handling and assess consistency; foster a cost-efficient/effective EM program; and assess other unanticipated benefits. Several underscored that support for EM implementation is not intended to substitute the NMFS Observer Program at this time.

  > Consensus Recommendation [Electronic Monitoring] - All Team members supported a consensus recommendation to advance wide implementation of EM in the longline fishery. The recommendation includes additional suggestions and objectives.

  Almost all of the Team members advocated for a consensus recommendation encouraging the *expedited* implementation of EM; two Team members did not support the proposed statement. One Team member felt such a statement was redundant to the existing EM program implementation planning discussions; the other Team member indicated the statement was too vague to be a substantive addition.

- ***Monitoring effectiveness***. NMFS will develop and implement a monitoring plan regardless of a TRT recommendation; however, a few TRT members wanted greater assurance of sufficient investment in monitoring, evaluating measures, and adapting, particularly given that several potential measures like gear modifications have not been thoroughly tested.

  > Consensus Recommendation [Effectiveness Monitoring] - The Team broadly agreed to the recommendation assuring TRP measures will be monitored and evaluated for effectiveness.

- ***Observer Program***. While not extensively discussed at the March 28-31 meeting, the Team has expressed consistent support for the Observer Program. Specifically, the Team supported continuing to improve coverage and data collection. Some Team members have consistently viewed the Observer Program as a promising opportunity to address data gaps that other methods like EM cannot accomplish.

Other Issues

As mentioned in the overarching themes section, the group pointed to significant information gaps and major concerns that may not fall directly under the auspices of a TRP. However, the Team felt strongly that NMFS should collaborate with others and make the necessary investments for these key issues.

> Consensus Recommendations

> [Pelagic Stock Assessment] - Conduct a full pelagic FKW stock assessment to accurately understand M&SI impacts from the Hawaiian longline fishery and M&SI impacts from the foreign fleet, compared against a PBR based on the full pelagic stock abundance.
> [MMPA Comparability Finding] - Encourage leveraging available regulations and policies.

Individual Proposals Submitted

Before the close of the meeting, NMFS requested the Team to submit any additional proposals that had been discussed but not written up yet. Three proposals were emailed to NMFS on March 31st and April 1st. While the various elements of the three proposals were presented and discussed on the last day of the meeting (and are reflected in the consensus recommendations and divergent perspective sections below), the individual proposal packages were not discussed at great length in plenary on the final day.

The following summarizes the three proposals (in order of receipt). The absence of a specific measure in a proposal does not necessarily indicate support, opposition, or abstention. Refer to **Appendix 3** for the full proposals, which contain important context, rationale, and detailed suggestions/considerations.

Proposal 1 (MMC)	Proposal 2 (Industry, WPRFMC, & Research)	Proposal 3 (Conservation & Research)
Gear Modifications, Handling, and Training		
• Given effectiveness uncertainty with proposed terminal gear and handling procedures, this approach cannot be relied on or expected to significantly reduce MSI at this time. • Once effectiveness has been confirmed, NMFS can consider reducing effort controls.	• Utilize and support successful implementation of the FLD, including specific method guidelines and thorough training. • Stronger leader (potentially braided and/or looped leader).	• No objection to recommended gear modifications (e.g., braided leader, stronger branchline, and FLD); however, the issue needs further research and is seen as unlikely to successfully meet MMPA goals as a standalone management strategy.
Caps and Effort Controls		
• Do not advise a hard bycatch cap (unlikely implementable and undue burden on the fishery) • Effort control as the most reasonable expectation to reduce M&SI below PBR. Conduct thorough analyses to explore different effort control measures.	• Consideration of effort reduction is premature. Conduct comprehensive effort study.	• Use set and/or hook-based reduction within the management area (where average of 90% of effort occurs). Effort controls can change over time. Cap effort based on current baseline of fishery effort. • Implement rolling effort closures (every vessel takes off a period of time.)
Area Closures		
(Not specifically mentioned.)	• Eliminate the SEZ provisions.	• (Not specifically mentioned.)
Learning and Monitoring/Tracking		

● Develop and implement adequate monitoring, review/ evaluation, and adaptation.	● Support EM as recommended by TRT.	● (Not specifically mentioned.)
Other Comments		
● Include strategies for further reducing MSI to the point where it is approaching ZMRG within five years.	● External to TRP process, NMFS should establish FKW-specific injury criteria that better reflect FKW interaction risks.	● Add shortline fishery to the TRP scope.

Consensus Recommendations and Additional Proposed Ideas Considered

The Team reached consensus on several recommendations and reached near-consensus for a few additional proposed ideas. Refer to **Appendix 2** for the full consolidated text of consensus recommendations and additional proposed ideas considered.

Consensus Recommendations

Brief recommendation statements are provided verbatim per TRT discussion; longer recommendation statements are summarized (but the full text can be found in **Appendix 2**).

Electronic Monitoring

(Full text in **Appendix 2**)

NMFS should work with the WPRFMC to support EM implementation for 100% of the Hawaiian deep-set longline fishery:

- Address major uncertainty issues (e.g., FKW bycatch, depredation, informing serious injury determinations, consistency with gear handling guidelines, etc.).
- Determine appropriate technical specifications (e.g., number of cameras).
- Continue support for Observer Program (TRT not suggesting a decline in observer coverage at this time).
- Set up as a federally-funded program (ensuring sustained support), but not preclude other funding sources.

Specific objectives aligned with TRP goals

- Improve certainty of bycatch and depredation, post-release condition by collecting key data like species, crew handling, trailing gear and location of the hook, animal injuries/behavior, etc.); improving coverage (e.g., in zones where different FKW stocks overlap)
- Assess consistency of handling and gather more information on handling
- Design program to be as cost-efficient and cost-effective as possible.
- Assess unanticipated benefits

MMPA Comparability Finding

> "Several foreign longline fleets operate within the range of the pelagic false killer whale stock and interact with this transboundary stock. The FKWTRT strongly urges NOAA to implement the provisions of the MMPA Import Rule (50 CFR 216.24(h)(6)) to ensure that all pelagic longline foreign fleets operating in this area, and importing fishery products into the U.S., employ measures to reduce SI/M of pelagic false killer whales fully equivalent to those required in the domestic Hawai'i deep set longline fishery."

Crew Training

(Full text in **Appendix 2**)

- The intent is to expand training beyond the captain/deck boss.
- Work with HLA to train at least one crew member per vessel.
- Encourage training accessibility (in multiple languages) and retention (hands-on application)
- Account for crew changes (fostering crew's ability to appropriately handle/release hooked animals, not prevent vessels from fishing if the crew is untrained)
- Modify a current "captain must be present" requirement to a captain notification (maintaining the requirement for the captain to be notified, but the crew can immediately take action and not wait for the captain to be notified).
- Develop accessible placards (in multiple languages) and other educational resources (as easily understandable and engaging as possible).

Pelagic Stock Assessment

> "NMFS has proposed a new management area for the Hawai'i pelagic stock of false killer whales. This area includes both the U.S. EEZ around Hawai'i and areas on the high seas, but the actual range of the stock is not known. The Team recommends that NMFS: (i) determine the full range and size of the Hawai'i pelagic stock; and (ii) estimate foreign fishery bycatch, including M/SI, of the Hawai'i pelagic stock within that full range."

Effectiveness Monitoring

> "The Team recommends that NMFS seek the team's review of and feedback on its monitoring plan to assess operational performance of take-reduction measures to be implemented by the proposed revisions to the take reduction plan."

Acoustic Monitoring

> "The team recommends that NMFS continues to support the ongoing acoustic monitoring and sound propagation study onboard fishing vessels. One of the main objectives should be to better understand the variables behind the differential depredation (and potential marine mammal take) of some vessels."

Additional Proposed Ideas Considered

The following statement was considered but did not receive full consensus support from the Team.

Expedite EM

> "Consistent with the team's recommendations on EM, the agency should not wait for the TRP amendment rulemaking to move forward with EM implementation in the Hawai'i deep-set longline fishery and instead expedite implementation of EM as soon as practicable."

E. Key Discussion Points: Shortline Fishery

Although not in the current TRP scope, the HI shortline fishery (a Category II fishery) has been a topic of interest for a number of TRT members over the years. The TRT shortline work group met in February and March to better understand the fishery and discuss potential linkages to the TRP goals. Staff from the State of Hawai'i's Department of Land and Natural Resources (DLNR), the primary management entity for the shortline fishery, presented information on the shortline fishery to the work group and at the March 10 TRT webinar. At the March 28-31 meeting, NMFS invited the TRT to share opinions on the rationale and potential implications for including the shortline fishery into the TRP scope (noting that

NMFS was not seeking a TRT consensus recommendation on shortline to prioritize thorough discussion on deep-set longline).

Overarching Themes

Scale

- DLNR relies on the Hawai'i commercial marine license system for information on the shortline fishery. Available self-reported data indicate approximately 5 shortline vessels actively fish, and much of the activity occurs around the Cross Seamount. DLNR staff acknowledged that past reporting has been inconsistent, making it challenging to tease out accurate fishing effort estimates (DLNR said it is working to improve these reporting procedures).
- Many Team members expressed concerns with the available information on the shortline fishery. Given discrepancies between observed and self-reported depredation data, several Team members speculated the shortline fishery could have a much larger impact on the population than is currently known.

Gear Type / Operations Similarity

- DLNR staff described the shortline fishery gear and operations to help identify similarities and differences between the deep-set longline and the shortline fisheries. The shortline fishery does not have standardized gear requirements; fishers who use shortline gear use a variety of gear types in combination on fishing trips. Shortline target catch is similar to longline (e.g., bigeye tuna and yellowfin tuna). NMFS staff described shortline gear as essentially downsized longline gear with a mainline less than 1 mile in total length (mainlines in the longline fishery can be 40-50 miles long).
- Opinions differed on whether the shortline gear and operations were sufficiently similar to the longline fishery. Some members felt that the differences in operations (e.g., shorter mainlines and smaller vessels) insinuate the shortline fishery should have an insignificant impact compared to the longline fishery. They also doubt vessels would switch between longline and shortline gear. Other Team members felt that, from a whale's perspective, the gear and hooked fish are the same; this insinuates there is a FKW interaction risk that warrants further exploration.

Relation to TRP

- TRT members who supported including the shortline fishery into the TRP scope pointed to concerns that this fishery is impacting the endangered and declining insular FKW population and potentially impacting the transboundary pelagic stock. They noted that the similarity in gear type suggested a high risk of interactions and said that incorporating the fishery into the Plan would provide a more certain method for gathering information that would allow for a more informed assessment of the fishery's potential impact on false killer whales.
- Other TRT members felt hesitant to bring the shortline fishery into the TRP process at this stage; expanding the scope, they said, could complicate discussions and hinder progress toward top-priority goals. Some members questioned whether bringing in the shortline fishery would result in meaningful differences given the supposed small size of the fishery (5-11 vessels based on self-reported state data) compared to the longline fishery (>140 vessels).
- Several Team members voiced strong concerns that a TRT recommendation to bring the shortline fishery into the TRP could undermine trust and relationships with shortline fishermen (the TRP process could be viewed as a federal, top-down directive).
- A few Team members suggested other statutory frameworks are more appropriate for addressing potential FKW interaction concerns in the shortline fishery (e.g., ESA recovery plan).

- A Team member noted that just because a fishery is brought into the plan does not immediately result in the same measures or requirements. The TRP can be applied across multiple fisheries in different ways.
- A member drew a parallel to the foreign fleet: both the foreign fisheries and shortline fishery effort and impact are largely unmonitored and unknown; therefore, both should be further explored to address critical information gaps.
- Several Team members expressed frustration with a seeming "chicken-egg" conundrum: the group cannot develop appropriate TRP management actions/plans without sufficient information, but it is challenging to gather more information without a management plan highlighting the information needed. NMFS acknowledged frustrations and encouraged the Team to share thoughts about information and coordination/engagement needs to help advance the shortline fishery discussion.

Proposals Considered

The following statements were considered but did not receive consensus support from the Team.

State (DLNR) and NMFS coordination for shortline monitoring (specifically EM)

Two different recommendations were considered by the Team on this topic.

Option 1:

> "NMFS and DLNR should coordinate to integrate shortline fishing into the federal government's expedited EM implementation."

All Team members supported the above statement except two individuals. One Team member conveyed concerns that the directive nature of the recommendation could harm the State's relationship with its fishermen, thereby increasing resistance to the effort. The other Team member reiterated the state-managed shortline fishery would not fall within the scope of the ongoing development of the federal EM program that is focusing on the longline fishery.

Option 2:

> "The Team sees the imperative for NMFS and DLNR to integrate shortline fishing into the federal government's expedited EM implementation."

This option received support from slightly more than half the Team, with Team members from three different caucuses (conservation, researcher, governmental) unable to support this statement. Some opposed it as they preferred a more pointed recommendation for NMFS and State coordination. Others felt the issue was already being adequately handled through the current EM implementation process.

VI. RESEARCH NEEDS

Various research needs were identified throughout the meeting (several specific issues and questions are captured in the appendices):

- Animal behavior (attraction and deterrents) and methods to reduce depredation
- Animal-gear interaction
- Stockwide assessment
- Foreign fleet effort and potential M&SI impacts

There was a shared view among the Team that, although robust research on these topics understandably takes years, these are high-priority issues calling for continued/expanded research.

VII. PUBLIC COMMENT

Each meeting day had time allotted for members of the public to comment; however, there were no public comments March 28-31.

VIII. NEXT STEPS

Based on the Team deliberations, participants agreed to the following next steps:

- [Near Term] Working group to discuss whether to straighten the hook or cut the line (with vets) and discuss implications for terminal gear configuration (e.g., leader length materials, looped leaders) and other gear. This group should consist of members from each constituency within a manageable size.
- [Longer Term] Handling group to discuss handling recommendations after obtaining more videos and more information on FLD.
- [Timing TBD] DLNR will provide a monitoring plan for the shortline fishery and report back on the progress via team webinar.

Questions or comments regarding this meeting summary should be directed to Bennett Brooks and Stephanie Horii (bbrooks@cbi.org | shorii@cbi.org).

IX. APPENDICES

1. March 10 webinar slide deck (TRT work group updates)
2. Consolidated Consensus Recommendations
3. Proposals Submitted

1. Appendix 1. March 10 Webinar Slide Deck Text - Work Group Updates

The following is the text from the March 10 webinar slide deck on the Work Group Updates presentation and discussion:

False Killer Whale TRT Work Teams

- Deterrents
- Gear / Handling (including fighting line device)
- Electronic Monitoring
- Southern Exclusion Zone
- Shortline Fishery

Deterrents

Topics Covered

- New deterrent methods
- Observer Program database for possible markers
- Research needs

Key Learnings

- Canvassed researchers globally for any emerging methods or gears - did not generate any new ideas
- Interest in looking more methodically at set of possible markers in depredated v. non-depredated vessels: what's been looked at previously can be ignored; what warrants a fresh look; what's never been looked at before
- Greatest interest in discards, vessel acoustics
- Strong interest in prioritizing Erin's vessel signature research - first needs outreach to vessels with high/low depredation rates
- Interest in limiting hooks/line length
- Mining the Observer Database
    - General observation of more whales in the fishery (or social learning)
        - Potential to try and identify individual whales - 200 Individuals cataloged already
        - Potential to review footage, to identify individual whales
    - Silencers on hydraulics
    - Concentration of where boats/fishermen
    - Lights at night (crab lights)
    - Fishery switching fish bait (seemed to have little effect on depredation)
    - Moonphase
    - Interest in information on if depredation occurs during setting or hauling
    - Magnitude of discards (attracting false killer whales)
        - Size, Species, At vessel condition (species might still be alive)
    - Boat size (surrogate for noise)
    - Artificial Bait (or detractant, like metal piece)
    - Research on which species are most commonly depredated by FKW

Gear/Handling

(including fighting line device)

Topics Discussed

- Fighting line device

- Other possible gear mods to help reduce M&SI inconclusive
- Gear handling guidelines

Key Learnings

- Fighting line device
    - Several models out for testing; device seems to be working as intended (stay tuned for video)
        - Deployed when animal is 20-30 feet away from vessel
        - Neither line cutter nor camera integration likely in near term
    - Potential for device to help with M&SI: help straighten hook; make it more likely crew can bring lip-hooked animal closer to vessel and cut line within a few inches of lip; help reduce breaking branchline
    - Even if not helpful with M&SI, can help reduce trailing gear
    - Need to better quantify potential for device to reduce M&SI (with caveats)
- Discussion of other possible gear mods to help reduce M&SI inconclusive
    - Branchline changes may be less significant once fighting line device adopted
    - No apparent fixes from other fisheries (e.g., mainline length, etc.)
    - No other gear mods garnering broad support
        - Industry still resistant to weak hooks - want to see impact of fighting line device over next few years; in meantime, double-down on research to identify other solutions
        - Others see need for greater certainty of reduced M&SI in near-term (will it be used effectively and consistently by crews on both observed and unobserved vessels); want to see Team pursue multiple pathways
- Gear handling recommendations - current thinking
    - Shift to fighting line will require new handling requirements: when / when no to use; how to make it slide down line; guidance on when to cut line (duration); distinguish between hooking and entanglements; etc.
    - Keep as simple as possible

State of Play

- Areas of Possible Alignment
    - Strong interest in possible TRP measure related to fighting line device
        - Require vessels to carry fighting line device meeting stipulated specifications
        - Need updated handling guidelines; reference in Team recommendation but publish outside of regs
        - Line cutter integration - best as separate rule or require use of NMFS-approved cutting device
        - Perhaps non-regulatory recommendation for NMFS to provide adequate resources to support captain AND crew training; collaboration to integrate camera into fighting line device
- No clear direction yet on other possible gear-related measures
    - Divergent views on weak hook
    - Additional measures need to be considered as part of wider package (e.g., linkage between effectiveness of “fighting line device” and observed/unobserved vessels) Information Needs
- Pre-Meeting Information Needs
    - PIFSC: Quantify, as possible, potential for device to reduce M&SI by mining Observer Program data (% of interactions where device could potentially be deployed, etc.)
    - PIFSC: Share clear guidance on when / when not to use fighting line

- Industry: Develop description of fighting line device and any associated handling guidelines
- May be value in reviewing training recommendations discussed during 2018 meeting

Electronic Monitoring

Topics Discussed

- EM Program Objectives
- Language for Possible EM Recommendation
- Additional information needs

Key Learnings

- Drafted High- level Electronic Monitoring Program Objectives
  - Sought feedback on Electronic Monitoring Program Objectives from Electronic Technologies Steering Committee
- Drafted Electronic Monitoring Recommendation Language
- Presentation on Baltic Sea experiences with EM

False Killer Whale Electronic Monitoring Program

Objectives

- Reduce uncertainty in FKW bycatch estimates
  - Gathering more information about specific FKW interactions for M&SI estimates
    - Key components of EM video: trailing gear (with crew handling in camera view); marine mammal injuries (blood); crew handling/behavior; duration; hooking location; species ID; animal size; animal behavior (e.g., assess impacts and potential for capture myopathy)
  - Reduce uncertainty in spatial patterns of FKW bycatch and bait/catch depredation
    - Increase effective coverage (combined observer & EM data) in zones where multiple FKW stocks overlap
    - Better identify areas with higher or lower FKW interaction rates, and bait/catch depredation rates
- Assess consistency of handling according to TRT recommendations
- Gather information on handling of FKW (comparison of observer program and EM program interactions)
- Design an EM Program to be as cost efficient and cost effective as possible
- Assess unanticipated benefits and or information that can be gathered from EM program

Draft Recommendation Language

There is uncertainty associated with false killer whale bycatch estimates in the Hawai'i-based deep-set longline fishery, as well as limited information available on actual events (e.g., animal size, behavior for assessing animal condition, the duration of interactions, and gear handling behavior by the crew) due to 20% observer coverage coupled with low interaction rates. There is also uncertainty in spatial patterns of depredation and bycatch. The three different stocks of false killer whales have areas of overlap, and actual observer coverage in those areas of overlap is limited due to the low effort in those areas.

As such, the FKWTRT recommends that NOAA Fisheries work with WPRFMC to support implementation of a federally-funded electronic monitoring (EM) program in the Hawai'i-based deep-set longline fishery that would substantially reduce uncertainty in false killer whale bycatch estimates (both in terms of quantitative estimates and spatial distribution) and provide information to inform serious injury determinations and consistency with gear handling guidelines, while ensuring that such program is as cost efficient and cost effective as possible

(see attached objectives document). The FKWTRT further recommends that NOAA Fisheries consider appropriate technical specifications (e.g., number of cameras, video resolution, etc.) to record animals both next to the vessel and a broader field of view during gear hauling.

State of Play

- Areas of Possible Alignment
    - Objectives of Electronic Monitoring
    - Possible language to include in TRT recommendation to Agency
    - No interest in WG to delve into EM implementation details at this point given ongoing EM Steering Committee discussions
- Other noteworthy discussion points
    - Potential linkages between EM and other possible measures (e.g., allow fishing in SEZ if using EM) need to be held in full team discussion

Southern Exclusion Zone

Topics Discussed

- SEZ Purpose
- Consequences related to SEZ Closures
- Possible changes to SEZ measure
- Additional information needs

Key Learnings

- Clarified Purposes of SEZ
    - Conservation benefit
    - Backstop to exceeding PBR
    - Incentive to fishermen to avoid FKW bycatch
    - Incentive to bring people back to the table to problem solve together
    - Key piece of overall consensus package
- Outlined Possible Consequences of SEZ Closures
    - Conservation Benefit for FKW and other PS (hard to quantify)
    - Closed fishing areas (possible economic impact)
    - Effort displacement due to SEZ closure
    - Safety risk (for smaller vessels, increased operational cost (fuel), potential environmental impacts (GHG pollution)
    - Potential for vessels to switch to shortline
    - Potential increase in imports if any vessels choosing not to fish during SEZ closure
    - Shortline vessels shift into SEZ
- Potential changes or alternatives to SEZ
    - Boundaries
    - Trigger Value – Change to 5-year rolling average rather than annual value
    - Timing/Duration of Closure– Full year rather than calendar year
    - Close SEZ to shortline fishery as well
    - Exemptions for allow for some fishing to continue in SEZ (ex. specific gear)
    - Dynamic spatial closures
    - Others to be discussed

State of Play

- Challenging to discuss SEZ in absence of other TRP elements
- Shifting SEZ boundaries may help meet MMPA mandates, but may not have meaningful population-level conservation benefits

    - Strong industry resistance to any expansion; prefer other measures to achieve conservation benefit
    - Need to keep MMPA mandates in mind
- Interest in revisiting specifics of SEZ trigger
    - Shifting from calendar year; exploring rolling averages
- Punitive approach to SEZ may prove to be disincentive to fishermen adoption of fighting line device
- Consider exemptions for certain gear types or vessels

Information Gathered & Provided

- Effort displacement from monument expansion in 2016
- Level of fishing effort in the SEZ when the SEZ was open
- Magnitude of effort displaced to the south and east of SEZ during closure
- Maps of protected species interactions to inform consequence of SEZ closure
- Request for information on if fishermen with an observer, have observer effect with SEZ closure threat, shifting vessel behavior
- SEZ closure impacts fleetwide or a subset of vessels

Shortline

Topics Covered

- State of Hawaii data on shortline fishery
- Potential overlap with Take Reduction Plan

Key Learnings

- State of Hawaii shared information about SL fishery, but still need to strengthen understanding of several key pieces
    - Number of operators | level of take | fishery characteristics (amount of line, etc.)
    - Potential strategies to address gaps: (improved reporting, observers or EM, etc.)
- Diverse perspectives on need to include short line fishery within TRP
    - Rationale to include: gear type, methods and fishing location; linkage to SEZ closure; data needs
    - Rationale to keep outside: very small fishery; distract from LL discussions
- To discuss with full Team
    - Share information on SL fishery to full team
    - Discuss relative merits of bringing shortline fishermen to March in-person meeting

State of Play

- Little clear direction from WG but some messages to share with full Team
    - SL to LL comparison: fleet size, location, fishing method, etc.
    - Back-of the envelope calculation to consider potential M&SI based on its size relative to LL fleet (though important to highlight caveats of any such calculation)
    - Mixed views within WG on merits of bringing SL fishery into TRT process
    - Possible strategies to reduce uncertainty/concerns (not consensus)
        - Consider voluntary video-monitoring of SL fleet
        - Recommend feds work with state to get more data on fishery
        - Follow-up on fishermen offers to carry observers on board
- Keep funding/costs in mind as consider options

Emerging Research Priorities

- False Killer whale attractants research: vessel sound, lights
- False Killer whale social learning: Identify individuals that depredate LL vessels

- Artificial bait development (or potential metal detractant)

Team Discussion Questions

- How might these different strands come together as a package of measures?
- What else do you need to know to have productive discussions later this month?
- To what extent should the Team be discussing short line at its in-person meeting? Would it be helpful to have short-line fishermen join for part of the meeting?
- What are emerging near-term (1-3 year) research priorities given Working Group discussions?

2. Appendix 2. Consolidated Consensus Recommendations and Other Proposed Ideas Considered

Introduction

Below is a consolidated set of the consensus recommendations and proposals considered per the FKW TRT March 28-31 discussions and next steps.

Consensus Recommendations

Below are those recommendations that were discussed and received consensus support from the Take Reduction Team.

Acoustic Monitoring

The team recommends that NMFS continues to support the ongoing acoustic monitoring and sound propagation study onboard fishing vessels. One of the main objectives should be to better understand the variables behind the differential depredation (and potential marine mammal take) of some vessels.

Crew Training

TRT recommends…

3. ***Crew training***. The intent of this recommendation is to encourage training of all crew. The Team recommends that NMFS, in coordination with the Hawai'i Longline Association, promptly train at least one crew member per vessel (in addition to the owners and operators) in marine mammal handling and release. Crew training should be (i) provided in the languages understood by the crews being trained, (ii) include a hands-on component, and (iii) made reasonably available by NMFS in a manner that allows all crews to participate and does not impact fishing operations. Training should be conducted dockside with hands-on component; as possible, NMFS should suggest approaches for at-sea training to maintain and improve crew readiness. NMFS' 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 crew training program, not to prevent vessels from fishing because some crew members are not yet trained.
4. ***Captain notification***. Once crew training is implemented and at least one crew member is certified on each vessel, modify the current guidance to eliminate the requirement that "longline vessel operators must supervise and be in visual and/or verbal contact with the crew during any handling or release of marine mammals." The intent of this recommendation is to maintain the requirement to notify the captain, but the notification does not need to occur before crew initiates handling or release of marine mammals. The trained crew is encouraged to take immediate action and not wait for the captain to be notified.
5. ***Placard***. Update NMFS-approved placard into languages understood by crews (e.g., Indonesian, Vietnamese, Tagalog) and to include change in captain notification. Alternative and/or supplemental educational resources should be utilized, including easily understandable graphics, to be as accessible and useful to crew as possible.

Electronic Monitoring

There is uncertainty associated with false killer whale bycatch estimates in the Hawai'i-based deep-set longline fishery, as well as limited information available on actual events (e.g., animal size, behavior for assessing animal condition, the duration of interactions, and gear handling behavior by the crew) due to 20% observer coverage coupled with low interaction rates. There is also uncertainty in spatial patterns of depredation and bycatch. The three different stocks of false killer whales have areas of overlap, and actual observer coverage in those areas of overlap is limited due to the low effort in those areas.

As such, the FKWTRT recommends that NOAA Fisheries work with WPRFMC to support implementation of a sustained electronic monitoring (EM) program in the Hawai'i-based deep-set longline fishery that would substantially reduce uncertainty in false killer whale bycatch estimates (both in terms of quantitative estimates and spatial distribution) and provide information to inform and improve serious injury determinations and consistency with gear handling guidelines, while ensuring that such program is as cost efficient and cost effective as possible [see objectives list below]. The EM equipment should be installed on 100% of the Hawai'i-based deep-set longline fishery and data adequately stored; the stored data should be sampled and analyzed consistent with the objectives of the program. The FKWTRT further recommends that NOAA Fisheries consider appropriate technical specifications (e.g., number of cameras, video resolution, etc.) to record animals both next to the vessel and a broader field of view during gear hauling.

This recommendation is not intended to suggest a decline in observer coverage at this time. The intent of the team's recommendation is for sustained funding to support electronic monitoring. The intent is that EM should be a federally-funded program, but should not preclude other third-party non-fishery sources of funding.

FKW TRT Potential Electronic Monitoring Program Objectives

1. Improve certainty of FKW bycatch and depredation estimates, and explanatory predictors of post-release survival
    a. Increase the size of sampled effort from which information about specific FKW interactions for M&SI estimates are collected
        - Key catch-level EM data collection fields
            1. Species ID (high priority)
            2. Crew handling/behavior (high priority)
            3. Duration of crew handling/release (medium priority)
            4. Trailing gear (medium priority)
            5. Marine mammal injuries (e.g., blood) (medium priority)
            6. Anatomical hooking location (medium priority)
            7. Animal behavior (e.g., assess impacts and potential for capture myopathy) (medium priority)
            8. Animal size (low priority)
    b. Reduce uncertainty in spatial patterns of FKW bycatch and bait/catch depredation
        - Increase effective coverage (combined observer & EM data) in zones where multiple FKW stocks overlap
        - Better identify areas with higher or lower FKW interaction rates and bait/catch depredation rates
2. Assess consistency of handling according to TRT recommendations

3. Gather information on handling of FKW (comparison of observer program and EM program interactions)
4. Design an EM Program to be as cost efficient and cost effective as possible
5. Assess unanticipated benefits and or information that can be gathered from EM program

MMPA Comparability Finding

Several foreign longline fleets operate within the range of the pelagic false killer whale stock and interact with this transboundary stock. The FKWTRT strongly urges NOAA to implement the provisions of the MMPA Import Rule (50 CFR 216.24(h)(6)) to ensure that all pelagic longline foreign fleets operating in this area, and importing fishery products into the U.S., employ measures to reduce SI/M of pelagic false killer whales fully equivalent to those required in the domestic Hawai'i deep set longline fishery.

Pelagic Stock Assessment

NMFS has proposed a new management area for the Hawai'i pelagic stock of false killer whales. This area includes both the U.S. EEZ around Hawai'i and areas on the high seas, but the actual range of the stock is not known. The Team recommends that NMFS: (i) determine the full range and size of the Hawai'i pelagic stock; and (ii) estimate foreign fishery bycatch, including M/SI, of the Hawai'i pelagic stock within that full range.

Effectiveness Monitoring

The Team recommends that NMFS seek the team's review of and feedback on its monitoring plan to assess operational performance of take-reduction measures to be implemented by the proposed revisions to the take reduction plan.

Additional Proposals Considered

The following proposal statements were considered but did not receive full consensus support from the Team.

Expedite Electronic Monitoring

Consistent with the team's recommendations on EM, the agency should not wait for the TRP amendment rulemaking to move forward with EM implementation in the Hawai'i deep-set longline fishery and instead expedite implementation of EM as soon as practicable.

All Team members supported except for two individuals. One felt that the existing federal EM program was sufficiently pursuing EM implementation; accordingly, including a recommendation in the TRP rulemaking process seemed redundant. The other Team member indicated the proposed statement lacked specificity and was not a substantive addition.

State (DLNR) and NMFS coordination for shortline monitoring (specifically EM)

Two different recommendations were considered by the Team on this topic.

Option 1: NMFS and DLNR should coordinate to integrate shortline fishing into the federal government's expedited EM implementation.

All Team members supported the above statement except two individuals. One Team member conveyed concerns that the directive nature of the recommendation could harm the state's relationship with its fishermen, thereby increasing resistance to the effort. The other Team member reiterated the existing federal EM program should lead the direction regarding EM implementation.

Option 2: The Team sees the imperative for NMFS and DLNR to integrate shortline fishing into the federal government's expedited EM implementation.

This option received support from slightly more than half the Team, with Team members from three different caucuses (conservation, researcher, governmental) unable to support this statement. Some opposed as they preferred a more pointed recommendation for NMFS and State coordination. Others felt the issue was already being adequately handled through the federal government's expedited EM implementation process.

7. Appendix 3. Proposals Submitted

Three proposals were emailed to NMFS March 31st and April 1st. While the various elements of the proposals were discussed during the meeting (and are reflected in the consensus recommendations and divergent perspective sections below), the individual proposal packages were not specifically discussed in plenary. The proposals are provided below (in order of receipt)

Proposal 1

Advice to NMFS regarding mitigative measures to be included in revisions to the False Killer Whale Take Reduction Plan

Dennis Heinemann, Marine Mammal Commission

At this time, there are only three mitigation measures that might have the potential to reduce MSI below PBR (the primary goal) within six months and to approaching ZMRG within five years (the secondary goal) – 1) a bycatch hard cap, 2) modifications to terminal gear and the handling of hooked whales, and 3) fishing effort controls.

1. We do not advise the use of a hard bycatch cap, as it is unlikely to be implementable and would place an undue burden on the fishery.
2. Given that terminal gear and handling procedures currently in use are clearly inadequate to achieving these goals, and because a) the proposed gear and handling modifications are untested, and b) there are numerous uncertainties associated with their performance, we have assessed that this approach cannot be relied on or expected to significantly reduce MSI at this time.
3. The only measure that has a reasonable expectation of reducing MSI below PBR is effort control. Given that there are several ways that an effort control could be implemented, we advise that NMFS rapidly undertake a statistical/modeling analysis to identify and evaluate potential effectiveness of different measures.

- The analysis should look at the relationship between fishing effort and interaction rates/MSI, taking into account the behavior of the whales, to determine the effort controls (e.g., hooks, sets, trips, vessels, fishing periods/closures) that would be most ideally suited to effectively and efficiently reducing and maintaining MSI below PBR, while anticipating unintended consequences, and, if possible, minimizing adverse impacts on the fishery.
- In addition, the analysis and proposed magnitude of the effort control will need to take into account a) the fact that fishing effort has been increasing steadily and likely will continue to do so between the time that the control is designed and implemented, and b) the degree of correlation between fishing effort and MSI or the interaction rate.
- The plan should include a monitoring plan that regularly assesses the operational effectiveness of the effort controls (i.e., do they reduce effort as expected), and allow for adaptively and promptly modifying those controls if they do not perform as expected.

Whales will continue to be hooked, suffer serious injuries and die. Therefore, the continued trialing, monitoring, and modification of gear and handling should remain a priority, and when improvements in or confirmation of the effectiveness of these approaches are established, NMFS can consider reduction of effort controls.

The plan revisions should include strategies for further reducing MSI to the point where it is approaching ZMRG within five years.

Proposal 2

FKW TRT Recommendations 03/31/2023

By TRT members John Myking, Roger Dang, Jonathan Moribe, Phil Westbrook, Ryan Steen, Tory O'Connell, Asuka Ishizaki, Aude Pacini, and Eric Gilman

Crew Training

We support the consensus recommendation for crew training. The lack of formal crew training has been a significant detriment to achieving proper handling of hooked FKWs. An added benefit of robust crew training is that crew members participate in foreign fleets and could, in theory, transfer proper handling methods to those fleets.

Fighting Line Device / Braided Leader / Clear Handling Guidance

We think there is great potential to reduce FKW serious injury and mortality with the use of the fighting line device (FLD) because it creates the tension at a point on the line below the branchline and below the weight and crimps.

The use of the FLD should be prescribed by regulation such that a regulation requires (1) the FLD to be on deck and (2) it should be used when a FKW is hooked (but not entangled). Including this in a regulation would improve the likelihood of this method being used for comparability findings under the MMPA Import Rule.

In addition to the regulation, there should be guidelines that prescribe specific methods to be followed, in a nutshell:

1. If no tangle, slide FLD until catches on the weighted swivel.
2. Apply tension for certain time.
3. If hook does not straighten after a specified duration, cut line below the weight and as close to the hook as possible.
4. If FLD does not catch on the weighted swivel, cut line as close to the hook as possible.

We think there is a significant potential for success of reducing the serious injury and mortality rate below PBR[2] by the use of the FLD, paired with formal crew training and clear handling guidelines. We believe it is reasonable to expect that use of the device can reasonably be expected to bend and release hooks 60% or more of the time (with an obvious goal for 100%).

Other benefits of FLD: (1) significantly reduces (or eliminates) risk of fly back, and (2) can be used on sharks so that becomes common practice by crews in the fleet.

Finally, we recommend that NMFS consider the use of a stronger leader (including potentially a braided leader), with a specified minimum threshold strength rating. Stronger leaders will further ensure that the hook is the weakest point of the terminal gear. We recommend that NMFS and the fleet continue to examine the potential use of a looped leader, which seems to have significant potential for releasing FKWs with no trailing gear and only a hook.

Electronic Monitoring

[2] Some Team members strongly object to the new PBR assessment presented by NMFS and will communicate those views separately in writing.

We support the implementation of Electronic Monitoring, as recommended by the Team.

Comprehensive Effort Study

We acknowledge that some Team members have recommended effort reduction as a potential way to reduce FKW MSI rates. We believe consideration of effort reduction is premature. We recommend that NMFS, in conjunction with other relevant agencies and the Council, conduct Management Strategy Evaluation to simulate the likely performance and tradeoffs of alternative management strategies involving effort reduction and to explore the effects of uncertainty of each candidate strategy. This evaluation should consider the following non-exclusive factors and issues:

- Identification of various approaches to effort reduction (including, for example, move-on rules triggered by an odontocete interaction – depredation or capture) and the underlying mechanism for affecting effective fishing power, odontocete depredation risk and odontocete bycatch risk.
- Effects on target and other valuable catch.
- Socio-economic consequences.
- Potential positive or negative effects on protected species (including FKWs, but including all protected species).
- Consequences regarding foreign imports of fishery products to the U.S. as a result of an effort reduction in the Hawai'i deep-set longline fishery. The consequences considered should be broad and include (but not be limited to) effects on the U.S. market, effects on U.S. fisheries and those who rely upon them, consequences on target species, and consequences on protected species (considering foreign fleets interact with protected species and are not required to comply with U.S. fleet protective requirements).

Other Recommendations

We recommend NMFS eliminate the SEZ provisions of the TRP regulations, which have not proven to have any conservation benefit.

We recommend NMFS establish FKW-specific serious injury criteria by no later than 12/31/2024 that better reflects the risk of interactions to Hawai'i pelagic FKWs. Specifically, we recommend that NMFS consider whether a single hook (with no trailing gear) left anywhere on a FKW causes the FKW to be likely to die.

Proposal 3

FKWTRP Recommendations from TRT members Andy Read, Kristen Monsell, Michael Jasny, Jane Davenport, Hannah Bernard, Robin Baird – March 2023

We believe substantial reductions in effort will be necessary to reduce M&SI in the Hawai'i deep-set fishery below PBR within 6 months of implementation of a new regulation. The magnitude of reductions necessary must be tied to the total effort, the observed takes, and the M&SI rate, all of which will change over time. We recommend that effort reductions be made in a way to avoid gaps in availability of commercially-caught fish to local communities (e.g., that there be no complete closure in the fishery) and to maximize the individual decision-making autonomy of fishery participants.

The magnitude of the necessary effort reduction will need to be commensurate with driving M&SI below PBR within six months of implementation. So, for example, if the fighting line device, other gear modifications, and/or improved training implemented by industry reduces M&SI between now and the final rule, the final rule may then require less effort reduction.

Effort reduction has a quantifiable relationship to bycatch such that NMFS can reasonably expect effort reduction measures to reduce M&SI to below PBR within six months of implementation. Effort reduction should be accomplished by the following layered measures, recognizing that:

1. Set and/or hook-based reduction within the management area (where an average of 90% of effort occurs)
2. Rolling closures – every vessel takes a period of time off – vessel operators can decide when it's in their best interest, e.g., to maintain continuous influx of US tuna into the market and simultaneously reduce effort
3. Cap on effort – amount of effort reduction should be evaluated against the current baseline of fishery effort; if new entrants into the fishery from latent effort, then NMFS has to amend effort reduction to account for more vessels – effort reduction should stay absolute as long as necessary to keep M&SI below PBR

Other:

1. Short line fishery in the plan
2. We do not object to gear modifications being recommended, such as braided leader, stronger branchline, fighting line