False Killer Whale Take Reduction Team Meeting
November 7-10, 2022: Honolulu, Hawaii

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) November 7-10, 2022, in Honolulu, Hawaii. The meeting followed an informational webinar, held on August 30, 2022, on recent FKW interactions and preliminary information from the Southern Exclusion Zone (SEZ) analysis, to prepare for the in-person discussion.

The in-person meeting focused on the following objectives:

- Reconnect as a team and meet new members
- Review and consider implications of latest data and studies related to false killer whale interactions
- Assess the effectiveness of the current False Killer Whale Take Reduction Plan (TRP or Plan) and brainstorm potential management and other measures; discuss strengths and challenges of different approaches
- Identify additional data and analysis needed to support Team discussions in early 2023

This meeting summary is presented in five main sections: Overview, Participants, Meeting Materials, Key Themes and Discussions, Public Comments and Next Steps. There are also three appendices: Appendix 1 compiles ideas shared during the meeting related to potential measures; Appendix 2 summarizes information related to FY 21 and FY 22 appropriation projects; and Appendix 3 describes work groups that will meet in preparation for the next FKW TRT meeting in early 2023.

II. PARTICIPANTS

The in-person meeting was attended by 16 Team members or their alternates: Aude Pacini, Asuka Ishizaki, Dawn Golden, Dennis Heinemann, Eric Kingma (Alternate), Hannah Bernard, Jane Davenport, John Myking, Jonathan Moribe, Kevin Brindock (Alternate), Kristy Long, Phil Westbrook, Robin Baird, Roger Dang, Ryan Steen, and Tory O'Connell Curran.

Elena Duke, TRT Program Coordinator with the NMFS Pacific Islands Regional Office (PIRO), Erin Oleson, and Amanda Bradford with the NMFS Pacific Islands Fisheries Science Center (PIFSC or Science Center), also joined the Team in its discussions. Sarah Malloy, Pacific Islands Region Acting Regional Administrator, and Kim Damon-Randall, NMFS Office of Protected Resources Director, also attended on Day 1 to welcome participants. As well, about 10 people, including staff from PIFSC, PIRO (Protected Resources Division [PRD] and Sustainable Fisheries Division [SFD]), NOAA Office of General Counsel, State of Hawaii, 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.

III. MEETING MATERIALS

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.

IV. KEY OUTCOMES

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

A. Welcome and Introduction

The meeting began with brief welcoming remarks by S. Malloy, Pacific Islands Region Acting Regional Administrator, who emphasized the meeting was an opportunity to reconnect as a team and begin discussions on potential mitigation measures to reduce Mortality & Serious Injury (M&SI). D. Golden, PIRO Fish and Wildlife Administrator, also welcomed participants.

S. Horii reviewed the meeting's objectives, the week's meeting agenda, and ground rules. Team members introduced themselves and participated in a brief icebreaker exercise to meet and reconnect.

B. Context for Team Deliberations

To inform Team discussions, the Day 1 and Day 2 meetings included a series of updates, information items, and a field tour. Below is a brief synopsis of the various updates and informational items shared at the meeting. Again, the in-person meeting built upon the August 30 informational webinar with presentations on recent FKW interactions and preliminary SEZ analysis. Team member comments related to the various briefings and updates are captured briefly below and integrated into a table of compiled Team ideas in Appendix 1.

Take Reduction Plan Overview and FKW Abundance and Status Meeting TRP Goals

E. Duke shared a high-level overview of the current FKW TRP, then E. Oleson reviewed FKW abundance and interaction data to inform the status for meeting the Plan and Marine Mammal Protection Act (MMPA) goals. Key takeaways include:

- The FKW TRP under the MMPA aims to reduce the incidental M&SI of Main Hawaiian Insular and Hawaii Pelagic FKW stocks below the stocks' Potential Biological Removal (PBR) levels.
- The FKW TRP was finalized in 2012 and based on consensus recommendations submitted to NMFS by the FKW TRT. The TRP established regulatory measures related to gear requirements; two longline management areas; and measures to improve captain and crew response to hooked or entangled marine mammals. The TRP also includes non-regulatory measures and a suite of research recommendations.
- The current Hawaiian FKW stock abundance (based on 2017-2021 data) estimates are approximately 160 MHI Insular FKW, 475 Northwestern Hawaiian Island FKW, and 2100 pelagic FKW. Survey protocols have changed over the years, making it difficult to back-calculate estimates given new information.

- Based on the most recent 5-year average, the Hawaiian pelagic stock M&SI is above PBR (17 M&SI > PBR of 16). Based on the 2022 *observed* M&SI, NMFS does not expect this to change once the 2022 M&SI *estimate* is available. NMFS is examining the development of stock abundance and PBR within the fishery area.

Team Discussion

- Much of the discussion focused on uncertainties related to abundance estimates and M&SI trends over time.
- Multiple Team members stated that NMFS' updated historical abundance estimates for the FKW pelagic stock indicate that, prior to 2022, M&SI has been below the current PBR (16) for the entirety of the FKW TRP.
- Some Team members emphasized that the current plan is not working because M&SI trends are moving in the wrong direction (i.e., increasing rapidly since 2015 and currently above PBR). The group also briefly discussed other factors that potentially could be contributing to increased interactions, including changing oceanographic factors, expansion of the Papahanaumokuakea National Monument (Monument) likely displacing fishing effort, other economic or management drivers impacting fishermen choices, etc.
- NMFS staff noted that there is a higher level of depredation now compared to 2008-2012 (i.e., pre-TRP). The increase in depredation correlates with an increase in overall fishing effort.
- There was a request for an update on the 2023 survey work and an opportunity to provide input.

Take Reduction Team Charge

K. Damon-Randall articulated NMFS' charge to the Team and near-term goals for Team discussions in the coming months. Given that M&SI exceeds PBR, NMFS is asking the Team to identify potential bycatch mitigation measures and develop recommended consensus measures to bring M&SI back below PBR. In the absence of consensus recommendations from the Team, NMFS is ultimately responsible for modifying the Plan. K. Damon-Randall underscored that these discussions are the Team's best opportunity to create recommended changes that address the Team's broad interests.

Mitigation Approaches Considered by the Team and Measures Considered by the Team in 2018

T. O'Connell Curran, on behalf of several fellow TRT members, shared an overview of general measures used to address marine mammal bycatch and depredation in longline fisheries to date. B Brooks then briefly reviewed measures the TRT had considered in 2018. Key takeaways included:

- Potential mitigation approaches generally include three types of strategies: avoid overlap between fishing effort and FKW (e.g., fishery closures), deter FKW interactions (e.g., acoustic pingers), and reduce the likelihood of M&SI (e.g., weaker hooks). Several types of deterrents have been tested for FKW in the past, and while some devices like pingers have worked for other whale species, they have thus far resulted in little success in deterring FKW.
- In 2018, the TRT explored several creative potential measures striving to balance the range of perspectives and concerns. No members committed to any individual measure unless it was part of an overall acceptable package. Much of the TRT discussion focused on finding the right balance between three potential measures: gear modifications, SEZ closure status, and electronic monitoring.
- The December 2020 Team agreement included crew training, depredation research, post-hooking mortality research, and data synthesis.

Team Discussion

- Team members briefly discussed other strategies that aim at eliminating the "dinner bell" signal to FKW (e.g., reducing the acoustic profile of vessels or discarding bycatch in a more strategic way).
- There was a suggestion to explore opportunities to reduce total effort (e.g., reducing the number of hooks on a line or reducing the length of the line).
- The group briefly noted data gaps that may never be adequately addressed (e.g., full range, abundance, and density distribution of the FKW stock). Given these spatial data gaps, Team discussions have focused on gear modifications in part because benefits result more broadly.

Recent Industry Education and Outreach Efforts

- **Protected Species Workshops**
  Savannah Lewis, PIRO Office of Sustainable Fisheries, shared updates on protected species workshop trainings for captains conducted by the Sustainable Fisheries Division (SFD). As part of its trainings, the marine mammal module includes overviews of the MMPA, reporting mortalities/injuries, handling and release guidelines, species identification, and logbook reporting.
- **Long Line Fishery Crew Training**
  E. Kingma shared an overview of the Hawaii longline fishery and related crew training. The longline fleet includes 145 active vessels out of Honolulu harbor landing approximately 300 million pounds of fish annually with an estimated dockside value of $125 million. The Hawaii Longline Association (HLA) provides a suite of resources and support, including hands-on training, tutorial videos, and a user-friendly website dashboard.

Team Discussion

- Team members asked about the content of the education and outreach efforts (e.g., using a flyback device).
- Several Team members were interested in accessing the SFD protected species workshop training modules (which could inform recommendations related to handling).
- The group briefly discussed whether/how/when the NMFS SFD captain trainings and the HLA crew trainings might better complement each other for more efficient handling during FKW interactions.

Council-Driven Management Changes under the Pelagic Fishery Ecosystem Plan

A. Ishizaki shared recent management actions for the Hawaii deep-set longline fishery under the Western Pacific Regional Fishery Management Council (WPFMC or Council) Pelagic Fishery Ecosystem Plan (FEP). Key takeaways included:

- The deep-set longline fishery is primarily managed under the Pelagic FEP. Existing requirements under the Pelagic FEP include measures related to permits, reporting, and vessel monitoring; vessel & fishing gear identification; observer placement and notification; spatial management areas; bigeye tuna (BET) allocation; protected species workshop requirement; and sea turtle and seabird mitigation/handling measures.
- Recent major changes include removal of wire leaders for oceanic whitetip sharks, new handling and release measures for oceanic whitetip sharks, consideration of electronic monitoring, and shallow-set longline modifications for sea turtle interactions.

- The Council has a pending measure for the deep-set longline fishery that aims to address an increase in Black-footed albatross interactions. The new requirement will require tori lines if stern set. The Council is also currently considering policy direction for electronic monitoring (EM) implementation through the Electronic Technologies Steering Committee formed by the Council.

Relevant Completed Studies

E. Oleson shared brief updates related to research underway, conducted by various organizations, as part of the FKW funding appropriated through Congress in FY 21 and FY 22. As a follow-up to a request on Day 1, E. Oleson also shared a table summarizing the FKW TRT's input on the use of FY 22 Congressional appropriation and the status of the projects. The projects, research leads, and project status are summarized in the tables in Appendix 2.

Team Discussion

- Several Team members were interested in the level of future funding that might support TRT research priorities. NMFS staff conveyed they do not know exactly how much Congress may appropriate funds toward research projects; however, staff speculate the amount will be relatively small.

Auction Tour and Dockside Chat with Captains

E. Kingma and captains led an auction tour and dockside tour early Tuesday morning at Pier 38 to connect and speak with captains and see a longline vessel and related gear. Multiple Team members later expressed their appreciation for the visit and the meaningful value they gleaned from these activities.

Acoustic Monitoring

E. Oleson expanded on recent acoustic monitoring work aimed at better understanding depredation. Key takeaways included:

- Researchers have been monitoring for FKW occurrence and behavior around longline gear. This work has been ongoing since 2014, though the most recent phase (since 2021) includes deploying 4 recorders evenly spaced throughout the gear. Six vessels have been monitored in this most recent phase so far.
- General vessel noise can be detected ~60 km away, presenting many opportunities for FKWs to hear vessels. Vessel noise is less likely to be detected in high Beaufort sea state vs. low.
- FKW detections are highest during the haul. Early analysis (Bayless et al 2017) suggested whales are detected more often than predicted from catch predation rates. FKW may also remain among the gear for several hours and follow hauls.
- A consistent sound ("acoustic signature") coming from some vessels could potentially be serving as a "dinner bell" attracting FKW. Seven of 12 trips with noise have FKW and depredation. When detected, the noise is heard on 80-100% of all hauls by that vessel, telemetry tags (analyzed in Anderson et al 2021) also indicate that animals are responding to sound of gear (with some distant attraction occurring).
- There is strong interest in further understanding and isolating the "acoustic signature."

Team Discussion

- Much of the discussion focused on different approaches to analyzing vessel noise profiles and isolating potential sound signature(s) that may be attracting FKW.

- The group brainstormed several potential sources of signatures or patterns (e.g., regular v. pulsating sounds, reeling in the mainline, fathometers, etc.). Fishermen shared their experiences, including that some vessels seem to attract FKW more than others, various strategies they have used to reduce vessel noise, etc.
- The Team expressed strong interest in continuing and expanding the research.

Video Gear

R. Baird shared and demonstrated components of a prototype camera system that could be attached to gear to better visualize FKW interactions. Key takeaways included:

- The gear would move down the line to capture data on hooking location, ingestion etc. It uses a GoPro Hero 10 that records in 4K at 60 frames per second and records up to 1.5 hours of video. It has 4 LED lights to illuminate anything within a few meters. It has a 3-month shelf life before components need to be serviced.
- The video gear system is designed for easy attachment and deployment (e.g., can be attached with clips to a tether line that the observers can take on/off and slide up/down the line).
- The prototype can still be modified; the goal right now is to get feedback and find someone willing to test it on a line with something hooked. Ideally, initial field tests would be with a longline vessel targeting tuna.

Team Discussion

- The group asked several questions to better understand the potential benefits, capabilities, limitations or drawbacks, and other operation considerations for the prototype video gear system. The gear may not work well with the branchline (e.g., unsure if it might damage the branchline, and may not be ideal if there is a whale caught on the line). Many of these unknowns can be addressed after field testing.
- One of the Team members/captain expressed interest in testing the system. He speculated the camera system may help reduce fly-back safety concerns.

Observed Interaction Reports

E. Duke reviewed key FKW/longline fishing-related trends and recent observer FKW interaction reports. E. Duke also shared video of relatively recent observed interactions. Key takeaways included:

- Longline fishing effort is increasing from 1200 to ~1600 trips, with sets trending upward. 2002-2022 hooks per set have been increasing. Interactions per effort (i.e., catch per unit effort [CPUE]) is trending upward as well.
- Thus far in 2022, there have been two interactions inside the EEZ and three to the south of the EEZ. Four of these interactions (two inside and two outside the EEZ) were determined to be serious injuries. For one interaction on January 11 outside the EEZ, injury status could not be determined based on the observer data.
- For FKW interactions 2013-2022:
    - *Outcomes* - More than two-thirds of interactions resulted in the line breaking (35%) or crews cutting the line (36%). The hook straightened for 7% of interactions and broke in 1.2% of interactions. The animal came free in 5.8% of interactions. 9.3% of interactions resulted in FKW mortality. 5.8% of interactions had unknown outcomes.
    - *Handling* - Crews attempted to apply active tension (e.g., pulling in the line and other actions) in approximately 48% of interactions and tied off the line in about 22% of interactions. In about 21% of interactions, either the line broke before action could be taken, or the line was immediately cut.

- *Captain Notifications* - More than two-thirds of the time, the captain was present.

- The video showed an example of a FKW that was hooked in the lip. The animal was tied off close to the vessel, and the FKW appeared to struggle and surfaced multiple times until it dove and broke the line at the leader. The gear (hook, leader, and weight) remained on the animal. This interaction was ultimately determined to result in a serious injury.

Team Discussion

- Much of the discussion delved into the gear system, particularly why the line appeared to break before the hook could be straightened or if the weak point was elsewhere in the system (e.g., swivel or crimp). Condition/age of gear could play a factor (but is difficult to field test).
- Based on the FKW interaction video, the group shared thoughts on handling given the situation. Several expressed the view that it would have been better for the animal if the crew had cut the line as close to the hook as possible and as quickly as possible.
- The group also reflected on the challenges for confirming details that inform serious injury determinations (e.g., precise location where the FKW is hooked). There was also discussion about how a lip hooking (as opposed to mouth or jaw hooking) can be a non-serious injury under the guidelines even if the hook is left in the lip with no other gear remaning.
- There was a request to get a further breakdown of each of the FKW interaction outcomes (e.g., better understanding the different "no-handling" interactions where the line breaking was not a substantial factor).

Electronic Monitoring (EM)

Jennifer Stahl with the Pacific Islands Fisheries Science Center (PIFSC) presented work related to electronic monitoring and how it can expand the opportunity for detecting and making determinations of post-release condition of cetaceans in the Hawaii longline fisheries. Key takeaways included:

- The EM Program aims to detect catch events (e.g., retained and bycatch, including protected species) and collect data on post-release condition of protected species.
- Currently, EM is under research and development with 20 volunteer vessels with two cameras on each vessel (rail and deck camera). The EM system captures the video with corresponding timeline data (e.g., vessel speed and location).
- Past research indicated EM was good at detection of retained fish, but needed improvements for discard detection, especially for sharks and a larger sample size for protected species.
- Utilizing machine learning may help reduce human error associated with analyzing video footage. It will take time for the AI to evolve into a robust model for species identification, but the current AI model can distinguish fish on deck and turtles in water/on deck (greatly reducing human analysis time eliminating the need to review video with no catch).
- Researchers also explored if the video could capture post-release condition to support NMFS serious injury determination analyses. Most determinations for cetaceans could be made (usually hooked in mouth but difficult to discern if lip-hooked only). Most cetacean interactions were in the deep-set fishery at night. Most of the analyzed interactions resulted in releasing the animal with trailing gear (If trailing gear is longer than the body length of the cetacean, no matter the attached location, the interaction is determined as a serious injury. However, if the cetacean is hooked in the mouth then the injury is considered serious if the trailing line is long enough to wrap around the goose beak at the back of the throat).
- Recommendations for EM to best assess protected species interactions are to ensure the camera with a view of the rail and water has a "bird's eye view", cameras are kept clean and maintained, cameras are sufficient quality (4 megapixels and 1080 p) and ideally record at 30

frames per second, and to encourage fishermen to perform all handling within the view of the cameras.

Team Discussion

- Team members posed a number of clarifying questions related to cost, camera gear, field of view, equipment lifespan, future funding, and other specifics.
- One Team member emphasized the importance of storing footage given federal government requirements to retain data for five years. Another sought to better understand the tradeoffs between electronic monitoring and observer-collected data (e.g., observer data tends to generate more information on species identification and hook location, while EM data provide insight into crew behavior).
- One Team member reiterated the need for a third camera that would focus on capturing a hooked animal when it is farther away from the vessel.

Southern Exclusion Zone (SEZ) Study Implications

E. Oleson reviewed key findings from the SEZ study led by Rob Ahrens (who had presented preliminary findings at the August 30 TRT webinar). The study explored the potential impact of SEZ closures on fishing effort, FKW depredation, and protected species bycatch. Key takeaways included:

- Closing the SEZ appears to displace effort south and east.
- Depredation rates within the SEZ are generally higher than elsewhere, though there is large variability given the relatively smaller number of sets within the SEZ.
- Haul time has a weak effect on depredation - with depredation increasing with haul times until ~9 hrs, then flat over the range of most haul times.
- Cumulative longline effort over the previous 7 days has a very weak positive effect on depredation rate.
- Seasonality plays a role in interaction rates with depredation rates increasing in winter months.
- There is an indication that some permits have statistically higher depredation rates.

Team Discussion

- Team members posed a number of clarifying questions focused on the following: ability to quantify bait depredation (A: difficult to discern); whether hooks on depredated sets are being collected (A: hooks generally collected only if there is an interaction); the extent to which the study accounted for confounding oceanic factors (A: yes, it did).
- Team members also identified a number of areas that might warrant further study such as:
    - Shift in effort outside the EEZ in winter and back in summer.
    - Understanding the potential impacts of effort shifting south to areas with potentially higher interactions with other protected species (sea turtles, giant manta ray, oceanic whitetip shark).
- Other more general comments included the following:
    - One Team member noted that nothing else seemed to stand out as a better depredation deterrent at this time.
    - Another Team member suggested the study shows the limited conservation purpose of the SEZ as it appears only to displace the interactions and not reduce takes.
    - Another Team member noted that the SEZ now comprises a significantly higher percentage of the area of the EEZ that is open to fishing than it did when the SEZ was first established because of the subsequent expansion of the Monument.

Weak Hook Study Implications

E. Duke reviewed a weak hook study led by Michael Musyl and Edward Phillips in 2021 (M. Musyl and E. Phillips presented draft findings at the October 27, 2021 TRT webinar). The study explored catch retention of weak hooks in Hawaii-based commercial deep set fishery. Key takeaways included:

- The study compared gear types (4.2 mm hooks vs. 4.5 mm [control hooks]) to explore if utilizing the weaker hook could bend and thus potentially reduce M&SI to FKWs, while still maintaining catch levels and revenue for target and marketable fish species.
- The study was also designed to complement a similar study conducted in 2010 (which had sampled during a time of year when larger bigeye tuna [BET] was historically absent). The newer effort focused on a time of year the fleet is known for landing larger BET.
- The 2021 study found BET catch risk was higher on the 4.2 mm hooks (though not statistically significant), and BET caught on 4.5 mm hooks were larger and heavier (statistically significant).
- Bigeye tuna caught on strong hooks fetched a significantly higher mean price per fish at auction ($52.89). For example, vessel revenue (all species combined) was similar between the two hook sizes (matching with the 2010 hook study results). The study also analyzed differences across a range of other species.

Team Discussion

- Group discussion helped clarify the rationale between the study thresholds: the study was designed to be able to detect a 10% or smaller difference in catch of BET and detect a 5% difference in catch value (determined by body size). In previous TRT discussions, several were more supportive of a threshold of no more than 5% difference in BET catch; however, a power analysis indicated that the study could not feasibly get sufficient sample size; therefore, the threshold was changed to 10%. The catch value threshold was set at 5% in part because fishing industry Team members felt that a 10% difference in value or catch size reflected an unacceptable economic impact to the fleet.
- Team members expressed differing views on how the hook studies (both the 2021 and 2010) might inform potential measure recommendations. While the studies offered some insight on potential economic impacts, several shared reservations about 2021 fishing anomalies and other data limitations of both studies. One view encouraged that regardless of the study results, given M&SI > PBR, discussions should identify options that advance TRP goals. Another view reiterated that potential measures still need to consider both economic impacts and conservation benefit.

C. Potential New TRP Measures or Modifications: Key Themes and Discussion Topics

The Team met in several configurations during the meeting – in plenary and cross-caucus, small groups breakouts (with optional and informal within-caucus meeting opportunities during breaks). The Team spent most of the meeting thinking through potential measures and near-term information needs to support future Team discussion and consensus recommendations for NMFS consideration.

Below is a summary of key themes discussed during the Team meeting. Consistent with the meeting objective to focus on brainstorming ideas and deferring any decisions on possible Team recommendations until its 2023 meeting, the Team actively discussed a range of possible ideas – from gear modifications, crew training and research needs, to possible deterrents and mitigation measures. More detailed specifics regarding potential measures, information needs, and possible TRP direction is captured in the Next Steps section and in Appendix 1.

- ***Varying views on urgency of new measures.*** Team members offered varied perspectives on the magnitude and urgency of any new measures needed in the near term. Some Team members drew on several factors as compelling reasons to suggest the need for urgency: the most recent M&SI five-year average exceeding PBR; increases in takes outside the EEZ, and the MMPA's long-term goal of approaching ZMRG, as compelling reasons to rethink Plan approach. Conversely, some Team members cautioned against pressing for draconian shifts in Plan approach and measures given that (1) the M&SI five-year average is only slightly above PBR, and (2) M&SI has only just exceeded PBR in 2022 if one accounts for the upwardly revised abundance estimates NOAA published in the 2020 SAR (though noting that downward bias in M&SI estimates for years prior to 2017 has not been corrected).

- ***Continuing interest in modifying the gear configuration to reduce the potential for M&SI.*** Though the gear requirements in the current TRP have not yet delivered the hoped-for conservation benefits, Team members still see potential in reconfiguring the current gear measures to be more effective. In particular, several Team members saw promise in a gear modification that would add a fighting line (and a possible line cutter) to better help crew members handle a line during an interaction and increase likelihood of straightening the hook,. A line cutter would could allow for quick and easy cutting of the line near the hook to minimize the amount of trailing gear . There was also interest in deploying the camera technology being developed by R. Baird as a way to film the interaction up close and better understand the dynamics. Fisheries representatives on the team will be working to develop a prototype prior to the Team's 2023 meeting. Multiple Team members stressed the importance of using existing interaction data (e.g., exact hooking locations) and potential SI considerations (e.g., line wrapping around the goosebeak) to guide development of any prototype.

- ***Ongoing focus on improving training and handling guidelines.*** Similar to the ongoing interest in the gear modifications described directly above, Team members continued to underscore the need for better training and handling guidelines that are more firmly informed by interaction data to-date. Such training needs to be provided on an ongoing basis and in the relevant language to ensure crew are well informed. Several Team members also cited benefit in designating a deck boss on each longline vessel to guide the crew in the event the captain is not immediately available. Such measures, along with any gear modifications, are best developed in cooperation with longline captains to foster buy-in and better uptake of any agreed upon measures.

- ***Reexamining the SEZ.*** Several Team members voiced interest in taking a closer look at the existing SEZ measure for a wide range of reasons. Some want to better understand any possible unintended consequences (e.g., possible linkages between SEZ closures and the existing shortline fishery). Some want to rethink the current trigger (calendar-year timing, account for inter-annual variability, etc.). Some also want to consider the merits of replacing the SEZ with some type of dynamic area management (if implementation hurdles can be overcome). Other Team members stated their belief that the SEZ should be eliminated. Most broadly, Team members agreed that any discussion of changes to the SEZ should be grounded in a clear, objective-driven approach.

- ***Revisiting EM.*** Several Team members emphasized the importance of incorporating electronic monitoring as a possible component in a revised TRP – both to have more data to evaluate the effectiveness of current TRP measures and implementation, as well as to provide an impetus for

consistent handling regardless of whether a vessel is carrying an observer or not. Issues related to the viability of any electronic monitoring requirement will likely center around the following: the extent to which the WPFMC is likely to adopt electronic monitoring requirements in the future; developing workable mechanisms to satisfy TRP monitoring while simultaneously addressing implementation considerations (e.g., cost crew privacy concerns, etc.).

- ***Accelerating research related to critical Plan needs.*** Given the lack of readily available deterrents or disentanglement strategies, Team members continue to emphasize the need for collaborative research to identify methods to decrease interactions and/or lower the likelihood of a mortality or serious injury. Team members discussed a range of research needs, but they were particularly interested in acoustic research that aimed to isolate vessel sounds that might serve as a "dinner bell" for false killer whales. Other cited research needs included: exploring why some vessels have higher depredation rates than others; better understanding specifics of hook locations (lip v. mouth); revisiting our understanding of the weak point in the gear system; exploring and/or revisiting emerging deterrents; understanding the extent of social learning among false killer whales; assessing whether false killer whales are getting hooked while depredating bait or target catch; etc.). A few Team members voiced interest and potential in securing additional funding from Congress for such efforts but understood that such an effort would need to be handled outside the federally managed TRT process.

- ***Interim work needed between now and the March 2023 Team meeting***. Team members broadly supported setting up several cross-caucus work groups to further develop ideas and potential measures to consider as part of Team recommendations when they meet in March 2023. Work group focus includes the following: fighting line/line cutter device; gear modifications/training & handling; SEZ; electronic monitoring; deterrents; and shortline fishery. (Detailed descriptions of these work groups can be found in Appendix 3**.**)

Discussions also covered a range of other themes, including the following:

- ***FKW learning and adaptation.*** Pushing at measures that have the potential to remain effective despite the speed at which false killer whales learn and adapt.
- ***Short-term and long-term measures***. Striving to identify measures capable of being implemented in the near-term and not solely focused on longer-term (and uncertain) solutions.
- ***Additional expertise.*** Inviting topic-specific experts, as needed, to support future Team discussions.
- ***Many factors to consider.*** Accounting for a range of implementation considerations when discussing potential measures (gear availability, gear lifespan, crew safety, vessel storage size, cost, etc.).
- ***Deterrents.*** Reaching out widely to researchers, gear manufacturers and others to identify any new deterrents being developed or tested elsewhere, as well as revisiting the viability and/or cost-benefit of previously explored deterrents (e.g., chain device/spider, shiny spoon near bait, etc.). This also included a recommendation to revisit the Werner et al. 2015 table detailing bycatch mitigation measures being used across fishery types.
- ***Reducing effort.*** Considering the merits of effort-related measures as a way to reduce M&SI.
- ***Foreign fleet.*** Considering the potential impacts of the foreign fleet, including competition and safety concerns, and how to move forward with recommended management measures given the limitations on managing the foreign fleet.

V. PUBLIC COMMENT

There was no public comment on November 7, 8, and 10. On November 9, R. Baird shared a public comment on behalf of a researcher to emphasize the value from analyzing FKW carcasses and encouraged fishermen to bring carcasses back when possible.

VI. NEXT STEPS

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

Near-Term

As noted earlier, the Team recommended convening a series of work groups - fighting line/line cutter device; gear modifications/training & handling; SEZ; electronic monitoring; deterrents; and shortline fishery - to make progress on a number of topics prior to the March 2023 in-person meeting. More details on these working groups are included in Appendix 3.

PIRO and PIFSC are to explore and share available information related to the following:

- HICEAS 2023 survey and opportunity to provide input.
- Changes to the fishery around 2015 (other than PMNMN Monument expansion); i.e., oceanographic variables.
- Interaction reports – e.g., hooked location and result; tie-off; tangling (goosebeak).
- Size of hooks used in Bill McLellan's pilot whale study (study presented to TRT in the past).
- Better understanding the hook-line-handling system.
- Past branchline aging and strength testing (old v. new).

TRT members

- Contact NMFS (E. Duke) with any recommended experts to bring to next TRT meeting (or future TRT meetings.
- T. O'Connell Curran to send information on sablefish and sperm whales social learning to NMFS E. Duke.
- E. Kingma to follow up with fishermen for their experiences using shiny spoons near bait as a deterrent; share that information with the Deterrents work group.

Additionally, NMFS (E. Duke) and the facilitation team will:

- Share any additional research and other resources with the TRT.
- Coordinate on next steps for the work groups (aim to have first meetings in December/early January).
- Prepare a Key Outcomes Memo (this document) summarizing Team deliberations and including the table summarizing ideas and potential measures brainstormed during the meeting (Appendix 1) as well as work group descriptions (Appendix 3).

By 2023 Meeting (tentatively week of March 27)

- TRT work groups will meet several times before 2023 meeting (descriptions provided in Appendix 3).

PIRO and PIFSC to explore and share available information, as possible, related to:

- Potential use of accelerometer on branchline to better understand depredation of bait vs. target catch.
- Costs for various EM options (won't have much detail on implementation timing and cost).
- Furthering acoustic research and what is needed to accelerate related work. For example:
    - Information from fishermen regarding boat characteristics (possibly gathered in a survey) to inform PIFSC's work to better understand vessel acoustics that might attract FKW.

    - Information on different gear systems/configuration that may relate to depredation.
    - Additional opportunities to obtain information from fishermen and others with related experience (NMFS and/or HLA if willing).
- Baseline probability of hooking in the mouth - look at available data to see whether this is more representative of what could be happening (lip, mouth), including gear outcomes.
- Observer coverage changes inside/outside EEZ (ideally seasonal).
- "Heat map" or some other visual to better spatially understand interactions per number of sets or hooks and potential relation to catch rates (effort).
- Upon request, upload past TRT presentations to a shared TRT folder.

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

- **Appendix 1: FKW TRT – Ideas Related to Potential Measures and Information Needs from the November 7-10, 2022 FKW TRT Meeting**

The table below compiles the range of ideas shared during the TRT meeting discussions; it does not represent the full TRT's opinion or recommendations. It is not an exhaustive list, and future discussions can still add, modify, and/or expand on these ideas.

Possible Measures and Approaches	Description / Rationale / Linkage	Strengths	Concerns	Timing Near Term or Long Term
Gear *Weak Hook - Strong Branchline*	• Modify the hook-branchline combo	• Fairly near-term, simple potential	• Other parts of the system may be breaking first (branchline, crimps, swivel) • Need to create constant tension to straighten • Even 4.5mm hooks can be bent • Information needs for how strength of branchline changes over time • Economic impact from new hook or branchline requirements	• Near term potential
Gear *Multi-purpose "Gizmo" - Fighting Line and Cutter*	• New gear system to create tension in attempt to bend hook (fighting line), but can cut the line near whale if unable to bend the hook (line-cutter) • Includes fighting line to lessen tension on branchline.	• Less flyback (safety) • Minimize gear remaining on whale • Even if won't work 100%, still could offer benefits • Fighting line/cutter superior to 2.3	• New tech is a long-term research and development process • Will need important captain/crew training	• Near Term: research and development, e.g., test on simulated not live animal; • Long Term: couple with EM
Gear *Fighting Line*	• Help bend the hook • Typically made of rope • Potentially part of "Gizmo" system	• Potentially complement the branchline	• Needs guidelines for handling (amt of time "fighting" before diff measure) • Capture myopathy data need	
Gear *Leader*	• Standardized leader length	• Observer can verify if enough line was cut	• Needs some flexibility vs. precision in length	• Near Term
Gear *Long-handled pole*	• Use long-handled pole, line-cutting device to cut line close to the whale	• Crews are really skilled so they could do this	• Whale too far away, moving too much	• Near Term: Develop pole device

Possible Measures and Approaches	Description / Rationale / Linkage	Strengths	Concerns	Timing Near Term or Long Term
line-cutting device		• Even reducing M&SI from 1-2 whales would be beneficial	• Able to get close enough to hook to eliminate sufficient trailing line?	• Long Term: Get all crew trained
Gear *Strengthen Line*	• Address branchlines breaking, possible "weakest" part of the system • 2.0 → 2.3mm or more for branchline • Switching to monofil from wire change where line is weakest (initiated starting Q1 2021)	• Better conditions to straighten hook • Fleet may be more receptive to a stronger line vs. weaker hook	• Takes up more space on the boat (would rather try to explore fighting line) • Many vessels smaller and would be harder to handle the whale to straighten hook • Swivel might be the weak point not the monofilament • Costly and takes time for full fleets to change gear • Possibly reducing number of hooks that can fit on a line	• Near Term: test fighting line • Takes about a year for vessels to change gear • Near Term: lifespan of gear (how long would it take to adopt) (branchlines buying 2 boxes per trip=~200 snaps, not the swivel–hook line) • Near Term: what gear is most fleet using?
Gear *Camera on gear*	• Cascadia Research Collective camera prototype	• Info relayed in real time – informs which action to take if you can see interaction up close	• Additional research and development needed • Crew will require specific training to handle new gear	• Near Term: refine prototype • Long Term: Crew training
Deterrents *Pingers*	• Startle the animal after hooked	• Animal applies tension to the line/straightens hook	• Lots of background noise, so unsure will be sufficiently effective • Even if heard, unclear how animal will react	
Deterrents *Chain device/spider*	• Something to put on branchline to protect catch		• Costly; space issue • Does device cost outweigh benefits of value added to catch?	
Deterrents / Misc. *Manage discards*	• Want to eliminate any actions that may be supporting "dinner bell" behavior	• If Council discard measure (originally for seabird	• FKW possibly learn to use deterrents as attractant	

Possible Measures and Approaches	Description / Rationale / Linkage	Strengths	Concerns	Timing Near Term or Long Term
Shiny objects	• Shiny spoon at the eye of hook to protect bait	mitigation) is redacted, opportunity to discuss how we manage for FKWs • Need to hear from fishermen		
Effort Controls *Reduce effort*	• With MSI>PBR, need to explore actions that correlate with higher takes • M&SI increasing as fishery effort expands	• near-term, simple action	• Econ impact • Recent (and expected?) closures (like the Monument) have already closed areas to fisheries • Uncertain whether reducing effort will result in meaningful reduction in FKW interactions.	• Near Term
Dynamic Closures / Management Areas *Southern Exclusion Zone (SEZ)?* *North EZ*	• Revisit size, location, duration, and triggers for SEZ • Need to be clear what we mean by "dynamic" Dynamic like Turtle Watch? Build off of existing fishery cooperatives	• Avoidance strategy • Dynamic more responsive and effective compared to static?	• Not enough info on movement patterns • Uncertain if there will be conservation benefit with a northern closure (if FKW so mobile) • Regulatory limitations to implement a dynamic closure, based on RT data	
Modifying Existing SEZ	• Revisit size, location, timing, duration, and triggers • Possible exemptions – e.g., If fishing vessel adopts 4.2 mm hook size or some other measure (e.g., EM), allow vessel to fish in SEZ (if closed)? • Balance b/w protecting FKW and being implementable	• Aims to meaningfully improve conservation benefit • Serves as backstop if other measures aren't effective • Aims to avoid M&SI > PBR • Most interactions were in the SEZ	• Differing perspectives on the conservation benefits • Trigger based on calendar year makes closure less effective if takes late in the year • Insular FKW are fairly spatially predictable, but pelagic FKW do not	
Shortline Fishery	• Consider including in the scope of the TRP? (if regulating the shortline, then would call for making a TRP rule)			• Near Term: Consider engaging shortline fishery (potentially invite to

Possible Measures and Approaches	Description / Rationale / Linkage	Strengths	Concerns	Timing Near Term or Long Term
				attend/serve on TRT?)
Observer Program	• Change data entry forms (e.g., distinguish when catch vs. bait depredation) • Collect hooks from interactions	• Potentially obtain genetic samples	• Logistically difficult to add more tasks	
Electronic Monitoring (EM) *More cameras?*	• Coupled with the gizmo - may provide incentive that use of that mechanism will be used even if observers aren't on board. • Monitor how well other measures (particularly handling) are working • Confirm crew behavior on observed v non-observed trips	• Some captains may prefer EM to having observers on the boat • Better resolution w/ minimal cost • Possibly encourages better adherence to handling guidelines (but "big govt" optics concerns) • Could inform how to improve methods (e.g., handling protocols)	• EM meant for targeted species and bycatch, not protected species (might not capture what we're interested in) • More gear and changes = High cost • Can we implement random sampling to reduce storage cost? • Fleet-wide adoption takes substantial time for buy-in (if at all) and implementation • Need to specify what we want to obtain from EM (must-haves and nice-to-haves) • Purpose messaging is very important (e.g., key purpose is to "get better data" rather than "enforcement")	• Near Term: research crew behavior consistency in presence of observer • Near Term: serving on EM Steering Committee - TRT member(s) / TRT rep (Elena) / PRD and SFD? • Long Term: for fleet adoption and implementation
O&E *Crew Training* **O&E** *Deck Boss training*	• Handling recommendations (could be voluntary and not in regulations) • Give deck boss authority to make decisions if captain not present • Deck boss is lowest hanging fruit, but ideally get all crew trained • NMFS sharing the latest information (e.g., gear changes and best management practices) • Include captains on decision-making process	• Don't have to wait for captain to be on board to give orders • Hands-on training superior to videos • Near-term implementation • More fruitful discussions will improve buy-in/engagement • Handling guidance does not require a new rule	• Need to know what gear will be used and how to know on what to train	• Near Term: easy handling strategies (hands on) • Near Term: Deck boss • Long Term: all crew trained

Possible Measures and Approaches	Description / Rationale / Linkage	Strengths	Concerns	Timing Near Term or Long Term
Misc. *Rewards*	● Reward unobserved boats for reporting interactions	● Would need valid proof	● Don't want to inadvertently encourage interactions	
Misc. *Genetics*	● Immediately obtain biopsy sample of hooked whale for genetic info	● Could better determine which population individual is from, gender, etc.	● Requires training if samples are to be collected by non-observer program staff ● Need to consider consistency with current handling guidelines that call for tying off the line rather than pulling the animal in close (which would be needed to obtain a sample)	

Long-term research questions to potentially further explore

Research issues to further explore that may not produce substantive information in time for TRP measure recommendations; viability of ideas to be explored by NMFS and in discussion with Team

Gear

- Where is the weak point(s) in the system? Lifespan considerations? Monofilament, swivel, crimps, hook? How could they be modified (to ensure the hook is the weak point)? Whether higher diameter mono would provide better option for trying to straighten hook?
- Extent of branchline tangles?

Analyzing interactions and handling

(if more can be done beyond existing studies/analyses)

- Where is the hook on the whale? How does the whale respond?
- What happens when the line is tied off and/or cut/broken?

Behavior

- Identifying and understanding drivers for "hot spots" for depredation/FKW interactions (if more can be done beyond existing studies/analyses)
- Study on why some boats have higher depredation rate than others
- What boat noise attracts FKWs? (hydraulics, hauling, cavitation?) Can noise be dampened? What is the noise profile? Multi-variates (bird activity)?
- Depredation (bait v. catch?)
- Effectiveness of artificial bait to reduce depredation?
- Extent of social learning spreading through population?

Closures

- Break down M&SI before and after SEZ closure (if more can be done beyond the SEZ analysis and any other related research work/analysis already conducted)

Alternative mitigation measures

- Continued/updated evaluation of other types of bycatch mitigation measures used across fisheries

- **Appendix 2: Status of FKW Projects Funded by FY 21 and FY 22 Appropriations**

On Day 1, E. Oleson shared brief updates related to research underway, conducted by various organizations, as part of the FKW funding appropriated through Congress in FY 21 and FY 22. The projects, research leads, and project status are summarized in the tables below:

FY 21 Projects	**Entity**	**Status**
Examine rates of empty hooks on each set as a proxy for depredation rate using the electronic monitoring system.	PIFSC-Fisheries Research and Monitoring Division (FRMD)	Complete
Examine hook corrosion rate and breaking strength from controlled studies.	PIFSC-FRMD	Complete
Assess and develop tools for safer handling of entangled whales.	PIFSC-FRMD & University of Hawaii (UH) Department of Engineering	Ongoing
Develop and test a miniature camera system for use by fishery observers to document how a whale is hooked.	Cascadia Research Collective	Ongoing
Deploy telemetry tags on pelagic FKWs to examine interaction rates and response to longline vessels.	Cascadia Research Collective	Ongoing
Acoustic monitoring of the longline fleet to identify and mitigate acoustic cues leading to depredation and bycatch.	PIFSC-Cetacean Research Program (CRP)	Ongoing

FY 22 Projects	**Entity**	**Status**
Assessing health & survival of FKWs with evidence of fisheries interactions		
Part 1: Examination of MHI insular FKWs with evidence of mouth hooking to evaluate long-term survival	Cascadia Research Collective	Underway
Part 2: Aerial photogrammetry for assessment of body condition to examine health impacts of prior fisheries interactions	Pacific Whale Foundation & UH Marine Mammal Research Program (MMRP)	Beginning soon
Augmenting FKW abundance with towed array datasets		
Part 1: Complete multi-target tracking tools to enable use of acoustic encounters in abundance analyses	PIFSC-CRP & UH Ocean Resources Engineering	Underway
Part 2: Validate new classification algorithms for use with survey encounters without visual sighting	PIFSC-CRP	Not yet started
Examine foraging behavior of MHI insular FKWs to inform depredation mitigation strategies	Pacific Whale Foundation & UH MMRP	Beginning soon
Deploy telemetry tags on pelagic FKWs to examine interaction rates and response to longline vessels.	TBD	Ongoing
Acoustic monitoring of the longline fleet to identify and mitigate acoustic cues leading to depredation and bycatch.	PIFSC-CRP	Ongoing

As a follow-up to a request on Day 1, E. Oleson shared a table summarizing the FKW TRT's input on use of FY 22 Congressional appropriation and the status of the projects:

Type of input	**Project**	**Current status**
New project	Development of false killer whale tagging approach to assess post-release survival rate in the Hawaii longline fishery	Infeasible given rarity of events, required expertise to accomplish, and need for research permit
New project	Convene technical workshop to inform NMFS' serious injury determination criteria revision	Insufficient data to assess species-specific concerns.
New project	Assess impact of the SEZ on FKW interaction rates. - Did the displacement of fishing effort cause a change in odontocete depredation and FKW capture rates? - Were there multispecies conflicts? – e.g., did the SEZ cause a change in catch rate of other threatened species?	Conducted by Rob Ahrens
New project	Evaluating artificial bait as a potential false killer whale mitigation measure in the Hawaii longline deep-set fishery.	Literature review ongoing
New project	Use innovative technology to study the fine-scale foraging behavior of false killer whales and the impact of injuries on their health (body condition and vital rates)	Funded in FY22
Support	Acoustic monitoring of fleet to understand/mitigate depredation	Funded in FY22
Support	Assess impacts of previous fisheries injuries in MHI insular FKWs using photo catalog	Funded in FY22
Support if with NMFS base funds	Augmenting FKW abundance estimates with towed array datasets	No NMFS base funds. Supported with FY22 FKW funds.
Not supported	Telemetry deployments on MHI insular FKWs	Not proposed or supported in FY22

Appendix 3: FKW TRT Work Group Descriptions

The Team identified the following work groups to explore particular issues of interest and report back on deliberations at the next Team meeting. Below provides an overview of the formed work groups, participants, work group goal, information needs, and proposed approach.

Fighting Line ("Gizmo") Work Group

- Participants: P. Westbrook, E. Kingma (with outreach to other Team members as needed)
- Goal: Develop prototype fighting line with integrated line cutter (as possible); test before in-person meeting if time allows
- Information needs:
  - Injury determination guidelines and input (from E. Oleson and A. Bradford) to inform device practicality
  - Data on entanglements /interaction types to inform device practicality (from interaction reports/videos - location of hook/weight visible)
  - Goosebeak entanglement concerns (e.g., understanding remaining line considerations related to wrapping around the goosebeak)
- Approach:
  - P. Westbrook and E. Kingma work to develop prototype
  - Coordinate, as needed, with E. Oleson and A. Bradford to ensure device development has potential to reduce injury severity
  - Keep Handling Work Group apprised of progress so it can incorporate needed guidance into its work
  - Reach out to rest of Team as needed

Gear Modifications/Training and Handling Work Group

- Participants: H. Bernard, A. Ishizaki, E. Kingma, J. Moribe, A. Pacini, E. Gilman, A. Bradford, K. Brindock (or designee)
- 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
- Information needs
  - Interaction reports to understand hooking specifics, including hook location probabilities (e.g., percent of interactions in lip v. inside mouth, etc.)
  - Capture myopathy considerations
  - Goosebeak entanglement concerns (e.g., understanding remaining line considerations related to wrapping around the goosebeak)
- Approach
  - Identify and gather needed information (support required by PIRO and PIFSC)
  - Begin developing updated handling protocols and training needs for crews, captains and deck bosses)
  - When developing guidelines, consider any input from Fighting Line Work Group, capture myopathy and goosebeak considerations

Electronic Monitoring Work Group

- Participants: R. Baird, T. O'Connell Curran, A. Ishizaki, R. Steen, K. Long
- Goal: Better understand and outline objectives, concerns, considerations and approaches tied to potentially incorporating electronic monitoring into the Take Reduction Plan; as appropriate, develop straw proposal for consideration by the Team at its spring meeting
- Information needs
  - SFD presentation on current electronic monitoring pilot
  - Relevant updates from WPFMC, SFD and others related to future electronic monitoring requirements (timing, requirements, etc.)

- Approach
    - Discussions to flesh out better understanding of electronic monitoring nexus with the FKW TRP
    - Outline objectives, possible approaches, EM technical needs, implementation considerations, concerns, etc.
    - As possible, develop straw proposal for discussion at spring TRT meeting

SEZ Work Group

- Participants: D. Heinemann, J. Davenport, B. Cummings, R. Steen, K. Long/K. Brindock, A. Ishizaki
- Goal: Assess all aspects of SEZ to-date; consider merits of alternative measures (e.g., dynamic closure models)
- Information needs
    - SEZ study (with possible follow-up questions)
    - Dynamic closure models (particularly those managed by fishery cooperatives)
- Approach
    - Work group discussions to better understand ramifications of SEZ closure (fleet shifts, possible nexus with shortline fishery, etc.)
    - Develop, as possible alternative approaches capable of providing both conservation benefit and behavioral incentives for consideration by full Team

Deterrents Work Group

- Participants: A. Pacini, R. Baird, E. Kingma/R. Steen, E. Gilman, T. O'Connell Curran, D. Heinemann, M. Jasny, A. Read, E. Oleson
- Goal: Explore potential measures to avoid /deter marine mammal depredation
- Information needs
    - Better understand information needed from captains to inform vessel sound characteristics research
    - Status of various deterrent measures: cost-benefit of "chain" cage around fish; other expert advice
    - Better understand relationship between depredation and effort
- Approach
    - Confirm and pursue information needs
    - Provide guidance to E. Oleson on vessel sound-related work (understanding "clicking" sound); foster collaboration with fleet on vessel sound work
    - Near-term need from TRT: what to ask of captains and how → E. Oleson ASAP
    - Discuss merits and strategies for exploring deterrent options (research needs, other)

Shortline Work Group

- Participants: R. Jenkinson, H. Bernard, R. Baird, K. Long, A. Ishizaki (or designee)
- Consider inviting shortline fishermen to serve on 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
- Information needs
    - Shortline fishery structure and numbers, existing management regulations, possible shifts of longline fishermen to shortline during SEZ closures
    - Any linkages / unanticipated nexus between TRP and shortline fisheries
- Approach
    - Convene initial conversation (earlier the better) to confirm information needs
    - Once data available, identify concerns and potential linkages between shortline fishery and TRP (e.g., do longliners convert to shortline fishing in SEZ closures, etc.)
    - Once linkages better understood, consider merits of / rationale for broadening team scope to include shortline fisheries (as informal contributors, as formal participants on team, etc.)
    - Balance need to better understand potential TRP "blindspot" with avoiding potential distraction from longline deliberations