Overview of TRP Research Recommendations

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FKW TRT – April 28, 2015

Research Category	Recommendation
FKW Biology	Hook-tissue interaction research to understand relationship between type of gear, where animal is hooked & severity of the injury.
	Evaluate survival of FKWs and similar species following fisheries interactions.
FKW Assessment	Hawaiian EEZ survey (at least every 5 years)
	Survey windward side of Hawaiian Islands to assess differential FKW encounter rates
Longline Gear	Survey longline vessels to identify commonalities among those w/ high depredation rates
FKW Assessment	Continue research into FKW abundance using towed and stationary acoustics. Develop new towed systems that allow for real-time localization of vocal FKWs
	Evaluate alternative methods for estimating abundance, with emphasis on improving precision
FKW Biology	Develop real-time assessment capability for distinguishing between FKWs and other odontocetes using whistles and echolocation clicks
	Conduct vessel sound playbacks
Longline Gear	Develop new or test existing methods for fleet to use acoustic recorders to determine FKW presence prior to setting
	Evaluate performance of gear used in deep-set fishery
	Evaluate impact of weak hooks on FKW bycatch rates

Research Category	Recommendation
FKW Biology	Hook-tissue interaction research to understand relationship between type of gear, where animal is hooked & severity of the injury. [McLellen presentation]
	Evaluate survival of FKWs and similar species following fisheries interactions.
FKW Assessment	Hawaiian EEZ survey (at least every 5 years)
	Survey windward side of Hawaiian Islands to assess differential FKW encounter rates [2014 Molokai survey]
Longline Gear	Survey longline vessels to identify commonalities among those w/high depredation rates
FKW Assessment	Continue research into FKW abundance using towed and stationary acoustics. Develop new towed systems that allow for real-time localization of vocal FKWs.
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Longline Gear	Develop new or test existing methods for fleet to use acoustic recorders to determine FKW presence prior to setting [Geoff McPherson research in Coral Sea & Indian Ocean]
	Evaluate performance of gear used in deep-set fishery
	Evaluate impact of weak hooks on FKW bycatch rates

Questions to the TRT

- Do any of the current research recommendations need to be refined?
- Are there other research topics that should be added to the list
- Any need to reprioritize the listed needs?

FKW Biology Recommendations

- Hook-tissue interaction research to understand relationship between type of gear, where the animal is hooked, & severity of the injury
- Evaluate survival of FKWs and similar species following fisheries interactions.
- Develop real-time assessment capability for distinguishing between FKWs & other odontocetes using whistles and echolocation clicks
- Conduct vessel sound playbacks
- Evaluate acoustic behavior near longlines using recorders on fishing gear
- Determine range at which a hook in a fish can be detected by FKW
- Carry out underwater observations of foraging behavior
- Assess impact of hook density on FKW ability to follow line
- Continue telemetry studies on the MHI insular stock FKWs
- Continue telemetry studies on the pelagic stock FKWs
- Evaluate FKW capability to see floats, as well as monofilament line of different colors and width
- Examine call types & rates by FKW populations to understand variability & nuances of the acoustic data, allowing for more precise and useful examination of existing and ongoing acoustic data.
- Determine the extent to which FADs attract FKWs.
- Test visual acuity of FKWs given different types of lights often found on longline vessels
- Assess FKW response to compounds found in oil fish and other fish species that FKWs do not depredate from the line
- Assess importance of fishery as a food source for FKWs.
- Study adaptive learning in the FKW
- Use acoustic tags to understand foraging and acoustic behavior
- Assess hormones to examine stress and reproductive rates
- Continue telemetry studies on the NWHI stock FKWs
- Examine physiological response of FKW and similar species during/following an interaction

Longline Gear & Fishing Recommendations

- Survey longline vessels to identify commonalities among those w/high depredation rates
- Develop new or test existing methods for fleet to use acoustic recorders to determine FKW presence prior to setting
- Evaluate performance of gear used in deep-set fishery
- Evaluate impact of weak hooks on FKW bycatch rates
- Determine types of hooks and hook manufacturers used by Hawaii deep-set longline vessels
- Desktop study to assess size of false killer whales caught
- Collect straightened hooks for genetic sampling
- Examine role of bait type, size, and manner of threading on bait depredation
- Follow-up weak hook study to understand impact on target catch.
- Record acoustic profile of vessels and fishing gear across the fleet during transiting, setting, soaking, and hauling to assess potential cues to FKWs
- Evaluate where animals are caught within a set and why
- Evaluate effectiveness of additions to terminal tackle or other items on the mainline as a method to reduce depredation on bait, catch and incidental takes of false killer whales
- Assess potential for hooks to be modified to increase or decrease detection range
- Identify and evaluate other factors that may affect hook strength (and severity of FKW injuries)
- Evaluate feasibility of using moored listening stations to determine FKW occurrence before a fishing trip
- Evaluate potential to use killer whale/other playbacks as deterrents
- Examine the ability of FADs to be used as decoys for false killer whales

State Fisheries Recommendations

- Develop detailed descriptions of fishing practices including precise information on gear types used in the state fisheries (e.g., troll, dangler, handline, hybrid).
- Evaluate hook-and-line (shortline, kakaline, troll, handline, etc.) fishery effort and geographic distribution regionally and seasonally
- Institute observer coverage (possibly from an alternative platform) and/or video monitoring to better track state fisheries' practices and possible interactions.
- Model the potential for FKW interactions with state fisheries by calculating a FKW CPUE in the deep-set longline fishery and then extrapolating that to the state fishery (based on rates of tuna caught).
- Cross-reference and otherwise examine existing data to assess consistency and QA/QC.
- Better understand the distinctions and areas of commonality in federal and state reporting protocols.

FKW Stock Assessment Recommendations

- Hawaiian EEZ survey (at least every 5 years)
- Survey windward side of Hawaiian Islands to assess differential FKW encounter rates
- Continue research into FKW abundance using towed and stationary acoustics. Develop new towed systems that allow for real-time localization of vocal FKWs
- Evaluate alternative methods for estimating abundance, w/emphasis on improving precision
- Monitor abundance and trends of MHI insular stock
- Use Observer Program data (in combination with other fishery-dependent data where applicable) on FKW sightings, interactions, and depredation to develop abundance estimates, estimate depredation rates, and identify hot spots.
- Use mark/recapture studies to supplement info on abundance, demographics, stock structure, and injury categorization
- Re-analyze the proportion of SI vs. NSI for circle hooks vs. tuna and J-hooks
- Collect additional genetic samples from the pelagic, NWHI, and other distant FKWs to assess population structure
- Evaluate detection probability for autonomous recorders in various locations
- Develop predictive habitat models of FKW density
- Evaluate degree of genetic differentiation between insular and pelagic stocks
- Develop methods to pro-rate blackfish and unidentified cetacean bycatch