

Protected Species Research Priorities

The Protected Species section deals with scientific research needed to reduce bycatch impacts on protected species and to ensure FEP compliance with statutory requirements such as the Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA). Incorporating climate and ecosystem indicators into fishery management, evaluating effectiveness of and developing protected species interaction and bycatch mitigation measures, and addressing the needs of small-boat fisheries and underserved communities are major priorities being addressed in this section.

PS1 Incorporate Climate and Ecosystem Indicators into Fishery Management to Inform Development of Dynamic/Adaptive Management Opportunities

The Council will be advancing the development of climate resilient fisheries through the IRA funding projects. The associated protected species management priorities for developing climate resilient fisheries are to 1) advance understanding of ecosystem drivers that impact protected species and bycatch rates, and 2) incorporate climate effects and population trends in predicting and managing protected species interactions in US Pacific pelagic fisheries.

PS1.1 – Management Priority: Advance understanding of ecosystem drivers that impact protected species and bycatch rates

Associated Information Needs/Gaps: Advancing the understanding of ecosystem drivers that impact protected species interaction and bycatch rates is an integral step to understanding climate effects on predicting and managing protected species interactions in fisheries. Progress has been made in recent years to improve understanding of environmental factors driving interaction patterns with the development of PIFSC's Protected Species Ensemble Random Forest (PSERF) model and other species distribution models. Further development of these models to refine the understanding of factors that impact interaction rates will improve the accuracy of future predictions.

Associated Research Priorities:

PS1.1.1 Improve understanding of relationships between species distribution and interaction distribution (including fishery distribution), interchangeability of those for management purposes, and consequences of each distributions on predictions under climate scenarios

PS1.2 – Management Priority: Incorporate climate effects and population trends in predicting and managing protected species interactions in US Pacific pelagic fisheries

Associated Information Needs/Gaps: Incorporating climate effects and population trends in predicting protected species interactions will help improve the information base necessary to manage fisheries into the future.

Associated Research Priorities:

PS1.2.1 Adapt false killer whale species distribution models to incorporate climate effects, which may include revising covariates with a climate focus (currently based on

remotely sensed data), using alternative remotely sensed data suitable for assessing climate effects, and incorporating ecosystem models or other in-situ data

PS1.2.2 Improve approaches for incorporating sea turtle abundance trends into population viability analyses

PS2 Monitor and evaluate effectiveness of protected species interaction and bycatch mitigation measures

Monitoring protected species interactions, evaluating impacts of fisheries interactions on protected species populations, and monitoring and evaluating the effectiveness of protected species interaction and bycatch mitigation measures are integral to managing fisheries under the MSA National Standards and the Council's FEPs, and to ensure these fisheries are managed consistent with other applicable laws such as ESA and MMPA. Data collection and research are needed to address the Council's associated management priorities for 1) advancing protected species population and risk assessments to support evaluation of impacts for FEP-managed fisheries; and 2) developing more robust abundance estimates and risk assessments for managing FKW interactions in the DSLL fishery.

PS2.1 – Management Priority: Advance protected species population and risk assessments to support evaluation of impacts for FEP-managed fisheries

Associated Information Needs/Gaps: The Council needs robust population and risk assessments to inform management of protected species interactions in fisheries managed under the Council's FEP. These assessments are used to develop MSA and associated NEPA analyses, as well as ESA and MMPA analyses and activities (e.g., ESA Section 7 consultations and associated Biological Opinions; MMPA Take Reduction Plans) that affect the FEP-managed fisheries. The primary species that are of high management priority include leatherback and loggerhead turtles, false killer whales (see also PS 2.2 below), oceanic whitetip shark, giant manta ray, and black-footed and Laysan albatrosses that interact with the Hawaii and American Samoa longline fisheries.

Associated Research Priorities:

- PS2.1.1** Improve length estimates for leatherback turtles caught in the Hawaii and American Samoa longline fisheries through observer and/or electronic monitoring data and developing approach for measuring leatherback turtles in-water from vessel-side to address information gap of length and sex ratio data needed for improving population assessments (associated activity - identify observer data fields important for population assessments)
- PS2.1.2** Continue international collaboration for collecting and compiling leatherback and loggerhead turtle nesting data
- PS2.1.3** Establish baseline abundance estimates for sea turtles utilizing innovative approaches such as close-kin mark recapture (CKMR; starting with Hawaii green turtles)

- PS2.1.4 Determine feasibility of CKMR for protected species (through an expert meeting to help prioritize and assess funding)
- PS2.1.5 Ongoing data collection to improve evaluation of impacts on ESA-listed species (including data limited species such as giant manta ray)
- PS2.1.6 Continue refinement of analytical tools for abundance trends and population impacts
- PS2.1.7 Complete tagging mechanism development and deploy satellite tags on post-interaction leatherback turtles in the longline fishery to estimate species-specific post-hooking mortality rates

PS2.2 – Management Priority: Develop more robust abundance estimates and risk assessments for managing false killer whale interactions in the Hawaii deep-set longline fishery

Associated Information Needs/Gap: Development of robust abundance estimates and risk assessments for managing false killer whale interactions in the Hawaii deep-set longline fishery continues to be a high priority for the Council. Priority information needs include estimation of species-specific post-release mortality rates, and resolving data limitations surrounding high seas false killer whale abundance and stock structure.

Associated Research Priorities:

- PS2.2.1 Improve pelagic false killer whale assessments on the high seas, including delineation of stock range based on robust biological data, robust abundance estimates, bycatch estimates and foreign fisheries impacts
- PS2.2.2 More frequent surveys to determine trends, increase genetic sampling - Incorporating passive acoustic data (increase precision in any individual surveys, which could help in deducing trend)
- PS2.2.3 Develop alternative strategies for collecting biopsy samples. Biopsy sample collection by federal observers have been limited due to the conflict with the False Killer Whale Take Reduction Plan goal of straightening hook.
- PS2.2.4 Incorporate cetacean samples into ongoing eDNA sampling work to develop utility of eDNA for refining false killer whale stock structure
- PS2.2.5 Establish international collaboration for collecting false killer whale demographic data
- PS2.2.6 Develop tagging or other innovative approach for improve species-specific post-release mortality estimate for false killer whales that interact with the Hawaii longline fishery

PS3 Develop and implement protected species interaction and bycatch mitigation measures

Measures to mitigate protected species interactions and bycatch of other species of concern are critical components of the ecosystem-based management approach implemented by the Council through its Fishery Ecosystem Plans (FEPs). The MSA also requires federal fishery management plans to be consistent with laws such as ESA and MMPA and directs under NS 9 that conservation and management measures minimize bycatch to the extent practicable. Research

and development is needed to address the Council’s management priorities for 1) developing and implementing revised seabird mitigation measures for the Hawaii shallow-set longline fishery; 2) reducing impacts on false killer whales;

PS3.1 – Management Priority: Develop and implement revised seabird mitigation measures for the Hawaii shallow-set longline fishery

Associated Information Needs/Gap: The Council is in the process of developing alternative seabird mitigation measures for the Hawaii shallow-set longline fishery, with focus on tori line to replace blue-dyed bait and provide flexibility with night setting. Following the 2024 pilot study, additional research may be necessary to further develop practical and effective seabird mitigation measures for the fishery.

Associated Research Priorities:

PS3.1.1 Conduct additional SLL seabird mitigation measure trials as necessary to refine development of alternative measures to blue-dyed bait that may also provide flexibility with night setting

PS3.2 – Management Priority: Reduce impacts on false killer whales

Associated Information Needs/Gap: False killer whale depredation on longline catch and bait lead to incidental interactions (hookings or entanglements). Development of a practical, safe and effective mechanism for deterring depredation, as well as approaches for reducing trailing gear continue to be priorities for the Council.

Associated Research Priorities:

PS3.2.1 Develop approaches for reducing trailing gear on false killer whales that interact in the longline fishery, including fighting line device and improved line cutter

PS3.2.2 Develop false killer whale depredation deterrents

PS3.3 – Management Priority: Develop and improve tools to help longline vessels avoid protected species interactions and bycatch, and reduce post-release mortality

Associated Information Needs/Gap: As new potential tools or approaches for reducing interactions and reducing associated impacts develop, research and development will be needed to assess the applicability of those tools or approaches to the region’s fisheries, and to conduct trials to evaluate the practicality, safety and effectiveness. New tools for reducing post-release mortality may help streamline protected species handling requirements and best practices.

Associated Research Priorities:

PS3.3.1 Develop and evaluate tools for interaction avoidance and other non-gear mitigation approaches utilizing information on interaction patterns and drivers

PS3.3.2 Develop and evaluate protected species safe handling measures and tools to reduce post-release mortality and (see also PS3.2.1)

PS4 Address the Needs of Small-boat Fisheries and Underserved Communities of the Western Pacific Region

Small-boat fisheries operating under the Council's FEPs are socially and culturally important in their respective island areas. While these fisheries have limited interactions with protected species, monitoring potential changes to interactions and depredation events will help identify any management needs in the future. The Council also continues to support the exploration of green sea turtle cultural use pathways as a priority for the underserved communities of the Western Pacific region.

PS4.1 – Management Priority: Monitor bycatch, protected species interactions and depredation in the Hawaii small-boat fisheries (priority on false killer whales & oceanic whitetip shark)

Associated Research Priorities:

PS4.1.1 Develop and test new gear, methods and tools to mitigate depredation, minimize protected species interactions and reduce post-release mortality (also see PF6)

PS4.1.2 Improve understanding of protected species interactions with aquaculture facilities and operations, and develop tools to reduce impacts as needs arise

PS4.2 – Management Priority: Continue to explore Green sea turtle cultural use pathways

Associated Research Priorities:

PS4.2.1 Green turtle population assessments for Hawaii/territories

PS4.3 – Management Priority: Improve early coordination for ESA actions (e.g., critical habitat, listing, recovery planning)

Associated Research Priorities:

PS4.3.1 Improve data collection on habitat use and habitat requirements for protected species to inform current and potential future critical habitat designations