



Cooperative Research Priorities for 2020/2021

AMERICAN SAMOA ARCHIPELAGO

1. Enhancing local community capacity to develop fisheries socio-economic profiles

Fisheries socio-economic profiles are important to assess the status of the fisheries. These profiles usually include data on resource users, catch rates and variables affecting these rates, degree of resource dependence and community vulnerability to the impacts of climate change. Usually, such profiling is conducted by local and/or federal agencies with adequate training. However, such endeavors can use up a significant amount of time and funding. This is a proposal to conduct a pilot project in training local fishermen and other community members to conduct such socio-economic surveys and develop a more comprehensive fisheries profile. We hypothesize that local communities will be able to develop accurate and reliable socio-economic surveys with results and profiles comparable to local and federal experts'.

MARIANA ARCHIPELAGO - GUAM

1. An evaluation of shark depredation occurrence in the Guam and Saipan small boat fishery including conducting a mark-recapture study in determining residency time and migration

A series of public meeting in Guam and Saipan yield some issues with depredation by sharks in the Guam and Saipan small boat fishery. Shark depredation results in loss of income of the fishermen as well as some bias in the catch reporting where the catch is lowered whereas the effort is reported in total, yielding a decreased CPUE. This is an artificial decrease due to non-reporting of depredation catch. Environmental organizations are pushing for the conservation of sharks in the Marianas based on supposed decline in shark biomass from underwater census surveys. Evaluating the depredation rates would provide a different angle to the shark population status because these are the population segments that interact with the fishery as opposed from those that are being sighted on a depth limited and area specific survey.

There are conflicting views between the fishing industry and scientist towards the status of the shark population in the Marianas archipelago. Mark and recapture studies can support determining the shark population size, residency times, and migration patterns. Tagging using pop-up archival tag or radio tags could provide home ranges information and habitat utilization pattern that could resolve the differences in view and opinion regarding visual observation and capture via fishing interactions. Other island areas in the region may also benefit from shark tagging studies, especially due to recent ESA-listing of the scalloped hammerhead and oceanic whitetip sharks. Cooperative research with fishermen provides platforms for data collection that may otherwise be unavailable.

2. Enhancing local fishing community cooperation and outreach

In the past 5 years, recent migrants to Guam have begun fishing on a commercial scale. These fishers, who are selling to novel vendors that are not participating in the current commercial receipts program, are resulting in an underreporting of commercial capture and sales on Guam. Many of these fishers are also shop owners, or contracted by individual shops to sell exclusively to the shop. Distrust of agencies and the use of commercial receipts data seem to be a common reason for not participating in the program. An education program, in native language as well as English, explaining the importance and reasons for reporting, in addition to an incentive program, possibly involving providing scales, bookkeeping, or other logistical support in return for sales and species data, may increase participation by these vendors.

MARIANA ARCHIPELAGO - CNMI

1. A study of stock assessment for CNMI's small-boat bottom fishery

Currently stock information for the CNMI's bottom-fish fishery is lacking and a greater understanding of status, effort and distribution are needed to properly manage the fishery. Bottom-fishing is commonly practiced by both commercial and subsistence members of the small-boat fishery in the CNMI. Although boat-based catch interview data assists in gathering information on stock status and fishing distribution, the amount of bottom-fish fishermen interviewed is relatively minute compared to the more popular method of trolling. A project aimed at identifying members of the bottom-fish fishery to provide information on the spatial distribution, fishing effort, and catch composition of bottom-fish in CNMI would be most beneficial to fisheries management. Intrinsic collaboration with the fishermen would be required for all stages of this study. The perceived benefits to management would be the collection of data required to adequately assess both the overall and site-specific bottom-fish stocks of the CNMI.

Footnote:

All of the CNMI's respective research priorities are aimed at collaborating with members of the small-boat fishery to bolster fisheries managers' ability to assess current stocks, understand the inherent by-catch associated with these fisheries and clarify the spatial distribution of fishing habitat/effort for the CNMI. Qualitative social data will also be gathered through interactions of the fishermen involved with these proposed research activities.

HAWAII ARCHIPELAGO

1. Continuation of the bottomfish tagging study

Prior to conducting actual tagging studies, cooperative research on post-release survival on tagged fish must be conducted. This is to determine the level of mortality associated with fishing stress and trauma experienced from tagging and release.

Bottomfish tagging is essential to determine the spatial distribution of its home range as well as elucidating the temporal vertical migration pattern of this essential resource for the Hawaii market. Part of elucidating home ranges is the evaluation of the effectiveness of the Bottomfish Restricted Fishing Areas both in federal and state waters. The effectiveness of Restricted Fishing Areas would depend on whether it was properly designed (by size and location) incorporating biology and ecology of

bottomfish. Cross area tagging would elucidate information on BRFA retention of adults when the tagged bottomfish inside the BRFA are captured outside the BRFA boundary. The tagging data would also fine tune the survival estimates as well as the population parameters needed for stock assessments.

2. Continue cooperative sampling through bottomfishers and PIFG in obtaining bottomfish samples for life history studies that provide input enabling improved stock assessments

Researchers within PIFSC's Fisheries Monitoring and Stock Assessment Division (FRMD) have been working with cooperative bottomfishers and the Pacific Islands Fisheries Group (PIFG) to capture rarely encountered sizes (juveniles and large adults) of Deep-7 bottomfish species. These sizes are needed by FRMD Life History Program researchers to determine early growth rates and to verify 1st and 2nd annual growth marks within otoliths (juvenile stages) and to determine longevity (from large adults) based on otolith trace geochemistry techniques. This information provides a more complete determination of the length-at-age relationship, size at sexual maturity, and lifespan within these species--information that is essential input to improved stock assessments within this group of fishes.

Fishermen participating in this research project have established a good working relationship with their clients (either markets or restaurants). One of the arrangements was to supply the fish already gilled and gutted which provides a good opportunity to sample otolith and gonads from the fish they provide their clients. This increases the sampling opportunity for life history studies.

PACIFIC PELAGICS

1. Study to determine longline fishery post-hooking mortality of marlin and secondarily of other species, as appropriate

An increase in size limits, or in most recent legislative attempt to ban the domestic trade of Hawaii billfish, for any given fishery will result in an increase in the number of fish that will be tossed back to sea after being caught on fishing gear if it does not meet the minimum size requirement or is banned from commercial sale. In the longline fishery, it will entail release of hooked marlins (or other pelagic species) and there is a need to determine whether post-hooked individuals are able to survive. It is important to determine the post hooking mortality in a situation in which a regulatory change may require release of caught fish, as such measures would provide little conservation benefit if post-hooking mortality is high.

PROTECTED SPECIES

1. Developing solutions to mitigate protected species interactions in the Hawaii longline fishery

Addressing protected species interactions in the Hawaii longline fishery continue to be a high management priority. In particular, long-term technical solutions to false killer whale hookings and entanglements, as well as associated depredation events are needed to ensure that the fishery, as managed under the Pelagic Fishery Ecosystem Plan, continues to be managed consistently with the Marine Mammal Protection Act. Close collaboration between fishermen and researchers are essential in developing technical solutions that are effective and practical for commercial operations.

2. Improve understanding of the extent of marine mammal and other protected species depredation in pelagic non-longline fisheries, including improving estimates of post-hooking mortality rates

Depredation of catch by cetaceans in small-boat pelagic non-longline fisheries is known to occur but information regarding the extent of such events are limited. Determining the extent and characteristics of depredation events provides a first step in determining whether such events need to be mitigated to minimize potential interactions with marine mammals and other protected species. Collaboration between fishermen and researchers in designing and implementing studies will be critical in collecting reliable data. Information on post-hooking mortality rates of false killer whales and cetaceans are also needed for longline and other fisheries, but tagging post-hooked false killer whales on longline vessels is logistically impractical. Innovative approaches for examining post-hooking mortality through collaborations with small-boat fishermen may provide a platform for data collection that is otherwise unavailable.