

## **Project Title: Developing Pot Survey Gear for Octopus**

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**Potential Industry Partners:** F/V Mythos, F/V Victory, other longline/pot vessels

**Overview:** The goal of the project is to continue development and testing of habitat pot gear for directed octopus research. The AFSC wishes to develop this gear to facilitate life history, tagging, and other studies in support of the federal stock assessment for the octopus species group. The main objective is to determine the scope, effort, and costs that would be associated with a species-specific biomass index survey for octopus, using habitat pot gear. Initial testing of habitat pot gear under NPRB study 906 indicated that unbaited plywood box pots are effective at capturing octopus. Further development work needs to determine optimal soak times and pot spacing as well as the average and variance of octopus catch rates that could be expected from a survey.

The proposed project will provide a loan of habitat pot gear from AFSC to two selected vessels in Kodiak and/or Dutch Harbor, Alaska. These vessels will fish the habitat pot gear on their own schedule and will experiment with different configurations, soak times, and fishing methods. The participating vessels will provide AFSC and ADF&G researchers with detailed catch data and periodic access to the catch for life history specimens. This project represents a partnership between AFSC, ADF&G, and industry. Industry partners are interested in assessing the potential of octopus as a possible commercial species. AFSC and ADF&G need to develop field methodologies that will support future management decisions for octopus. At present, there is no reliable biomass time series for assessment of octopus populations. Knowing the cost and scope of a survey to obtain a time series for this group would aid future management efforts.

**Research Description:** Octopus are present in both state and federal waters of Alaska, and are taken as incidental catch in both state and federal groundfish, crab, and prawn fisheries. At present, some incidentally-caught octopus are sold or retained for bait, and there is a potential international market for food-grade octopus. There is no directed fishing of octopus allowed in federal waters under current regulations. There is currently a process for commissioner's permits for directed octopus fishing in state waters. The ADF&G will cooperate in the project by granting commissioner's permits to the selected vessels for the longlined habitat pot gear. If this project is successful, future work may include testing of gear in federal waters under research or experimental permits.

Beginning in 2011, the NPFMC divided the "other species" category in the BSAI into separate subgroups for better catch accounting and management. A similar change is expected in the GOA in 2013. In response to this change in the FMP, AFSC is now preparing stock assessments for the separate subgroups, one of which is the octopus complex (all species of octopus). Preliminary assessments prepared in 2008-2011 have highlighted the general lack of information available on octopus in Alaskan waters, and have shown that routine bottom trawl surveys are not the best tools for assessing biomass or distribution of octopus. This study is part of efforts to learn more about octopus in Alaska, and to provide the data needed for stock assessment and management. Habitat

pot gear may provide an effective tool for directed studies of octopus movement and life history. One goal of this effort is to determine if it would be feasible to use habitat pot gear for some type of species-specific abundance index survey of octopus. The overall research objective is to collect information on optimum gear configuration and fishing methods, range and variability in catch rates, and suitable locations for further research. This information is needed to perform preliminary scoping of the effort and cost that would be required for an octopus survey.

The ADF&G is interested in octopus studies because octopus is also a state-managed species, with potentially high biomass in state waters. Alaska currently manages octopus under its shellfish management program, and allows directed fishing only with a special commissioner's permit. The ADF&G assisted with the early development of habitat pot gear during the NPRB study, and has indicated that it would support additional gear testing in state waters under commissioner's permits.

NPRB project 906 included the construction of 125 plywood box pots and a variety of other pots in different materials. These pots were fished as snap-on longline gear from a 48 ft commercial vessel out of Kodiak. Pots were fished in of Kalsin bay off Kodiak, in 50-100 m depths. Among the different pot designs tested, the best catch rates were obtained with plywood box pots and pots made from scrap ATV tires. Catch rates for these pot designs were in the range of 30-40%, and octopus caught had an average weight of 11.3 kg (25 lbs). The captain of the charter vessel for the field trials estimates that under commercial conditions, it would be feasible to fish 300-400 habitat pots per day. Assuming a fishing rate of 300 pots per day, a catch rate of 35%, and an average weight of 25 pounds, the expected catch would be approximately 2,600 pounds of octopus per day. Octopus are currently purchased in Kodiak at \$0.50 per pound for bait, yielding an estimated catch price of \$1,300 per day. This is not sufficient to cover costs of most commercial operations, which is why the proposal includes a small additional incentive to the industry participants.

The proposed project calls for AFSC to loan existing habitat pots plus 300 additional plywood box pots to the participating vessels and assist in the application for ADF&G commissioner's permits. The vessels will fish the gear and market their catch as they see fit, but will agree to provide the AFSC with records of when and where the gear was fished, the numbers of pots fished, and the numbers and total weight of octopus caught. In addition, the participating vessels will allow researchers access to their catch at intervals in order to collect species and life-history information. If feasible, AFSC or ADF&G scientists may accompany the vessel on some trips.

The main cost of the project is to provide each vessel with a minimum fee to supplement their income from the catch. This provides a buffer against the uncertainty in fishing and compensates for time lost to rigging and learning to fish the new gear. AFSC already owns the existing pots and materials to build an additional 200 box pots. Funds are also requested for purchasing of additional pot materials, for tackle and supplies, and for shipping pot materials to Alaska. Travel funds for an AFSC scientist to present study

