FY15 PROJECT PROPOSAL SUMMARY PAGE

Continuing, Multi-Year Projects

Proposals are due to the EVOSTC office by September 2, 2014. Please note that the information in your proposal and budget form will be used for funding review. Late proposals, revisions or corrections may not be accepted.

Project Title: PWS Herring Research and Monitoring: Expanded Adult Herring Surveys

Project Period: February 1, 2015 – January 31, 2016

Primary Investigator(s): Michele Buckhorn, PhD; Richard Thorne, PhD; Prince William Sound Science Center, Cordova, AK

Study Location: Prince William Sound, AK

Project Website (if applicable): http://pwssc.org/research/fish/pacific-herring/

Abstract*: Prince William Sound herring stock biomass estimates from hydroacoustic surveys provide a direct measure of the stock abundance for use in the age-structured assessment (ASA) model that is the forecasting tool used for management. Prior to 2001, the hydroacoustic surveys were conducted exclusively by the Prince William Sound Science Center (PWSSC). Since 2001, the effort has been shared between PWSSC and the Cordova office of Alaska Department of Fish and Game (ADF&G). While the ADF&G considers the hydroacoustic surveys to be critical (Steve Moffitt, personal communication) the lack of a commercial herring fishery in PWS since 1998 has reduced management priorities for herring. Thus the PWSSC contribution has become critically important for the long-term, especially if a future fishery appears only a remote possibility. With the level of effort available over the past several years, PWSSC and ADF&G individually have achieved herring biomass estimates with a precision of about ±30%, which is insufficient for management purposes. However, the combined effort currently meets management requirements for precision. Current stock assessment efforts by ADF&G resource managers in PWS focus on the largest spawning aggregations. The objective of this study is to increase the current survey area of adult spawning beyond the Port Gravina and Fidalgo areas to provide a more precise estimate of spawning biomass. We propose to extend the PWSSC acoustic surveys to help identify the relative contributions of additional spawning aggregations over temporal and spatial scales. This will help establish more accurate estimates of the total herring biomass in PWS and provide an alert to changes in biomass in different regions. Beginning in FY2013 and continuing until 2016, hydroacoustic surveys will be conducted in late spring (April-May) to assess adult spawning biomass. ADF&G will continue to conduct direct sampling for age/length/weight. Additional direct capture will be conducted at adult spawning sites (See Bishop proposal).

Estimated Budget:

EVOSTC Funding Requested* (*must include 9% GA)*:

FY12	FY13	FY14	FY15	FY16	TOTAL
$6,540	$84,366	$68,125	$90,579	$84,366	$333,976

Non-EVOSTC Funds to be used:

FY12	FY13	FY14	FY15	FY16	TOTAL

Date: 8/15/2014

I. EXECUTIVE SUMMARY

Robust Pacific herring (*Clupea pallasii*) populations, suitable for exploitation by commercial fisheries, are typically sustained by periodic recruitment of strong year classes into the adult spawning population. However, the Prince William Sound (PWS) herring population has not had a strong recruitment class since 1989, when the *Exxon Valdez* Oil Spill (EVOS) occurred. In the EVOS settlement herring were identified as an injured resource and they remain listed as an unrecovered species by the EVOS Trustee Council (EVOSTC). Understanding why herring have not recovered in Prince William Sound requires understanding potential bottlenecks in the herring life cycle. The identification of the limiting conditions to herring recovery requires a series of focused process studies combined with monitoring of the natural conditions that affect herring survival.

The current management of the Prince William Sound (PWS) herring stock by the Alaska Department of Fish and Game (ADF&G) includes information from hydroacoustic surveys. Biomass estimates from these surveys provide a direct measure of the stock abundance and are provided for input into the age-structured assessment (ASA) model that is the primary forecasting tool. The hydroacoustic surveys were initiated in 1993 when fishers were unable to locate concentrations of herring despite a forecast for high abundance. Over time period the hydroacoustic survey has shown to be an early and accurate measure of the herring stock abundance and compares well with the recent ASA model estimates that now can incorporate hydroacoustic survey information as well as an index of male spawning abundance.

Prior to 2001, the hydroacoustic surveys were conducted exclusively by the Prince William Sound Science Center (PWSSC). Since 2001, the effort has been shared between PWSSC and the Cordova office of Alaska Department of Fish and Game. Over the past 5 years, the PWSSC effort has been supported by EVOS TC. The cooperative effort has been critical since both PWSSC and ADF&G have limited resources for this effort. While ADF&G considers the hydroacoustic surveys to be critical (Steve Moffitt, personal communication) the lack of a commercial herring fishery in PWS since 1998 has reduced management priorities for herring during a time of overall limited funding for the state agency. Thus the PWSSC contribution has become critically important for the long-term, especially if a future fishery appears only a remote possibility.

With the level of effort available over the past several years, PWSSC has achieved herring biomass estimates with a precision of about ±30%. This level of precision is insufficient for management purposes. There is concern that some concentrations of fish are not located and surveyed under current levels, in which case the estimate is biased, a factor not incorporated into variance calculations for precision.

II. COORDINATION AND COLLABORATION

A. Within a EVOTC-Funded Program

This project is part of the integrated "PWS Herring Research and Monitoring" proposal submitted by the Prince William Sound Science Center to the Exxon Valdez Oil Spill Trustee Council. It includes the collaboration and coordination described there for work within the herring research group and with the Long-Term Monitoring proposal submitted by the Alaska Ocean Observing System. The vessel is shared with the Validation of Acoustic Survey Project. We explored putting a bird observer from the Gulf Watch Alaska program onboard, however, the pattern for exploring for is not conducive to results that can be used by the bird project.

B. With Other EVOSTC-funded Projects

N/A

C. With Trustee or Management Agencies

Fish and biomass estimates are provided to Steve Moffitt with ADF&G in Cordova.

III. PROJECT DESIGN – PLAN FOR FY15

A. Objectives for FY15

The objective of this study is to increase the current survey area of adult spawning beyond the Port Gravina and Fidalgo areas to provide a more accurate estimate of spawning biomass.

B. Changes to Project Design

N/A

IV. SCHEDULE

A. Project Milestones for FY 15

Objective 1. To increase the current survey area of adult spawning beyond the Port Gravina and Fidalgo areas to provide a more precise estimate of spawning biomass.

To be met by May 2015

B. Measurable Project Tasks for FY 15

FY 15, 1st quarter (February 1, 2015 - April 31, 2015)

April: *Survey*

FY 15, 2nd quarter (May 1, 2015-July 30, 2015)

May 30: *Annual PI meeting*

FY 15, 3rd quarter (August 1, 2015 – October 31, 2015)

August: *Submit Annual Report*

September 1: *Complete Adult Survey Analysis*

FY 15, 4th quarter (November 1, 2015- January 31, 2016)

December 15: *Report and manuscript writing*

V. PROJECT PERSONNEL – CHANGES AND UPDATES

Dr. Buckhorn will be leaving the project before the FY15 funding begins. The PWSSC is beginning the search for a suitable replacement. Dr. Thorne remains available as the Co-PI to assist with the transition.

VI. BUDGET

A. Budget Forms (Attached)

Provide completed budget forms.

B. Changes from Original Proposal

No changes are requested.

C. Sources of Additional Funding

No additional funding is provided.