

**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: Intensive surveys of juvenile herring

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

**Primary Investigator(s):** Michele Buckhorn, PhD (Lead PI)  
 Richard Thorne, PhD (co-PI); 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\*:** Hydroacoustic surveys of juvenile herring nursery areas in Prince William Sound have been conducted during fall and late-winter for the last several years. The number of locations surveyed have varied from 5-9, including the 4 Sound Ecosystem Assessment (SEA) bays. However, each seasonal effort has conducted only a single night survey in each of these locations. Thorne (2010) examined seasonal changes from fall 2006 to spring 2009. He showed that apparent overwinter mortality of age 0 herring appeared to be greatest in Simpson Bay and least in Whale Bay. However, the differences in seasonal abundance could be attributed to mortality, emigration, or changes in ambient light. We propose to address these uncertainties with an intensive fall and late winter/spring intensive survey.

The fall series started mid-October 2013 and extend to the first week of December. The late winter/spring series began in February 2014, and extended into the 2<sup>nd</sup> week of April. Sampling was conducted in Simpson and Windy Bays. Fish were collected using a mid-water trawl. And the survey design followed the historic zig zag transects run by Thorne since 1993 in order to remain consistent with that sampling design and to put the long term fall and spring surveys into context.

**Estimated Budget:**

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

FY12	FY13	FY14	FY15	FY16	TOTAL
50,140	29,757	46,543	6,758	0	133,198

**Non-EVOSTC Funds to be used:**

FY12	FY13	FY14	FY15	FY16	TOTAL

*\*If the amount requested here does not match the amount on the budget form, the request on the budget form will be considered to be correct.*

**Date:** 8/15/2014

**I. EXECUTIVE SUMMARY**

Hydroacoustic surveys of juvenile herring nursery areas in Prince William Sound have been conducted during fall and late-winter for the last several years. The objectives of this effort have been to improve understanding of habitat utilization by juvenile herring, especially age 0, and to help identify candidate sites that could be potentially used for supplementation efforts. The surveys have also been a focus for other studies on juvenile herring energetics, disease and predation. The number of locations surveyed have varied from 5-9, including the 4 Sound Ecosystem Assessment (SEA) bays. However, each seasonal effort has conducted only a single night survey in each of these locations. Thorne (2010) examined seasonal changes from fall 2006 to spring 2009. He showed that apparent overwinter mortality of age 0 herring appeared to be greatest in Simpson Bay and least in Whale Bay. However, he also pointed out that the differences over winter could also be the result of emigration. Not only might age 0 herring move among bays during the winter, but movement into and out of bays may be progressive during a season. It is possible the overwintering component of age 0 may not be fully recruited into a bay at the time a single fall survey, or may have begun spring movement out of bays prior to any given late-winter survey. Another potential source of variability could be the stage of the moon. Ambient light is known to affect fish distributions. On many occasions, age 0 concentrations were readily identified by their distinct distribution: a diffuse layer near surface, near shore and near the heads of bay. On other occasions, this distinctive distribution was absent even though age 0 herring were present. The change might have been the result of different ambient light regimes.

## **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. This project worked with the Validation of Acoustic Survey and Non-Lethal Sampling projects of the Herring Research and Monitoring program.

### **B. With Other EVOSTC-funded Projects**

N/A

### **C. With Trustee or Management Agencies**

N.A

## **III. PROJECT DESIGN – PLAN FOR FY15**

### **A. Objectives for FY15**

It will put current single season measurements of juvenile herring into a temporal context to address estimates of mortality and immigration/emigration.

The objectives of this study are:

1. to improve the accuracy of both annual and seasonal comparisons from single-night surveys by intensively sampling throughout a fall and spring season
2. estimate the level of immigration and emigration of age 0 herring between bays.

### **B. Changes to Project Design**

There are no substantive changes to project design.

## **IV. SCHEDULE**

## **A. Project Milestones for FY 15**

For each project objective listed (III.A), specify when critical project tasks will be completed, as submitted in your original proposal. Please identify any substantive changes and the reason for the changes. Please format your information as in the following example:

**Objective 1.** To improve the accuracy of both annual and seasonal comparisons from single-night surveys by intensively sampling throughout a fall and spring season. *To be met by January 2015*

**Objective 2.** To improve the accuracy of both annual and seasonal comparisons from single-night surveys by intensively sampling throughout a fall and spring season. *To be met by January 2015*

## **B. Measurable Project Tasks for FY 15**

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

*January: Finish report*

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

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

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

## **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.