EVOSTC FY17-FY21 INVITATION FOR PROPOSALS
FY18 CONTINUING PROGRAM PROJECT PROPOSAL SUMMARY PAGE

Proposals requesting FY18 funding are due to shiway.wang@alaska.gov and elise.hsieh@alaska.gov by August 23, 2017. 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 Number and Title

18120111-G Adult Pacific Herring Acoustic Surveys in Prince William Sound

Primary Investigator(s) and Affiliation(s)

Peter S. Rand, PWSSC

Date Proposal Submitted

26 July 2017

Project Abstract

We propose to continue a long term data set of biomass estimates of the spawning population of Pacific herring in Prince William Sound. This proposal primarily addresses Objectives 1 (expanding and testing the herring ASA model) and 2 (providing input to the ASA model). Since 1993, the Prince William Sound Science Center (PWSSC) has been carrying out acoustic surveys as a cost-effective approach to estimate the biomass of adult Pacific herring just prior to the spawning period. Here we propose to continue this sampling during 2018. **Our main goal for this proposed project is to produce a reliable estimate of adult biomass of the spawning population of Pacific herring during 2018 in support of the age-structured assessment (ASA) model**

Prince William Sound herring stock biomass estimates from hydroacoustic surveys provide a measure of the stock abundance for use in the 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, ADF&G, pers. comm.) 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%. As in recent years, we intend to continue to survey the two main spawning aggregation regions (Port Gravina and Fidalgo, and along the northeast coast of Montague Island). This will allow us to continue generating accurate estimates of the total herring spawning biomass in PWS and provide an alert to changes in biomass in these two different regions. We propose to carry out this assessment in spring (March-April) to assess adult spawning biomass. This project will use the ADF&G data from direct sampling for age, sex and length in the estimates of biomass. The estimate will then be provided to the modeling project.

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

FY17	FY18	FY19	FY20	FY21	TOTAL
74.2	73.8	61.3	63.1	64.9	337.4

Non-EVOSTC Funds to be used, please include source and amount per source:

FY17	FY18	FY19	FY20	FY21	TOTAL

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

1. EXECUTIVE SUMMARY

Please provide a summary of the project including key hypotheses and overall goals, as submitted in your original proposal. If there are highlights that you would like to include from your FY17 work, please include them here. Also, please list any publications that have been submitted and/or accepted since you submitted your last proposal.

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). The current proposal will extend a long term data set on adult herring biomass which serves as a leading indicator of species recovery in PWS.

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 measure of the stock abundance and serves as 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 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.

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. 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, ADF&G, 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%.

We successfully surveyed in Port Gravina and in northeast Montague Island during the spring of 2017. We have not yet completed analyzing the acoustic data. We expect to have estimates completed by the third quarter and have the final report completed in the final quarter of 2017. **Our main goal for this proposed project is to produce a reliable estimate of adult biomass of the spawning population of Pacific herring during 2018 in support of the age-structured assessment (ASA) model**

2. COORDINATION AND COLLABORATION

A. Within an EVOTC-Funded Program

Provide a list and clearly describe the functional and operational relationships with other EVOSTC-funded program projects. This includes any coordination that has taken or will take place and what form the coordination will take (shared field sites or researchers, research platforms, sample collection, data management, equipment purchases, etc.).

B. With Other EVOSTC-funded Projects

Indicate how your proposed project relates to, complements or includes collaborative efforts with other proposed or existing projects funded by the EVOSTC that are not part of a EVOSTC-funded program.

C. With Trustee or Management Agencies

Please discuss if there are any areas which may support EVOSTC trust or other agency work or which have received EVOSTC trust or other agency feedback or direction, including the contact name of the agency staff. Please include specific information as to how the subject area may assist EVOSTC trust or other agency work. If

the proposed project requires or includes collaboration with other agencies, organizations or scientists to accomplish the work, such arrangements should be fully explained and the names of agency or organization representatives involved in the project should be provided. If your proposal is in conflict with another project, note this and explain why.

Our proposal is closely aligned with the spring spawning survey proposal of ADF&G. Ship time for our acoustic surveys is included in this allied proposal. Further, the ASL sampling (required to partition our total biomass estimate into separate age classes) is included in this allied proposal.

Data we generate in our proposed field work will also support the ASA model analyses in Trevor Branch's UW proposal.

Movements of herring determined by the proposed HRM tagging program may inform our survey planning during this grant period. Understanding movements of adult fish during the spring will help us address issues implicit in our survey design. In particular, we feel it is critical to investigate whether there are migratory links between the Montague and Port Gravina/Fidalgo aggregations. Thus, results from this allied proposal could help advance our sampling approach.

3. PROJECT DESIGN – PLAN FOR FY18

A. Objectives for FY18

Identify the primary objectives for your project for FY18 as submitted in your original proposal.

B. Changes to Project Design

If the project design has changed from your original proposal, please identify any substantive changes and the reason for the changes. Include any information on problems encountered with the research or methods, if any. This may include logistic or weather challenges, budget problems, personnel issues, etc. Please also include information as to how any problem has been or will be resolved. This may also include new insights or hypotheses that develop and prompt adjustment to the project.

A. Objectives

Our main goal for this proposed project is to produce a reliable estimate of adult biomass of the spawning population of Pacific herring for each year during 2017-2021 in support of the age-structured assessment (ASA) model. In support of this goal, we identify the following objectives:

1) Carry out a hydroacoustic survey prior to the herring spawning season as a means to quantify the total biomass of adult herring in regions within Prince William Sound that have historically been important for spawning. This survey includes validation of targets by direct capture of fish with various gear types.
2) Each year conduct repeated hydroacoustic sampling over transects to quantify precision of our biomass estimates.
3) Carry out reconnaissance by air or ship to assure our survey design is adapting to any changes in the spawning distribution of Pacific herring in PWS.

B. I do not have any substantive changes to my primary objectives in FY2018.

4. SCHEDULE

A. Program Milestones for FY18

For each project objective listed, 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.

B. Measurable Project Tasks for FY18

Specify, by each quarter of each fiscal year, when critical project tasks (for example, sample collection, data analysis, manuscript submittal, etc.) will be completed, as submitted in your original proposal. Please identify any substantive changes and the reason for the changes.

Below is a list of tasks associated with this project for FY2018. We do not intend to make any substantive changes from what appeared in our original proposal.

Task	FY18			
	1	2	3	4
Task 1 admin & logistics				
Contracting for shiptime	X			
Permitting	X			
Task 2 data acquisition & processing				
Research Cruise	X			
Post processing			X	
Task 3 data management				
database mgmt./QAQC			X	
metadata (HRM)			X	
workspace upload			X	
Task 4 analysis & reporting				
Analysis and summary				X
Annual Reports				
Annual PI meeting				X
Permit reports				X

5. PROJECT PERSONNEL – CHANGES AND UPDATES

If there are any staffing changes to Primary Investigators or other senior personnel please provide CV's for any new personnel and describe their role on the project.

No changes.

6. Budget

A. Budget Forms (Attached)

Provide completed budget forms.

B. Changes from Original Proposal

If your FY18 funding request differs from your original proposal, provide a detailed list of the changes and discuss the reason for each change.

C. Sources of Additional Funding

Identify non-EVOSTC funds or in-kind contributions used as cost-share for the work in this proposal. List the amount of funds, the source of funds, and the purpose for which the funds will be used. Do not include funds that are not directly and specifically related to the work being proposed in this proposal.

A. Budget Forms

See attached for detail.

Budget Category:	Proposed FY 17	Proposed FY 18	Proposed FY 19	Proposed FY 20	Proposed FY 21	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	$39.5	$40.7	$41.9	$43.2	$44.5	$209.9	$ 0.2
Travel	$0.6	$0.6	$0.6	$0.6	$0.6	$2.8	$ -
Contractual	$10.8	$10.8	$0.8	$0.8	$0.8	$24.0	$ -
Commodities	$1.5	$0.0	$0.0	$0.0	$0.0	$1.5	$ -
Equipment	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$ -
Indirect Costs (*will vary by proposer*)	$15.7	$15.6	$13.0	$13.4	$13.8	$71.4	$ 0.1
SUBTOTAL	$68.1	$67.7	$56.3	$57.9	$59.6	$309.5	$0.3
General Administration (9% of subtotal)	$6.1	$6.1	$5.1	$5.2	$5.4	$27.9	N/A
PROJECT TOTAL	$74.2	$73.8	$61.3	$63.1	$64.9	$337.4	
Other Resources (Cost Share Funds)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	

B. Changes from Original Proposal

No changes in budget are requested

C. Sources of Additional Funding

No additional sources of funding.