ATTACHMENT C ***EVOSTC Annual Project Report Form***

Form Rev. 9.14.17

*Please refer to the Reporting Policy for all reporting due dates and requirements.

1. Project Number: *See*, Reporting Policy at III (C) (1).

17120111-F

2. Project Title: *See*, Reporting Policy at III (C) (2).

ASL Study and Aerial Milt Surveys

3. Principal Investigator(s) Names: *See*, Reporting Policy at III (C) (3).

Stormy Haught

4. Time Period Covered by the Report: *See*, Reporting Policy at III (C) (4).

FY17

5. Date of Report: *See*, Reporting Policy at III (C) (5).

1/31/2018

6. Project Website (if applicable): *See*, Reporting Policy at III (C) (6).

N/A

7. Summary of Work Performed: *See*, Reporting Policy at III (C) (7).

Conducted 59 hours of spring aerial surveys to collect data on survey routes, location and linear extent of herring milt, classification of herring milt, herring school biomass; distribution and abundance of sea lions, other marine mammals and bird aggregations associated with herring or herring spawn. 9.5 mile days of spawn were observed in 2017. Integrated all current and past aerial survey data (flight tracks, spawn extents, bird/mammal observations) into Geodatabase in ArcGIS.

Collected herring samples with purse seine, cast net and gill net. Processed and summarized, age, sex, and size data from over 3,800 herring collected during acoustics surveys, spawning grounds surveys, and Prince William Sound (PWS) Herring Research and Monitoring Program disease surveys. Samples from active spawn included collection of paired variable mesh gill net and cast net samples for evaluating gear selectivity. Provided R/V Solstice as a research platform for the adult acoustics survey, disease sampling, and collection of pre-spawn and spawning Pacific herring samples.

8. Coordination/Collaboration: *See*, Reporting Policy at III (C) (8).

Provided *R/V Solstice* (as well as department personnel) as a research platform for the adult acoustics survey (17120111-G), disease sampling (17120111-E), and reproductive maturity sampling (17170111-D). Also provided a small number of samples (seine captured herring) to the herring migration project (17120111-B). Provided 2017 herring ASL and aerial survey results to the modeling and stock assessment project (17120111-C).

9. Information and Data Transfer: *See*, Reporting Policy at III (C) (9).

Presented 2017 results at the annual herring program PI meeting in Cordova, AK 11/15/2017

Uploaded aerial survey (routes and biomass, spawn, bird, mammal observations) shapefiles and ASL 1973-2017 ASL data (.csv) to the research workspace.

10. Response to EVOSTC Review, Recommendations and Comments: *See*, Reporting Policy at III (C) (10).

Science Panel Comments and Responses on Revised FY17-21 Proposal, September 2016

The Panel raised concerns about the need for ground-truthing that the PI explained could not be completed due the lack of vessel availability. The Panel recognized this explanation, but feels strongly enough about the importance of this activity that the we would be supportive of a Trustee Council decision to award modest additional funds needed to complete this activity pending an appropriate proposal.

PI Response: Successful ground-truthing of herring spawn via dive survey is unlikely without significant long-term funding for training, equipment and personnel. Budget reductions in 2015 reduced staff size for the Alaska Department of Fish & Game (ADF&G) in Cordova and current workload does not allow for additional local staff time to be dedicated to this program. ADF&G does conduct herring spawn dive surveys in other parts of the state. High costs would likely result from significant down time associated with a dive team travelling to Cordova and waiting for small unpredictable spawn events (as have been observed in PWS for the past several years). Scheduling of charter vessels would likely run into the same spawn timing/ availability concerns. We will continue to evaluate options to ground-truth herring spawn in PWS, but it is unlikely that this will be possible in 2018.

Science Panel Comments and Responses on Revised FY18 Proposal, September 2017

The Panel appreciates the support this proposal provides to the entire herring program. The basic survey approach looks reasonable (based on successful work of past years) and the budget also looks reasonable.

This proposal seems to one that provides important technical services to the herring program as well as to ADF&G. The text under 'Executive summary' is well-presented, forthright, detailed and appreciated. This text is also very 'Alaska-centric' – and almost appears defensive of existing approaches and methodology. A case in point concerns the use of 'mile-days' as the fisheries-independent index of herring abundance. This usage should be examined, both within, and outside of the context of the assessment model. There may be valid, biological reasons why 'mile days' could tend to inflate estimates of escapement, depending on the circumstances. This comment should not be taken as a criticism of this proposal, but applied to the entire herring program. The metric of spawning is fundamental to PWS herring and it warrants more attention – especially analyses of spatial and temporal variability, combined with herring population characteristics (size, age, etc.) As noted in last year's work plan, similar comments can be made about the acoustic work.

The Panel feels that the entire herring program would benefit from a detailed review of the past work, including times and locations of surveys, acoustic gear used for each survey. This recommendation was also expressed in last year's work plan.

PI Response (10/11/2017)
The text is Prince William Sound centric because it explains the history of the data collection that this proposal continues.
The usage various data sets within the ASA model has been examined and reported in the final report for project 16120111-Q Population modeling by Trevor Branch and in the Masters thesis of Melissa Muradian (2015). We reference the work of Willette et al. (1999) as one effort to examine the usage of mile-days-spawn. The mile-days-spawn is only considered an index of the population and not meant to be considered a direct measure of the spawning biomass. The ASA model includes historical dive surveys that the modeling project show as an anchor for the aerial survey data. In the past the logistics of conducting dive surveys were considered to make the effort too expensive to propose. With declining biomass in PWS and reduced dive surveys in Southeast Alaska there may be opportunities to develop a reasonably cost program conducted by divers trained for this type of survey. We will work to determine the feasibility and cost of conducting dive

surveys in PWS. We will also continue to consider other approaches (rake or ROV surveys) to determine if a scientifically defensible survey can be conducted by alternate means.

There has been work examining the spawning characteristics, but none of it has been published yet. Dick Thorne was working on a manuscript detailing the shifts in timing and location of spawning in relation to predation pressure by whales, and we will have to follow up to determine the status of that effort. We have tried to use water temperature to help predict spawn timing for guiding survey timing. There appears to be a temperature that spawning does not occur below (~14.5C), but overwinter water temperatures have not been a consistent predictor of when spawning will begin. Spawn location, timing, and the relationship to environmental conditions are things appropriate for the analysis that David McGowan has proposed in his postdoc. The required aerial and acoustic survey information exists for that analysis.

11. Budget: *See*, Reporting Policy at III (C) (11).

Budget Category:	Proposed FY 17	Proposed FY 18	Proposed FY 19	Proposed FY 20	Proposed FY 21	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	$54.5	$54.5	$54.5	$54.5	$54.5	$272.5	$42.5
Travel	$1.4	$1.4	$1.4	$1.4	$1.4	$6.8	$0.0
Contractual	$94.6	$94.6	$94.6	$94.6	$94.6	$473.0	$35.2
Commodities	$2.1	$2.1	$2.1	$2.1	$2.1	$10.5	$15.6
Equipment	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
SUBTOTAL	$152.6	$152.6	$152.6	$152.6	$152.6	$762.8	$93.3
General Administration (9% of subtotal)	$13.7	$13.7	$13.7	$13.7	$13.7	$68.7	N/A
PROJECT TOTAL	$166.3	$166.3	$166.3	$166.3	$166.3	$831.5	
Other Resources (Cost Share Funds)	$54.5	$54.5	$54.5	$54.5	$54.5	$272.5	

Note: Many 2017 *R/V Solstice* expenses were billed as commodities. When this budget was developed, it was anticipated that all Solstice expenses would be considered contractual. We will work with ADF&G administrative staff and vessels staff in 2018 in order to properly bill Solstice expenses as contractual.

We appreciate your prompt submission and thank you for your participation.