

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

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

15120111-O

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

PWS Herring Program – Coordination and Logistics

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

W. Scott Pegau

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

February 2015 through January 2016

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

February 2016

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

<http://pwssc.org/research/fish/pacific-herring/>

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

The year began with the presentation of the synthesis completed in 2014 to the EVOS Science Panel. A principal investigator (PI) meeting was held in November in conjunction with the Gulf Watch Alaska PI meeting. A meeting also occurred during the Alaska Marine Science Symposium to allow investigators another opportunity to touch base with each other.

The synthesis pulls together results from the various projects and from the Gulf Watch Alaska program to examine our current knowledge of herring in Prince William Sound (PWS). The most surprising result was the correlation between the diatom abundance anomaly measured by the continuous plankton recorder and the growth of age-0 herring in PWS. A strong positive correlation was found and a manuscript was accepted that discuss the findings. Other important findings include the spatial and temporal patterns associated with herring condition, the evidence of overwinter feeding by age-0 herring, the importance of different inputs to the age-structure-analysis model, and the ability to track acoustically tagged adult herring. For complete findings please see the synthesis titled, "Pacific herring in Prince William Sound: A synthesis of recent findings" that was submitted to the *Exxon Valdez* Oil Spill Trustee Council.

The logistical support and reporting tasks were completed as scheduled. CDFU fishermen were trained and assigned areas for fish capture in March. Two cruises were contracted to support the expanded adult herring surveys. We worked with local researchers to collect herring at Montague Island for ADF&G and the genetics project. We deployed the satellite transmitting cameras on Kayak Island as a means to detect spawn without requiring daily aerial surveys. It was difficult to detect spawn in the camera images. We did observe spawn when we went to retrieve the cameras so we know of at least one spawn event that should have been captured. Examining the images revealed that there was a change in bird behavior that may indicate that there had been one spawning event earlier in the year.

A plane was contracted to support the aerial surveys for the age-1 herring index and to support the forage fish project. We worked closely with the forage fish project to survey in their areas of interest and provide validation. Several days of overlap of the aircraft and the sampling vessel allowed for validation of the aerial observations. A collaboration with a University of Oregon journalism class was established. The class

provided people to maintain the paper logs while getting the opportunity to see more of PWS. Students have also been brought on for short periods to assist with analysis of the aerial survey data.

This project continues to support investigators in uploading their data to the ocean workspace. Updated energetics, disease prevalence, acoustic survey, aerial survey, and tagging data were submitted. Presentations from PI meetings and other meetings are also uploaded to the workspace.

We often meet with Steve Moffitt, the local herring fisheries manager. It is through these meetings that we keep track of the needs of the resource managers. We were also able to meet with Sherri Dressler of ADF&G to discuss our findings and how they might be informed by herring research in other parts of the state. We also meet with the Cordova District Fishermen United to ensure research results make it back to the fishermen.

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

- a) This project is responsible for coordination among all of the HRM projects. In the past year there have been several meetings of the investigators to coordinate work, present a synthesis of our understanding of herring in Prince William Sound, and examine future research needs.

There is coordination among the HRM and GWA programs in reporting, and PI meeting attendance.

This project shares responsibility with the GWA forage fish project for analysis of the aerial survey data.

- b) We follow the progress of the two other projects funded in Cordova. We use the harbor for testing herring and contribute when possible particularly to the Cordova Clean Harbor group.
- c) This project works with Steve Moffitt and Sherri Dressler of Alaska Department of Fish and Game to transfer new findings to ADF&G and for guidance about the needs of the department. Investigators from the National Oceanic and Atmospheric Administration and the US Geological Survey are participating in the program.

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

- a) Publications – Batten, S.D., Moffitt, S., Pegau, W.S., and Campbell, R. (submitted) Plankton indices explain interannual variability in Prince William Sound herring first year growth. *Fisheries Oceanography*
- b) Presentations – Presented an overview of the HRM program at a Cordova Community lecture, to the Cordova District Fishermen United, Prince William Sound Regional Citizens' Advisory Council, and various EVOS groups. A poster was presented at the Alaska Marine Science Symposium.
- c) Data products – This project does not generate data.
- d) Information archive - Presentations from the PI meetings are loaded on the Ocean Workspace.

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

There were no project specific comments.

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

Budget Category:	Proposed FY 12	Proposed FY 13	Proposed FY 14	Proposed FY 15	Proposed FY 16	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	\$19,100.0	\$27,900.0	\$28,700.0	\$20,900.0	\$21,700.0	\$118,300.0	\$ 72,944
Travel	\$9,500.0	\$4,100.0	\$5,000.0	\$4,000.0	\$8,700.0	\$31,300.0	\$ 21,296
Contractual	\$216,960.0	\$375,999.0	\$282,288.0	\$244,916.0	\$243,657.0	\$1,363,820.0	\$ 995,892
Commodities	\$2,300.0	\$4,000.0	\$2,300.0	\$4,400.0	\$1,000.0	\$14,000.0	\$ 10,425
Equipment	\$50,500.0	\$0.0	\$0.0	\$0.0	\$0.0	\$50,500.0	\$ 79,851
Indirect Costs (<i>will vary by proposer</i>)	\$35,700	\$56,130	\$37,800	\$36,800	\$35,570	\$202,000.0	\$ 159,275
SUBTOTAL	\$334,060.0	\$468,129.0	\$356,088.0	\$311,016.0	\$310,627.0	\$1,779,920.0	\$1,339,683.0
General Administration (9% of	\$30,065.4	\$42,131.6	\$32,047.9	\$27,991.4	\$27,956.4	\$160,192.8	
PROJECT TOTAL	\$364,125.4	\$510,260.6	\$388,135.9	\$339,007.4	\$338,583.4	\$1,940,112.8	
Other Resources (Cost Share Funds)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$60,000.0

Total expenditures are very close to the proposed budget at this stage. The project is overspent on Equipment due to repairs to the Remotely Operated Vehicle and the purchase of remote cameras. Funds from Personnel and Contractual Services will be used to cover the equipment expenses.



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