

Exxon Valdez Oil Spill Trustee Council



FINAL Work Plan for
Fiscal Year 2016

Issued February 1, 2017



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Table of Contents

FY16 Proposal Funding Recommendations	1
Non-EVOSTC Program Proposals & Project Amendment Descriptions	5
EVOSTC Long-Term Monitoring Program (Gulf Watch Alaska) Project Descriptions.....	13
EVOSTC Long-Term Herring Monitoring and Research Program Project Descriptions.....	84
NOAA Harbor Protection Program Project Descriptions	140

FY16 Proposal Funding Recommendations

The funding described in this document is approximate; for funding amounts authorized by the Council, please see the Annual Funding Overview (AFO) for the appropriate fiscal year. The AFO is posted on the EVOSTC website after the fall Council meeting.

Page	Project Number	Principal Investigator	Project Title	FY16 Requested	FY16 Funding Amount Recommended				Approved
					Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
6	16120100	EVOS Admin	EVOS Administration	\$2,574,920	Not Reviewed	Not Reviewed	\$2,574,920	\$2,574,920	\$2,574,920
7	16100853	Irons	Pigeon Guillemot Restoration Program	\$162,735	\$162,735	\$162,735	\$162,735	\$162,735	\$162,735
14	16120114	McCammon	EVOSTC Long-Term Monitoring Program	\$2,530,400	\$2,448,405*	\$2,448,405*	\$2,448,405*	\$2,448,405*	\$2,448,405*
85	16120111	Pegau	PWS Herring Program	\$1,702,821	\$1,702,821	\$1,702,821	\$1,702,821	\$1,702,821	\$1,702,821
141	16120112	Jennings	NOAA Harbor Protection – Project Management	\$8,448	\$8,448	\$8,448	\$8,448	\$8,448	\$8,448
145	16120112-A	Patton	NOAA Harbor Protection – Cordova Clean Harbor	\$77,355	\$77,355	\$77,355	\$77,355	\$77,355	\$77,355
TOTAL REQUESTED, RECOMMENDED & APPROVED				\$7,056,679	\$4,399,764	\$4,399,764	\$6,974,684	\$6,974,684	\$6,974,684

**Indicates this review group recommends a Do Not Fund for Project #16120114-I, Hollmen*

EVOSTC Long-Term Monitoring Program Projects (Gulf Watch Alaska)

The funding described in this document is approximate; for funding amounts authorized by the Council, please see the Annual Funding Overview (AFO) for the appropriate fiscal year. The AFO is posted on the EVOSTC website after the fall Council meeting.

****The total for these projects can be found above under 16120114-McCammon***

Page	Project Number	Principal Investigator	Project Title	FY16 Requested	FY16 Approved	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
24	16120114A	Batten	LTM Program - Continuous Plankton Recorders	\$73,100	\$73,100	Fund	Fund	Fund	Fund	Fund
27	16120114B	Hoffman	LTM Program - Coordination and Logistics	\$288,100	\$288,100	Fund	Fund	Fund	Fund	Fund
30	16120114C	Bishop	LTM Program - Seabird Abundance in Fall and Winter	\$86,300	\$86,300	Fund	Fund	Fund	Fund	Fund
33	16120114D	Bochenek	LTM Program - Data Management	\$162,600	\$162,600	Fund	Fund	Fund	Fund	Fund
38	16120114E	Campbell	LTM Program - Oceanographic Conditions in PWS	\$209,300	\$209,300	Fund	Fund	Fund	Fund	Fund
41	16120114G	Doroff	LTM Program - Oceanographic Monitoring in Cook Inlet/Kachemak Bay	\$108,800	\$108,800	Fund	Fund	Fund	Fund	Fund
44	16120114H	Holderied	LTM Program - Science Coordination and Synthesis	\$151,600	\$151,600	Fund	Fund	Fund	Fund	Fund
47	16120114I	Hollmen	LTM Program - Conceptual Ecological Modeling	\$81,900	\$0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
51	16120114J	Hopcroft	LTM Program - Seward Line Monitoring	\$107,700	\$107,700	Fund	Fund	Fund	Fund	Fund
54	16120114K	Kuletz	LTM Program - PWS Marine Bird Surveys	\$215,700	\$215,700	Fund	Fund	Fund	Fund	Fund
57	16120114L	Konar	LTM Program - Ecological Communities in Kachemak Bay	\$47,400	\$47,400	Fund	Fund	Fund	Fund	Fund
60	16120114M	Matkin	LTM Program -Long-term killer whale monitoring	\$132,300	\$132,300	Fund	Fund	Fund	Fund	Fund

Page	Project Number	Principal Investigator	Project Title	FY16 Requested	FY16 Approved	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
63	16120114N	Moran	LTM Program - Humpback Whale Predation on Herring	\$54,400	\$54,400	Fund	Fund	Fund	Fund	Fund
66	16120114O	Piatt	LTM Program - Forage Fish Distribution, Abundance, and Body Condition	\$150,300	\$150,300	Fund	Fund	Fund	Fund	Fund
69	16120114P	Weingartner	LTM Program - GAK1 Monitoring	\$122,500	\$122,500	Fund	Fund	Fund	Fund	Fund
72	16120114R	Ballachey	LTM Program - Nearshore benthic systems in the Gulf of AK	\$331,905	\$331,905	Fund	Fund	Fund	Fund	Fund
75	16120114S	Carls	LTM Program - Oil Level and Weathering Tracking	\$6,500	\$6,500	Fund	Fund	Fund	Fund	Fund
78	16150114-T	Bochenek	LTM Program - Supplemental Data Management Support	\$126,000	\$126,000	Fund	Fund	Fund	Fund	Fund
80	16120120	Jones	LTM Program - Data Management and Synthesis	\$73,900	\$73,900	Fund	Fund	Fund	Fund	Fund

EVOSTC Long-Term Herring Monitoring and Research Program Projects

The funding described in this document is approximate; for funding amounts authorized by the Council, please see the Annual Funding Overview (AFO) for the appropriate fiscal year. The AFO is posted on the EVOSTC website after the fall Council meeting.

****The total for these projects can be found above under 16120111-Pegau***

Page	Project Number	Principal Investigator	Project Title	FY16 Requested	FY16 Approved	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
98	16120111A	Bishop	PWS Herring Program - Validation of Acoustic Surveys	\$145,297	\$145,297	Fund	Fund	Fund	Fund	Fund
102	16120111C	Bochenek	PWS Herring Program - Data Management Support	\$23,980	\$23,980	Fund	Fund	Fund	Fund	Fund
109	16120111E	Rand	PWS Herring Program - Expanded Herring Surveys	\$84,366	\$84,366	Fund	Fund	Fund	Fund	Fund
113	16120111F	Rand	PWS Herring Program - Juvenile Herring Abundance Index	\$82,949	\$82,949	Fund	Fund	Fund	Fund	Fund
117	16120111H	Hoover	PWS Herring Program – Outreach & Education	\$38,259	\$38,259	Fund	Fund	Fund	Fund	Fund
121	16120111K	Hershberger	PWS Herring Program – Herring Disease Program	\$298,006	\$298,006	Fund	Fund	Fund	Fund	Fund
124	16120111L	Heintz	PWS Herring Program - Herring Condition Monitoring	\$253,861	\$253,861	Fund	Fund	Fund	Fund	Fund
128	16120111O	Pegau	PWS Herring Program - Coordination and Logistics	\$338,583	\$338,583	Fund	Fund	Fund	Fund	Fund
131	16120111Q	Branch	PWS Herring Program - Population Dynamics Modeling	\$104,920	\$104,920	Fund	Fund	Fund	Fund	Fund
136	16160111S	Bishop	PWS Herring Program – Herring Movement Study	\$272,600	\$272,600	Fund	Fund	Fund	Fund	Fund
139	16160111T	Moffitt	PWS Herring Program – ASL Study & Aerial Milt Surveys	\$60,000	\$60,000	Fund	Fund	Fund	Fund	Fund

**Non-EVOSTC Program Proposals &
Project Amendments**

Project Number: 16120100

Project Title: EVOSTC Annual Budget

Primary Investigator(s): Elise Hsieh, EVOSTC Executive Director
Linda Kilbourne, EVOSTC Administrative Manager

PI Affiliation: EVOSTC **Project Manager:** ADFG

EVOSTC Funding Approved:

FY16
\$2,574,920

Abstract:

The budget structure is designed to provide a clearly identifiable allocation of the funds supporting Trustee Council activities. The program components are:

- Administration Management
- Data Management
- Science Program
- Public Advisory Committee (PAC)
- Habitat Protection Program
- Trustee Agency Project Management & Federal Funds Transfer
- Trustee Agency Funding
- Alaska Resources Library & Information Services (ARLIS)

The budget estimates detailed within those specified program components are projected based upon prior year actual expenditures and include the application of estimated merit step increases, as well as payroll benefits increases. Detailed 12-month budget component items cover necessary day-to-day operational costs of the *Exxon Valdez* Oil Spill Restoration Office and administrative costs associated with overseeing current Trustee Council program objectives.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Not Reviewed	Not Reviewed	Fund	Fund	Fund

Project Number: 16100853

Project Title: Pigeon Guillemot Restoration Research in Prince William Sound

Primary Investigator(s): David Irons

PI Affiliation: USFWS **Project Manager:** USFWS

EVOSTC Funding Authorized To Date: \$1,881,297

FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
\$317,000	\$284,300	\$48,400	\$0	\$281,000	\$0	\$0	\$396,656	\$391,206

FY16
\$162,735

Additional EVOSTC Funding Requested: \$264,676

FY17	FY18
\$139,968	\$124,708

Requests include 9% GA.

Total EVOSTC Funding (Authorized and Requested): \$2,145,973

Funding From Non-EVOSTC Sources:

FY14	FY15	FY16	FY17	FY18	Total Non-EVOSTC Funding
\$391,280	\$ 371,280	\$317,580	\$313,580	\$312,580	\$ 1,707,300

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/27/15.*

This project provides an opportunity to restore the population of Pigeon Guillemots (*Cepphus columba*) in Prince William Sound, Alaska, which has fallen by more than 90% at the Naked Island Group since 1989. A restoration plan for Pigeon Guillemots in PWS was prepared to address the species' lack of population recovery following injury by the 1989 Exxon Valdez oil spill. Predation on nests and adults by mink is now the primary limiting factor for guillemot reproductive success and population recovery at the most important historical nesting site for guillemots in PWS (i.e., the Naked Island group). Mink on the Naked Island group are descended in part from fur farm stock and arrived on the island group during the 1980s. The goal of the project is to remove all mink from the Pigeon Guillemot nesting areas and allow for recovery to occur. We trapped for the first time in the winter and spring of 2014. Seventy-six mink were killed. During the 2015 trapping season 23 mink were killed in localized areas. The last three weeks only three females were trapped, none were pregnant although it was breeding season. That is an indication that there are so few mink left in the nesting areas that was difficult to find a mate. We expect it will take 3 trapping seasons to remove all mink from the nesting areas. After that will be conduct monitoring trapping to ensure the mink are gone from the nesting areas. This summer we counted over 90 pigeon guillemots, up from 74 last year, control islands did not have a similar increase. We did not expect to see this large of increase in birds

this year. The warm water in the Gulf of Alaska may have contributed as other species were moving from the Gulf to PWS. We surveyed active nests and found about 30 confirmed nests and about 20 suspected nests, last year we found 11. Colonies are starting to form again with up to 6 nests in one area. Productivity during the chick stage was high, around 80%, indicating that the adults could find enough food for their chicks. This winter and spring we will trap again.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY16

Date: September 2015

Trapping of mink to promote restoration of pigeon guillemots is already a remarkable success story, well ahead of expected time frames for recovery. The project is well along to remove all mink from PIGU nesting sites, and a positive PIGU population response has already been observed. Documentation of population trends of predator and prey over the full 5-year course of this project will make for an excellent case study. However, over the long term, the question is whether this success will be temporary or sustained, given that mink remain on other parts of the islands. The PIs have made estimates of PIGU population doubling times as a result of mink eradication from nesting sites. Additionally, it would be informative to estimate mink population trends in the absence of an ongoing trapping program after the conclusion of this project. Ultimately, lacking a program to fully eradicate mink from these islands, redistribution of a rebounding mink population would be expected to once again cause a PIGU population decline over the long term. Population projections of both predator and prey may be useful to evaluate the merits and timeliness of future management agency decisions about predator controls.

Science Coordinator, Executive Director Comments – FY16

Date: September 2015

I concur with the Science Panel’s comments.

Public Advisory Committee Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

The Panel notes that the proposal is strong and well written and provides a level of detail that allows for constructive review. We do note the high cost of the mink trapping effort in relation to the number culled in FY14. We are concerned about the effectiveness of the project and its ability to achieve its goals in the long term given that eradication of mink will not be allowed.

Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

We concur with the Science Panel.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund Contingent	Not Reviewed	Fund	Fund

Science Panel Comments – FY14

Date: September 2013

The panel recommends funding of this proposal. The panel notes that the proposal is strong and well-written and provides a level of detail that allows for constructive review. The panel does acknowledge that culling could be a temporary or on-going solution and a “money sink,” if continued into future years and that it is a substantial commitment to fund and monitor over time. However, it is active restoration, which is rare among submitted proposals, and it is an interesting scientific experiment.

Science Coordinator Comments – FY14

Date: September 2013

I concur with the science panel regarding the scientific merit of the proposal. I also echo the concerns of the Panel this is likely a temporary solution and a full cull would be needed to increase the population by the numbers cited in the proposal. Dr. Irons stated in his final report for Phase 1 of this project (Page 12):

“... because even a single mink can devastate a guillemot colony (U.S. Fish and Wildlife, unpubl. data), culling is unlikely to significantly reduce the level of guillemot nest predation or facilitate population recovery.”

Has something changed since the report was accepted that a limited cull would now be considered useful?

I also have several questions regarding the design of the project including: If the number of birds increases, are there any plans to determine if the increase was from the predator removal or other factors? The plan includes monitoring the population on Smith Island as a control which is currently mink-free. However, there is no monitoring plan discussed in the proposal. Will Smith Island be surveyed at the same time and frequency as Naked Island? The proposal states that ADFG is only willing to consider a limited cull at this time. If a complete removal is found to be necessary, would a permit to complete this work be possible or denied due to the mixed genetic stock of the mink on the Island?

At this time, I feel that the Council should postpone a funding decision until a final Environmental Assessment is provided by the PI and the question above regarding the limited cull is answered.

Public Advisory Committee – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Executive Director Comments – FY14

Date: September 2013

I concur with the Science Panel and support the concerns of the Science Coordinator. Due to the prospect of matching funds if this proposal is funded at this time and the opportunity for active restoration, I recommend funding, conditioned upon completion of the EA to the satisfaction of EVOSTC Executive Director and the coordinating agencies (USFWS, APHIS, ADFG, USFS).

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	No consensus	No comments	No consensus

Science Panel Comments – FY12

Date: June 2011

This proposal has been previously submitted to the EVOS Trustee Council and reviewed by the Science Panel.

Support for the work was strong among the Science Panel members. One concern that arose pertained to the question of whether the mink found today on Naked and nearby Islands in the Naked group are descendants of the animals introduced artificially or whether these are fully native mink with an intact natural genome. That question has now been answered with DNA analysis revealing a mixed genome, not reflecting a pure native stock. This answer would appear to satisfy the question of whether these mink are natural (no) and to allow the extermination to move forward, if supportable scientifically by the Science Panel and Trustee staff and if politically and financially acceptable to the Trustee Council.

Here we will provide a review of the adequacy of the science. First, it is noteworthy that PIGUs are the only bird species still listed as Not Recovering after EVOS. Second, the importance of Naked Island and its potential recovery to this species is evident – the Naked Island group held about 25% of the PIGU population in PWS prior to the spill despite representing only 2 % of the PWS shoreline. Third, the inference that mink represent the impediment to PIGU recovery on Naked is strong, based especially on comparison Smith Island where mink are absent and PIGU survival is good. Fourth, the contention that strong recovery of PIGUs on Naked would lead to spread and re-colonization of other suitable sites in PWS is a reasonable expectation, so restoration on Naked pays a wider dividend of recovery elsewhere in PWS. Fifth, we know that the introduced foxes are now gone from Naked so that isn't the problem. Sixth, the alternatives analysis is compelling in showing that no other restoration option would work and that eradication is the only solution. For example, providing more of the now reduced lipid-rich prey would be useless, resulting in feeding mink better not in enhancing PIGU survival and abundance. Culling would be a half-step and require costly intervention forever, and thus can be rejected as a viable restoration option. Seventh, elimination of predatory mammals on islands is a well-established practice to enhance ground-nesting seabirds and other birds. Consequently, this proposal makes good sense scientifically and addresses an ongoing restoration failure of importance.

The only questions involve the costs and the potential use of dogs, if trapping fails to get every last mink in the eradication process. The costs are 2.4 Million or 1.3 Million if a National Wildlife Foundation match is obtained. We concur that these cost estimates are reasonable because a 3-5 year time frame is needed to complete the removal. So while high, the expenditures are likely justified. The use of dogs in the removal of mink seems to possibly conflict with animal rights as an unacceptably cruel practice.

Science Coordinator Comments – FY12

Date: June 2011

This proposal is scientifically compelling and builds on four years of work focused on this topic. While the idea of a direct restoration project is appealing, I am concerned that the total project cost is very high in relation to the total number of nests that they project will be added to the island complex.

Public Advisory Committee Comments – FY12

Date: July 2011

No project specific comments.

Executive Director Comments – FY12

Date: July 2011

I do not have a recommendation for this project. The project is very compelling because it potentially provides active restoration for an injured species. However, the high cost and speculation regarding the long-term outcome needs to be weighed carefully by the Council.

FY07 FUNDING RECOMMENDATIONS

Science Panel	Science Coordinator	PAC	Executive Director
Fund reduced	Not reviewed	Not reviewed	Fund reduced

Science Panel Comments – FY07

Date: Fall 2006

This proposal investigates the efficacy of direct restoration techniques for the pigeon guillemot population in PWS. They will genetically sample mink that reside on Naked Island Archipelago to determine if the population was introduced or native and make recommendations for a recovery plan for pigeon guillemots based on the findings. Pigeon guillemots are one of two non-recovered species and this project represents one of the few restoration based proposals that have been submitted. The genetic sampling of mink and studies examining the relative contribution of mink vs. other predators to pigeon guillemot survival and reproduction are important in evaluating mink removals as a potential restoration activity. However, there is some concern that removal of mink may not be an appropriate restoration activity if the mink are in fact native. Also, food limitation studies may be difficult to interpret with respect to restoration and are perhaps premature. Mink removal may still prove an effective restoration tool even if food quality is poor. Furthermore, given the likely annual variation in food supply, a lack of food in one year may not be a reasonable predictor of future food limitation. We recommend funding the initial year of this proposal and suggest that efforts be made to provide genetic evidence on mink at the end of that year so that reasoned decisions can be made regarding future funding.

Science Coordinator Comments – FY07**Date: Fall 2006**

The Science Director is on a long-term detail from the FWS and must therefore, recuse herself from making recommendations on FWS proposals. The PI on this proposal is employed by the FWS.

Public Advisory Committee – FY07**Date: Fall 2006**

Not Reviewed.

Executive Director Comments – FY07**Date: April 2006**

Salaries and logistics are the major expenses of this proposal. Assuming mink predation on pigeon guillemots, any direct restoration will likely involve controlling the mink population on Naked Island. Before this can be undertaken a determination must be made whether the mink population is indigenous or introduced. Therefore, I only recommend funding the minimum mink capture and genetic testing program necessary to determine where the population is indigenous or introduced. I further recommend local trappers and logistics be utilized in this effort to reduce expense.

**EVOSTC Long-Term Monitoring
Program Projects**

Project Number: 16120114

Project Title: EVOSTC Long-Term Monitoring Program (Gulf Watch Alaska)

Primary Investigator(s): Molly McCammon

PI Affiliation: AOOS **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$13,826,265

FY12	FY13	FY14	FY15	FY16
\$2,904,600	\$2,675,800	\$ 2,994,400	\$2,803,060	\$2,448,405

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA.

Total EVOSTC Funding (Authorized and Requested): \$13,826,265

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$1,886,000	\$1,738,000	\$1,823,000	\$1,902,000	\$1,636,000	\$8,985,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

The goal of the Long-term Monitoring (LTM) program, known as Gulf Watch Alaska, is to provide sound scientific data and products that inform management agencies and the public of changes in the environment and the impacts of these changes on Exxon Valdez oil spill (EVOS) injured resources and services. The five-year program includes: 1) four monitoring components (environmental drivers, benthic, pelagic, lingering oil); 2) data management services; 3) integrated syntheses of data; 4) historic data recovery and syntheses; and 5) science outreach.

The program has six primary objectives:

1. Sustain and build upon existing time series in the EVOS-affected regions of the Gulf of Alaska.
2. Provide scientific data, data products and outreach to management agencies and a wide variety of users.
3. Develop improved monitoring for certain species and ecosystems.
4. Develop science synthesis products to assist management actions, inform the public and guide monitoring priorities for the next 20 years.
5. Enhance connections between the Gulf Watch Alaska and Herring Research and Monitoring (HRM) programs.
6. Leverage partnerships with outside agencies and groups to integrate data from broader efforts.

Some highlights from our progress in year 4 of the program include:

- Completed all project sampling and program annual reports through year 3

- Updated and added information to the program website (www.gulfwatchalaska.org) and data portal
- Completed and submitted program synthesis report and response to comments
- Held successful annual meeting and synthesis workshop, presented and participated in the joint programs science meeting in February
- Collaborated with the HRM program in joint synthesis reports, program meetings, and program reports

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY16

Date: September 2015

The Science Panel was pleased to see that the two programs are closely integrating. It is expected that cross program publications and further integration, both on a practical and on a scientific level, will occur in the next 5 year plan, as noted in the Panel’s comments from September 2014.

The administrative program management component for the program is very high cost with no detail on the need for these expenditures.

Science Coordinator, Executive Director Comments – FY16

Date: September 2015

I concur with the Science Panel’s comments.

Public Advisory Committee Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

This year, the Panel was pleased to see improvement in this year’s proposals regarding QA/QC of data collection and integration of projects, including the oceanography proposals and proposals by Matkin, Moran and Arimitsu & Piatt. The revised reporting forms also prompted greater inclusion of benchmark results, publications and changes to work plans. The Panel was also pleased to see that the Science Advisory Panel has been selected and is actively providing feedback to the Program. The Panel appreciates the PIs initial efforts to engage junior scientists and continues to encourage post-docs being integrated into the programs.

Next year, the Panel would still like to see improvements in:

Inclusion of fundamental information

The Panel would like to see the inclusion of fundamental information regarding the 1) approach, design and analysis of studies and 2) explicit statements of how analyses are answering major questions. This key information is essential to evaluating proposals, and we expect to see brief descriptions included in the next proposals. We are not requesting that detailed descriptions be provided to the degree exhibited in original proposals or publications; PIs should use their expertise to identify and include essential, fundamental information that should be included to facilitate review. Good examples of the level of expected detail include the proposals by Carls, Jones, Piatt and the Marine Debris Removal proposal by Pallister (available on the EVOSTC website).

The Panel appreciates that any additional requests for information in proposals can be perceived as onerous and that the Panel had indicated in prior years that they did not want the entire original proposal text included every year. However, the minimal, essential information requested should not take long to incorporate and could remain in subsequent proposals. From a Panel perspective, proposals cannot be evaluated without key, fundamental information on major hypothesis in part so changes to the design can be considered in proper context. We appreciate your efforts in refining your multi-year proposal submissions.

Coordination & Collaboration/Synthesis

The Panel appreciated the programs' explicit statements recognizing the synergisms among project efforts. It is clear that most projects are already working together where it is practical or advantageous to the achieving the goals of individual projects. We also appreciated that the programs recognized the need to integrate data across projects to arrive at a synthetic view of the status and trends of the PWS ecosystem, including more information on conceptual models and the synthesis of existing datasets that promise the necessary integration across projects. However progress in these areas will need to be more explicit and more fully developed, and details provided to the Panel were too limited to be able to truly evaluate progress in this area. We look forward to seeing synthesis (integrated data synthesis, not just conceptual synthesis) both within and across projects at the February synthesis meeting and view this as a critical checkpoint to assess progress of the program toward a synthetic understanding.

Science Coordinator Comments – FY15

Date: September 2014

I concur with the Science Panel’s overall comments. The Program has clearly worked hard over the past field seasons to better integrate the projects, refine the administrative and outreach activities, and collect and maintain the scientific data.

PAC, Executive Director Comments – FY15

Date: October 2014

I concur with the Science Panel and Science Coordinator.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
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Fund	Fund	Not Reviewed	Fund	Fund
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Science Panel Comments – FY14

Date: September 2013

The science panel appreciates the general approach of the LTM program but feels that more basic information was needed to fully evaluate the potential success of the program. Our comments below, and for several individual projects, highlight examples that would have benefitted from the inclusion of additional information for developing more informative proposals and progress reports. The panel looks for more informative proposals and progress reports in the future. Our goal is to provide feedback that may strengthen the program while it is still in its formative stage of implementation.

****Proposals by Matkin on killer whales, Moran on humpback whales, and Carls & Lindeberg on benthic monitoring were all praised by the Science Panel for their importance, inclusion of detail, and significant progress.***

Proposals were lacking in detail, hindering their evaluation

There was not enough information provided for the Science Panel to evaluate the proposals and offer substantive suggestions. In order to evaluate proposal merits, the Science Panel wanted to see more detail, including:

- Sampling design, locations and methods, including QA/QC of data collection
- Approach to data analysis including statistical methods and/or relevant contrasts
- Explicit statement of how analyses will answer the major questions
- A discussion of results to date and any adjustments in project design in view of results
- Explicit statement of how individual project results relate to or will be integrated into the broader program
- The proposals should be reviewed as a whole by someone from the group before submission.

The panel, EVOSTC and agency staff will be looking at options for providing brief guidance and/or a form for the programs in advance of proposal drafting and submission to clarify expectations. When EVOSTC staff has a draft form or guidance, we will circulate it to the Team Leads for their feedback. There was also initial discussion regarding reporting which we will also circulate if it is further developed.

An overall review by an outside expert in physical oceanography and climate would be useful.

In the current round of proposals, the need to describe physical oceanographic forcing was rarely described. Several proposals generally provided vague language, in some cases they cut and pasted text from the overarching and original 2012 proposal.

There is uneven treatment and an apparent lack of collaboration among the four oceanography projects in LTM. The Weingartner (GAK1) and Hopcroft (Seward Line) proposals are well thought out and collaborative. However, Campbell and Doroff proposals should be more collaborative and thorough, including physical measurements; they are also unclear on instrument calibration and data QA/QC. There is no evidence of collaboration with trained physical oceanographers or reference to

the PWS sampling stations in the Hopcroft proposal. An overall review of the physical oceanography and climate aspects of LTM (and, to a lesser extent, herring) would be useful.

Outside expert for oceanography review - some suggestions for trained oceanographers who work with biologists include: John Largier, UC Davis/Bodega Marine Laboratory, Steven Bogard, SWFSC-NMFS, and Jack Barth, OSU.

Publications

The Science Panel encourages investigators to publish their results in peer-reviewed journals to make their hard-won results available to wider scientific audience. This encouragement especially applies to young investigators who are establishing their careers. They may quickly become unable to compete for other jobs. We anticipate the FY17 Invitation will include an expectation to publish.

Data Management

The Science Panel is concerned about progress on data management. The data management proposal drew heavily on their old proposal without including sufficient updated evidence of interactions between the programs' PIs and the data management team. In addition, there does not appear to be a data management policy or QA/QC policy created as the programs approach Year Three. In addition, no milestones were reported in the newly submitted proposals, so it was difficult to gauge how much progress had been made in the last two years. Moreover, it was not clear how data would be available for synthesis. The panel recommends that the Council condition funding upon the creation of a credible and detailed data management policy and a QA/QC policy and include clear milestones in for their proposal.

Regarding a QA/QC policy: such a document is a basic need of any data management. We note too that instruments commonly need to be calibrated before and after use to be able to adjust for measurement drift, if it occurs. With two separate data centers operating under the EVOSTC program it is crucial that a high level of QA/QC be maintained. The Science Panel is concerned that adequate attention is not being devoted to this fundamental aspect of data management. It is particularly important that to assemble complete metadata to ensure that long-term data sets can be verified and understood once the current participants have moved on to new positions. For example, EPA and NSF require detailed data management and QA/QC plans as part of all proposals. Large monitoring programs, such as NSF's LTER and oceanographic programs, devote considerable time and effort to addressing these critical needs.

Example: As a specific example, the Ocean Tracking Network (OTN) has four nearly full-time people creating metadata forms that are required to be filled out, submitted and checked for QA-QC before data can be added to the database. Since OTN is currently adding equipment to tracking arrays in PWS, it would be particularly appropriate at this time to arrange communication between senior OTN data managers with EVOSTC program data PIs to ensure that data standards are adequate. As with OTN, and as emphasized in the initial funding of the EVOSTC programs, skilled data management resulting in data that can be relied upon by the scientific community and resource agencies will ultimately determine the long-term success and influence of the programs. The contact at OTN is Bob Branton (bob.branton@gmail.com) or (bob.branton@dal.ca).

Attrition of Experienced Personnel

The panel notes that it may be a challenge to replace experienced personnel retiring or transitioning out of the programs, but the need for their expertise remains. To address these changes, the panel suggests that the programs partner their junior PIs with newly recruited, experienced scientists. Where difficulties exist in filling key positions, the panel also suggests strategically tapping outside experts to review projects and provide consultation and setting up a Post-Doc training program for the LTM and Herring projects. As experienced personnel leave the program either through retirement or departure, the salary savings could fund this kind of activity.

Potential Resource - The panel encourages the programs to consider options for developing concepts for postdoctoral programs that can help address these issues. The panel and the programs' internal panels and advisory groups can provide assistance in identifying potential post doc candidates who may be helpful to the programs. Intergovernmental Personnel Assignments and perhaps NRC Research Associate post-docs may also be a source for additional expertise and post-doc work.

Synthesis in Advance of February 2015 Workshop

There is concern from our review of the proposals that the programs are postponing work on synthesis until just before the Workshop. The programs should think through and create a step-by-step route and design for their 2015 synthesis so there is sufficient field time to work on it. This plan should include mechanisms and process. The part of synthesis that involves creation of and testing of models is best done by an iterative process in which modeling is sequentially tested by reference to new data and the models revised accordingly.

There was also a suggestion to focus on cross-cutting topical issues, such as acoustics and calibration. PIs with different expertise could be paired to initiate and encourage actual synthetic analyses and presentation in contrast to single PI presentations on isolated projects or topics.

Examples for pairings include: disease and physiology, and modeling of herring movements and disease.

Inter-project cooperation and communication

The Science Panel acknowledges and salutes the efforts made to coordinate logistics of field projects, especially following a long period when PIs worked relatively independently on most projects. However we are not convinced that some of the individual projects are as well connected as they should be, in terms of communication among PI's. This comment is based on an apparent lack of connectivity among some of the proposals.

Program Science Panel and Upcoming 2015 Synthesis

*See also Synthesis in Advance of February 2015 Workshop, above.

Proposal Objective 2. Assist with Scientific Review Panel

"Setup of the panel has been delayed in order to make the most effective use of panel members' time in advance of the synthesis workshop. Planning of the synthesis workshop begins in the final two quarters of year 2; the panel will be established by the end of year two (approximately one year in advance of the synthesis workshop)."

This is a major problem. Bringing an outside science review into projects makes changes difficult (because of already established long-term monitoring protocols). Some of these aspects should have been established in Year 1 rather than just before a major synthesis workshop in Year 3. The Science Panel suggests they establish a group that reviews the developed monitoring and integration plans and how they support synthesis.

Regarding the Program’s Science Panel:

What is its status? Their influence and guidance is not apparent; guidance, integration is needed. The LTM Program’s internal Science Panel should be already composed, constituted and advising by now.

Science Coordinator Comments – FY14

Date: September 2013

In concur with overall comments of the Science Panel. I agree with the Panel’s comments regarding the overall poor quality of the proposals. Most proposals made no effort to even change the dates of their tasks and deliverables making it almost impossible to determine where the project was in meeting its objectives. I am also particularly concerned by the lack of a functioning science advisory committee this far into the program. The creation of this group was a requirement of the FY12 Invitation for Proposals under which this program was funded. ***I would recommend to the Council that funding of the administrative portion of this program be withheld until a plan is in place for a program science advisory body.***

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Executive Director Comments – FY14

Date: October 2013

I concur with the Science Panel and their extensive comments noted above and support the concerns of the Science Coordinator.

Trustee Council Comments – FY14

Date: October 2013

The Council requests the Team Leads and PIs within the Long-Term Programs in Project numbers 14120111 and 14120114 work with EVOSTC staff to address Science Panel and EVOSTC staff comments in the Fiscal Year 2014 Work Plan and participate in a Long Term Programs’ Data Review Meeting with EVOSTC and Trust Agency Staff.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

I concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund
April 2011	Fund	Fund	Fund	Fund

Science Panel Comments – FY12

Date: July 2011 – Individual Panel Member Comments

Individual Comment 1:

Seabird monitoring costs double in year 3 – The explanation is clear, although the basis for why two surveys may be needed in year 3 and what is lost when only 1 is done is unclear. Cost breakdown for Coordination, data management, outreach, and administration – The suite of activities included under this heading is now explicit as are the total costs associated with each one in the budgets provided. I wish to note, however, the “conceptual modeling” project of Hollmen does not fall into any of these categories – it is a scientific study, not an administrative service, outreach activity, coordination, or data management task, and should be reviewed as such. In that context, I examined the Hollmen proposal and have some concerns. Although intended to be “conceptual modeling”, I find no mention of any concepts in the proposal. I cannot find indication of the methodological approaches to be used and why they were chosen. For example, will this be a Bayesian process? Will modeling be ecosystem based? Will ECOPATH or something analogous be employed? There are no literature citations in this proposal. For 395K over 5 years, more detail would seem to be called for. I cannot find a CV included for the PI, Hollmen. Does she have modeling experience, and, if so, in what types of models?

Synthesis concerns – the PIs provide a thoughtful and compelling response to this issue, providing an excellent overview and demonstrating potential for meaningful syntheses.

Data management – The PIs make a strong case for the cost efficiencies associated with leveraging that lower the costs of the data management for EVOS Trustee projects by joining with AOOS in a coordinated effort with a single consultant-provider. The response also makes a justifiable case for why teaming up with AOOS makes sense – because of their presumed permanence as compared to other science programs. I am impressed that Phil Mundy chairs the AOOS external advisory committee and concur that he has the experience and wisdom to provide rational advice and guidance. Nevertheless, the bottom line after all is said and done is – Does Axiom deliver the data

products that are acceptable to the scientists it is serving. This response document appears to argue that the scientists that participate in the Monitoring Program are indeed satisfied. So that helps me side with continuing the relationship with Axiom. Nevertheless, this document implies a willingness to interact with NCEAS and to discuss their recommendations for improvements in all aspects of Axiom's data management services and I think that facilitating that set of interactions in a meaningful way (meaning to sufficient depth and not just superficial) is important for piece-of-mind given delays in delivery of reports from Axiom on past EVOS Trustee contracts. I am also curious to know of the outstanding final reports have indeed been completed successfully at this time. I see argued in this response document that the past scientist clients of AXIOM are satisfied with the company's services, which addresses one major issue raised by the Science Panel.

Date: April 2011

This proposal is well presented and provides a thorough long-term monitoring program for the spill area. The team is experienced and well-qualified to complete the proposed work. The outreach and education strategies and partnerships are well thought-out and have the potential to provide effective means to disseminate information and engage community members in understanding the results of the integrated monitoring program. The potential future development of a citizen monitoring program would provide another effective strategy. The Science Panel was especially impressed with the section called 'cross-cutting' that showed the linkages with the Herring Program. Gathering and making data available will be the keystone of this program. The Science Panel expressed serious concerns about past performance of some participants and that the data management team does not have sufficient expertise or scientific guidance to deliver a useable data system. In addition, it is not clear at all there is a plan for the inclusion of structurally diverse data: where and how will such data be organized so that relevant data and metadata from a broad array of disciplines can be assembled in one database. The panel viewed this as this as an informatics problem that, if not resolved at the onset, will jeopardize the long-term program. There is a very clear need to overcome critical technological impediments to accomplishing synthetic, integrative environmental science, while at the same time promoting more open access to information and data sharing. It is critical that this database be open source and be compliant with the Knowledge Network for Bio-complexity metadata compliant with Ecological Metadata Language. In addition, there should be a plan from the outset as to how to incorporate this data into NPRB's GOAIERP program at the end of the first five-year contract cycle.

Therefore, we strongly recommend that the Council provide assistance from an organization such as the National

Center for Ecological Analysis and Synthesis (NCEAS) for peer review and technical assistance to the data management team. With regard to the separate lingering oil monitoring proposal included within the Program proposal, the Panel has no objection to the funding of this additional project.

Science Coordinator Comments – FY12

Date: April 2011

I agree with the Science Panel and Executive Director. I also have serious concerns regarding the data program and would encourage the Council to assist the team by providing funding for a collaborator to assist the data team in their development of the data program. My concerns regarding

the proposed contractor are based on a poor past performance with meeting deadlines and producing deliverables. I also believe that the final product would greatly benefit if Axiom was given assistance from a group that has experience working with large heterogeneous data sets.

The PI's that are included in this program proposal have extensive experience gathering data in PWS and have contributed to several long-term data sets that will be the foundation of this program. The team's quick response to our data set questions demonstrates their ability to work together and to openly share information with their fellow researchers.

Public Advisory Committee – FY12

Date: April 2011

The PAC supports funding the LTM project proposal, noting that the PAC agrees with the Science Coordinator in that there are serious concerns regarding the data program and would encourage the Council to assist the project team by providing funding for a comprehensive review of the data program. The motion passed, with dissent by Brune and Bauer, based on Axiom's current past due deliverables.

It was moved by French, second by Studebaker, that the PAC supports the Science Panel recommendation for additional funding for the LTM project to consider the effects of lingering oil. Passed unanimously.

Executive Director Comments – FY12

Date: April 2011

There has been strong concern about the program's data manager serving the entire program. Since April, the data manager's work has been favorably reviewed, has submitted late deliverables to the Council and several data management options have been produced by this program and outside entities. These options presented are in conjunction with leaders in the field of heterogeneous scientific database management and are excellent options. I recommend the Council pursue one of these options to ensure successful management of the data produced by this and past Council-funded efforts.

Project Number: 16120114-A

Project Title: LTM Program - Continuous Plankton Recorders

Primary Investigator(s): Sonia Batten

PI Affiliation: SAHFOS **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$1,263,700

FY02-FY11	FY12	FY13	FY14	FY15	FY16
\$984,300	\$0	\$66,800	\$68,800	\$70,700	\$73,700

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$1,263,700

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$94,700	\$148,000	\$180,800	\$169,000	\$592,500

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

Many important species forage outside of Prince William Sound for at least some of their life history (herring, salmon, birds and marine mammals for example) so an understanding of the productivity of these shelf and offshore areas is important to understanding and predicting fluctuations in resource abundance. The Continuous Plankton Recorder (CPR) has sampled a continuous transect extending from the inner part of Cook Inlet, onto the open continental shelf and across the shelf break into the open Gulf of Alaska monthly through spring and summer since 2004. There are also data from 2000-2003 from a previous transect. The current transect intersects with the outer part of the Seward Line and provides complementary large scale data to compare with the more local, finer scale plankton sampling on the shelf and in PWS. We are continuing to sampling this transect spring through fall each year with monthly resolution. Resulting data will enable us to identify where the incidences of high or low plankton are, which components of the community are influenced, and whether the whole region is responding in a similar way to meteorological variability. Evidence from CPR sampling over the past decade suggests that the regions are not synchronous in their response to ocean climate forcing. The data can also be used to try to explain how the interannual variation in ocean food sources creates interannual variability in PWS zooplankton, and when changes in ocean zooplankton are to be seen inside PWS. The CPR survey is a cost-effective, ship-of-opportunity based sampling program supported in the past by the EVOS TC that includes local involvement and has a proven track record.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16**Date: September 2015**

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15**Date: September 2014**

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator, Executive Director, Trustee Council Comments – FY14**Date: September and October 2013**

There are no project specific comments.

Public Advisory Committee Comments – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13**Date: September 2012**

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13**Date: September 2012**

We concur with the Science Panel.

Public Advisory Committee Comments – FY13**Date: September 2012**

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund
April 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12**Date: June 2011**

There are no project specific comments.

Project Number: 16120114-B

Project Title: LTM Program - Administration, Science Review Panel and PI Meeting Logistics, and Outreach and Community Involvement

Primary Investigator(s): Katrina Hoffman

PI Affiliation: PWSSC **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$1,418,100

FY12	FY13	FY14	FY15	FY16
\$263,300	\$274,700	\$298,600	\$293,400	\$288,100

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$1,418,100

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et al. To achieve fiscal efficiency, the Prince William Sound Science Center (PWSSC) serves as the administrative lead and fiscal agent for the consortium implementing this program known as Gulf Watch Alaska (GWA). As fiscal agent and administrative lead, PWSSC is responsible for: managing award contracts for all non-Trustee Agency projects within the program; ensuring the program and projects adhere to all reporting policies, practices and timelines as required by the EVOSTC and NOAA; serving as a liaison between the program and EVOSTC staff; coordinating travel and logistics for principal investigator annual meetings; coordinating travel and logistics for outreach efforts; participating in an annual audit; and providing administrative support to the outreach and community involvement component of the GWA program. The Outreach and Community Involvement component is coordinated by the Alaska Ocean Observing System. We also coordinate with the Herring Research and Monitoring Program on data sharing, administration and outreach.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY16

Date: September 2015

The high cost of the program administration is of concern to the Panel.

Science Coordinator, Executive Director Comments – FY16

Date: September 2015

I concur with the Science Panel’s comment.

Public Advisory Committee Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

There is discussion of the website being the primary outreach tool for the team, yet the site does not appear to be regularly updated or provide much information for the general public on the Program

Science Coordinator Comments – FY15

Date: September 2014

I concur with the Panel’s concerns regarding the outreach program. The website is being used as the “primary source of information” but there is very little information that would be of use to the general public. The publications page is blank and there are no links to the Delta Sound Connection article mentioned in the proposal.

PAC, Executive Director Comments – FY15

Date: October 2014

We concur with the Science Panel and Science Coordinator.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14

Date: September 2013

This proposal demonstrates a good range of activities, is well written and explained. Very good elaboration on the level of partnering and how partnerships work. The project has good advisory committees, but could use some evaluation of the impacts of its public educational programs – are they reaching the intended audience, etc. The budget may be inadequate to support evaluation costs.

Science Coordinator, Executive Director, Trustee Council Comments – FY14

Date: October 2013

There are no project specific comments.

Public Advisory Committee Comments – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13**Date: September 2012**

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director, Trustee Council Comments – FY13**Date: September 2012**

There are no project specific comments.

Public Advisory Committee Comments – FY13**Date: September 2012**

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund
April 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12**Date: June 2011**

There are no project specific comments.

Project Number: 16120114-C

Project Title: LTM Program - Seabird Abundance in Fall and Winter

Primary Investigator(s): Mary Anne Bishop

PI Affiliation: PWSSC **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$ 380,900

FY12	FY13	FY14	FY15	FY16
\$51,700	\$78,600	\$80,900	\$83,400	\$86,300

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$380,900

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$10,500	\$45,500	\$63,500	\$63,500	\$63,500	\$246,500

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

This project is a component of the integrated Gulf Watch Alaska Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et.al. The vast majority of seabird monitoring in areas affected by the Exxon Valdez oil spill has taken place around breeding colonies during the reproductive season, a time when food is generally at its most plentiful. However, seabirds spend most of the year widely dispersed. Late fall through winter are critical periods for survival as food tends to be relatively scarce or inaccessible, the climate more extreme, light levels reduced, day length shorter and water temperatures colder. Post-spill ecosystem recovery and changing physical and biological factors all have the potential to affect PWS seabird populations. Of the seabirds that overwinter in PWS, nine species were initially injured by the Exxon Valdez oil spill, including three species that have not yet recovered (marbled murrelet, Kittlitz's murrelet and pigeon guillemot). Here we propose to continue to monitor from 2012 through 2016 seabird abundance, species composition, and habitat associations using multiple surveys (up to 5 surveys per season) during late fall and winter. The data will improve our predictive models of seabird species abundance and distribution in relation to biological and physical environmental factors. In addition, by monitoring the top-down forcing by seabirds, a major source of herring predation, this project will complement the suite of PWS Herring Research & Monitoring studies, including improved mortality estimates for herring population models. This project is part of the pelagic component within the integrated Gulfwatch Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et. al. Our project uses as observing platforms the vessels associated with the LTM Humpback Whale surveys, PWS Herring Research & Monitoring Juvenile Herring Abundance Index and integrates the seabird observations with those studies. In addition, our projects uses vessels

associated with Alaska Dept. of Fish and Game October PWS shrimp surveys, and PWS Science Center February acoustic array cruises.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14

Date: September 2013

The proposed objectives are to characterize the spatial and temporal distribution of seabirds in PWS during late fall and winter and relate the presence of seabirds with prey distributions from hydro-acoustic surveys for identifying winter habitat of seabirds and improving estimates of herring consumption in winter. The panel feels that improved resolution of sampling during summer, when seabirds are nesting and most accurately censused, may be more fruitful than conducting expansive surveys during the winter. Given the overlap of investigators on the summer and winter surveys, we encourage them to consider conducting annual rather than biannual surveys in summer by scaling back winter surveys.

Science Coordinator, Executive Director, Trustee Council Comments – FY14

Date: September and October 2013

I concur with the Science Panel.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund
April 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: June 2011

There are no project specific comments.

Project Number: 16120114-D

Project Title: LTM Program – Data Management

Primary Investigator(s): Rob Bochenek

PI Affiliation: Axiom Consulting **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$ 844,700

FY12	FY13	FY14	FY15	FY16
\$190,800	\$163,400	\$164,000	\$164,000	\$162,600

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$844,700

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$683,000	\$640,000	\$620,000	\$500,000	\$500,000	\$2,943,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*
This project supplies the EVOS Long Term Monitoring (LTM) effort with critical data management support to assist study teams in efficiently meeting their objectives and ensuring data produced or consolidated through the effort is organized, documented and available to be utilized by a wide array of technical and non-technical users. This effort leverages, coordinates and cost shares with a series of existing data management projects which are parallel in scope to the data management needs of the long term monitoring program. In the first two years, this project would focus on providing informatics support to streamline the transfer of information between various study teams and isolate and standardize historic data sets in the general spill affected area for use in retrospective analysis, synthesis and model development. These efforts would continue into year three through five but efforts would also focus on developing management and outreach applications for the data and data products produced from the LTM program.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16**Date: September 2015**

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15**Date: September 2014**

It was encouraging for the Science Panel to hear via a conference call with Kris Holderied, Tammy Neher, and Scott Pegau that the standardized forms for metadata submission had been recently modified, and that a more refined version is now available to investigators. The Panel is hopeful that this will facilitate all investigators' compliance on submission of both metadata and data in a timely manner (within one year of collection) as agreed upon when accepting funding from EVOSTC.

Science Coordinator Comments – FY15**Date: September 2014**

I concur with the Science Panel's comments. I understand the challenges of achieving data compliance with the individual projects and would be happy to assist if desired.

PAC, Executive Director Comments – FY15**Date: October 2014**

We concur with the Science Panel and Science Coordinator comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund Conditional	Fund Conditional	Not Reviewed	Fund Conditional	Fund Conditional

Science Panel Comments – FY14**Date: September 2013**

Progress is listed as "Data is being archived on the Workspace by investigators in the program..." and "Data from the past two field seasons will be ingested into the data management system. We will continue to refine and expand the information available through the Herring data portal."

Please specify what data have been incorporated. Also, the demonstration of progress is not adequate. More detail is essential. Failing that, this project should be suspended. An inventory of all data proposed to be incorporated eventually into the program should be drawn up and an accounting of progress on incorporating the listed data sets should reported annually, including any changes to the inventory of target datasets.

The Science Panel is concerned about progress on data management. The data management proposal drew heavily on their old proposal without including sufficient updated evidence of interactions between the programs' PIs and the data management team. In addition, there does not

appear to be a data management policy or QA/QC policy created as the programs approach Year Three. In addition, no milestones were reported in the newly submitted proposals, so it was difficult to gauge how much progress had been made in the last two years. Moreover, it was not clear how data would be available for synthesis. The panel recommends that the Council condition funding upon the creation of a credible and detailed data management policy and a QA/QC policy and include clear milestones in for their proposal.

A QA/QC policy is a basic need of any data management. We note too that instruments commonly need to be calibrated before and after use to be able to adjust for measurement drift, if it occurs. With two separate data centers operating under the EVOSTC program it is crucial that a high level of QA/QC be maintained. The Science Panel is concerned that adequate attention is not being devoted to this fundamental aspect of data management. It is particularly important that to assemble complete metadata to ensure that long-term data sets can be verified and understood once the current participants have moved on to new positions. For example, EPA and NSF require detailed data management and QA/QC plans as part of all proposals. Large monitoring programs, such as NSF's LTER and oceanographic programs, devote considerable time and effort to addressing these critical needs.

Example: As a specific example, the Ocean Tracking Network (OTN) has four nearly full-time people creating metadata forms that are required to be filled out, submitted and checked for QA-QC before data can be added to the database. Since OTN is currently adding equipment to tracking arrays in PWS, it would be particularly appropriate at this time to arrange communication between senior OTN data managers with EVOSTC program data PIs to ensure that data standards are adequate. As with OTN, and as emphasized in the initial funding of the EVOSTC programs, skilled data management resulting in data that can be relied upon by the scientific community and resource agencies will ultimately determine the long-term success and influence of the programs. The contact at OTN is Bob Branton (bob.branton@gmail.com) or (bob.branton@dal.ca).

Science Coordinator, Executive Director Comments – FY14

Date: September and October 2013

We concur with the Science Panel.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Trustee Council Comments – FY14

Date: October 2013

The Council requests the Team Leads and PIs within the Long-Term Programs in Project numbers 14120111 and 14120114 work with EVOSTC staff to address Science Panel and EVOSTC staff comments in the Fiscal Year 2014 Work Plan and participate in a Long Term Programs' Data Review Meeting with EVOSTC and Trust Agency Staff.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13**Date: September 2012**

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13**Date: September 2012**

We concur with the Science Panel.

Public Advisory Committee Comments – FY13**Date: September 2012**

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Modify	Modify		Modify

Science Panel Comments – FY12**Date: June 2011**

The PIs make a strong case for the cost efficiencies associated with leveraging that lower the costs of the data management for EVOS Trustee projects by joining with AOOS in a coordinated effort with a single consultant-provider. The response also makes a justifiable case for why teaming up with AOOS makes sense – because of their presumed permanence as compared to other science programs. I am impressed that Phil Mundy chairs the AOOS external advisory committee and concur that he has the experience and wisdom to provide rational advice and guidance. Does Axiom deliver the data products that are acceptable to the scientists it is serving. This response document appears to argue that the scientists that participate in the Monitoring Program are indeed satisfied. So that helps me side with continuing the relationship with Axiom. Nevertheless, this document implies a willingness to interact with NCEAS and to discuss their recommendations for improvements in all aspects of Axiom’s data management services and I think that facilitating that set of interactions in a meaningful way (meaning to sufficient depth and not just superficial) is important for piece-of-mind given delays in delivery of reports from Axiom on past EVOS Trustee contracts. I see argued in this response document that the past scientist clients of AXIOM are satisfied with the company’s services, which addresses one major issue raised by the Science Panel.

Science Coordinator Comments – FY12**Date: June 2011**

I agree with the Science Panel and Executive Director. I also have serious concerns regarding the data program and would encourage the Council to assist the team by providing funding for a collaborator

to assist the data team in their development of the data program. My concerns regarding the proposed contractor are based on a poor past performance with meeting deadlines and producing deliverables. I also believe that the final product would greatly benefit if Axiom was given assistance from a group that has experience working with large heterogeneous data sets

Public Advisory Committee – FY12

Date: July 2011

Issues raised by the Science Panel, Trustee Council staff, and the PAC called for additional work and collaboration to assist with establishment of a data management system that includes accessible scientific data as well as public information. French noted that he had no problem with either NCEAS or Woods Hole—he questioned Axiom’s role and staying power. French said he supported the NCEAS and Axiom collaboration. Chairman Eilo summed the PAC interest in the Trustee Council implementing a solid data management, synthesis, and public access system.

Executive Director Comments – FY12

Date: July 2011

There has been strong concern about the program’s data manager serving the entire program. Since April, the data manager’s work has been favorably reviewed, has submitted late deliverables to the Council and several data management options have been produced by this program and outside entities. These options presented are in conjunction with leaders in the field of heterogeneous scientific database management and are excellent options. I recommend the Council pursue one of these options to ensure successful management of the data produced by this and past Council-funded efforts.

Project Number: 16120114-E

Project Title: LTM Program –Monitoring of oceanographic conditions in PWS

Primary Investigator(s): Robert Campbell

PI Affiliation: PWSSC **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$ 1,041,600

FY12	FY13	FY14	FY15	FY16
\$238,100	\$193,200	\$197,300	\$203,700	\$209,300

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$1,041,600

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$23,300	\$23,300	\$23,300	\$145,000	\$135,000	\$349,900

Abstract:

**This abstract is excerpted from the PI’s Proposal, dated 9/1/15.*

This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et. al. This project is intended to provide physical and biological measurements that may be used to assess bottom-up impacts on the marine ecosystems of Prince William Sound. Specifically, it is proposed to deploy an autonomous profiling mooring in central Prince William Sound that will provide high frequency (~daily) depth-specific measurements of physical (temperature, salinity, turbidity), biogeochemical (nitrate, phosphate and silicate) and biological (Chlorophyll-a concentration) parameters, over the course of the growing season (focused on the vernal and autumn blooms). Several regular vessel surveys are also proposed to provide ground-truth data for the mooring, and to attempt to capture some of the spatial variability in PWS. As well as the mooring site, the surveys will visit all four of the SEA bays to maintain ongoing EVOSTC funded time series measurements at those sites and to support proposed herring research (Pegau et. al). The major entrances (Hinchinbrook Entrance and Montague Strait) will also be visited. The surveys will make the same suite of measurements as the mooring, and will also collect water and plankton samples. This project will also link significantly with the herring research efforts proposed by Pegau et al.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14

Date: September 2013

The physical measurements are very important in a project of this kind. There is little evidence that the nuances of the physical oceanography – from instrument calibration, data QA, interpretation of results, and relationships to other similar programs – are in place. There is no reference to or integration with the UA (University of Alaska) physical oceanographers from the GulfWatch (GAK1) program or to the physical measurements being made in PWS in the Seward Line program, or the historical physical oceanography conducted by the PWSSC that describes water mass movements from the shelf into Hitchinbrook Entrance and through PWS.

For the moored instrument, calibration is a concern. The proposal states that instruments will be calibrated annually. Typically they should be calibrated before and after each deployment, and the data corrected for drift of the instruments. Has a physical oceanographer been consulted on this? The concern is that the physical data will be assumed to be accurate and will be used for various purposes without adequate QA/QC.

There is not a lot of specificity on how the plankton will be handled, net sizes or other factors. Need further information on target species, and it would be good to show how this relates to Hopcroft’s Seward line project, particularly those EVOSTC funded samples taken in PWS, and to Batten’s continuous plankton recorder results. There is no evidence of this in the Collaboration and Cooperation section of the proposal.

Science Coordinator, Executive Director Comments – FY14

Date: September and October 2013

We concur with the Science Panel.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Trustee Council Comments – FY14

Date: October 2013

There are no project specific comments.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: July 2011

There are no project specific comments.

Project Number: 16120114-G

Project Title: LTM Program – Long-term monitoring of oceanographic conditions in Cook Inlet/Kachemak Bay

Primary Investigator(s): Angela Doroff and Kris Holderied

PI Affiliation: ADFG, NOAA

Project Manager: ADFG, NOAA

EVOSTC Funding Authorized To Date: \$778,300

FY12	FY13	FY14	FY15	FY16
\$191,900	\$177,400	\$166,500	\$133,700	\$108,800

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$778,300

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$282,000	\$180,000	\$180,000	\$255,000	\$255,000	\$1,152,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services. This project is designed to assist in the evaluation of recovery and restoration of injured resources in the foot print of the Exxon Valdez oil spill (EVOS). It is important to know if oceanic conditions and changes in the Gulf of Alaska are synchronous with near-shore trends, and monitoring at multiple sites will help discern such relationships. Mapping currents and water mass movements of a region contributes to our understanding of patterns in the abundance and diversity of marine plankton, invertebrates, fish, birds, and mammals in coastal Alaska. We are mapping the waters in lower Cook Inlet and Kachemak Bay to understand the intrusions of the Alaska Coastal Current and to identify spatial and temporal changes in this region and relate these observations to injured resources. Developing an understanding of the structure of the physical oceanography will help us understand the connectivity of water movement and potential plankton transport between lower Cook Inlet and Kachemak Bay. By determining the local species of phytoplankton and zooplankton and understanding their seasonal distribution we will begin to understand the biological patterns associated with upper trophic levels of the nearshore marine system. Information from this project will also be useful to local mariculture operations, subsistence harvesters of hard shell clams and other invertebrates, NOAA Regional Ocean Circulation Model applications, and monitoring programs for harmful algal blooms.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16**Date: September 2015**

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15**Date: September and October 2014**

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14**Date: September 2013**

The Science Panel agrees that mapping the waters of lower Cook Inlet and Kachemak Bay to understand the effects of intrusions of the Alaska Coastal Current and variation of other currents on phytoplankton and zooplankton distribution and abundance is a valuable part of long-term ecosystem monitoring.

Questions arose about the ability to meet this objective with the proposed unbalanced sampling design. Sampling transects 3, 4, 6, and 7 (Kachemak Bay and lower Cook Inlet) will be reduced from quarterly in the first three years of the project to three times in Y4 and twice in Y5 due to budget constraints, thereby limiting the scope of analysis among years. Would a different, but inter-annually consistent, design provide a more powerful, thorough, and rigorous analysis of temporal and spatial variation under these budget constraints? Alternatives might include reducing the: (1) sampling frequency of transects to three times per year throughout the study, (2) the number of stations along transects to maintain quarterly sampling or (3) the number of transects to maintain quarterly sampling. We advise that this sampling plan be carefully re-evaluated and justified.

Concerns were also expressed about the collection and handling of physical measurements – are instruments appropriately calibrated, and how are data handled (QA/QC)? Evidence of collaboration with other physical measurement programs (GAK1, Seward Line) and the relationship to (and use of?) the results of the new Seward Line PWS stations were of interest. Are the physical oceanography measurements in the program designed to take into account the gyre and counter-gyre in Kachemak Bay?

Science Coordinator, Executive Director, Trustee Council Comments – FY14

Date: September and October 2013

There are no project specific comments.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator Comments – FY13

Date: September 2012

I concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

Executive Director Comments – FY13

Date: September 2012

I concur with the Science Panel.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: June 2011

There are no project specific comments.

Project Number: 16120114-H

Project Title: LTM Program – Science Coordination and Synthesis

Primary Investigator(s): Kris Holderied

PI Affiliation: NOAA

Project Manager: NOAA

EVOSTC Funding Authorized To Date: \$708,500

FY12	FY13	FY14	FY15	FY16
\$123,500	\$139,000	\$148,300	\$146,100	\$151,600

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$708,500

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$13,000	\$13,000	\$13,000	\$13,000	\$13,000	\$65,000

Abstract:

**This abstract is excerpted from the PI’s Proposal, dated 9/1/15.*

This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et al (2011). This project explicitly provides for science coordination and syntheses of data from our long-term monitoring program (Gulf Watch Alaska), as well as incorporating an interdisciplinary framework into program development and implementation. The science coordination and synthesis component of our integrated program improves linkages between monitoring in different regions (Prince William Sound, Gulf of Alaska shelf, lower Cook Inlet) as well as between disciplines in a given region, as a way to better discern the impacts of environmental change on restoration and continued recovery of injured resources. Science coordination includes facilitating program planning and sharing of information between principal investigators, developing annual reports on the science program, and coordinating ongoing evaluation of the overall program. Science synthesis efforts help integrate information across the entire program and are closely coordinated with the conceptual ecological modeling and data management teams in our integrated program.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator, Executive Director, Trustee Council Comments – FY14

Date: September and October 2013

There are no project specific comments.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12**Date: June 2011**

There are no project specific comments.

Project Number: 16120114-I

Project Title: LTM Program – Conceptual Ecological Modeling

Primary Investigator(s): Tuula Hollmen

PI Affiliation: ASLC **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$349,200

FY12	FY13	FY14	FY15	FY16
\$83,100	\$91,900	\$95,600	\$78,600	\$0

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$349,200

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI’s Proposal, dated 9/1/15.*

This project is a component of the integrated Gulf Watch Alaska Long-term Monitoring of Marine Conditions and Injured Resources and Services program. We will develop conceptual ecological models to support the synthesis and planning relating to the long term monitoring program in Prince William Sound, outer Kenai coast, and lower Cook Inlet/Kachemak Bay. We will summarize system components, processes, and influences into a synthetic framework and develop submodels to support programmatic integration across its components. Conceptual models will assist in identification of data needs and development of long term monitoring priorities. Through refinement of models, they will also demonstrate progress in understanding of ecosystem structure and function through the Gulf Watch Alaska program. The conceptual models will provide a framework for development of numerical and quantitative models of system function and responses to external influences. Finally, the conceptual models will provide a communication tool among scientists, resource managers, policy-makers, and the general public, and will provide visualization tools to support outreach efforts of the Gulf Watch Alaska program.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund

Science Panel Comments – FY16

Date: September 2015

The Science Panel feels that insufficient progress has been made and we note that previous comments have not been adequately addressed. The Panel recognizes the importance and key integrative role that this proposal should play; however, we have received essentially the same minimal information in consecutive annual reports from the PIs indicating limited progress. The Conceptual Model presented at the February meeting was a disappointment. Upon request, the Panel received the "in press" paper, but the modest example of the zooplankton-herring-whale sub-model does not provide adequate evidence that stated overall goals and milestones are being addressed. The Panel had expected that the model would have been fully articulated earlier in the five-year cycle, tested and refined, and then modified, as indicated as an "iterative" process in the initial proposal. It's clear at this point that the only product is a diagram depicting hypothesized / expected links among entities in the ecosystem that is descriptive and does not draw on legacy data or recent Program data. Given that these issues have been raised annually, it is not clear how completing the objectives in this year (producing sub-models) will further our understanding of the system.

Science Coordinator, Executive Director Comments – FY16

Date: September 2015

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

The Panel appreciated that the conceptual model could provide significant integration, however the Panel remained concerned about the lack of detail on the conceptual models. It is important for the Panel to better understand what exactly the conceptual modeling approaches, how they are implemented, and specifically how they make use, and will in the future make use, of the data collected by other projects. The details of the organizing model (and sub-models described in the conference call) and its value for guiding future work must be demonstrated at the upcoming synthesis meeting; otherwise the Panel is unlikely to recommend continued funding for this work beyond FY15.

Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

We concur with the concerns of the Science Panel.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund Conditional	Fund Conditional	Not Reviewed	Fund Conditional	Fund

Science Panel Comments – FY14**Date: September 2013**

From the CV, there is no evidence that the PI has experience as a synthetic ecological modeler. Her CV and publications suggest that she is more of an avian physiologist. It is unclear how their web-based visualization and data exploration tools differ from those of the data management group and NCEAS. Is there unnecessary duplication? Also, it appears that there are no plans to achieve the objectives until the very end of the 5-yr program. This is not acceptable, as it leaves inadequate time for iterative model evaluation and refinement.

This modeling project is very important to the overall program. However, it lacks evidence of any progress two years into the project and offers no vision of what can and will be done. No milestones have been tied to ongoing costs for this project. The proposals include an integration component but the submissions were boilerplate. More explicit information that sets out a road map is needed, not necessarily a longer submission. The programs are focused on monitoring but the programs should still have forward-thinking research. There should also be an adaptive process that allows the programs to set out a conceptual model, which is continuously updated and refined as its accuracy is challenged by new data and the PIs should develop a collection of reasonable hypotheses. To address these problems, the panel recommends the formation of a Conceptual Modeling Group, drawn from the programs' existing PIs who are already involved in the programs and known for their synthetic vision: Piatt, Pegau, Weingartner, Hopcroft and Jeep Rice. Examples of synthesis can be found on the Internet, including Chesapeake Bay, George's Bank and Steve Brandt's spatially explicit modeling of habitat quality and fish growth. Daniel Pauly and Tom Okey have been involved in an ECOPATH-ECOISM modeling of the PWS food web.

Science Coordinator, Executive Director Comments – FY14**Date: September and October 2013**

We concur with the Science Panel.

Public Advisory Committee Comments – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Trustee Council Comments – FY14**Date: October 2013**

There are no project specific comments.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel Comments – FY12

Date: June 2011 – Individual Panel Member Comments

Individual Comment 1:

I examined the Hollmen proposal and have some concerns. Although intended to be “conceptual modeling”, I find no mention of any concepts in the proposal. I cannot find indication of the methodological approaches to be used and why they were chosen. For example, will this be a Bayesian process? Will modeling be ecosystem based? Will ECOPATH or something analogous be employed? There are no literature citations in this proposal. For 395K over 5 years, more detail would seem to be called for. Does the PI have modeling experience, and, if so, in what types of models?

Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: June 2011

There are no project specific comments.

Project Number: 16120114-J

Project Title: LTM Program – Seward Line Monitoring

Primary Investigator(s): Russ Hopcroft

PI Affiliation: UAF

Project Manager: ADFG

EVOSTC Funding Authorized To Date: \$470,200

FY12	FY13	FY14	FY15	FY16
\$98,100	\$59,900	\$100,500	\$104,000	\$107,700

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$470,200

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$300,000	\$300,000	\$600,000

Abstract:

**This abstract is excerpted from the PI’s Proposal, dated 9/1/15.*

The ocean undergoes year-to-year variability in the physical environment, superimposed on longer-term cycles, and potential long-term trends. These variations influence ocean chemistry, and propagate through the lower trophic levels, ultimately influencing fish, seabirds and marine mammals. Over the past 50 years the Northern Pacific appears to have undergone at least one clear “regime shift”, while the last 18 years have seen multi-years shifts of major atmospheric indices, leaving uncertainty about what regime the coastal Gulf of Alaska is currently in. Regime shifts are often expressed as fundamental shifts in ecosystem structure and function, such as the 1976 regime shift that resulted in a change from a shrimp dominated fisheries to one dominated by pollock, salmon and halibut. Long-term observations are also critical to describe the current state, and natural variability inherent in an ecosystem at risk of significant anthropogenic impact. Given the potential for such profound impacts, this proposal seeks to continue multidisciplinary observations which began in 1997 along the Seward Line and in PWS that assess the current state of the Northern Gulf of Alaska, during 2012-2017. Such observations form critical indices of ecosystems status that help us understand some key aspects of the stability or change in upper ecosystems components for both the short and longer-term. By analogy, the weather has been studied for more than a hundred years, yet regular observations are still needed to know what is happening and what can be expected in the near future.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator, Executive Director, Trustee Council Comments – FY14

Date: September and October 2013

There are no project specific comments.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/June 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12**Date: June 2011**

There are no project specific comments.

Project Number: 16120114-K

Project Title: LTM Program – Continuing the Legacy: Prince William Sound Marine Bird Population Trends

Primary Investigator(s): Kathy Kuletz and Robb Kaler

PI Affiliation: USFWS

Project Manager: USFWS

EVOSTC Funding Authorized To Date: \$681,700

FY12	FY13	FY14	FY15	FY16
\$206,500	\$24,200	\$211,100	\$24,200	\$215,700

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$681,700

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$56,000	\$22,000	\$56,000	\$22,000	\$56,000	\$212,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et al. and spans 1989-2014, and includes 13 years of boat-based surveys aimed at monitoring population trends of marine birds and mammals in Prince William Sound after the Exxon Valdez oil spill. Data collected will be used to examine trends from summer to determine whether populations in the oiled zone are increasing, decreasing, or stable, as well as to examine overall population trends for the Sound. Data collected from 1989 to 2012 indicated that pigeon guillemots (*Cepphus columba*) and marbled murrelets (*Brachyramphus marmoratus*) are declining in the oiled areas of Prince William Sound. We have found high inter-annual variation in numbers of some bird species and therefore recommend continuing to conduct surveys every two years. These surveys are the only ongoing means to evaluate the recovery of most of these injured marine bird species. Surveys would also benefit the benthic monitoring and forage fish monitoring aspects of the Long-term Monitoring Project as well as the Herring Project.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16**Date: September 2015**

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15**Date: September and October 2014**

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14**Date: September 2013**

The Science Panel agrees that continuing the long-term monitoring of marine birds in Prince William Sound (since 1989) is important, given that some species (pigeon guillemots and marbled murrelets) are still declining in oiled areas. We also agree that the high inter-annual variation in numbers of some bird species is problematic, and hence, we question whether maintaining biennial sampling is sufficient to detect trends in recovery. Annual sampling may be needed to better couple variation in bird abundances with ocean conditions, and thereby improve our understanding of factors affecting the recovery of bird populations in PWS; however, it also would increase the budget substantially. In light of this, we recommend that the PIs review the purpose and goals of sampling and that the sampling frequency be carefully reconsidered, in part by using a power analysis of impacts of alternative survey frequencies.

Science Coordinator Comments – FY14**Date: September 2013**

In concur with the Science Panel but I do not agree that more frequent sampling may be necessary.

Public Advisory Committee Comments – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Executive Director Comments – FY14**Date: October 2013**

I concur with the Science Panel but do note that the sampling frequency has been reviewed by the Panel in the past with varied recommendations. Suffice to say, issues regarding budget and purpose remain and should be continued to be revisited by the PIs.

Trustee Council Comments – FY14

Date: October 2013

There are no project specific comments.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel Comments – FY12

Date: June 2011 – Individual Panel Member Comments

Individual Comment 1:

Seabird monitoring costs double in year 3 – The explanation is clear, although the basis for why two surveys may be needed in year 3 and what is lost when only 1 is done is unclear

Science Coordinator, PAC, Executive Director ,Trustee Council Comments – FY12

Date: June 2011

There are no project specific comments.

Project Number: 16120114-L

Project Title: LTM Program – Long-term monitoring of Ecological Communities in Kachemak Bay: a comparison and control for PWS

Primary Investigator(s): Brenda Konar

PI Affiliation: UAF

Project Manager: NOAA

EVOSTC Funding Authorized To Date: \$239,900

FY12	FY13	FY14	FY15	FY16
\$48,100	\$48,200	\$48,100	\$48,100	\$47,400

Funding includes 9% GA

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$239,900

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et. al. As part of this component, we monitor rocky intertidal, seagrass and clam gravel beach systems as well as the sea otter abundance and diet in Kachemak Bay. This component is complementary to work being conducted under this program in Prince William Sound and Katmai.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator, Executive Director, Trustee Council Comments – FY14

Date: September and October 2013

There are no project specific comments.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12**Date: June 2011**

There are no project specific comments.

Project Number: 16120114-M

Project Title: LTM Program – Long-term killer whale monitoring

Primary Investigator(s): Craig Matkin

PI Affiliation: North Gulf Oceanic **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$536,100

FY12	FY13	FY14	FY15	FY16
\$7,200	\$132,300	\$132,300	\$132,300	\$132,300

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$536,100

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$23,500	\$23,500	\$23,500	\$23,500	\$23,500	\$117,500

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

The proposed project is a continuation of the annual monitoring of AB pod and the AT1 population killer whales in Prince William Sound-Kenai Fjords. These groups of whales suffered significant losses at the time of the oil spill and have not recovered at projected rates. Monitoring of all the major pods and their current movements, range, feeding habits, and contaminant levels will help determine their vulnerability to future perturbations, including oil spills. The project also extends the scope of the basic monitoring to include an innovative satellite tagging program used to examine habitat preference, feeding ecology and assist in relocating whales for feeding studies. It continues examination of feeding habits using observation, prey sampling and innovative chemical techniques. The study will delineate important habitat, variations in pod specific movements and feeding behavior within a temporal and geographic framework. We will examine the role of both fish eating and mammal eating killer whales in the near-shore ecosystem and their impacts on prey species. Community based initiatives, educational programs, and programs for tour boat operators will continue to be integrated into the work to help foster restoration by improving public understanding and reducing harassment of the whales.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator, Executive Director, Trustee Council Comments – FY14

Date: September and October 2013

There are no project specific comments.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12**Date: June 2011**

There are no project specific comments.

Project Number: 16120114-N

Project Title: LTM Program – Long-term monitoring of humpback whale predation on Pacific herring in Prince William Sound

Primary Investigator(s): John Moran

PI Affiliation: NOAA

Project Manager: NOAA

EVOSTC Funding Authorized To Date: \$591,800

FY12	FY13	FY14	FY15	FY16
\$127,400	\$128,800	\$139,600	\$141,600	\$54,400

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$591,800

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$83,500	\$74,700	\$75,000	\$78,500	\$25,000	\$336,700

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et. al. We will evaluate the impact by humpback whales on Pacific herring populations in Prince William Sound. Following protocols established during the winters of 2007/08 and 2008/09(EVOSTC project PJ090804). We will continue to monitor the seasonal trends and abundance of humpback whales in Prince William Sound. Prey selection by humpback whales will be determined through acoustic surveys, visual observation scat analysis and prey sampling. Chemical analysis of blubber samples (stable isotopes and fatty acid analysis) will provide a longer term perspective on whale diet and shifts in prey type. These data will be combined in a bioenergetic model to determine numbers of herring consumed by whales, with the long term goal of enhancing the age structure modeling of population with better estimates of predation mortality.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14

Date: September 2013

This proposal was praised by the Science Panel for their importance, inclusion of detail, and significant progress.

Science Coordinator, Executive Director Comments – FY14

Date: September and October 2013

We concur with the Science Panel.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Trustee Council Comments – FY14

Date: October 2013

There are no project specific comments.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: June 2011

There are no project specific comments.

Project Number: 16120114-O

Project Title: LTM Program – Monitoring long-term changes in forage fish distribution, abundance, and body condition in PWS

Primary Investigator(s): John Piatt

PI Affiliation: USGS

Project Manager: USGS

EVOSTC Funding Authorized To Date: \$967,600

FY12	FY13	FY14	FY15	FY16
\$209,900	\$202,500	\$202,500	\$202,500	\$150,300

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$967,600

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$297,200	\$297,200	\$297,200	\$297,200	\$72,200	\$1,261,000

Abstract:

**This abstract is excerpted from the PI’s Proposal, dated 9/1/15.*

This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et. al. In response to a lack of recovery of wildlife populations following the Exxon Valdez Oil Spill (EVOS), and evidence of natural background changes in forage fish abundance, there was a significant effort to document forage fish distribution, abundance, and variability in Prince William Sound (PWS) since the 1990’s. We proposed to adopt some of these earlier sampling techniques, and also incorporate new methods to monitor forage fish in Prince William Sound with fishing and acoustic surveys of forage fish, and to measure indices of forage fish condition. In this last year of the project, we will not conduct field work. We will complete analysis of all data collected in FY12-15 and produce a final report on methods for long-term monitoring of forage fish distribution, abundance and condition in Prince William Sound.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16**Date: September 2015**

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15**Date: September 2014**

The Panel commends the PI's on the high degree of collaboration with projects in both Programs.

Science Coordinator, PAC, Executive Director Comments – FY15**Date: September and October 2014**

We concur with the Science Panel.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator, Executive Director, Trustee Council Comments – FY14**Date: September and October 2013**

There are no project specific comments.

Public Advisory Committee Comments – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13**Date: September 2012**

Due to the change in the funding cycle, the program only began their work four months prior. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13**Date: September 2012**

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: June 2011

There are no project specific comments.

Project Number: 16120114-P

Project Title: LTM Program – GAK1 Monitoring

Primary Investigator(s): Tom Weingartner

PI Affiliation: UAF

Project Manager: ADFG

EVOSTC Funding Authorized To Date: \$579,200

FY12	FY13	FY14	FY15	FY16
\$109,500	\$112,500	\$115,700	\$119,000	\$122,500

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$579,200

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et. al.

This program continues a 45-year time series of temperature and salinity measurements at hydrographic station GAK 1. The data set, which began in 1970, now consists of monthly CTDs and a mooring with 6 temperature/conductivity recorders throughout the water column. The project monitors two important Alaska Coastal Current ecosystem parameters that will quantify and help understand interannual and longer period variability in: a) Temperature and salinity throughout the 250 m deep water column, and b) Near surface stratification.

In aggregate these variables are basic descriptors of the Alaska Coastal Current, an important habitat and migratory corridor for organisms inhabiting the northern Gulf of Alaska, including Prince William Sound

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY16**Date: September 2015**

The Panel appreciated the PI providing really good documentation of how the data collected was used in publications and management activities. To date they report 36 papers that have used or cited these data, 2/3 of which address fisheries issues.

Science Coordinator, Executive Director Comments – FY16**Date: September 2015**

I concur with the Science Panel’s comments.

Public Advisory Committee Comments – FY16**Date: September 2015**

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15**Date: September and October 2014**

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator, Executive Director, Trustee Council Comments – FY14**Date: September and October 2013**

There are no project specific comments.

Public Advisory Committee Comments – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13**Date: September 2012**

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: June 2011

There are no project specific comments.

Project Number: 16120114-R

Project Title: LTM Program – Long-Term Monitoring: Nearshore Benthic Ecosystems in the Gulf of Alaska

Primary Investigator(s): Brenda Ballachey

PI Affiliation: USGS

Project Manager: USGS

EVOSTC Funding Authorized To Date: \$1,559,905

FY12	FY13	FY14	FY15	FY16
\$282,400	\$304,100	\$331,900	\$309,600	\$331,905

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$1,559,905

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$274,000	\$274,000	\$274,000	\$274,000	\$274,000	\$1,370,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

This project is a component of Gulf Watch Alaska: Integrated Long-Term Monitoring of Marine Conditions and Injured Resources and Services. For the Nearshore ecosystem component, we have implemented a long-term monitoring program at five locations across the GOA, including sampling areas in Western, Northern and Eastern Prince William Sound (PWS), Kenai Fjords National Park, and Katmai National Park and Preserve. Additional nearshore sampling as part of Gulf Watch Alaska is ongoing in Kachemak Bay (Project 12120114-L) and is closely coordinated with this project. The Gulf Watch Alaska nearshore program is integrated with nearshore monitoring implemented in 2006 by the National Park Service to cost-effectively monitor nearshore ecosystems across the central and western Gulf of Alaska, including spill-affected areas, and provide information on recovery and restoration of injured resources. We propose to (1) continue sampling Katmai NPP, Kenai Fjords NP, and Western PWS in 2016 (all 3 areas previously sampled in multiple years starting in 2006), and (2) sample Eastern PWS in 2016 (previously sampled in 2012 and 2014). We will continue to coordinate with the ongoing nearshore monitoring program in Kachemak Bay. Monitoring metrics include marine invertebrates, kelps, sea grasses, birds, mammals, and physical parameters. In addition to taxa-specific metrics, monitoring includes recognized important ecological relations that include predator-prey dynamics, measures of nearshore ecosystem productivity, and contamination. The nearshore benthic monitoring program also will integrate physical data collected in PWS, along the GOA shelf and in Cook Inlet, under the Environmental Drivers component of the GWA long-term monitoring program.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16**Date: September 2015**

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15**Date: September and October 2014**

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator, Executive Director, Trustee Council Comments – FY14**Date: September and October 2013**

There are no project specific comments.

Public Advisory Committee Comments – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13**Date: September 2012**

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13**Date: September 2012**

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: June 2011

There are no project specific comments.

Project Number: 16120114-S

Project Title: LTM Program – Lingering Oil - Extending the Tracking of oil levels and weathering (PAH composition) in PWS through time

Primary Investigator(s): Mark Carls

PI Affiliation: NOAA

Project Manager: NOAA

EVOSTC Funding Authorized To Date: \$217,100

FY12	FY13	FY14	FY15	FY16
\$19,600	\$13,100	\$8,700	\$169,200	\$6,500

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$217,100

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et al. The goal was to provide the EVOSTC with an assessment of persistent Exxon Valdez oil in Prince William Sound, describe its chemical characteristics, and initiate a routine, long-term monitoring program that will resample the same sites every five years over the next 20 years. The field work for the first sampling was completed earlier this year and laboratory analyses are underway. Beach sampling was similar to surveys conducted by Auke Bay Laboratories during 2001 to 2005. Sediment samples were collected to estimate amounts of remaining oil and passive samplers were deployed to provide information about biologically available oil. Objectives are to complete the laboratory analysis and 1) fingerprint oil, 2) determine oil sources, 3) report oil persistence and weathering over decades, 4) determine biological availability, 5) produce a synthesis report, and 6) archive hydrocarbon data in the Trustee-sponsored hydrocarbon database. These data, together with the recently completed retrospective analysis of biomarkers (which are the most environmentally persistent components of the oil), will help investigators understand potential exposure levels (past and present) and linkages to species at higher trophic levels.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16**Date: September 2015**

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15**Date: September and October 2014**

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14**Date: September 2013**

This is one of the few projects presenting data, and it was “refreshing.” The hydrocarbon database is important to assess environmental damage in the event of another oil spill, and it may be still relevant to biological assessments of long-term oil impacts and perhaps to re-opener disputes. The PI’s indicate that there are not enough funds for complete updating and QA/QC of the database with 1-person/yr effort. If so, arrangements should be made to correct this oversight. If the solution is to request additional funds, then a detailed supplemental proposal should fully justify this request. In general, the Science Panel requests that fundamental information on the numbers and locations of sampling be included in future project proposals and reports.

Science Coordinator, Executive Director Comments – FY14**Date: September and October 2013**

We concur with the Science Panel.

Public Advisory Committee Comments – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13**Date: September 2012**

Due to the change in the funding cycle, the program only began their work four months prior. We

have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: June 2011

There are no project specific comments.

Project Number: 16150114-T

Project Title: LTM Program – Supplemental Data Management

Primary Investigator(s): Rob Bochenek

PI Affiliation: Axiom Consulting **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$247,800

FY12	FY13	FY14	FY15	FY16
\$0	\$0	\$0	\$121,800	\$126,000

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$247,800

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*
The EVOSTC Long Term Monitoring (LTM) and Prince William Sound Herring Research and Monitoring (PWS Herring) programs propose an ambitious monitoring and research agenda. These efforts could facilitate a more thorough understanding of the effects of the oil spill if the new data and information on the spill-affected ecosystems are effectively managed and collated along with historical data on these systems. Based on feedback acquired from the EVOSTC Science Panel and staff, we propose a supplemental data management effort to execute on major tasks that have been deemed of high importance but are not being addressed by existing data management projects supporting EVOSTC programs (Projects 1412011D and 1412011C). This project proposes to increase the data management support for both LTM and PWS Herring programs by establishing a data coordinator position to improve metadata quality and best practices. Furthermore, this project will develop mechanisms to transfer and integrate LTM and PWS Herring program data products into DataONE.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund Reduced	Fund Reduced	Fund Reduced	Fund Reduced	Fund Reduced

Science Panel Comments – FY15

Date: September 2014

The possibility of AOOS joining the DataOne system was discussed at the March 2014 Data Meeting as a way to ensure that the data collected as part of the Programs would be available to the widest audience possible. After reviewing the submitted proposal and the budget clarification provided, we would support the funding of the Data Coordinator position and the tasks associated with becoming a DataOne node. The Data Coordinator position should only be funded for the task of preparing the resource maps for data collected as part of the Council funded Programs. We would recommend that the funding of the NODC and OBIS Submission and associated staff time be considered at a later date.

Science Coordinator Comments – FY15

Date: September 2014

I concur with the Science Panel and recommend funding for Tasks 1 and 2 for FY15. The total I recommend for funding is \$121,802 for FY15 which includes 9% GA.

PAC, Executive Director Comments – FY15

Date: October 2014

We concur with the Science Panel and Science Coordinator.

Project Number: 16120120

Project Title: LTM Program –Collaborative Data Management and Holistic Synthesis of Impacts and Recovery Status Associated with EVOS

Primary Investigator(s): Matthew Jones

PI Affiliation: NCEAS

Project Manager: NOAA

EVOSTC Funding Authorized To Date: \$1,706,700

FY12	FY13	FY14	FY15	FY16
\$416,800	\$464,700	\$372,100	\$379,200	\$73,900

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA

Total EVOSTC Funding (Authorized and Requested): \$1,706,700

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*
The AOOS-led Long-Term Monitoring (LTM) and the PWSSC-led Herring Research and Monitoring (HRM) programs propose an ambitious monitoring and research agenda over the next five years. These efforts could facilitate a more thorough understanding of the effects of the oil spill if the new data and information on the spill-affected ecosystems are effectively managed and collated along with historical data on these systems, and then used in a comprehensive synthesis effort. We propose a collaboration among NCEAS and the AOOS LTM and HRM teams to help build an effective data management cyber-infrastructure for proposed monitoring efforts and organize these data with historical data, including previous EVOSTC-funded efforts, to prepare for synthesis and ensure all data are organized, documented and available to be used by a wide array of technical and non-technical users. Building on the LTM and HRM syntheses and modeling efforts and the 20-year historical data from EVOSTC projects and any available current data, NCEAS would convene two cross-cutting synthesis working groups to do a full-systems analysis of the effects of the 1989 oil spill on Prince William Sound and the state of recovery of the affected ecosystems.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

The Panel strongly encourages the two NCEAS working group leads attend the February 2015 Program synthesis meeting.

Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

We concur with the Science Panel.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator Comments – FY14

Date: September 2 and October 013

There are no project specific comments.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Executive Director Comments – FY14

Date: October 2013

NCEAS appears to be working quickly to process the inherently difficult historical data recovery in preparation for their future synthesis efforts, and in spite of what appears to be a more limited involvement regarding collaborating on methods for processing current data. There remains unanimous Panel concern regarding the Programs’ data management, as captured in the FY12 Panel comments below.

Trustee Council Comments – FY14

Date: October 2013

The Council requests the Team Leads and PIs within the Long-Term Programs in Project numbers 14120111 and 14120114 work with EVOSTC staff to address Science Panel and EVOSTC staff comments in the Fiscal Year 2014 Work Plan and participate in a Long Term Programs’ Data Review Meeting with EVOSTC and Trust Agency Staff.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13**Date: September 2012**

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13**Date: September 2012**

We concur with the Science Panel.

Public Advisory Committee Comments – FY13**Date: September 2012**

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel Comments – FY12**Date: April 2011**

These comments are from the two Science Panel members that have been tasked by the panel to with work with the EVOSTC staff on the data management and synthesis topic. The Panel does not believe that Axiom currently has the capacity to conduct the most effective management of the data. The biological investigations produced by the suite of projects included in this proposal package generate data that are challenging to code in ways that facilitate their combination with other data such as physical or chemical variables. The discipline that handles these challenges is known as informatics. The Science Panel views the inexperience of Axiom personnel as a critical problem. This concern does not imply inadequate capability of the key staff of Axiom. It is a reflection of their limited experience. Consequently, establishing a partnership between Axiom and NCEAS makes sense because Matt Jones and NCEAS are willing to share their cutting-edge expertise. NCEAS is the “National” Center for Ecological Analysis and Synthesis and the principals of the NCEAS proposal are leaders in this field. Pairing NCEAS with Axiom, would promote information sharing of NCEAS’ expertise, such emerging data standards as DateOne and on a suite of data manipulation and synthesis tools, such as meta-analysis methods. This information transfer represents critical capacity building within Alaska that would greatly benefit EVOSTC, AOOS, NPRB, and other important research and monitoring enterprises. The willingness of NCEAS to collaborate with Axiom is evident from their proposals and discussions with Rob Bochenek, Elise, Molly, and others. Nevertheless, the most creative and appealing aspect of the proposal provided by NCEAS, and which builds on technical metadata processing that NCEAS excels in, relates to the second phase of work – the synthesis activities. Some syntheses have indeed been supported by the EVOS Trustee Council over the years.

These include very important outputs of the program – a synthesis of novel oil toxicity mechanisms in pink

salmon by Rice et al. 2003; a book edited by Spies that placed the oil and natural resources of coastal Alaska in a context of changing climate; reviews of the delayed and indirect mechanisms by which EVOS oil caused ecological injuries by Peterson et al. (2003); and reviews of multi-year EVOS oil persistence on Alaskan beaches by Short and colleagues.

Phase II of the NCEAS proposal promises facilitation of just such synthesis outputs. This activity is extremely important for both the Herring and especially the Long-term Monitoring programs. The Panel recommends funding of this Phase II, under conditions that reflect engagement of the PIs from these two programs to develop the questions to be addressed and help select the experts who will participate in the study groups and synthesis efforts. The Panel notes that failure to solve the problem of creating an enduring depository for EVOS-Trustee funded data is a long-standing problem. At least 10 year ago, the EVOS Trustee Council and staff endorsed the responsible and ethically necessary principle that each study funded by the Council must deliver all resulting data in electronic form to the council staff as part of their final reporting obligations. Despite this mandate, there exists now no data base of the historically-funded projects. This issue has great capacity to embarrass the Council and the memory of the past failures motivates the Panel to recommend finally solving this problem by engaging the undeniable expertise and preeminence of NCEAS to collaborate in this venture.

Science Coordinator Comments – FY12

Date: April 2011

I concur with the Science Panel and strongly recommend that this proposal be funded. Data may be the single largest legacy of these programs and it is critical that the work starts on the strongest foundation possible.

Public Advisory Committee – FY12

Date: July 2011

Issues raised by the Science Panel, Trustee Council staff, and the PAC called for additional work and collaboration to assist with establishment of a data management system that includes accessible scientific data as well as public information. French noted that he had no problem with either NCEAS or Woods Hole—he questioned Axiom’s role and staying power. French said he supported the NCEAS and Axiom collaboration. Chairman Eilo summed the PAC interest in the Trustee Council implementing a solid data management, synthesis, and public access system.

Executive Director Comments – FY12

Date: July 2011

I also strongly concur with the Science Panel and science coordinator. The PAC was also strongly in favor of this very important collaboration, historical data recovery and the synthesis work.

**EVOSTC Long-Term Herring Monitoring
and Research Program Projects**

Project Number: 16120111

Project Title: PWS Herring and Monitoring Program

Primary Investigator(s): Scott Pegau

PI Affiliation: PWSSC **Project Manager:** NOAA

EVOSTC Funding Authorized to Date: \$6,328,343

FY12	FY13	FY14	FY15	FY16
\$1,027,390	\$1,264,759	\$1,429,195	\$1,365,678	\$1,241,321

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$6,328,343

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$154,731	\$0	\$154,731

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/21/15.*

The goal of the Herring Research and Monitoring program is to improve the predictive models of herring stocks through observations and research. The program is designed around a twenty year time frame with changes in emphasis of the process studies every five years. During this period we have four objectives to help us move towards our goal. They are: Provide information to improve input to the age-structure-analysis (ASA) model, or test assumptions within the ASA model. Inform the required synthesis effort. Address assumptions in the current measurements. Develop new approaches to monitoring.

A combination of monitoring and process studies will be used to address these objectives. The monitoring projects follow changing conditions and provide inputs to modeling efforts. The process studies are designed to be much shorter and to answer a very specific question. The monitoring components include tracking the prevalence of disease, aerial surveys, increased adult biomass surveys, and juvenile condition and biomass surveys. All of the monitoring components address the first objective.

There are eighteen studies that range in length of one to five years designed to address the different objectives. To address the first objective we are examining the age that fish join the spawning stock, the genetic structure, and examining the approaches available to model herring stocks. To address the second objective we are working on gathering relevant datasets and providing visualization, conducting an analysis using the herring scale library owned by ADF&G, and providing coordination between projects to examine the connectivity. To address the third objective there are intensive

studies of juvenile condition and acoustic estimates of juvenile populations, trying to determine if immigration may impact our surveys, providing validation to the acoustic surveys, and conducting laboratory studies of disease. We are looking to herring tagging, disease forecasting, and non-lethal acoustic validation to address the last objective.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY16

Date: September 2015

The Science Panel was pleased with the progress of the individual projects and the overall Program. The Panel is gratified to see several new and younger scientists with fine and promising records of past preparation and accomplishments. For example, the progress made already by Dr. Rand to work through the backlog of samples left after the departure of Tom Kline is impressive. Dr. Pegau’s active leadership is critical to the study’s success and especially to achieving important syntheses among separate projects.

Science Coordinator, Executive Director Comments – FY16

Date: September 2015

I concur with the Science Panel’s comments.

Public Advisory Committee Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

This year, the Panel was pleased to see improvement in this year’s proposals regarding QA/QC of data collection and integration of projects, including the proposals by Bishop and Pegau (aerial survey). The revised reporting forms also prompted greater inclusion of benchmark results, publications and changes to work plans.

Next year, the Panel would like to see improvements in:

Inclusion of fundamental information

The Panel would like to see the inclusion in proposals of information regarding the 1) approach, design and analysis of studies and 2) explicit statements of how analyses are answering major questions. This key information is essential to evaluating proposals, and we expect to see brief descriptions included in the next set of proposals. We are not requesting that detailed descriptions be provided to the degree exhibited in original proposals or publications; PIs should use their expertise

to identify and include essential, fundamental information that should be included to facilitate review. Good examples of the level expected detail include the GulfWatch proposals by Carls, Jones, and Piatt and the Marine Debris Removal proposal by Pallister (available on the EVOSTC website).

The Science Panel would also appreciate having more detail about how the herring programs contribute to the existing and proposed herring assessment process and model. In particular it would be useful to have a short paragraph on each of the tuners used in the model: spawn assessments and acoustic data.

The Panel appreciates that any additional requests for information in proposals can be perceived as onerous and that the Panel had indicated in prior years that they did not want the entire original proposal text included every year. However, the minimal, essential information requested should not take long to incorporate and could remain in subsequent proposals. From a Panel perspective, proposals cannot be evaluated without key, fundamental information on major hypothesis and models, in part so changes to the design can be placed in proper context. We appreciate your efforts in refining your multi-year proposal submissions.

Planning Succession Necessitated by Attrition of Experienced Personnel

This continues to be an area of concern for the Panel. The departure of Michele Buckhorn, who serves as the lead PI for three of the twelve submitted projects, could have a large impact on the overall success of the Program. We understand from our discussion with Scott that they are working to address the issue but feel that this highlights the issue of a need for junior scientists to be trained within the projects so smooth transitions in scientific personnel.

The Panel continues to support efforts to increase future capacity with regard to PIs turnover and continues to encourage that post-docs be integrated into the programs.

Improved data submission by Herring Program PIs

We understand that many PIs in the Herring program are behind in providing metadata and data to the central data repository. With the new forms that have been developed, and the availability of assistance from Axiom staff, it is important for each PI to comply with the data submission requirements set forth as a condition of their funding.

Coordination & Collaboration/Synthesis

The Panel appreciated the programs' explicit statements recognizing the synergisms among project efforts. It is clear that most projects are already working together where it is practical or advantageous to the achieving the goals of individual projects. We also appreciated that the programs recognized the need to integrate data across projects to arrive at a synthetic view of the status and trends of herring populations in PWS. However progress in these areas will need to be more explicit and fully developed. Details provided to the Panel were too limited to be able to truly evaluate progress in this area. Discussion on the conference call with the PI was encouraging in that details of the stock models will be provided to the panel in advance of the February synthesis meeting. We look forward to seeing synthesis both within and across projects at the February synthesis meeting and view this as a critical checkpoint to assess progress of the program toward a synthetic understanding.

Future Consideration

(1) Early life history. There appears to be no effort made to examine distribution of herring larvae. Larval surveys, especially when spread over time and space can be revealing about species composition and in some instances could provide auxiliary indices of abundance (such as CALCOFI). A focus of the predecessor SEA Program at PWSSC involved how physical transport of herring larvae may play important roles in transporting them to rearing and nursery areas, thereby influencing survival and abundance patterns. Some linkage back to those concepts may be fruitful, especially given the extent of physical oceanographic information now available.

(2). Age at maturity. It would be a relatively simple matter to examine the maturity of herring captured in the late winter. By this time any herring that is set to mature will have developing gonads that can be examined macroscopically – and even histologically, using oocyte diameter as a criterion of maturation. Have such simple and inexpensive approaches been considered?

(3). Spawn Assessments. The questions that arise from spawn assessments are (1) the completeness in time and space; (2) the continuity of the survey effort over time, especially with changes in available resources; (3) the use of mile-‘days’ instead of cumulative distance, which is the measure used in most other parts of the coast, in the US and Canada. For acoustic surveys, similar questions arise, especially about the continuity over time, etc. The issue of stock assessment of herring, as one of the key forage species in PWS, is vital to much of the entire EVOSTC work and it is difficult to provide adequate assessment without larger agency-level effort. The existing PIs are highly qualified and well regarded, but it is clear that the development of a revised model will take some time. There may be other, independent, sources that might provide such a revised model in the interim. Have such sources been considered?

(4). Climate change. Climate change may affect various biological attributes of fish populations including growth and susceptibility of disease, etc.

(5). Anthropogenic changes. The impacts of anthropogenic changes related to fisheries, either extractive fishing or fish culture, could be useful.

Science Coordinator Comments – FY15

Date: September 2014

I concur with the Panel’s overall comments. I commend the Program for their high-level of coordination and collaboration both within the Program and with the local community. I would also be interested in more detail regarding the incorporation of the projects data into the existing and proposed ASA model.

PAC, Executive Director Comments – FY15

Date: October 2014

We concur with the Science Panel and Science Coordinator.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14

Date: September 2013

Proposals were lacking in detail, hindering their evaluation

There was not enough information provided for the Science Panel to evaluate the proposals and offer substantive suggestions. In order to evaluate proposal merits, the Science Panel wanted to see more detail, including:

- Sampling design, locations and methods, including QA/QC of data collection
- Approach to data analysis including statistical methods and/or relevant contrasts
- Explicit statement of how analyses will answer the major questions
- A discussion of results to date and any adjustments in project design in view of results
- Explicit statement of how individual project results relate to or will be integrated into the broader program
- The proposals should be reviewed as a whole by someone from the group before submission.

The panel, EVOSTC and agency staff will be looking at options for providing brief guidance and/or a form for the programs in advance of proposal drafting and submission to clarify expectations. When EVOSTC staff has a draft form or guidance, we will circulate it to the Team Leads for their feedback. There was also initial discussion regarding reporting which we will also circulate if it is further developed.

Publications

The Science Panel encourages investigators to publish their results in peer-reviewed journals to make their hard-won results available to wider scientific audience. This encouragement especially applies to young investigators who are establishing their careers. They may quickly become unable to compete for other jobs. We anticipate the FY17 Invitation will include an expectation to publish.

Data Management

The Science Panel is concerned about progress on data management. The data management proposal drew heavily on their old proposal without including sufficient updated evidence of interactions between the programs' PIs and the data management team. In addition, there does not appear to be a data management policy or QA/QC policy created as the programs approach Year Three. In addition, no milestones were reported in the newly submitted proposals, so it was difficult to gauge how much progress had been made in the last two years. Moreover, it was not clear how data would be available for synthesis. The panel recommends that the Council condition funding upon the creation of a credible and detailed data management policy and a QA/QC policy and include clear milestones in for their proposal.

Regarding a QA/QC policy: such a document is a basic need of any data management. We note too that instruments commonly need to be calibrated before and after use to be able to adjust for measurement drift, if it occurs. With two separate data centers operating under the EVOSTC program it is crucial that a high level of QA/QC be maintained. The Science Panel is concerned that adequate attention is not being devoted to this fundamental aspect of data management. It is particularly

important to assemble complete metadata to ensure that long-term data sets can be verified and understood once the current participants have moved on to new positions. For example, EPA and NSF require detailed data management and QA/QC plans as part of all proposals. Large monitoring programs, such as NSF's LTER and oceanographic programs, devote considerable time and effort to addressing these critical needs.

Example: As a specific example, the Ocean Tracking Network (OTN) has four nearly full-time people creating metadata forms that are required to be filled out, submitted and checked for QA-QC before data can be added to the database. Since OTN is currently adding equipment to tracking arrays in PWS, it would be particularly appropriate at this time to arrange communication between senior OTN data managers with EVOSTC program data PIs to ensure that data standards are adequate. As with OTN, and as emphasized in the initial funding of the EVOSTC programs, skilled data management resulting in data that can be relied upon by the scientific community and resource agencies will ultimately determine the long-term success and influence of the programs. The contact at OTN is Bob Branton (bob.branton@gmail.com) or (bob.branton@dal.ca).

Attrition of Experienced Personnel

The panel notes that it may be a challenge to replace experienced personnel retiring or transitioning out of the programs, but the need for their expertise remains. To address these changes, the panel suggests that the programs partner their junior PIs with newly recruited, experienced scientists. Where difficulties exist in filling key positions, the panel also suggests strategically tapping outside experts to review projects and provide consultation and setting up a Post-Doc training program for the LTM and Herring projects. As experienced personnel leave the program either through retirement or departure, the salary savings could fund this kind of activity.

Potential Resource - The panel encourages the programs to consider options for developing concepts for postdoctoral programs that can help address these issues. The panel and the programs' internal panels and advisory groups can provide assistance in identifying potential post doc candidates who may be helpful to the programs. Intergovernmental Personnel Assignments and perhaps NRC Research Associate post-docs may also be a source for additional expertise and post-doc work.

Synthesis in Advance of February 2015 Workshop

There is concern from our review of the proposals that the programs are postponing work on synthesis until just before the Workshop. The programs should think through and create a step-by-step route and design for their 2015 synthesis so there is sufficient field time to work on it. This plan should include mechanisms and process. The part of synthesis that involves creation of and testing of models is best done by an iterative process in which modeling is sequentially tested by reference to new data and the models revised accordingly.

There was also a suggestion to focus on cross-cutting topical issues, such as acoustics and calibration. PIs with different expertise could be paired to initiate and encourage actual synthetic analyses and presentation in contrast to single PI presentations on isolated projects or topics. *Examples for pairings include:* disease and physiology, and modeling of herring movements and disease.

Herring Program Advisory Group, academic position suggestion

Some additional expertise that could assist with this group are Tim Essington (UW) and Alec McCall, SWFSC would also be a good choice for membership. *See also Attrition of Experienced Personnel, above.

Defining program priorities

There is a basic requirement of the herring program to develop a credible and defensible program/project to assess herring abundance. In practice this means the implementation of a modern stock assessment model. This requirement supersedes all others because virtually all other projects in the herring program, and some in the GulfWatch program, are dependent on the confidence levels associated with the herring assessments. Such assessment is essential even in the absence of any commercial fishery of in Prince William Sound, because herring abundance will impact so much of the ecology of other species.

Stock assessments usually are done by an agency, such as ADFG, but because of the importance of herring it is reasonable for other experts to develop a state-of-the-art age-structured stock assessment (ASA) model tailored for PWS herring, perhaps to be done cooperatively with ADFG. From the proposals this seems to be happening, but, in the opinion of the Science Panel, not rapidly enough. The concern with delay is that it will be difficult to fully appreciate many of the ecological processes of Prince William Sound unless there is a reasonable understanding of the abundance of herring. In other words, the scientific value of nearly all of the herring projects depends partly on the reliability of the herring assessments. Typically, an age-structure-assessment (ASA) model requires a 'tuner' or an independent dataset that provides a time-series index of abundance (i.e., to tune the model). For PWS herring there may be only two options: a time series of (i) spawn data or (ii) acoustic data. The problem is complex, because the time series of these two datasets are of differing length. Perhaps there are other data options, but the modelers need to ensure that they understand the strengths and limitations of all the data they use in the model. This is a task that requires experience.

It is important to note that, while acoustic estimates of abundance of herring are commonly used around the world, they seldom are used as stand-alone independent measures of biomass. Instead, they usually contribute time-series data to more complex models that incorporate age structure data and other information. If the available time series data (from spawn or acoustics) are not suitable for an ASA model, then other assessment models or approaches must be considered – and presumably this could involve acoustic approaches, or even simple models based mainly on spawn abundance data. Therefore a firm recommendation of the Science Panel is that the direction and requirements of the stock assessment process, through ASA models, should be clarified and evaluated as soon as possible.

We wish to further elaborate about why all the other herring projects are secondary in importance to stock abundance estimation. It is because much of the biology and life history of herring is impacted by density-dependent processes and this, in turn, can affect growth, maturation, migration, condition, disease and recruitment – all subjects of the proposals in the herring program. Herring abundance also affects other fauna, especially seabirds and marine mammals. Therefore, the Science Panel recommendation is that the assessment of herring abundance should get top priority, and proceed as vigorously and rapidly as possible. This is not to say that the other projects are unworthy or should stop - on the contrary. The assessment project, while vital, is among the most scientifically routine of

the lot, because it involves the implementation of exiting protocols and methodologies. That does not mean it is simple or easy to do, but it is not a ‘hypothesis testing’ enterprise in the usual sense. Nevertheless, the products of assessments will provide a basis for better science for almost all of the other projects. The common element on all the other projects, with the possible exception of some acoustics projects, is that they aim to determine why and how herring populations change – physiologically or ecologically. In a sense their value is dependent on the rigor of the herring abundance assessments.

What are the implications of this recommendation?

- (1) The project on ASA modeling work should be acknowledged as a priority (even a pre-requisite) among the other herring projects. It needs to be implemented rapidly because its requirements could impact that way that other projects develop, especially acoustic projects.
- (2) The immediate implication is that the development of a functional herring ASA model should be proceeding much more rapidly than indicated in the progress report. If this task cannot be implemented in a timely manner, than the herring program should consider other ways of getting this work done.
- (3) A longer-term implication is that some of the closely related projects that might provide input data to the ASA, especially some of the acoustic projects, could require modification or reconsideration. If the age-structured model cannot incorporate the acoustic data, as it is presently acquired, then the design of the acoustic programs should be adjusted and re-evaluated. However, this cannot be determined until the ASA model is functional and evaluated.
- (4) Once the ASA model is functional, then it should be formally reviewed by 1-2 independent (outside) experts to evaluate its formulation, application and efficacy. Such a review is a common practice and should culminate in a report that documents the review findings. This report would then provide direction about the data requirements for a reliable ASA model of PWS herring. (Note: this was a recommendation in the 2011 Science Panel report).
- (5) If the fully-developed ASA model cannot provide acceptable results because of the limitations of the input data, then other approaches to herring biomass assessments must be considered. These could include simpler models that rely more directly on acoustics or spawn deposition.

Inter-project cooperation and communication

The Science Panel acknowledges and salutes the efforts made to coordinate logistics of field projects, especially following a long period when PIs worked relatively independently on most projects. However we are not convinced that some of the individual projects are as well connected as they should be, in terms of communication among PI’s. This comment is based on an apparent lack of connectivity among some of the proposals.

Project gap: microchemistry

The panel noted that the PWS herring population could have important spatial structure that might go undetected by genetic analysis of microsatellites. This could occur if PWS herring consist of a meta-population with spatially separate sub-populations that, nevertheless, have sufficient genetic exchange to preclude genetic detectable differentiation. Therefore it is important to re-examine this issue because the previous genetic work, conducted more than a decade ago, had a short duration and a limited number of probes. Based on the previous genetic study in Prince William Sound, and similar but more recent genetic analyses of other herring populations in the eastern Pacific, the panel

does not anticipate that the current genetic studies will demonstrate new evidence of genetic variation within PWS. Instead these studies will probably provide important confirmatory evidence of a lack of genetic differentiation detectable within different parts of the Sound. Such evidence, however, would not necessarily mean that PWS herring lack any spatial variation.

It is possible that PWS herring constitute a meta-population consisting of several sub-populations that may have spatially distinct life histories for parts of their lives. If so, these populations could have different growth rates, and population parameters. Knowledge of such possible spatial structure is integral to understanding factors affecting the abundance of PWS herring. The absence of such understanding represents an ongoing gap in the program. Such a gap could be addressed by analyses of microchemistry of otoliths. Time spent by herring in different bays within PWS and the surrounding region, could be reflected in the chemical composition of otoliths that can be detected by analyses of microchemistry. This approach would have linkages to several other projects. Thus, the microchemistry approach would provide helpful new insights to ongoing projects while improving linkages among them.

The panel is aware of difficulties associated with previous attempts to examine microchemistry of herring. We acknowledge that microchemistry must be used carefully as a research tool, but point out that it can be a powerful and informative approach when done properly. For this reason we suggest that the herring program could consider the incorporation of this approach. For technical reasons, explained below, we further suggest that the optimal approach would be the examination of otoliths.

Regarding scales vs. otoliths: Herring scales may not be a good tissue for microchemistry, but otoliths may be useful. The main problem with scales is that herring resorb calcium and other minerals from their scales as they mature sexually. The effect does not interfere with annulus formation on scales but it could confound comparisons of putative population groups. This is not a concern for otoliths where, in theory, the chemical signatures are retained unchanged with age/time. The main concern with otolith collections is that they need to be collected and stored carefully prior to analysis. As they dry, otoliths tend to develop hairline cracks that can accumulate extraneous material – which again can confound results. *Potential Resource* - The current director of the UAF Alaska Stable Isotope Facility is Matt Woller. He is well respected and is an excellent collaborator. See: <http://ine.uaf.edu/werc/asif/>

Forage Fish

The Science Panel supports the enhanced attention to estimating population abundances of important forage fish in the Long-term Monitoring/Gulf Watch Project, while noting that the Herring Program will also be sampling forage fishes acoustically and during net tows, such as those planned to ground-truth acoustic signals. Except for herring itself, the early studies of EVOS impacts on the PWS ecosystem unfortunately failed to establish population assessment on any of the forage fishes of known significance to supporting higher-order predators: sand lance, capelin, and eulachon in particular. The Piatt project in LTM/Gulfwatch can serve as the centerpiece study of forage fish to which information gathered by PIs on other projects could be transferred to provide enhanced knowledge of abundances and dynamics of forage fishes.

Science Coordinator Comments – FY14

Date: September 2013

I concur with the Science Panel. I commend this program for its dedication to using local community resources when appropriate and its efforts to work together as a team. I concur with the Panel’s comments regarding the overall poor quality of the proposals. Most proposals made no effort to even change the dates of their tasks and deliverables making it almost impossible to determine where the project was in meeting its objectives.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Executive Director Comments – FY14

Date: October 2013

I concur with the Science Panel and Science Coordinator.

Trustee Council Comments – FY14

Date: October 2013

The Council requests the Team Leads and PIs within the Long-Term Programs in Project numbers 14120111 and 14120114 work with EVOSTC staff to address Science Panel and EVOSTC staff comments in the Fiscal Year 2014 Work Plan and participate in a Long Term Programs’ Data Review Meeting with EVOSTC and Trust Agency Staff.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

April 2011	Fund	Fund	Fund	Fund
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Science Panel Comments – FY12

Date: June 2011 – Individual Panel Member Comments

Individual Comment 1:

Linkages among the projects are done in a thoughtful and detailed fashion. I see huge progress in how well the leaders of the herring program are viewing this Program as a whole and integrating its pieces. I commend the PIs. Specifically, the logistic coordination is compelling and achieves cost efficiencies as well as intellectual linkages. The temporal staging of various research efforts is likewise logical and well-conceived. And I concur that the acoustics studies do involve three different efforts with different gear, sampling methods, and targets, so that any synergies are limited, largely to whether adult herring are encountered during sampling targeting juveniles and this is addressed.

Date: April 2011

This program seeks to add to the existing body of knowledge that began under the PWS Herring Survey program in FY10. The proposed projects will provide both new and continuing information regarding the current status of herring in PWS. The data collected under this program will be made available to researchers and the public and will provide critical information for resource managers. The continuation of current outreach and education strategies from the PWS Herring Survey projects and the additional strategies in the proposal have the potential to provide effective means to disseminate information and engage the fishing community and other community members in understanding the results of the integrated monitoring program.

The Panel recommends funding most components of this proposal, but reiterates the same serious concern about the data management components. Again the Science Panel strongly recommends that the Council provide assistance from an organization such as the National Center for Ecological Analysis and Synthesis (NCEAS) for peer review and technical assistance to the data management team.

The success of this proposal will depend on the reliability of herring spawn surveys which are not part of the present groups of proposals. Herring assessments in PWS, and everywhere else in the eastern Pacific, use spawn surveys as an essential part of the assessment. The approach currently used in PWS differs from all others in the use of miledays, whereas all other jurisdictions use a static measure of spawn, once spawning is completed. Also, the completeness of the spawn surveys has been questioned. (Note: these comments should not be construed as criticism of ADFG or their staff because the panel recognizes the effort and dedication made by such staff. On the contrary, the comments and recommendations related to spawn surveys should be seen as an initiative to provide assistance to field staff associated with herring assessment. The benefits of such assistance will accrue both to the science and management of PWS herring). Nearly all of the proposals are predicated on the availability of reliable herring spawning biomass assessments that are, in turn, dependent on accurate spawn surveys. To provide credible support for these proposals and for management advice future estimation of spawn must be made with a level of accuracy that consistent with that used in other jurisdictions. To provide credible management advice future estimation of spawn must be made with a level of accuracy that is required to support the assessments. There are concerns that substantial amounts of spawn may have gone undetected in some years and that some of the past

spawn estimates may have been made inaccurately through error in the estimated width and density of spawn. Such concerns may not be valid but there is no way to determine this without additional work. Therefore to evaluate whether the accuracy and reliability of present and past estimation of herring spawn in PWS is accurate, we recommend developing diver-assisted surveys. The Science Panel noted that diver surveys, yielded different results in the past (details provided in Recommendations to Team Leader). This would also include an assessment model and biological sampling review. Herring Stock Assessment Modeling: A Science Panel Recommendation for Review Success of the herring program will depend on the reliability of ADF&G herring spawn surveys. Nearly all of the proposals are predicated on the availability of reliable herring spawning biomass assessments that are, in turn, dependent on accurate herring assessments.

Herring assessments in PWS, like everywhere else in the eastern Pacific, use spawn surveys as an essential part of the assessment. The approach used in PWS, however, differs from all others in that PWS uses mile-days, whereas all other jurisdictions use a static measure of spawn, once spawning is completed. Herring assessments also rely on accurate bio-sampling for estimates of size and age of herring. Recently, the completeness of the spawn surveys has been questioned and many have questioned the reliability of the present assessments. Additional effort may be required for all aspects of herring assessments to ensure that they are done well and are well-regarded. These comments above should not be construed as criticism of ADFG or their staff, as their present staff is clearly dedicated and hard-working.

Science Coordinator Comments – FY12

Date: April 2011

I concur with the Science Panel. I also have serious concerns regarding the data program and would encourage the Council to assist the team by providing funding for a comprehensive review of the data program. I also concur with the Science Panel that the fundamental data that will be utilized by the program should be rigorously reviewed to ensure the best possible platform for the herring projects. I do believe that the data that has been gathered by ADF&G for PWS herring has been carefully gathered and reviewed. I would like to continue working with staff at ADF&G to determine what actions would have the greatest benefit to both the herring program and ADF&G managers. The possible addition of a staff position at ADF&G that would work closely with herring program would be of tremendous value to both the program and the management agency.

Public Advisory Committee – FY12

Date: July 2011

The Science Panel said the response to their concerns and further coordination was good. The Alaska Department of Fish and Game will partially fund a herring liaison position. Improved modeling techniques will be included as a separate project (PI is Branch). Torie Baker stated that this type of effort is what is needed to help resource managers in their decision-making. It was moved by French, second by Anderson Faulkner that the PAC concurs with the Science Panel recommendation to fund the Branch modeling project. There were no objections.

Date: April 2011

The PAC supports funding the herring project proposal, noting that the PAC agrees with the Science Coordinator in that there are serious concerns regarding the data program and would encourage the Council to assist the project team by providing funding for a comprehensive review of the data program, and (amendment moved by Baker, second by Andersen Faulkner) further, the PAC supports

additional discussions with the Alaska Department of Fish and Game on the use of the recommended dive surveys. The motion passed, with dissent by Brune and Bauer, based on Axiom's current past due deliverables.

The group discussed the herring proposal and the added value of the NCEAS data management addition. Catherine Boerner stated that the data was the "gold mine" of many of these projects, and needed to be made available over the long term—and the NCEAS team will assist in making this happen. Baker raised a question about the use of "outside" consultants versus Alaskans, and how the two would work together. Hsieh said that NCEAS is experienced in working with diverse groups and it was her impression, thus far, that Axiom would also be amenable to working with NCEAS. Brune questioned past due delivery of a product by Axiom, noting the Trustee Council policy to not fund organizations which were behind in deliverables—he believes Axiom should not be awarded additional work when there are outstanding deliverables, and that this sets a dangerous precedent. Fandrei agreed that this was an issue. Hsieh said she expected the outstanding deliverable to come in May. French said it was important that data not be proprietary so it would be publicly available. Amanda Bauer asked if there were other organizations that Axiom did work for. Hsieh mentioned several State and Federal agencies that are Axiom clients.

Executive Director Comments – FY12

Date: July 2011

There has been strong concern about the program's data manager serving the entire program. Since April, the data manager's work has been favorably reviewed, has submitted late deliverables to the Council and several data management options have been produced by this program and outside entities. These options presented are in conjunction with leaders in the field of heterogeneous scientific database management and are excellent options. I recommend the Council pursue one of these options to ensure successful management of the data produced by this and past Council-funded efforts.

In addition, the program and ADF&G have discussed what actions would enhance the program's value to the management of herring. Both entities recommend the Council fund 70% of an ADF&G biometrician III or a fisheries scientist I to coordinate with the herring program and to also focus on a modeling effort. This is included in our draft administrative budget and has the strong support of individual Science Panel members. We have continued to decrease our admin budget, but are also positioning our staff and agency staff to support the long-term programs.

Project Number: 16120111-A

Project Title: PWS Herring Program - Validation of Acoustic Surveys for Pacific Herring Using Direct Capture

Primary Investigator(s): Mary Anne Bishop

PI Affiliation: PWSSC **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$592,960

FY12	FY13	FY14	FY15	FY16
\$68,016	\$90,579	\$148,022	\$141,046	\$145,297

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$592,960

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/14/15.*

Acoustic surveys provide a relatively low-cost, remote sensing tool to estimate species-specific fish biomass and abundance. Interpreting acoustic data requires accurate ground truthing of acoustic backscatter to confirm species and length frequency of insonified targets. Pelagic trawls are the recommended method for validating species composition and for obtaining relatively unbiased information on length frequency distribution, age, and other biological information. Here we propose to use a low-resistance, light-weight midwater sweeper trawl capable of towing speeds (up to 3 knots) as a method to ground truth acoustic surveys for juvenile herring. Our pelagic trawl surveys will take place in conjunction with and onboard the same vessel as two studies in the PWS Herring Research and Monitoring program: Juvenile Herring Abundance Index (years 2-5) and Acoustic Consistency: Intensive Surveys of Juvenile Herring (year 3). In addition, this project will validate acoustic surveys associated with the PWS Herring Research and Monitoring Program: Expanded Adult Surveys (years 2-5). For the adult herring surveys, Alaska Dept. Fish and Game has required gillnets and jigging for validation in lieu of trawls. Our project will provide data on species composition and length frequency to aid in the interpretation of current and historical acoustic surveys. Juvenile herring samples collected during our pelagic trawl surveys will be distributed to six projects within the integrated herring program: condition index, energetics, growth, disease, juvenile herring abundance index, juvenile herring intensive surveys. Adult herring are being collected in spring to validate the expanded adult herring acoustic surveys as well as for two additional studies in the herring research program: age at first spawn and herring genetics. Adult herring samples will also be provided to Alaska Dept. Fish and Game for the adult herring age-structure-analyses model. Our trawls will also provide fishery-

independent surveys for non-herring species, thus increasing our knowledge of pelagic fishes in Prince William Sound.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

There is evidence of substantial, well-executed field work, and excellent support and integration with other projects.

Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

We concur with the Science Panel.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14

Date: September 2013

It seems that Dr. Bishop is performing a ‘service’ to the other PI’s, but an essential one, especially in the collection of herring samples. For this service the Science Panel applauds her efforts. It would be useful to know, however, how much of the total effort is actually dedicated to acoustic work. This proposal contributes to the cumulative cost of acoustic work in Prince William Sound – so between the three proposals by PI Buckhorn, and this, the total annual effort and cost of acoustic work is significant. This may be appropriate if acoustics has a central role by providing key data for annual abundance estimates. The rationale for this proposal is to validate an acoustic target using a single beam sounder. This is valid in the context of the present program but there may be a more fundamental question that has not been addressed – although it is not directed specifically at this project. Is the acoustic equipment being used the best for the job? If acoustic estimates were used as the ASA tuning index, how would any change(s) in the acoustic surveys (survey protocols, or equipment) affect the temporal integrity of the index? Similar questions were posed in the 2011 Science Panel report.

A different question: There is an interesting excerpt from the proposal: “We recognize that a major deficit in the existing PWS Herring Survey program is the lack of an effective means of validating the acoustic signal. Fortunately, if we can establish through direct capture of insonified fish that certain patterns in echograms can be interpreted as different year classes of herring, ***then we may be able to reanalyze historical acoustic measurements to better understand changes in juvenile herring populations.***” The suggestion is that acoustic strength estimates, obtained by field measurements in from this project, could be used to adjust results from past herring surveys. It is not clear who would do this retrospective analysis. Regardless, such a contribution would be welcome - with the caveat that the rationale and methodology must be documented and accessible, preferably in a published report.

Science Coordinator, Executive Director Comments – FY14

Date: September and October 2013

We concur with the Science Panel.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Trustee Council Comments – FY14

Date: October 2013

There are no project specific comments.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
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June/July 2011	Fund	Fund	Fund	Fund
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Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: June 2011

There are no project specific comments.

Project Number: 16120111-C
Project Title: PWS Herring Program – Data Management Support
Primary Investigator(s): Rob Bochenek
PI Affiliation: Axiom Consulting **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$331,142

FY12	FY13	FY14	FY15	FY16
\$130,800	\$130,800	\$22,345	\$23,217	\$23,980

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$331,142

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$21,200	\$0	\$21,200

FY15 Non-EVOSTC funding from FY15 proposal.

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/10/15.*

This project supports the EVOS Integrated Herring Research Program with critical data management support to assist study teams in efficiently meeting their objectives and ensuring data produced or consolidated through the effort is organized, documented and available to be utilized by a wide array of technical and non-technical users. This effort leverages, coordinates and cost shares with a series of existing data management projects, cyber-infrastructure and partnerships which contribute capacity and information to this effort. During year one and two, this project would focus on providing informatics support to streamline the transfer of information between various study teams and isolate and standardize historic data sets in the general spill affected area for use in retrospective analysis, synthesis and model development. This work would scale down in year three thru five to provide support for general project level data management and archival.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY16

Date: September 2015

The Science Panel appreciates that there was progress in data assimilation and posting. We look forward to continued progress and request clarification on the current status and major bottlenecks of the process. The graph showing the number of files was descriptive; however the Panel would like some context to understand the potential scale of the vertical axis on that figure. What is the total number of expected files? The Panel also wanted to have a better descriptor of the nature of data uploaded that goes beyond files including the type of files, number of datasets, and the percentage of data from the current herring program has been submitted to the workspace by individual project PIs. What fraction of what has been submitted is non-compliant (lacking metadata, QA/QC, etc.)? What fraction has been submitted and is awaiting uploading? It feels like the overall project should have a grid of dataset by year with a key showing the status of each dataset. This would allow easy visualization of both the scope and status of the project.

Science Coordinator, Executive Director Comments – FY16

Date: September 2015

We concur with the Science Panel’s comments.

Public Advisory Committee Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

It was encouraging for the Science Panel to hear via a conference call with Program Science Leads that the standardized forms for metadata submission had been recently modified, and a more refined version is now available to investigators. However, it was discouraging to learn that not all investigators were compliant on submission of both metadata and data in a timely manner (within one year of collection) as agreed upon when accepting funding from EVOSTC. In the future we see submission of required data and metadata as a condition of funding renewal.

Science Coordinator Comments – FY15

Date: September 2014

I concur with the Science Panel and would be willing to assist with data compliance if desired.

PAC, Executive Director Comments – FY15

Date: October 2014

We concur with the Science Panel.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund Conditional	Fund Conditional	Not Reviewed	Fund Conditional	Fund

Science Panel Comments – FY14

Date: September 2013

Progress is listed as “Data is being archived on the Workspace by investigators in the program...” and “Data from the past two field seasons will be ingested into the data management system. We will continue to refine and expand the information available through the Herring data portal.” Please specify what data have been incorporated. Also, the demonstration of progress is not adequate. More detail is essential. Failing that, this project should be suspended. An inventory of all data proposed to be incorporated eventually into the program should be drawn up and an accounting of progress on incorporating the listed data sets should be reported annually, including any changes to the inventory of target datasets. The science panel is concerned about progress on data management. The data management proposal drew heavily on their old proposal without including sufficient updated evidence of interactions between the programs’ PIs and the data management team. In addition, there does not appear to be a data management policy or QA/QC policy created as the programs approach Year Three. In addition, no milestones were reported in the newly submitted proposals, so it was difficult to gauge how much progress had been made in the last two years. Moreover, it was not clear how data would be available for synthesis. The panel recommends that the Council condition funding upon the creation of a credible and detailed data management policy and a QA/QC policy and include clear milestones in for their proposal.

Regarding a QA/QC policy: such a document is a basic need of any data management. We note too that instruments commonly need to be calibrated before and after use to be able to adjust for measurement drift, if it occurs. With two separate data centers operating under the EVOSTC program it is crucial that a high level of QA/QC be maintained. The Science Panel is concerned that adequate attention is not being devoted to this fundamental aspect of data management. It is particularly important that to assemble complete metadata to ensure that long-term data sets can be verified and understood once the current participants have moved on to new positions. For example, EPA and NSF require detailed data management and QA/QC plans as part of all proposals. Large monitoring programs, such as NSF’s LTER and oceanographic programs, devote considerable time and effort to addressing these critical needs. Example: As a specific example, the Ocean Tracking Network (OTN) has four nearly full-time people creating metadata forms that are required to be filled out, submitted and checked for QA-QC before data can be added to the database. Since OTN is currently adding equipment to tracking arrays in PWS, it would be particularly appropriate at this time to arrange communication between senior OTN data managers with EVOSTC program data PIs to ensure that data standards are adequate. As with OTN, and as emphasized in the initial funding of the EVOSTC programs, skilled data management resulting in data that can be relied upon by the scientific community and resource agencies will ultimately determine the long-term success and influence of the programs. The contact at OTN is Bob Branton (bob.branton@gmail.com) or (bob.branton@dal.ca).

Science Coordinator, Executive Director Comments – FY14

Date: September and October 2013

We concur with the Science Panel.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

Trustee Council Comments – FY14

Date: October 2013

The Council requests the Team Leads and PIs within the Long-Term Programs in Project numbers 14120111 and 14120114 work with EVOSTC staff to address Science Panel and EVOSTC staff comments in the Fiscal Year 2014 Work Plan and participate in a Long Term Programs' Data Review Meeting with EVOSTC and Trust Agency Staff.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund
April 2011	Modify	Modify	Modify	Modify

Science Panel Comments – FY12

Date: April 2011

Gathering and making data available will be the keystone of this program. The Science Panel expressed serious concerns about past performance of some participants and that the data management team does not have sufficient expertise or scientific guidance to deliver a useable data system. In addition, it is not clear at all there is a plan for the inclusion of structurally diverse data: where and how will such data be organized so that relevant data and metadata from a broad array of disciplines can be assembled in one database. The panel viewed this as this as an informatics problem that, if not resolved at the onset, will jeopardize the long-term program. There is a very clear need to

overcome critical technological impediments to accomplishing synthetic, integrative environmental science, while at the same time promoting more open access to information and data sharing. It is critical that this database be open source and be compliant with the Knowledge Network for Biocomplexity metadata compliant with Ecological Metadata Language. In addition, there should be a plan from the outset as to how to incorporate this data into NPRB's GOAIERP program at the end of the first five-year contract cycle.

Therefore, we strongly recommend that the Council provide assistance from an organization such as the National Center for Ecological Analysis and Synthesis (NCEAS) for peer review and technical assistance to the data management team. With regard to the separate lingering oil monitoring proposal included within the Program proposal, the Panel has no objection to the funding of this additional project. The Panel does not believe that Axiom currently has the capacity to conduct the most effective management of the data. The biological investigations produced by the suite of projects included in this proposal package generate data that are challenging to code in ways that facilitate their combination with other data such as physical or chemical variables. The discipline that handles these challenges is known as informatics. The Science Panel views the inexperience of Axiom personnel as a critical problem. This concern does not imply inadequate capability of the key staff of Axiom. It is a reflection of their limited experience. Consequently, establishing a partnership between Axiom and NCEAS makes sense because Matt Jones and NCEAS are willing to share their cutting-edge expertise. NCEAS is the "National" Center for Ecological Analysis and Synthesis and the principals of the NCEAS proposal are leaders in this field. Pairing NCEAS with Axiom, would promote information sharing of NCEAS' expertise, such emerging data standards as DateOne and on a suite of data manipulation and synthesis tools, such as meta-analysis methods. This information transfer represents critical capacity building within Alaska that would greatly benefit EVOSTC, AOOS, NPRB, and other important research and monitoring enterprises. The willingness of NCEAS to collaborate with Axiom is evident from their proposals and discussions with Rob Bochenek, Elise, Molly, and others. Nevertheless, the most creative and appealing aspect of the proposal provided by NCEAS, and which builds on technical metadata processing that NCEAS excels in, relates to the second phase of work – the synthesis activities. Some syntheses have indeed been supported by the EVOS Trustee Council over the years. These include very important outputs of the program – a synthesis of novel oil toxicity mechanisms in pink salmon by Rice et al. 2003; a book edited by Spies that placed the oil and natural resources of coastal Alaska in a context of changing climate; reviews of the delayed and indirect mechanisms by which EVOS oil caused ecological injuries by Peterson et al. (2003); and reviews of multi-year EVOS oil persistence on Alaskan beaches by Short and colleagues. Despite these valuable legacies, more synthesis is needed into the future, including on herring, where numerous potential explanations for its lack of recovery exist and a growing body of diverse data requires synthesis to extract now cryptic insights.

Phase II of the NCEAS proposal promises facilitation of just such synthesis outputs. This activity is extremely important for both the Herring and especially the Long-term Monitoring programs. The Panel recommends funding of this Phase II, under conditions that reflect engagement of the PIs from these two programs to develop the questions to be addressed and help select the experts who will participate in the study groups and synthesis efforts. The Panel notes that failure to solve the problem of creating an enduring depository for EVOS-Trustee funded data is a long-standing problem. At least 10 year ago, the EVOS Trustee Council and staff endorsed the responsible and ethically necessary

principle that each study funded by the Council must deliver all resulting data in electronic form to the council staff as part of their final reporting obligations. Despite this mandate, there exists now no data base of the historically-funded projects. This issue has great capacity to embarrass the Council and the memory of the past failures motivates the Panel to recommend finally solving this problem by engaging the undeniable expertise and preeminence of NCEAS to collaborate in this venture.

Science Coordinator Comments – FY12

Date: April 2011

I concur with the Science Panel. I also have serious concerns regarding the data program and would encourage the Council to assist the team by providing funding for a comprehensive review of the data program. I also concur with the Science Panel that the fundamental data that will be utilized by the program should be rigorously reviewed to ensure the best possible platform for the herring projects. I do believe that the data that has been gathered by ADF&G for PWS herring has been carefully gathered and reviewed. I would like to continue working with staff at ADF&G to determine what actions would have the greatest benefit to both the herring program and ADF&G managers. The possible addition of a staff position at ADF&G that would work closely with herring program would be of tremendous value to both the program and the management agency.

Public Advisory Committee – FY12

Date: July 2011

Issues raised by the Science Panel, Trustee Council staff, and the PAC called for additional work and collaboration to assist with establishment of a data management system that includes accessible scientific data as well as public information. In response, the National Center for Ecological Analysis and Synthesis (NCEAS) submitted a proposal to work with Axiom (a subcontractor to AOOS), and the Woods Hole Oceanographic Institution also submitted a proposal. Elements of both options were reviewed and discussed. Data management generally consumes about 30% of a research program budget; the costs for including one of these options for assistance remain within that range. French noted that he had no problem with either NCEAS or Woods Hole—he questioned Axiom’s role and staying power. McCammon said that Axiom would be a subcontractor to AOOS, had been doing cutting edge work, and was committed to the project—they have a 4-year contract. She also stated that the AOOS Board was committed to the project. French said he supported the NCEAS and Axiom collaboration. Eilo summed the PAC interest in the Trustee Council implementing a solid data management, synthesis, and public access system

Date: April 2011

Brune questioned past due delivery of a product by Axiom, noting the Trustee Council policy to not fund organizations which were behind in deliverables—he believes Axiom should not be awarded additional work when there are outstanding deliverables, and that this sets a dangerous precedent. Fandrei agreed that this was an issue. Hsieh said she expected the outstanding deliverable to come in May. French said it was important that data not be proprietary so it would be publicly available. Amanda Bauer asked if there were other organizations that Axiom did work for. Hsieh mentioned several State and Federal agencies that are Axiom clients. PAC agrees with the Science Coordinator in that there are serious concerns regarding the data program and would encourage the Council to assist the project team by providing funding for a comprehensive review of the data program.

Executive Director Comments – FY12

Date: July 2011

There has been strong concern about the program's data manager serving the entire program. Since April, the data manager's work has been favorably reviewed, has submitted late deliverables to the Council and several data management options have been produced by this program and outside entities. These options presented are in conjunction with leaders in the field of heterogeneous scientific database management and are excellent options. I recommend the Council pursue one of these options to ensure successful management of the data produced by this and past Council-funded efforts.

Project Number: 16120111-E

Project Title: PWS Herring Program – Expanded Adult Herring Surveys

Primary Investigator(s): Peter Rand

PI Affiliation: PWSSC **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$333,976

FY12	FY13	FY14	FY15	FY16
\$6,540	\$84,366	\$68,125	\$90,579	\$84,366

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$333,976

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/14/15.*

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 $\pm 30\%$, 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).

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	

Science Panel Comments – FY15

Date: September 2014

An extract from the Executive Summary states is as follows: *“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.”*

What level of precision would be acceptable for ADF&G? If, as indicated in the report, that the biomass estimates (based on incomplete acoustic data) may be unduly conservative, then it follows there should be some estimate of the time required to attain a degree of completeness that would be acceptable. Such clarification would be useful.

Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

We concur with the Science Panel.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14

Date: September 2013

If acoustic information is to be used for annual herring assessments (by ADFG or anyone else) then it would seem reasonable that there were some meaningful communication between the people doing the survey and those doing the assessments (see specific comments on the previous proposal).

Is there a data source, or database on areas that were ‘historically surveyed’? If so, what or where is it? Will it be made available to the data synthesis projects? Has there been any effort made to report on these data? Because of PI departures, a very junior, although promising scientist without any peer-reviewed publications, is left alone to execute this project. The Science Panel urges engagement

of a more senior experienced partner to help guide and enhance this project.

It is gratifying to see that samples from Kayak Island were made available to geneticists. However, there does not appear to be any reference to this in the genetics proposal.

Science Coordinator, Executive Director Comments – FY14

Date: September and October 2013

We concur with the Science Panel.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Trustee Council Comments – FY14

Date: October 2013

There are no project specific comments.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator Comments – FY13

Date: September 2012

I concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

Executive Director Comments – FY13

Date: September 2012

I concur with the Science Panel.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: April 2011

There are no project specific comments.

Project Number: 16120111-F

Project Title: PWS Herring Program – Juvenile Abundance Index

Primary Investigator(s): Peter Rand

PI Affiliation: PWSSC **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$404,172

FY12	FY13	FY14	FY15	FY16
\$90,143	\$80,115	\$66,054	\$84,911	\$82,949

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$404,172

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI’s Proposal, dated 8/14/15.*

Management of the Pacific herring stock in Prince William Sound is based primarily on an age-structured-assessment (ASA) model. The current model, developed in 2005, incorporates both hydroacoustic estimates of the adult herring biomass and an index of the male spawning, called the “mile-days of spawn”. Unfortunately, the forecast is based on measurements from the previous year and does not have a direct measure of future age 3 recruitment. Current knowledge suggests that most mortality occurs during the first winter of life, so the relative recruitment may be fixed by the end of the first year. Consequently, estimates of relative abundance of age 1 and age 2 fish should provide an index of future recruitment. An index of age 0 fish would also provide a forecast of recruitment if additional information were available on the magnitude of the first year mortality. We will conduct annual fall surveys (FY2013-2016) of 8 bays; four of which will be the Sound Ecosystem Assessment bays. This will maintain a continual database from these locations. The other 4 bays will be selected based upon the survey results of the current EVOSTC FY10 Herring Survey Project (# 10100132). Surveys will be conducted using 120 kHz split-beam hydroacoustic unit in a stratified systematic survey design (Adams et al. 2006). For this study, direct capture will be directed to size and species composition. A midwater trawl will be used to sample randomized transects within each strata.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY16

Date: September 2015

The proposal is basically sound but some of the text of this proposal may generate more confusion than clarity. While it is correct to state that the ASA model (which 'hindcasts' or provides 'after-the-fact' estimates of spawning biomass), cannot account for future recruitment, it is important to understand that this is a limitation that applies to most ASA models, on herring or other species. Usually assessment biologists attempt to use some form of a 'stock-recruitment' function to provide an estimate of new recruits, usually considered to be the numbers of sexually maturing fish that join the adult population for the first time, probably mainly at age three (~36 months) when they mature sexually. A different approach to estimating recruitment may involve an empirical estimate - or relative index - of the numbers of juvenile fish in the population. Such empirical estimates of juveniles could be based on fishing surveys (CPUE) or acoustic surveys.

If juvenile abundance could be estimated a year or two before recruitment, perhaps at age 1 (or between ~6-17 months) or age two (~17-30 months) then this also could be used in anticipation of the spawning at age 3. There are now several instances of regular juvenile surveys that are used for such empirical estimation in various herring populations. In the Strait of Georgia an estimate of age 0+ juveniles from synoptic surveys made in September can provide a useful index of relative recruitment strength nearly 2.5 years before recruitment occurs. There are other examples of this approach in European herring populations.

Based on the comments above, I suggest that the clarity of the proposal might be improved if it were to provide some of this context.

Another general consideration about this proposal is that while valid, desirable and useful, juvenile surveys are not necessarily vital for annual assessments. There are alternative approaches to estimate annual recruitment based on stock-recruitment models. Such approaches are commonly used but usually because there are no alternatives. Also, for relatively short-lived fish such as herring, the size of the recruiting cohort can constitute a large component. So, while it is better to have empirical estimates of recruitment, they are not always available. Further, it may take some time to establish such a relationship. For example, the time required to develop a comparison of age 0+ juveniles (say in late winter at age 6 months) and subsequent recruits (at age 36 months), with five data points in a regression, will be about 8 years: 7.5 years between the first juvenile survey (of cohort n) and the year of recruitment of age three fish (of cohort $n+5$) - and perhaps another six months to gather all of the data to make the ASA assessment in Year $n+5$.

Science Coordinator, Executive Director Comments – FY16

Date: September 2015

I concur with the Science Panel's comments and suggestions.

Public Advisory Committee Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15**Date: September 2014**

The two projects, Juvenile Herring Abundance & Juvenile Intensive Surveys, have been in place for several years but the 2015 proposals did not provide any information on past results. Why is that?

Science Coordinator Comments – FY15**Date: September 2014**

This project has provided status updates in its 2012 and 2013 Annual Reports. The proposal requirements did not request a discussion of past results.

PAC, Executive Director Comments – FY15**Date: October 2014**

No project specific comment. Science Coordinator’s comments are noted.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator, Executive Director, Trustee Council Comments – FY14**Date: September and October 2013**

There are no project specific comments.

Public Advisory Committee Comments – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13**Date: September 2012**

Due to the change in the funding cycle, the program only began their work four months prior. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13**Date: September 2012**

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: April 2011

There are no project specific comments.

Project Number: 16120111-H

Project Title: PWS Herring Program – Outreach & Education

Primary Investigator(s): Haley Hoover

PI Affiliation: PWSSC **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$153,908

FY12	FY13	FY14	FY15	FY16
\$16,459	\$30,520	\$32,700	\$35,970	\$38,259

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$153,908

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$50,000	\$50,000	\$65,000	\$65,000	\$65,000	\$295,000

FY12 – FY15 Non-EVOSTC funding from FY15 proposal; FY16 amount from proposal section VI-C.

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/14/15.*

The Outreach & Education project is designed to enhance the PWS Herring Program research activities by showcasing their relevancy, broadening their applicability and extending their impact to people in the community. PWSSC educators will work with PWS Herring Research and Monitoring principal investigators (PI) and project collaborators to prepare public education materials that communicate the purpose, goals and results of the research program to “non-scientist” audiences and stakeholders in communities in and beyond the spill affected area.

Outreach and education products will extend and transfer Pacific herring and marine ecosystem information to inform the public of local research activities and improve their ecological and ocean science literacy.

The specific objectives of this proposal, which includes the outreach and education components of the PWS Herring Research and Monitoring Program, are to:

1. Disseminate PWS herring research information and lessons learned in this program to individuals, groups, policy makers, resource managers and institutions in PWS, including the effected fishing community.
2. Extend and transfer PWS herring research-based outreach and education products to general audiences in and beyond the spill affected areas of PWS.
3. Integrate community involvement into the planning and sampling programs through citizen science

opportunities and public workshops

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

The Science Panel appreciates the progress made on local outreach. One of the simplest ways to do this is to keep the website updated, because it is the portal to the outside world. However, we also recommend that investigators work with the outreach program to craft presentations that could be delivered at various venues (e.g., schools, Science Pubs). There was a comment in the proposal that there has been some difficulty getting PI's to commit to outreach efforts due to logistics. The location of the PI's should have little impact on their ability to participate in outreach efforts. Involvement of PIs in outreach activities can extend the reach of the program and improve the public's appreciation of what is being accomplished. We also encourage the outreach team to call and interview PI's to get information that would be beneficial to the outreach efforts.

Investigators responses to previous comments made by the science Panel suggested that funding is insufficient to expand outreach. The Panel feels that two people are being supported to complete this work, which is ample provided that the program prioritizes updating the website and working with PIs on presentations over local outreach.

Science Coordinator Comments – FY15

Date: September 2014

I concur with the Science Panel. The website is listed as an outreach tool yet there is very little information about this Program. I struggled to find the Program specific webpage on the PWSSC site and there was almost no information for researchers or the public.

PAC, Executive Director Comments – FY15

Date: October 2014

No project specific comment. Science Coordinator's comments are noted.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
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Fund	Fund	Not Reviewed	Fund	Fund
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Science Panel Comments – FY14

Date: September 2013

Was there any attempt to coordinate output with Gulf monitoring group? As noted above, the Science Panel notes that there may be opportunities and requirements for increased communication among PI's within the herring project. A key point is how the different projects relate to each other, especially their connections or inter-dependences. This aspect was not well developed in this (2013) set of proposals. Perhaps this outreach project can assist in this regard?

Science Coordinator, Executive Director Comments – FY14

Date: September and October 2013

We concur with the Science Panel.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Trustee Council Comments – FY14

Date: October 2013

There are no project specific comments.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

I concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12

Date: April 2011

There are no project specific comments.

Project Number: 16120111-K

Project Title: PWS Herring Program – Herring Disease Program (HDP)

Primary Investigator(s): Paul Hershberger

PI Affiliation: USGS

Project Manager: USGS

EVOSTC Funding Authorized To Date: \$871,782

FY12	FY13	FY14	FY15	FY16
\$0	\$0	\$281,874	\$291,902	\$298,006

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$871,782

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$42,100	\$42,100	\$84,2007

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/14/15.*

The Herring Disease Program (HDP) is part of a larger integrated effort, Prince William Sound Research and Monitoring (outlined in a separated proposal by Dr. Scott Pegau). Within this integrated effort, the HDP is intended to evaluate the impact of infectious and parasitic diseases on the failed recovery of the PWS herring population. The framework for the 2012 – 2016 HDP involves a combination of field surveillance efforts, field-based disease process studies, and laboratory-based controlled studies. Field surveillance efforts will provide continued and expanded infection and disease prevalence data for herring populations in Prince William Sound (PWS), Sitka Sound, and Puget Sound. During FY 2016 we will continue the health assessments of adult herring from Prince William Sound and Sitka Sound, we will continue to rear colonies of specific-pathogen-free Pacific herring for controlled studies in the laboratory, we will compare the relative sensitivities of four newly-developed diagnostic assays that are capable of identifying prior exposure to VHS virus in Pacific herring. Additionally, by employing the qPCR and chromogenic in situ hybridization tools that were developed as products of the HDP, we will begin searching for intermediate invertebrate hosts for *Ichthyophonus*.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY16**Date: September 2015**

There are no project specific comments.

Science Coordinator Comments – FY16**Date: September 2015**

I would like to commend the project team on their outstanding publication record. This project is pioneering techniques for disease detection and management and it is gratifying to see that they are sharing their knowledge during each stage of the research with the scientific community both in Alaska and worldwide.

PAC Comments – FY16**Date: September 2015**

There are no project specific comments.

Executive Director Comments – FY16**Date: September 2015**

I concur with the Science Coordinator’s comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15**Date: September 2014**

The Panel commends this project team for their outstanding record of scientific publication.

Science Coordinator Comments – FY15**Date: September 2014**

I also commend the team for their efforts to publish their work in peer-reviewed literature.

PAC, Executive Director Comments – FY15**Date: October 2014**

We concur with the Science Panel and Science Coordinator.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14**Date: September 2013**

The Science Panel feels that this is probably one of the most important high-payoff programs within EVOSTC. Funding needs to continue and the incorporation of disease ecology needs to be somehow incorporated into models.

Science Coordinator, Executive Director, Trustee Council Comments – FY14

Date: September and October 2013

We concur with the Science Panel.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Project Number: 16120111-L

Project Title: PWS Herring Program – Herring Condition Monitoring

Primary Investigator(s): Ron Heintz

PI Affiliation: PWSCC

Project Manager: NOAA

EVOSTC Funding Authorized To Date: \$974,024

FY12	FY13	FY14	FY15	FY16
\$0	\$229,990	\$238,601	\$251,572	\$253,861

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$974,024

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$42,431	\$46,683	\$ 89,114

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/12/15.*

Outlined here is a single herring monitoring project that is a part of an integrative program that will enhance the current herring monitoring efforts and examine aspects of particular life stages to allow better modeling of Prince William Sound herring populations. The long-term goal of the program is to improve predictive models of herring stocks through observations and research.

This project will be continuing the development of an overwinter herring mortality model that began with an ongoing monitoring project initiated in 2007, and incorporates results from Prince William Sound herring research dating as far back as the 1990's. Accordingly, herring are sampled in November and the following March (Objectives 1 and 2). The model runs by applying herring condition observations made before and after winter (Objective 3). Proposed sampling will commence in November 2012 and end in March 2016. A future project is expected to continue the time series beginning in November 2016. The purpose of the time series is to relate overwinter mortality to herring recruitment.

Additionally, this project will be furthering the development of an overwinter herring mortality model with additional data types including proximate composition, RNA/DNA, and diet (Objective 6), as well energy levels per se. The goal is to use physiological indicators to realistically modify the daily energy loss rate in the overwintering model. The results of model improvement will be tested using the March data model validation approach that began in 2007.

We will no longer be assessing competitive effects of other juvenile fishes on condition of age-0

herring using stable isotope analysis as noted in previous proposals (Objective 4). Our experience with the sampling program is that we were unable to target the sample sizes need for other species to make this a realistic goal. This aspect of the project was not conducted in 2015 and will not be conducted in 2016.

In 2015, we examined the relationship between age-0 herring length and scale growth (Objective 5) using existing data collected as part of this program, in order to better interpret long-term scale data held by Alaska Department of Fish and Game within the context of energetics. This project will not continue in 2016 as the analysis was completed successfully.

Additionally, we will be assessing effects of competition of other juvenile fishes on condition of age-0 herring using stable isotope analysis on an opportunistic basis.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

Parts of this expensive proposal/project are vague. In particular the ‘new’ work looking at juvenile scales is not clear. (1) Is the plan to take scales from juvenile fish? If so, this could be difficult because, depending on the time of year and fish size, scales may be incompletely developed and very fragile. (2) Have the investigators done any ‘preliminary work’ to examine the feasibility of their approach? (3) The project refers to ‘predictive models’ but is there a hypothesis? (4) Will this project build on previous 2012 EVOSTC-supported projects on scales by Moffitt?

Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

We concur with the Science Panel.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14

Date: September 2013

Considerable concern was expressed about the departure of Dr. Kline and the panel endorses Pegau's expressed urgency in finding a suitable replacement. These proposals tackle important issues and they both do a very good job of relating what they do to other projects, especially to the ASA model. These proposals also present well and respond to much of what the panel recommended in 2011.

Over-wintering mortality among herring juveniles has been invoked as an explanation for many things: recruitment variation, spatial variation in herring survival and susceptibility to disease within Prince William Sound, and perhaps more. It is an important topic and there is a rich legacy of work on this by productive researchers in Prince William Sound. It is important that this work receive the continued attention it deserves, including as much synthesis of past work as possible.

With respect to the 2013 proposals: no plan is evident to examine the relationship of the change in energy content to climate and oceanographic conditions during the pre-sampling and overwintering periods. If PIs are truly interested in determining whether the "constraints" are relaxed, then all constraints, including climate/ocean factors must be considered. As much as possible these projects must be integrated with oceanographic and biological data from LTM, especially because the causes for condition changes are crucial. The project must also be integrated with the herring disease program. The panel suggests that condition be used in experiments with disease challenges including transmission mechanisms.

Science Coordinator, Executive Director Comments – FY14

Date: September and October 2013

We concur with the Science Panel.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Trustee Council Comments – FY14

Date: October 2013

There are no project specific comments.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

Project Number: 16120111-O

Project Title: PWS Herring Program – Coordination and Logistics

Primary Investigator(s): Scott Pegau

PI Affiliation: PWSSC **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$1,940,113

FY12	FY13	FY14	FY15	FY16
\$364,126	\$510,261	\$388,136	\$339,007	\$338,583

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$1,940,113

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$20,000	\$21,000	\$22,000	\$24,000	\$24,700	\$111,700

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/14/15.*

This project is for the coordination and logistics aspects of the proposed program titled, "Herring Research and Monitoring". The long-term goal of the program is to improve predictive models of herring stocks through observations and research. The objectives of the program are 1) Provide information to improve input to the age-structure-analysis (ASA) model, or test assumptions within the ASA model, 2) Inform the required synthesis effort, 3) Address assumptions in the current measurements, and 4) Develop new approaches to monitoring. The Coordination and Logistics project objectives are to 1) ensure coordination between projects to achieve the program objectives, 2) Provide a synthesis from existing results, and 3) provide logistical support to the various projects.

Coordination includes scheduling of projects to ensure the maximum sharing of vessel time and ensuring that projects dependent on results or samples from another project are in the correct order. Coordination will be primarily through email and teleconference, but each year all the investigators are required to meet in person. Coordination is also taking place with the existing Herring Survey program, the Long-Term monitoring program, and ADF&G herring sampling. Logistics is primarily in providing vessel time. A synthesis was provided to EVOSTC in early 2015.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15

Date: September and October 2014

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel, Science Coordinator, Executive Director, Trustee Council Comments – FY14

Date: September and October 2013

There are no project specific comments.

Public Advisory Committee Comments – FY14

Date: October 2013

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13

Date: September 2012

Due to the change in the funding cycle, the program only began their work four months prior to this review. We have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director, Trustee Council Comments – FY12**Date: April 2011**

There are no project specific comments.

Project Number: 16120111-Q

Project Title: PWS Herring Program – Modeling the population dynamics of PWS herring

Primary Investigator(s): Trevor Branch

PI Affiliation: University of WA **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$427,083

FY12	FY13	FY14	FY15	FY16
\$36,907	\$87,013	\$97,836	\$100,407	\$104,920

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$427,083

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/14/15.*

Shortly after the Exxon Valdez oil spill, the Prince William Sound herring populations collapsed and have not yet recovered. We propose a modeling project to (1) revise and update the ASA model used to manage this population, (2) conduct simulations to test which data sources are most important in assessing the current status of this population, and (3) collect data on herring populations worldwide to find out how often these populations collapse under ordinary conditions.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY16

Date: September 2015

The role of Trever Branch in devoting explicit models not only ASA models for herring but also potentially other process-oriented models are very evident in reviewing the most recent proposals. His explicit models can serve well to synthesize data from several different herring projects, especially articulating which factors contribute to herring fitness and recovery.

Science Coordinator, Executive Director Comments – FY16

Date: September 2015

I concur with the Science Panel’s comments.

Public Advisory Committee Comments – FY16

Date: September 2015

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY15

Date: September 2014

The Panel acknowledges the detailed and well-rounded proposal for this project. The Panel also strongly supports the recognition in the proposal that the ASA model will have a key role in synthesis. For this reason, it is essential that all participants in the upcoming synthesis meeting have a clear description of the model as currently coded. Such a description does not exist in the published literature or previous reports to EVOSTC. The description should include (i) equations; (ii) a list of parameters assigned values before model runs; and (iii) a list of parameters estimated from data and objective functions used. It does not need to include much supporting text. We suggest a target date of December 1, 2014 for this description so that attendees have ample time to take account of the model details in preparation for the synthesis meeting. A further, more technical, comment is that there was no reason given for moving to a Bayesian framework. There are many potentially excellent reasons for this decision, but they were not presented.

Is the present ASA model used for PWS identical to the model described by Hulson et al. 2008? (See Hulson, P-J. F., Miller, S. E., Quinn, T. J. II, Marty, G. D., Moffitt, S. D., and Funk, F. 2008. Data conflicts in fishery models: incorporating hydroacoustic data into the Prince William Sound Pacific herring assessment model. – ICES Journal of Marine Science, 65: 25–43.)

Objective 3 (Gathering data on clupeids of the world) is a formidable task, especially for a graduate student. More regional comparisons however may be useful if the analyses were confined to a smaller number, especially those in the eastern pacific.

Science Coordinator, PAC, Executive Director Comments – FY15**Date: September 2014**

We concur with the Science Panel.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Not Reviewed	Fund	Fund

Science Panel Comments – FY14**Date: September 2013**

While this effort may be in the correct direction, the estimation of herring biomass is an integral and very important part of the herring program. Candidly, the Science Panel had expected more progress and more effort than the efforts of a graduate student to be directed at this issue. This comment should not be seen as a criticism of the student, but instead as a deficiency in the effort directed at this important issue. There is no indication from the proposal that there is any dialogue between the PI and the other herring program PI's and if so, that is a problem that should be addressed. A specific concern is the extent to which acoustic data, or acoustic indices, can be used, as a component of the annual assessments. Similar questions exist about the spawn data. It seems probable that some form of fisheries-independent index would be required to tune the age-structure (ASA) model. If not, then something else might be used, such as a spawn index and if so, that might require a reallocation of resources. Therefore a better understanding of the data requirements for practical development of the ASA model is required. To this end the modelers need to examine and evaluate the strengths and weaknesses of the available data, preferably in collaboration with other PI's in the herring program.

Science Coordinator, Executive Director Comments – FY14**Date: September and October 2013**

We concur with the Science Panel.

Public Advisory Committee Comments – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Trustee Council Comments – FY14**Date: October 2013**

There are no project specific comments.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
September 2012	Fund	Fund	Not Reviewed	Fund

Science Panel Comments – FY13**Date: September 2012**

Due to the change in the funding cycle, the program only began their work four months prior. We

have reviewed the work completed to date and are comfortable with the program continuing their proposed work.

Science Coordinator, Executive Director Comments – FY13

Date: September 2012

We concur with the Science Panel.

Public Advisory Committee Comments – FY13

Date: September 2012

Not reviewed due to the lack of a quorum at their meeting. No individual comments were received.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
April – Aug.2011	Fund	Fund	Fund	Fund

Science Panel Comments – FY12

Date: April 2011

The Herring Program team clearly gave careful thought to how modeling should be done and who should do it. Their choice and recruitment of Trevor Branch at UW is superb. This is a young rising star in fisheries dynamics modeling, who has many experienced colleagues with whom to interact. His proposal represents a good guideline for the modeling work he will begin, identifying some key processes of high value to the herring program. We expect to see evolution of the modeling as the project develops and see Branch as a leader who will make adaptive additions and modifications as new issues arise. We would like to have seen a more overt mention of how competing drivers of herring mortality will be tested against one another – physiological stress, starvation, top-down predation, and disease. These are clearly embedded in the life history modeling, but model fits to choose the factor or combinations of factors that best fit observed abundance changes would be welcome.

Agency Staff Comments – FY12

Date: August 2011

The proponent is a great choice for this work, and having this as a doctoral project is a cost-effective way to get some very good work done. The project description is light on details, and that is acceptable to a limited extent, given that the work includes an investigation of what has been done and the available data (via the management strategy evaluation), and that it is important to be flexible in model development. It would be helpful to have more details on the “holistic” model. For example, the Hulson et al. age structured analysis is referenced in relation to the management strategy evaluation, but there is no clear description of how the proposed holistic life-stage model relates to or builds off of the ASA, i.e., what the structure of the “holistic” model will be. Another concern is that is not clear if or how the “holistic” model will be used to aid in identifying the limiting factors in herring recruitment and recovery. That could be an important aspect of the overall herring program. The disclaimer in the second paragraph of the “Statement of the Problem” is disconcerting given the intellectual effort that the proposal aims to expend on model development: “While we do not anticipate that there will be a major change in our modeling ability in the next five years, we

expect that the combination of monitoring and focused process studies will provide incremental changes over the next twenty years and result in a much better understanding of herring populations by the end of the program.” Perhaps the proponent could offer a more detailed, though conditional description of what the expected benefits might be.

The order of the three tasks is a bit confusing. The tasks given in Methods (p. 3-4) are: 1. Management strategy evaluation to identify most informative datasets –2. Predict future levels of recruitment – a meta-analysis of time series for other herring and clupeid stocks. 3. Holistic model of herring dynamics – life stage model (age based), tasks conducted by UW students and faculty with access to Hilborn, Punt, and Essington.

The expected order of completion of these tasks as given under Milestones (p.7) is 1. model (by 9/14), 2. MSE (by 9/15), and 3. predict recruitment (by 9/16)

It is not clear why a model will be developed first, and then a different model (ASA) used in the management strategy evaluation. Also, the work to predict future recruitment, as described, appears correlational and doesn’t appear to involve the “holistic” model or a mechanistic understanding of herring dynamics, yet the timeline has this work occurring after initial model development. How would this work be related to the “holistic” model?

The budget includes research assistant-ship and tuition for a Ph.D. student – essentially a half time position dedicated to this research. This is a cost efficient use of funds.

Science Coordinator Comments – FY12

Date: April 2011

I concur with the Science Panel's comments. The PI's identified are skilled and well-respected in their field and will bring valuable experience to this complex project.

Public Advisory Committee – FY12

Date: April 2011

The PAC concurs with the Science Panel recommendation to fund the Branch modeling project. There were no objections.

Executive Director Comments – FY12

Date: April 2011

There are no project specific comments.

Project Number: 16160111-S

Project Title: PWS Herring Program – Herring Movement Study

Primary Investigator(s): Mary Anne Bishop

PI Affiliation: PWSSC

Project Manager: NOAA

EVOSTC Funding Authorized To Date: \$272,600

FY12	FY13	FY14	FY15	FY16
\$0	\$0	\$0	\$0	\$272,600

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$272,600

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$415,000	\$415,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/31/15.*

One of the important knowledge gaps for the Pacific herring (*Clupea pallasii*) population in Prince William Sound (PWS) is understanding adult herring annual migration movements between spawning, summer feeding, and overwintering areas. In 2013 we documented post-spawn migration of herring from Port Gravina to the PWS entrances by acoustic tagging adult herring and collecting data from the Ocean Tracking Network acoustic arrays. The 2013 study, however, could not verify if herring were migrating out into the Gulf of Alaska and then returning to PWS because of the layout of the Ocean Tracking Network arrays.

The goal of this herring study is to clarify the annual migration cycle of PWS adult herring. The objectives of this FY16 proposed project are to 1) purchase and deploy additional acoustic receivers at the Ocean Tracking Network arrays so that the direction of herring movements (into or out of PWS) can be determined; and 2) purchase acoustic tags. Achieving these objectives in FY16 will then allow us in FY17 to begin to address objectives aimed at 1) documenting adult herring migration movements out from and into PWS; and 2) understanding factors that influence migration patterns including age, condition, spawning location, and residency in PWS.

Because it takes several months from the start of funding to get tags and equipment purchased, prepared, and deployed, completing these activities during FY16 will allow us to initiate acoustic tracking studies in 2017 when herring are aggregated on their spring spawning grounds. With the batteries of the Hinchinbrook Entrance and Montague Strait acoustic arrays expiring around March 2020, a tagging program starting in 2017 provides a larger time window (three seasons, FY17, 18, 19)

for collecting high quality data and increases the feasibility of monitoring herring aggregations in the three major spawning areas: Port Fidalgo, Port Gravina, and Montague Island. In addition, by using acoustic tag programmed at low power only, battery life on acoustic tags would be increased to of ~400 days. This would allow us to monitor acoustic-tagged herring from one spawning season to the next.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY16

Date: September 2015

The proposed project uses stationary transducers (fixed to bottom) to detect fish tagged with small, battery-energized internal tags that have been surgically inserted into previously live herring and then released. This is relatively new technology or relatively new application to herring that, when employed in PWS, will attempt to discern important information about herring movements, especially the extent of movement into, or out of, PWS.

Much of the Panel discussion of this topic was related to the efficacy of the technology or equipment, the types of questions or hypotheses that might be addressed, and the utility of such information relative to the stated goals and objectives of the herring program. Probably most of the questions and recommendations that we discussed have already been considered by the proposers who list three general objectives and four general hypotheses (two have several sub-hypotheses). Nearly all of the Panel comments and suggestions about herring biology have been covered by these hypotheses except for one: the contribution that this project would make to the key goal of providing information to support the stock assessment model.

This aspect is not clearly presented in the proposal (2016 and beyond), but its apparent omission is likely an oversight. There are several ways that acoustic array information is relevant. One important contribution is an examination of a widely held view, within the scientific and lay communities in the PWS area, that herring spend all of their lives within the sound. For instance such an assumption has implications for acoustic survey design (timing and location) and herring sampling – which relate to integral assumptions in the assessment model. Further, the potential results from the use of acoustic arrays could drastically affect input used for mass-balance ecological models (such as Ecopath) that are applied to PWS. The acoustic array proposal might be clarified if the PI elaborated on these later points.

The other issue about this proposal concerned the appropriateness of funding a proposal prior to the next general invitation, which will not be released until next year. The views of the Panel members were split on this but all recognized the trade-offs. By starting now there will be much better opportunity to access the existing array of acoustic receivers. The down-side is that this proposal will appear to be getting special attention and indeed it would be. On the other hand it also is clear that the proposal is sound and that the proponents are well-established and very productive scientists.

It is clear based on the life span of existing acoustic arrays that this project needs to be funded in FY16 as the existing array will not be functional beyond 2017. As such, a delay in funding will make the project of low or no value. A finding that significant herring movement occurs out (and in) of PWS would be an important finding conceptually, even if the data are more qualitative. Linking possible movements with oceanographic data from year to year would be very important.

Science Coordinator, Executive Director Comments – FY16

Date: September 2015

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY16

Date: September 2015

There are no project specific comments.

Project Number: 16160111-T

Project Title: PWS Herring Program – ASL Study and Aerial Milt Survey

Primary Investigator(s): Steve Moffitt

PI Affiliation: ADFG

Project Manager: ADFG

EVOSTC Funding Authorized To Date: \$60,000

FY12	FY13	FY14	FY15	FY16
\$0	\$0	\$0	\$0	\$60,000

Additional EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$60,000

Funding From Non-EVOSTC Sources:

FY12	FY13	FY14	FY15	FY16	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$53,237	\$53,237

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/14/15.*

This project will conduct spring aerial surveys to document Pacific herring *Clupea pallasii* spawn distribution and biomass as well as the distribution and abundance data on sea lions, other marine mammals, and birds associated with herring schools or spawn. Additionally, this project will process age, sex, and size samples of Pacific herring collected by acoustics surveys, spawning surveys, PWS Herring Program disease sampling and genetics collections. Aerial survey and age, sex, and size data have collected since the early 1970s and are an essential part of the age structured model used by the Alaska Department of Fish and Game to estimate the historical and future biomass for fisheries management. This project will also provide support to other Prince William Sound herring program and Gulf Watch Alaska projects by sharing information about herring or marine mammal locations or processing samples collected by the other projects.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16

Date: September 2015

There are no project specific comments.

NOAA Harbor Protection Program Projects

Project Number: 16120112

Project Title: NOAA Harbor Protection Projects – Project Management

Primary Investigator(s): Laurel Jennings

PI Affiliation: NOAA

Project Manager: NOAA

EVOSTC Funding Authorized To Date: \$40,975

FY12	FY13	FY14	FY15	FY16
\$19,883	\$0	\$6,540	\$6,104	\$8,448

EVOSTC Funding Requested: \$0

Request includes 9% GA

Total EVOSTC Funding (Authorized and Requested): \$40,975

Funding From Non-EVOSTC Sources:

FY14	FY15	FY16	FY17	FY18	Total Non-EVOSTC Funding
\$0	\$38,304	\$0	\$0	\$0	\$38,304

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 9/1/15.*

In this project, NOAA Restoration Center is providing oversight, management and technical assistance for two projects; one focused on harbor protection and harbor clean-up as well as another focused on snow management/water quality improvement, both efforts take place in Cordova, AK. The goal of these projects is to improve habitat for the benefit of species impacted by the Exxon Valdez oil spill. In addition, habitat for herring populations will also benefit from the implementation of these projects. As of this reporting period (September 1, 2015), the Copper River Watershed Project Snow Management Project will be in the final reporting period for EVOS. NOAA RC will continue to offer oversight and post-project closeout and report review. NOAA RC technical support and management of the Native Village of Eyak's Harbor Protection and Harbor Clean-up Project will continue until 2017.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16**Date: September 2015**

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund Reduced	Fund Reduced	Fund Reduced	Fund Reduced	Fund Reduced

Science Panel Comments – FY15**Date: September 2014**

We recommend funding for this this effort with the removal of the travel expenses for the staff member located in Washington, DC.

Science Coordinator, PAC, Executive Director Comments – FY15**Date: September and October 2014**

We concur with the Science Panel.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund Conditional	Fund Conditional	Not Reviewed	Fund Conditional	Fund

Science Panel Comments – FY14**Date: September 2013**

Not reviewed.

Science Coordinator Comments – FY14**Date: September 2013**

This proposal's funding is dependent on the Council's decision on proposals from the Copper River Watershed and the Native Village of Eyak.

Public Advisory Committee – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Executive Director Comments – FY14**Date: September 2013**

This proposal's funding is dependent on the Council's decision on proposals from the Copper River Watershed and the Native Village of Eyak.

FY12 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
June/July 2011	Not reviewed	Do not fund	Do not fund	Fund
April 2011	Do not fund	Do not fund	Do not fund	Do not fund

Science Panel Comments – FY12

Date: June 2011

Not reviewed.

Science Panel Comments – FY12

Date: April 2011

In response, the Proposer has reduced their budget to \$1 million and has indicated funding from NOAA in the final proposal. The panel has several key concerns regarding the proposed program. First, a significant portion of the funding requested will be spent in administrative and travel costs for the Seattle, WA and Anchorage, AK based team. Second, the narrative does not provide enough information to determine the potential effectiveness of the program. Finally, there is no established plan for outreach and education that would be critical for this type of effort. There are only general descriptions of types of activities that might be included in community-specific plans. There are references to other Best Management Practices (BMP) but the proposal does not commit to following any particular BMP. There seems to be overlap in scoping and assessment phases with an already existing Alaska Clean Harbor project funded for \$282,615 by CIAP grant (see CIAP approved state plan, http://dnr.alaska.gov/coastal/CIAP/ciap_Fall.htm). Unless coordination is required, there may be duplication of effort with the Clean Harbor program at significantly higher expense in this project. Travel costs seem high, especially in the implementation phases that do not involve public outreach. Most of the staff is coming from Seattle which increases the cost, but there is not much justification in the proposal other than relationship building with communities. The listed project managers do not seem to have much experience with harbor operations, so technical assistance may be limited.

Science Coordinator Comments – FY12

Date: June 2011

The team has reduced their budget as requested by the Council. I continue to be concerned that the first projects will not even be selected until June 2013 leaving only three field seasons available for the actual work. Also, the current timeline would not allow the Council (who will only be meeting annually in Aug/Sep) the opportunity to review the projects prior to their selection and implementation.

Public Advisory Committee Comments – FY12

Date: July 2011

A revised proposal with funds leveraged has reduced the cost of this effort, which will be managed by NOAA staff. Studebaker raised a concern about the details of the effort, it is not clear what will be done and where. John French mentioned the need to coordinate this with the U.S. Coast Guard clean harbors program. Eilo stated that he supported the cleanup of harbors. The only changes to the project are a reduced budget. While there are merits to the cleanup of harbors, the Trustee Council should proceed with caution, as there are few details at this time explaining what this project will accomplish.

Executive Director Comments – FY12

Date: July 2011

The proposer has responded to SP and TC concerns and submitted a reduced-budget proposal that mitigates issues identified prior. However, the PAC has identified concerns with funding a largely

administrative process and I agree with the Science Coordinator's concerns. This is an important focus area, as also discussed by the PAC, but due to those issues, my "fund" recommendation is fairly soft.

Trustee Council Comments – FY12

Date: October 2011

A revised proposal has been submitted by the team. At this time, funding has only been approved to complete the scoping and RFP development phase of this project. The Council will review the completed RFP at a later date and will determine at that time if future funding is warranted

Trustee Council Comments – FY12

Date: September 2011

The Council did not vote to fund this entire request. However, it did request a revised proposal and budget that would be limited to the scoping and RFP phase, concluding with presentation to the Council of the proposals received in response to the RFP and with a budget not-to-exceed \$125,000 (plus 9% GA). The following items were also specifically noted as being of interest:

1. Greater staffing efficiency for travel in the spill-area communities: limit travel time and number of travelers to only those necessary.
2. Consult EVOSTC office staff members, such as Cherri Womac, who have experience locating free or low-cost meeting rooms in these communities.
3. Work with DEC staff to ensure that the scoping/RFP phase seeks proposals for work which is not already legally required by state or federal law.
4. The currently-proposed timeframe for scheduling meetings in the communities is an extremely busy time for harbor personnel. It is recommended that you determine when other meetings with harbor personnel are occurring and/or adjust your schedule to dates that are outside of the commercial fishing season.
5. The scoping/RFP phase should emphasize to proposers and interested parties that the Council's current intent is to consider funding proposals with a total not to exceed the remaining amount of the original NOAA Clean Harbor proposal. For example, if the entire \$125,000 is used during the scoping/RFP phase, fund proposals up to a total of approximately \$953,750.

Trustee Council Comments – FY12

Date: June 2011

The Council requests the proposer review the Science Panel comments and strengthen its proposal and adjust the budget to \$1 million dollars.

Project Number: 16120112 - A

Project Title: NOAA Harbor Protection Program – Cordova Clean Harbor

Primary Investigator(s): Ivy Patton

PI Affiliation: Native Village Eyak **Project Manager:** NOAA

EVOSTC Funding Authorized To Date: \$344,073

FY12	FY13	FY14	FY15	FY16
\$0	\$0	\$193,722	\$72,996	\$77,355

Additional EVOSTC Funding Requested: \$0

Requests include 9% GA.

Total EVOSTC Funding (Authorized and Requested): \$344,073

Funding From Non-EVOSTC Sources:

FY14	FY15	FY16	FY17	FY18	Total Non-EVOSTC Funding
\$0	\$0	\$0	\$0	\$0	\$0

Abstract:

**This abstract is excerpted from the PI’s Proposal, dated 8/25/15.*

The Native Village of Eyak, along with their partners, will bring a local, physical presence to the Cordova Harbor to promote clean boating practices through education and information dissemination. In addition, the work will engage the local harbor staff, marine businesses, Coast Guard, and non-profit organizations by supporting increased use of available services. Finally, this important work will evaluate existing harbor user practices, give recommendations for improvements to decision makers, and assist with improving and augmenting critical harbor services.

Specifically the tasks for this project include:

- Addressing waste and antifreeze disposal limitations - achieved by providing new waste receptacles at convenient locations. These new receptacles will reduce the chance of materials being lost back to the environment while making it easier to properly dispose of waste.
- Improved outreach activities - educating harbor users to the best practices, which will reduce waste reaching the harbor. This will be done using signage and the development of new, effective outreach materials.
- Evaluation – monitor the effectiveness of the harbor cleanup effort by tracking changes in use patterns and PAH levels in mussels.

FY16 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY16**Date: September 2015**

There are no project specific comments.

FY15 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund	Fund	Fund	Fund	Fund

Science Panel, Science Coordinator, PAC, Executive Director Comments – FY15**Date: September and October 2014**

There are no project specific comments.

FY14 Funding Recommendations:

Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
Fund Conditional	Fund Conditional	Not Reviewed	Fund Conditional	Fund

Science Panel Comments – FY14**Date: September 2013**

The science panel appreciates the interest of the local community in cleaning up Cordova Harbor. We also appreciate the improvements to the proposal in response to our comments on the previous version, but we do recommend further changes to the work plan should the proposal be funded.

It should be straightforward to estimate the costs of the three antifreeze waste disposal options without actually implementing each of them. If the real objective of this part of the proposal is to implement the three approaches on a trial basis to determine which of them is likely to be most effective, then this should have been stated together with a detailed rationale of the pros and cons of each approach. It also isn't clear to the panel why additional surveys are needed, although we do recommend that a follow-up survey be conducted to evaluate compliance with the initiatives and reasons for the success or failures of each initiative. We also recommend that knowledge gained from the project be communicated to other communities and a plan for doing so should be developed.

Science Coordinator, Executive Director Comments – FY14**Date: September and October 2013**

We concur with the Science Panel.

Public Advisory Committee – FY14**Date: October 2013**

The October 2013 PAC meeting was cancelled due to the federal government shutdown. Abstracts were submitted to the PAC; no individual comments were received.

Trustee Council Comments – FY14**Date: October 2013**

The Council requests the PIs work with EVOSTC staff to refine their budget in response to Science Panel and EVOSTC staff comments.

FY13 FUNDING RECOMMENDATIONS

Date	Science Panel	Science Coordinator	PAC	Executive Director
January 2013	No consensus	Modify	Not reviewed	Modify

Individual Science Panel Comments – FY13

Date: December 2012/January 2013

Reviewer 1:

This proposal describes several projects, each of which could make important contributions to preventing water pollution in the Cordova harbor and Orca Inlet and one of which can provide proof of concept for responding to small oil spills. The proposal reflects past work in various groups in Cordova-Eyak coming together under the banner of Clean Harbors to support this project on behalf of the environment and natural resources of the area. Several components make up this proposed project. It will address antifreeze pollution by pursuing recycling possibilities. It will address the lead pollution of improper disposal of batteries with a battery storage shed. It will hold a conference and then conduct pilot studies of containment and removal of small oil spills, including purchase of boom. It will conduct a variety of outreach efforts including educational possibilities through the high school ocean science bowls. All of this seems well conceived. The question is whether this fits the profile of EVOS Trustee funding policies. First, the EVOS Trustee Council has not previously invested in pollution prevention or in research or implementation of response actions. That is clearly what this proposal is all about. Second, the cost of this project is very high – 417 K in EVOS Trustee Council funds. Third, I cannot find evidence that the responsible PIs have a track record of demonstrating experience and success in handling this level of funding in a previous similar project. Fourth, I question the value of the PAH sampling in mussels, given that the response activities for small oil spills represent merely a pilot project not a sustained set of responses that could be sufficient to allow detection of reduced pollution in the mussels. Fifth, the sampling design for collecting mussels (From where? How many? Why the proposed frequency?) is not adequately justified. Sixth, this proposal needs to do a better job of relating pollution reduction to enhancing recovery of injured species, to show the connection typically required for EVOS Trustee Council funding.

Reviewer 2:

I appreciate that groups are coalescing on behalf of the community to improve water quality of the Cordova Harbor. Several projects have been proposed, including 1) proper disposal of antifreeze, batteries and trash, 2) small oil spill response, 3) workshops, public education and outreach, and 4) monitoring of water quality. A substantial component of this proposal is exploratory (e.g., workshops, contest), but I favor a more cost-effective approach of implementing best available practices. There are a great many harbors that are addressing these same issues, and it should be straight forward to adopt existing practices. I am also not convinced that the monitoring PAHs in mussels is the best use of funds for tracking success of this multi-pronged approach to cleaning up the harbor. Furthermore, mussels will be collected from only one location in the harbor. How will this provide meaningful data on small spills that are patchy in space and time? This is the most expensive of the proposals, and the budget could be trimmed to focus on components that would have a direct, immediate impact on improving water quality while concomitantly reducing associated administrative costs

Reviewer 3:

This proposal is presented by a group of concerned citizens including the NVE and others such as PWS keeper, Cordova fishermen, etc. Their goals are to bring a presence to Cordova Harbor to promote clean boating practices, engage local harbor staff, businesses, etc. in supporting services and to assist with improving user clean practices. Previously NVE and CCH has addressed antifreeze disposal, dealing with small spills in the harbor and developing cleanup approaches, extending outreach activity for education of harbor users, and evaluation of changes through PAH monitoring of mussel tissues. While the other tasks are worthy, the last item on PAH levels in mussels is too ambitious and the design is probably not such that useful data can be obtained. It is suggested this last task be eliminated. This is an expensive proposal and cost savings could be realized in a number of areas, particularly in administration.

Science Coordinator Comments – FY13**Date: January 2013**

Overall, the proposal is clear and maximizes the local, state, and federal resources available. The costs are clearly detailed and the objectives are reasonable in both time frame and cost. The amount of cooperation and coordination that has already been achieved is remarkable and I appreciate that much of the planning and design has already occurred prior to this funding request.

My primary concern is with the projects that address small-spill response through workshops and a demonstration project. While these projects would certainly be useful for OSRI or the oil and gas industry, they may not be able to receive funding through the EVOS Trustee Council who is usually not able to fund any activities in oil spill prevention and response. I would recommend that these projects be removed from the proposal and the budget be reduced accordingly. I also suggest that some clarification is needed about the antifreeze demonstration project to ensure that this project would result in a long term solution to the harbor's need for dealing with antifreeze. In response to several of the science panel members concern regarding the PAH monitoring in mussels, the sampling and monitoring proposed is part of the existing NOAA Mussel Watch Program. This information would add to the long-term data set that already exists through this program.

Public Advisory Committee Comments – FY13**Date: January 2013**

Abstracts were submitted to individual members of the PAC for comment. No comments were received.

Executive Director Comments – FY13**Date: February 2013**

I support the recommendations and observations of the Science Coordinator, though I also note the remaining concerns of the Council's legal advisers.

Executive Director Comments – FY13**Date: January 2013**

This project was solicited by NOAA under EVOSTC project 12120112, Phase I of which was funded in

the FY'12 Work Plan. Phase I was funded by the Council at a reduced sum of \$20,000 for an invitational process and work with spill area communities to encourage submission of proposals reducing contamination originating from harbors and marinas. It should be noted that there are concerns regarding the proposals that were submitted under this program. This has long been a tenuous funding area for the Council. In the past, the Council funded acquisition of waste management facilities and activities and aided their implementation, but there was concern about the very indirect links between such projects and restoration. The projects submitted under NOAA's invitation have simply renewed these concerns. Moreover, some of the proposals are for projects that are very similar to those that have been funded by the Council in the past and have, apparently, not been successful or not maintained, both of which are inimical to Council policies. Lastly, some of the proposals seek funding that is aimed at correcting illegal behaviors on the part of members of the public or of governmental entities and seek monies that would augment, probably unlawfully, the appropriations of local governments and one or more State agencies.