Womac, Cherri G (EVOSTC)

From: Womac, Cherri G (EVOSTC)
Sent: Monday, November 13, 2017 12:51 PM
To: 'James Balsiger (jim.balsiger@noaa.gov)'; 'Terri Marceron (tmarceron@fs.fed.us)'; Wackowski, Stephen (stephen_wackowski@ios.doi.gov); 'Hartig, Lawrence L (DEC)'; Mulder, Steven E (LAW); Rogers, David E (DFG)
Cc: Adams, Lauri (EVOSTC sponsored); Hsieh, Elise M (EVOSTC)
Subject: Letter from Senator Murkowski re Bering River Coal Fields
Attachments: UPDATED 11.13.17 Draft TC Agenda for Nov 14 2017 TC mtg.pdf

Dear Trustees:

We previously circulated to you (below) a letter received from Senator Murkowski regarding the Bering River Coal Fields and a proposal to purchase KADCO's coal interests. Subsequently, USDOI Trustee Steve Wackowski requested we add the item to the agenda for discussion at the Nov. 14th Council meeting. We are aware some Trustees were discussing this informally but haven't received further direction.

As per Trustee Wackowski's request, we have added the Bering River coal interests purchase to the agenda and a draft agenda is attached for your review.

Also we wanted to advise you that we are anticipating completing the meeting before 1:30 and are planning to provide lunch immediately after at our office in Grace Hall.

Lauri J. Adams
Exxon Valdez Oil Spill Trustee Council
4230 University Drive, Ste. 220
Habitat Program Director
Direct: (907) 265 9337
Mobile: (907 748 7575
lauri.adams@alaska.gov

From: Stephen Wackowski [mailto:stephen_wackowski@ios.doi.gov]
Sent: Tuesday, October 31, 2017 6:07 PM
To: Adams, Lauri (EVOSTC sponsored)
Cc: Jim Balsiger (jim.balsiger@noaa.gov); Hartig, Lawrence L (DEC); Teri Marceron(tmarceron@fs.fed.us); Mulder, Steven E (LAW); Rogers, David E (DFG); Steve Wackowski (steve_wackowski@ios.doi.gov); Hsieh, Elise M (EVOSTC)
Subject: Re: Letter from Senator Murkowski re Bering River Coal Fields

Does a link to injury analysis cost us anything besides staff time? If not why have we not done the analysis already?

We should engage on this issue with the Energy Committee sooner than later. I support adding it as an item on the next agenda to take some action on.

Sent from my iPhone

On Oct 31, 2017, at 5:48 PM, Adams, Lauri (EVOSTC sponsored) <lauri.adams@alaska.gov> wrote:

> Dear Trustees:

Attached is a letter we recently received from Senator Murkowski asking the Council to consider purchase of coal development rights in a portion of the Bering River coal fields as an EVOS habitat protection project. The coal rights are currently held by the Korean Alaska Development Corporation (KADCO). Representatives of KADCO have brought this proposal to the Council in prior years, and while it has been reviewed informally previously, the Council has not elected to take up the KADCO proposal in its formal deliberations. As you will recall, the Bering River coal fields are located entirely outside of the spill area boundary (to the east of the Copper River Delta, approximately 50 air miles southeast of Cordova).

Since this issue was last brought to your attention in 2016, Chugach Alaska Corporation, the owner of 62,000 acres of the coal interests and approximately 73,000 acres of surface estate overlying the coal fields, has reached an agreement with several non-profit organizations to protect the surface estate of its lands for conservation purposes, while retaining the rights to sell carbon credits. Chugach Alaska has also conveyed its 62,000 acres of subsurface coal rights to the conservation organizations, and the coal rights reportedly have been retired. KADCO was not a part of those agreements and still retains 11,000 acres of coal rights in the same area underlying a portion of the newly-conserved Chugach Alaska surface estate. KADCO acquired its portion of the coal rights originally through a bankruptcy proceeding in 1991. The coal fields have never been developed and it is uncertain if development is economic in today's markets.

The letter from Senator Murkowski makes two requests:

1. It reiterates the request made by KADCO's representatives in 2016 that the Council "**initiate a link-to-injury analysis**" as the first step in deciding whether the Council should commit trust fund habitat monies to acquire KADCO's 11,000 acres of coal rights outside of the spill area boundary, and presumably retire them.

2. The letter also requests that the Council "**undertake the formal assessment needed to justify the expenditure of oil spill settlement funds and perhaps consider the acquisition of the coal leases**" so as to "**inform the Council of the merits of acquiring the lands versus use of the existing settlement funds for other research and habitat proposals.**"

The 1994 *Exxon Valdez* Oil Spill Restoration Plan does not address purchases of property interests outside of the boundaries of the spill area, and Council habitat funds have never been used for that purpose in the Council's history. The Restoration Plan does include the possibility of limited restoration/research/monitoring occurring outside the spill area when specific conditions are met. (See the 1994 Restoration Plan at p. 14) This authority has been used very rarely—only twice to our knowledge—to fund modest scientific research projects outside the spill area that were anticipated to benefit injured wildlife populations within the spill area.

If the Council is inclined to pursue the KADCO coal rights as a possible EVOS habitat protection project, we suggest the central issue for you to decide is whether to authorize habitat purchases outside of the spill area. We do not doubt that a case could be made in various instances that lands outside the spill area could have a link to potential impacts to spill area resources within the boundary (for example, if the lands in question were developed in a way that resulted in significant impacts extending inside the spill zone--collapse of a tailings dam on a tributary river, for example). So, a link-to-injury analysis is not the central question. The central issue for the Council is the decision to undertake to amend the Restoration Plan to allow expenditure of funds for habitat purchases located outside the current spill area boundary.

The oil spill area boundary was drawn broadly in the 1994 Restoration Plan to include "all the shoreline oiled by the spill, severely affected communities, and adjacent uplands to the watershed divide." If the

Council is inclined toward modifying the Restoration Plan to authorize expenditures outside of those boundaries, or to expand the boundaries, it may be beneficial to evaluate a number of considerations:

1. How would the Council determine the limits of how far outside the existing spill area boundary to extend its activities, and what geographic areas new projects would be received from? There may be other projects in addition to the Bering River coal project that might be brought forward in such a scenario. What criteria should the Council use to authorize habitat purchases outside the spill area?
2. The impact on the habitat fund balance of expanding the geographic area of habitat projects. Currently habitat funds are dedicated to beneficial habitat restoration projects in the spill area (river and stream culvert removal, replacements and fish passage upgrades, stream bank restoration projects, enhanced public access for fishing and recreation, clean water projects, etc.), and purchases of high-value habitat within the spill zone that then becomes open to public use for fish and wildlife-oriented recreation.
3. Would a new habitat prioritization need to be prepared for areas beyond the spill area boundary (akin to the current prioritization covering areas within the spill zone) to help determine where the Council should expend remaining habitat funds?
4. The process for making funding decisions outside of the spill area would need to be addressed. The Council may wish to consult with DOJ and each trust agency's attorneys regarding the process, but we would anticipate that a new NEPA document may have to be undertaken before any funding decisions outside the spill area could be made, because the EIS for the present Restoration Plan was limited to the spill area and did not consider habitat acquisitions outside it.
5. What public process should attend a proposal to expand habitat purchases to an area outside the current spill area? Should there be public hearings in affected communities both within and outside the current geographic limits of the spill area? Is this a NEPA issue only or is some greater public consultation effort warranted. (The issue may be divisive as between spill-affected communities within the current spill area boundary and communities outside the boundary.)
6. Narrowing in on the KADCO proposal, the transaction costs should be evaluated, including the costs to complete a mineral appraisal to government standards. We have not previously undertaken an appraisal of mineralized lands for a habitat purchase, so this is a would have to be determined. Engagement with a willing seller is also prerequisite for any EVOS purchase; the Council would want to confirm that KADCO is a willing seller and would be willing to sell at the fair market value as determined by such an appraisal.

If the Council wishes to proceed on the KADCO Bering River coal rights, funding and staff resources from the appropriate trust agencies with expertise in NEPA, mineral assessments, etc. would need to be made available to develop next steps.

We look forward to your direction as to how you would like to proceed. If you would like, we can add this item to the agenda for discussion at the November 14th meeting. If preferred or in addition to any discussion on Nov. 14th we can schedule a subsequent meeting (perhaps in early spring) to consider the proposal.

Elise and Lauri

<10 27 17 Letter from Sen Murkowski to Trustee Council.pdf>

<UPDATED 11.13.17 Draft TC Agenda for Nov 14 2017 TC mtg.docx>

Womac, Cherri G (EVOSTC)

From:	Womac, Cherri G (EVOSTC)
Sent:	Friday, October 27, 2017 8:36 AM
To:	'James Balsiger (jim.balsiger@noaa.gov)'; 'Terri Marceron (tmarceron@fs.fed.us)'; Stephen Wackowski (steve_wackowski@ios.doi.gov); 'Hartig, Lawrence L (DEC)'; Mulder, Steven E (LAW); Rogers, David E (DFG)
Cc:	Hsieh, Elise M (EVOSTC); Adams, Lauri (EVOSTC sponsored)
Subject:	Trustee Council meeting materials update
Attachments:	Draft TC Agenda for Nov 14 2017.pdf; 10.13.17 Draft Reporting Policy.pdf; DRAFT FY18 Annual Budget 10.26.17.pdf; 10.16.17 FY18 DRAFT Work Plan rev 10.26.17.pdf; Draft Sept 28 2017 PAC Meeting Summary.pdf

Trustees:

This year's agenda is lighter than previous years. Commissioner Hartig will need to leave the Council meeting early, approximately 1:30 to return to his Anchorage office to participate in a 2:00 p.m. cabinet meeting with the Governor that afternoon. Please print the attached documents and insert in the Nov 14 meeting binder behind the appropriate tab. The attached documents are also available on the EVOSTC events web page at: http://www.evostc.state.ak.us/index.cfm?FA=events.home

Attached:

A *revised* Nov 14 Council meeting agenda. The Financial Procedures have been removed from the Executive Director's update. The procedures are still under review by the auditor and not ready for review by the Council.

A *revised* Reporting Procedures is attached, the revisions clarify the peer review and submission processes. The earlier version also included updated contact and submission information, electronic documents and the report drafting process.

A *revised* FY18 Draft Work Plan. This revision includes comments and responses by Dr. Gorman to her project 18170111-D. The Panel has recommended Council funding be contingent upon Panel review of a revised proposal addressing the stated concerns before funding is released.

A *revised* FY18 Annual Budget. There has been a reallocation of funds from USGS to USFWS. ADNR is requesting an increase of $10K to cover anticipated costs associated with updating and transitioning the Habitat Catalog to a digital document.

New, Draft Sept 28, 2017 PAC meeting summary.

A *reminder*: A pre-meeting briefing with Commissioner Hartig is scheduled for Thursday, Nov 2, 10:00 to 11:30 at his Anchorage office. If anyone else would like to participate please let Cherri know so she can make arrangements.

Please contact me if you have any questions.

Thank you,

Lauri/Cherri

Womac, Cherri G (EVOSTC)

From:	Womac, Cherri G (EVOSTC)
Sent:	Friday, September 29, 2017 2:41 PM
To:	'James Balsiger (jim.balsiger@noaa.gov)'; 'Terri Marceron (tmarceron@fs.fed.us)'; Stephen Wackowski (steve_wackowski@ios.doi.gov); 'Hartig, Lawrence L (DEC)'; Mulder, Steven E (LAW); Rogers, David E (DFG); Gregory Siekaniec (gregory_siekaniec@fws.gov)
Cc:	Adams, Lauri (EVOSTC sponsored)
Subject:	Revised Nov 14 2017 meeting materials
Attachments:	09.29.17 FY18 DRAFT Work Plan.pdf; 9.29.17 Draft TC Agenda for 11.14.17.pdf

Attached are two revised documents for the Nov 14 Council meeting. For those attending the pre-meeting briefing scheduled for October 3, 2017 at 10:30 am, these updated documents will be referenced.

1. The FY18 Draft Work Plan updated to include the PAC and the Executive Director's recommendations. The PAC and Executive Director have followed the Science Panel and Science Coordinator's recommendations to fund all but one project, which is 18170111-D, Gorman, at page 33 in the Work Plan. The Gorman project is recommended to be 'fund contingent' on satisfactory responses to the Science Panel's questions and comments primarily related to technical issues concerning using scales to assess age of maturity in herring. The proposer is working with the Science Coordinator to respond to the Science Panel's questions.
2. A revised draft meeting agenda. Presentations and discussion of the Herring Research and Monitoring Programs and the Long-Term Monitoring Programs have been moved to the morning, before the lunch break, to accommodate the PIs catching an afternoon flight to Cordova to attend a previously scheduled Work Shop on Nov 15.

Please have these two revised documents printed and insert them in your binder behind the appropriate tabs.

The revised Financial Policy is still under review by the long-time auditor Max Mertz and will be emailed when available.

The Summary of the Sept 28, 2017 Public Advisory Committee's meeting is being prepared and will also be emailed when available.

A reminder of the Oct 3 pre-meeting briefing at the EVOSTC office, suite 220, Grace Hall conference room, 4230 University Drive, Anchorage.
avid Rogers: to participate by teleconference *please call: 907-269-7219*

Please let me know if you have any questions.

From:	Womac, Cherri G (EVOSTC)
To:	"James Balsiger (jim.balsiger@noaa.gov)"; "Terri Marceron (tmarceron@fs.fed.us)"; Stephen Wackowski (steve_wackowski@ios.doi.gov); "Hartig, Lawrence L (DEC)"; Mulder, Steven E (LAW); Rogers, David E (DFG)
Cc:	Hsieh, Elise M (EVOSTC); Adams, Lauri (EVOSTC sponsored)
Subject:	Nov 14, 2017 TC Meeting Materials Summary
Date:	Tuesday, September 19, 2017 2:20:00 PM
Attachments:	Draft TC Agenda for Nov 14.pdf Nov 14 Meeting Materials.zip DRAFT FY18 Work Plan Sept 18 2017.pdf

Hello Trustees,

We look forward to meeting with you:

Internal Briefings: are pre-meeting briefings for individual Trustees in preparation for the Council meeting; Trustees are welcome to attend any scheduled briefings; please contact our office.

Tuesday, Oct. 3rd, 10:30 – Noon: Terri Marceron, Steve Wackowski, Steve Mulder, David Rogers (David via teleconference): at the EVOSTC Office, Second Floor Grace Hall, 4230 University Drive, USGS Complex, APU Campus. The direct line into the conference room is: 907-269-7219**.**

Thursday, Oct. 26th, 9:00 – 10:30 a.m.: Jim Balsiger via teleconference.

Wednesday, Nov. 1, 10:00 – 11:30: Larry Hartig at his office, 555 Cordova St. Anchorage.

Trustee Council Meeting: This in-person meeting will be held Tuesday, November 14th, 10 a.m. to 4:30 p.m. at the Dr. Glenn A. Olds Hall Conference Room; lunch will be provided in the EVOSTC office in Grace Hall. A brief summary of meeting materials and select agenda items is below.

This meeting's agenda is expected to be somewhat lighter than past years. The science program is entering the second year of the second five-year cycle and is on track with regard to its development and progress. The Council has approved several habitat enhancement projects the last couple of years with regard to fish passage, boardwalks for river bank restoration and culvert removals and replacements, and these projects continue to progress as expected. We anticipate developing another new habitat enhancement project, in the Copper River watershed, for your review next year. In addition, last year the Council reviewed a trio of documents regarding lingering EVOS oil: a lingering oil review and update of research, an update of subsistence uses in the EVOS spill area and an ADEC evaluation of remedial options. The Council determined that long-term monitoring is an appropriate action to implement with respect to lingering oil. Final reports and results from recent lingering oil monitoring efforts have been received, and we will be developing a lingering oil monitoring

project for review by the Council at a later date. The EVOSTC Office has also updated the EVOSTC Lingering Oil webpage with the most recent lingering oil information and we would like to thank Dede Bohn (USGS) and Jim Fall (ADFG) for their assistance with that update.

Please let me know if you have any questions or would like additional information.

Thank you!
Elise

Meeting Materials Notebook
Cherri has made notebooks for each of you, tabbed with each agenda item and all attachments to this and any associated emails. For those in Anchorage the notebooks will be delivered to your offices by courier. For those in Juneau, they will be sent FedEx. Detailed budget sheets for the Proposals are not included in your proposal notebook due to their volume but are available from our office upon request. A draft motion sheet and draft resolution(s) will be provided to you at the Council meeting.

Meeting materials are also available on the EVOSTC website: http://www.evostc.state.ak.us/index.cfm?FA=events.home. Full proposals are not included on the website as they are confidential unless funded.

If documents are subsequently updated or added: We will email them to you and post them on the EVOSTC website. Any documents that are updated will include a note with information identifying changes so that review can be limited to the revisions. Documents we anticipate updating or adding in advance of the Council meeting include:

A revised Financial Policy, which is currently being reviewed by our long-time auditor Max Mertz;

the FY18 Draft Work Plan which will include the PAC and Executive Director's recommendations; and

the September 28, 2017 PAC Meeting Summary, available after their meeting.

EVOSTC Fiscal Year: FY18 references refer to the EVOSTC fiscal year: February 1, 2018 – January 31, 2019.

The EVOSTC Public Advisory Committee (PAC) will meet on Sept. 28, 2017 and review the current drafts of the annual budget, and programs and projects in the work plan.

Meeting Materials Include:

FY18 Annual Asset Allocation

The EVOSTC Investment Working Group (IWG) met in the spring to review a presentation by Callan Assoc. (presentation attached) and to determine an asset allocation recommendation for FY18. The IWG currently consists of Paul Erlendson (Callan Assoc.), Bob Mitchell (ADOR), Steve Mulder/Jen Schorr (ADOL), Joe Darnell/Liz Gobeski (DOI Solicitor's Office); Elise Hsieh and Lauri Adams (EVOSTC); and Larry Hartig (ADEC). The IWG is typically assembled in the early spring and Trustees are contacted, should they wish to join or participate.
Over the years, EVOSTC Investment Funds have been invested fairly aggressively, yielding substantial earnings growth for the Council and also having weathered the severe downturn in 2008. As the Investment Funds slowly wind down to an anticipated end in 10-15 years, the asset allocation is tailored to reflect anticipated time horizons and spending patterns. Thus, the asset allocation recommended by the IWG for FY18 reflects a slightly more conservative posture than that in the past few years, while still pursuing a growth and risk-oriented mix.
The asset allocation recommended by the Investment Working Group is Mix 3, shown on page nine of the FY18 Callan Asset Allocation Review document in your meeting materials and is as follows:
Domestic Equities 35% +/-7%
International Equities 22% +/-7%
Domestic Bonds 43% +/-5%
Cash Equivalents 0%+10%/-0%

EVOSTC Policy Updates

The EVOSTC Reporting Policy is being revised to include updated contact and submission information, including electronic documents and clarifying peer review and reporting drafting and submission processes. The EVOSTC Financial Procedures are being revised to streamline the policy and clarify processes for financial reporting regarding transfer of funds.

EVOSTC Annual Budget

The FY18 EVOSTC Budget is similar to last year's budget in its components and allotted funding. There is an approximately $61,000 increase from FY17.

ADNR State Park's Habitat Restoration and Protection Projects: reauthorization of one of six projects, Kenai Flats Project

Last fall the Council approved funding for six riverbank restoration projects that address fish habitat restoration and the protection of habitats that support numerous species affected by EVOS. The primary goal of each project is to restore fish habitats that have been adversely impacted by human activity and to provide continuing habitat protection into the future. The Council funded up to approximately $2.214 million for the six projects. For one project, Project 1: Kenai River Special Management Area (KRSMA): Kenai River Flats Riverbank Protection, the EVOSTC office recommended and the Council funded up to $327,000 of the

$1,436,650 total, as there is potential for federal or other funds to complete the anticipated total budget.

We recommend reauthorization of the previously-approved $327,000 for Project 1 Kenai River Flats, as the timeline for federal application for Alaska Transportation Alternative Program funds is Summer 2018.

The remaining projects and their previously-approved EVOSTC funding are listed below. These projects do not require reauthorization and are advancing, with preliminary design and environmental work taking place. Design and permit work will follow next and are expected to take place in 2018:
KRSMA: Eagle Rock Riverbank Protection: $410,450
Crooked Creek State Recreation Site Riverbank Restoration: $445,900
KRSMA: Kenai River Ranch Riverbank Restoration: $166,200
KRSMA: Pipeline Crossing Riverbank Restoration: $282,450
Anchor River State Recreation Area Riverbank Protection; $426,600

FY18 EVOSTC Draft Work Plan: Scientific Projects and Proposals

The FY18 EVOSTC Draft Work Plan contains proposal abstracts and funding recommendations from the EVOSTC Science Panel, EVOSTC Science Coordinator, Public Advisory Committee, and EVOSTC Executive Director for all projects and programs proposed for FY18. It also includes the annual budget and Habitat Restoration and Enhancement projects, but does not include Habitat Parcels Protection. The Work Plan includes a table with funding recommendations (pg.1). This main table is followed by two tables that list the individual projects within the Long-Term Monitoring and Long-Term Herring Research and Monitoring Programs and individual project funding recommendations, followed by abstracts and funding recommendation comments for each individual project. As noted in the Work Plan Funding Recommendation Tables, all Program submissions are recommended for funding, except that one proposal, Gorman is recommend Fund Contingent (see below under Herring Program).

The Draft Work Plan is a working document and will continue to be updated as reviews progress. It is circulated among the Council, Public Advisory Committee, Trust Agency Staff, Proposers, and posted on the EVOSTC website for public comment.

EVOSTC Long-Term Programs

Long-Term Monitoring - Gulf Watch Alaska (GWA) Program

The GWA Program is progressing well; Mandy Lindeberg, Program Lead, is continuing to strengthen coordination of logistics and synthesizing results. All projects are recommended for funding by the Science Panel and Science Coordinator. The output from this program is to be noted: 19 papers have been accepted in a peer-reviewed journal, 45 datasets have been

made public. Program and Project Goals are being achieved in a timely manner and plans for FY18 have not shifted from their original submission.

Long-Term Herring Research and Monitoring Program (HRM)

The Herring Program is also continuing to progress. Program goals are being achieved in a timely manner and all projects are recommended for funding by the Science Panel and Science Coordinator, except for one project. One HRM project, Principal Investigator Gorman, is a Fund Contingent upon the Program Lead and Principal Investigator's satisfactory responses to questions and comments related to using scales to assess the age of maturity of herring:

Gorman 18170111-D: Studies of Reproductive Maturity among Age Cohorts of Pacific Herring in Prince William Sound, Alaska (pg 33 of the FY18 EVOSTC Draft Work Plan, rev. 18 Sep 2017).

The Herring Program has also requested additional funding for expanded PWS sampling and both Programs request shifting of funds for additional work by qualified post-docs in FY18:

Herring Program request for expanded PWS sampling: Of particular significance, last year Project 18120111-E (Herring Disease Program II) developed a reliable test to detect antibodies associated with the viral hemorrhagic septicemia (VHS) virus, which may be contributing to the lack of recovery of herring populations in PWS. Outbreaks of the VHS virus in herring can occur over a short period of time with large mortality. This test allows researchers to determine when herring were exposed to the VHS virus within at least the last year, which will provide a better measure of mortality between sampling events. Archived samples were analyzed for VHS virus antibodies and, notably, the concentrations were much higher in the PWS herring population all the years analyzed (2012 – 2016) compared to herring in Sitka. These results may indicate why the herring biomass suffered a rapid decline over the past few years. Because of this important achievement in FY17, the Herring Program is looking to expand the PWS field sampling efforts to more fully understand the demographics of these observations. If these data were separated into age classes, then the antibodies could be followed by year class and the life stage at which herring were exposed to the VHS virus could be determined. This would allow managers to incorporate more detailed information about disease and age of exposure into the age-structured assessment (ASA) model, which would improve its performance. Thus, the Herring Program has requested and the Science Panel, Science Coordinator and PAC support an additional annual funding of $24.5K starting in FY18 to expand sampling efforts.

Both Programs' request to shift FY18 funds to support Post-Doc Work: As per the FY17-21 EVOSTC Invitation, approximately $278,000 for FY17-20 was designated for funding one three-year post-doc position, and this funding is included in the Herring FY17-21 Budget. Two highly qualified candidates applied for this post doc work. One proposal (Groner: $265,000 for FY17-20) would be funded under the currently approved funding and addresses the role of disease

as a top-down force affecting both herring recruitment and standing biomass, which will be important in light of the catastrophic spawning biomass over the last three years. A second proposal (McGowan: $330,000 for FY17-20) examines the statistical relationships between herring recruitment and bottom-up and top-down forcing factors which provides the critical synthesis of data between the Herring and Long-Term Monitoring Programs over the last five years. The Programs' post-doc selection committee, Science Panel and Science Coordinator consider both proposals of high enough quality to merit funding. Each proposal will provide different but necessary information that will benefit the EVOSTC Programs.

As noted, there is funding for one of the three-year post docs (Groner) already included. In addition, the FY1-21 Invitation included $150k for a Cross-Program Publication Group, which as some of you may recall from last year, has not attracted any successful proposals. We suggest using these CPPG funds this year toward the first year of the second post-doc (McGowan). Funding for FY19 and FY20 for McGowan would be expected to continue and would be requested in those future years' budgets.

Pigeon Guillemot (PIGU) Restoration Research in PWS (Kaler 18100853)

The Science Panel and Science Coordinator support the funding for the final year of this five-year active restoration project. During the 2017 field season, no new mink were trapped but there was snow for the first time in four years and mink tracks were observed. The Project will continue its winter and spring mink trapping and monitoring of PIGU nest sites on both Naked Island and the control islands. The Project has experienced success beyond their initial projections: counts of pigeon guillemots at Peak, Naked and Story Islands have doubled in two years. Numbers of pigeon guillemots counted at control islands did not have a similar increase. Surveys of breeding guillemots found the number of nests had more than quadrupled since 2014. Colonies are starting to form with up to 10 nests in one area. Productivity during the chick stage was high, around 80%, indicating that the adults could find enough food for their chicks. The Project continued to remove mink adjacent to nesting sites in FY17 and is requesting an expanded trapping permit from ADF&G for FY18.

Immunological Expressions – (Whitehead 18170115)

This strongly supported continuing project is progressing well. State and federal agency researchers at ADF&G and NOAA are collaborating well with Project PIs. The ADF&G staff has been helpful and responsive with sending tissue collections, which has contributed to the goals of this project being achieved in a timely manner. The analysis of samples has also been conducted cost-effectively, which has allowed for additional samples to be collected at other locations because the work is ahead of schedule the PI has proposed shifting a small portion of future years funding forward to FY18 to accelerate the work schedule.

Habitat Protection Parcels – Port Valdez

Meals Hill Parcels

The meeting materials include a Benefits Report for the Meals Hill parcels in Port Valdez. As background information: any purchase of a property interest using EVOSTC funds requires EVOSTC approval of a purchase price or range, an EVOSTC-approved appraisal; and completion of extensive due diligence, the results of which are acceptable to the agencies accepting a property interest and to their legal advisors; and a finding by the EVOSTC Executive Director, informed by the agencies accepting a property interest and their legal advisors that it is in the best interest of the Council to move forward with the acquisition of the property. Due to the requirements of the Trust Funds, funds are authorized for an 18-month period, after which they come before the Council for re-authorization, if necessary. As with all Council-funded habitat protection, the Council only considers purchase values that are consistent with an EVOSTC-approved fair market value appraisal process.

This project encompasses the protection of approximately 184 acres in the Port Valdez area adjacent to the Valdez Ferry Terminal in Prince William Sound. The Meals Hill property consists of two parcels that contain habitat ranked in the highest priority category in the 2014 Great Land Trust EVOS Habitat Land Prioritization. The parcels are also in close proximity to prior EVOSTC habitat protection projects and thus build upon past EVOSTC efforts. The parcels would be transferred to the State of Alaska, Department of Natural Resources. A conservation easement would be held by the U.S. Bureau of Land Management.

Acquisition of this property would contribute to EVOSTC area-wide goals including habitat protection for injured species and enhanced recreation opportunities. EVOS-affected species are dependent on the coastal, wetland, and upland habitats provided by these parcels. Protection of the parcels would conserve habitat for fish, shore birds, seabirds, migratory birds, and mammal species. The protection of Meals Hill will provide new recreational opportunities by securing public access to a unique, locally accessible coastal property with existing trails for non-motorized recreation along the coast and within walking distance to the Ferry Terminal, Valdez Small Boat Harbor and downtown Valdez. Protection of the property will create public access for multiple recreational activities including hiking, biking, kayaking, bird and wildlife viewing, and berry picking.

Funding Request: Not to exceed $5,200,000; appraisal expected late fall 2017.

Womac, Cherri G (EVOSTC)

From: Womac, Cherri G (EVOSTC)
Sent: Wednesday, May 10, 2017 9:24 AM
To: 'James Balsiger (jim.balsiger@noaa.gov)'; 'Terri Marceron (tmarceron@fs.fed.us)'; Greg Siekaniec; 'Hartig, Lawrence L (DEC)'; Rogers, David E (DFG); Mulder, Steven E (LAW)
Cc: Hsieh, Elise M (EVOSTC)
Subject: EVOSTC Programs Reallocation of Unspent Admin Funds

Hello Trustees,

No response is required, but if you have an alternative recommendation to that detailed below, please let me know by May 19:

The EVOSTC Long-Term Programs, which started their second five-year term Feb. 1, have requested a reallocation of $69,000 in unspent administrative funds from the first five-year term for uses that benefit both programs: $39,000 to be reallocated to a Deep Sea Research II special edition publication for open access and color imprint expenses and $30,000 added to an on-going aerial forage fish survey. The current EVOSTC Financial policy allows transfers of up to 10% or up to $10,000 between projects and thus the $69,000 amount is above that automatically-allowed amount.

We support the Programs' efforts to efficiently re-allocate unspent funds from their first five-year term and are pleased to facilitate this effort by approving a transfer of the funds between projects. If you would like more information, have any questions or if you have an alternate recommendation, please email me by May 19.

Thank you,
Elise

Draft 11.13.17

Exxon Valdez Oil Spill Trustee Council

4230 University Drive Suite 220 • Anchorage, AK 99508-4650 • (907) 278-8012 • fax 276-7178

AGENDA
EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
November 14, 2017
10:00 a.m. to 4:30 p.m.
Anchorage, Alaska

Trustee Council Members

STEVEN E. MULDER
Alternate for Attorney General Jahna Lindemuth
Alaska Department of Law

JAMES BALSIGER
Administrator, Alaska Region
National Marine Fisheries Service
U.S. Department of Commerce

LARRY HARTIG
Commissioner
Alaska Department of Environmental Conservation

TERRI MARCERON
Forest Supervisor
Chugach National Forest
U.S. Department of Agriculture

DAVID E. ROGERS
Alternate for Commissioner Samuel Cotten
Alaska Department of Fish and Game

STEPHEN WACKOWSKI
Senior Advisor to the Secretary for Alaska Affairs
Office of the Secretary
U.S. Department of the Interior

Meeting in Anchorage: USGS Alaska Pacific University Campus;
Dr. Glenn A. Olds Hall Conference Room, 4210 University Drive
Teleconference Number: 800.315.6338. Code: 72241#

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Draft 11.13.17

1. Call to Order	
2. Consent Agenda - Approval of Agenda* - Approval of January 11, 2017 Meeting Notes*	
3. Public Comment (3 minutes per person)	
4. Public Advisory Committee (PAC) Comments - September 28, 2017 meeting summary	*Kurt Eilo*, PAC Chair
5. 2016-2018 PAC Conservation/Environmental seat vacancy, status of solicitation	*Phil Johnson*, PAC Designated Federal Officer US Dept. of the Interior
6. Investment - Annual Asset Allocation*	Elise Hsieh, EVOSTC Executive Director Lauri Adams, EVOSTC Habitat & Admin Support *If needed, available for questions:* *Paul Erlendson,* Callan Associates Inc. *Bob Mitchell,* AK Dept. of Revenue
7. Long-Term Programs Intro - Long-Term Monitoring Program (Gulf Watch Alaska) Project 18120114* - Herring Research and Monitoring Program (HRM) Project 18120111* - Data for Long-Term Programs Project 18120113*	Shiway Wang, EVOSTC Science Coordinator *Mandy Lindeberg,* NOAA Auke Bay Laboratories *Scott Pegau,* Prince William Sound Science Center *Carol Janzen,* Alaska Ocean Observing System
8. Lingering Oil, Immunological Expressions Project 18170115*	Shiway Wang *If needed, available for questions:* *Andrew Whitehead,* UC Davis, Dept of Environmental Toxicology
Break	
9. Pigeon Guillemot Restoration Research in Prince William Sound (PIGU) Project 18100853*	Shiway Wang *If needed, available for questions:* *Robert Kaler,* US Fish & Wildlife Service *David Irons,* US Fish & Wildlife Service, retired
10. Executive Director Updates - Reporting Procedures* - Habitat Update Catalog	Elise Hsieh/Lauri Adams

- Copper River Watershed Habitat Enhancement Project
- Lingering Oil Long-Term Monitoring

11. FY18 EVOSTC Annual Budget Project 18180100*	Elise Hsieh/Lauri Adams Linda Kilbourne, EVOSTC Administrative Manager
12. Reauthorization of State Parks Kenai River Flats Riverbank Protection Project 17170116*	Elise Hsieh/Lauri Adams *If needed, available for questions:* *Rys Miranda*, P.E., Chief of Design and Construction, Div. of Parks and Outdoor Recreation, ADNR
13. Habitat Protection Parcel - Port Valdez - Meals Hill*	Lauri Adams, EVOSTC Habitat & Admin Support *If needed, available for questions:* Great Land Trust Staff
14. Bering River Coal Fields KADCO Coal Interests*	Elise Hsieh/Lauri Adams

Adjourn

*Potential Action Item

DRAFT 1.27.17

Exxon Valdez Oil Spill Trustee Council

4210 University Drive • Anchorage, AK 99508-4626 • 907 278 8012 • fax 907 276 7178

TRUSTEE COUNCIL MEETING NOTES

Anchorage, Alaska

January 11, 2017

Chaired by: Michael Johnson
Trustee Council Member

Trustee Council Members Present:

Terri Marceron, USFS
•Michael Johnson, USDOI
Jim Balsiger, NMFS
Steve Mulder, ADOL **
David Rogers, ADF&G *
Larry Hartig, ADEC

- • Chair
- * David Rogers alternate for Samuel Cotten
- ** Steve Mulder alternate for Jahna Lindemuth

The meeting convened at 10:10 a.m., January 11, 2017 on the USGS Alaska Pacific University Campus, Dr. Glenn A. Olds Hall Conference Room, 4210 University Drive, Anchorage.

1. Approval of the January 11, 2017 meeting agenda

APPROVED MOTION: Motion to approve the January 11, 2017 draft meeting agenda.

Motion by Hartig, second by Mulder

2. Approval of the November 3, 2016 meeting notes

APPROVED MOTION: Motion to approve the November 3, 2016 draft Trustee Council meeting notes with corrected spelling of David Rogers last name, deleting the "d".

Motion by Hartig, second by Rogers

Public Comment: **Two public comments were offered.**

3. Approval of Kodiak Island Habitat Enhancement Buskin River Watershed Project 17170779

APPROVED MOTION: Motion to approve $4,535,533, which includes GA, for authorization of the Kodiak Island Habitat Enhancement Buskin River Watershed Project 17170119, dated December 1, 2016. This authorization is valid until July 11, 2018.

Motion by Hartig, second by Mulder

4. Approval of Habitat Protection

APPROVED MOTION: Motion to approve funding for the protection of the following parcels with purchases of interests in land to be at the fair market value established by an approved appraisal and the total cost of which, including due diligence and closing costs, does not exceed the amount noted for each parcel:

A. Parcel KEN 4006, Kasilof River Parcel (Lot 31), Kenai: $165,000;
B. Parcel KAP 4007, Spiridon Bay, Kodiak National Wildlife Refuge: $180,000;

These purchases are further conditioned upon:

1. due diligence reports, which are acceptable to the Alaska Department of Natural Resources, U.S. Department of Interior Solicitor's Office and the Alaska Department of Law; and
2. provided that the EVOSTC Executive Director, in consultation with the Alaska Department of Natural Resources, U.S. Department of Interior Solicitor's Office and Alaska Department of Law, determines that it is in the interest of the Council to move forward with purchase of the interests in the Parcels.

Authorization for funding for the purchase of interests in the Parcels shall terminate if purchase agreements are not executed by July 11, 2018.

Motion by Mulder, second by Hartig

5. Approval of Revised FY17 EVOSTC Annual Budget, Project 17120100

APPROVED MOTION: Motion to approve an addition of $51,230 for ADNR Realty Services, which includes GA, to the FY17 Annual Budget previously approved by the Council in Resolution 16-02.

Motion by Hartig, second by Mulder

Adjourn at 10:45 Unanimous consent, no motion.

Meeting Summary

A. GROUP: *Exxon Valdez* Oil Spill Trustee Council (EVOSTC) Public Advisory Committee (PAC)

B. DATE: September 28, 2017

C. LOCATION: Dr. Glenn A. Olds Conference Room, 4210 University Drive, Anchorage, AK

D. MEMBERS IN ATTENDANCE: (T = via teleconference)

Name	Principal Interest
Kurt Eilo	Sport Hunting/Fishing, PAC Chair
Gary Fandrei	Aquaculture/Mariculture
John French	Science/Technical, PAC Vice-chair
Stacy Studebaker	Recreational Users
Amanda Bauer	Commercial Tourism
Patience Andersen-Faulkner	Subsistence
George Skladal	Public at Large
Emilie Springer	Commercial Fishing

E. NOT PRESENT:

Name	Principal Interest
David Totemoff, Sr.	Native Landowner
VACANT	Conservation/Environmental

F. OTHER PARTICIPANTS:

Name	Organization
Lauri Adams	Trustee Council Habitat Program Director
Philip Johnson	Designated Federal Officer, Department of the Interior
Shiway Wang	Trustee Council Science Coordinator
Linda Kilbourne	Trustee Council Staff
Helen Woods	Alaska Resources Library and Information Services
Cherri Womac	Trustee Council Staff
Mandy Lindeberg	National Oceanic and Atmospheric Administration
Rys Miranda	Alaska Department of Natural Resources – State Parks
Scott Pegau (T)	Oil Spill Recovery Institute
Katrina Hoffman (T)	Prince William Sound Science Center
Sylvia Kreel (T)	Alaska Department of Natural Resources
Christine Kehr(T)	General Accountability Office (GAO), Assistant Director
Amy Ward-Meier (T)	GAO, Senior Analyst
Dan Will (T)	GAO, Analyst
Jessica Lewis (T)	GAO, Analyst
Travis Schwartz (T)	GAO, Analyst

H. SUMMARY:

At 10:00 a.m. the Designated Federal Officer (Philip Johnson) opened the meeting and took roll call of PAC members. Seven members were present, establishing a quorum; an eighth member arrived later.

Kurt Eilo was re-elected as PAC chair and John French was re-elected as vice chair.

The PAC approved a slightly modified agenda (the order of two speakers was changed).

The PAC also approved the September 22, 2016 meeting summary. The chair will sign the meeting summary and it will be posted on the Trustee Council web site.

Johnson updated the PAC on the status of the Conservation/Environmental seat vacancy. Kate McLaughlin resigned from the PAC in April, 2017 because she was hired by one of the Trustee agencies (U.S. Forest Service). Johnson reported that the next step is to advertise the vacancy in the Federal Register. Prior to publication of this notice, he will obtain the required surnames (signatures) from within the DOI. He expects to initiate this process prior to the Trustee Council meeting in November, 2017.

Public Comment: The floor was open for public comment, telephonically and for attendees.

Mandy Lindeberg (NOAA), program lead for Gulf Watch Alaska (GWA), has worked on *Exxon Valdez* oil spill (EVOS) issues since the 1990s, and she thanked the PAC for their work and contributions to the public process.

No comments were provided by phone participants.

Executive Director's Report:

Lauri Adams (Trustee Council Habitat Program Director) provided the Executive Director report, as Elise Hsieh was unable to attend.

Adams noted that the Trustee Council appreciates the work of the PAC. She reported that Catherine Boerner (former Science Coordinator) has left the Trustee Council. The new Science Coordinator is Dr. Shiway Wang. Dede Bohn with the U.S. Geological Survey (USGS) has retired; however, other USDOI staff will be working with the program. .

Proposed changes to the Reporting Procedures are found in the packet of meeting materials.

With respect to finances, an external audit was performed within the past year. It was a "clean audit" with no recommendations. The Restoration/Research and Habitat subaccounts are managed by the Alaska Department of Revenue. There is approximately $100 million remaining in the Research subaccount, with an additional $98 million in the Habitat subaccount. These totals include already encumbered funds. Details regarding the *Exxon Valdez* Oil Spill Investment Fund are available on the Alaska Department of Revenue's web site: (http://treasury.dor.alaska.gov/Investments/Exxon-Valdez-Oil-Spill-Investment-Fund.aspx).

In response to a question, Adams discussed the Long-Term Spending Plan. The Trustee Council is in year 7 of a 20-year spend down plan of the account's principal. The spending trajectory is on track at the present time..

Adams discussed ongoing work and reports on lingering oil that were completed during the past year. The EVOSTC web site has been updated with new information on lingering oil, including an overview/summary of the most recent work for the public. Adams also noted that the Trustee Council is working on a proposal for targeted monitoring of lingering oil within the next year.

The PAC offered comments on lingering oil issues raised during the Executive Director's report. Studebaker noted that new generations of Alaskans are not aware of EVOS issues including lingering oil and ongoing monitoring program work. The Trustee Council should do more outreach on these issues.

French discussed new chemistry information coming out of the Deep Water Horizon (DWH) oil spill, with the identification of a reported 50,000 – 100,000 compounds in crude oil. These include polar aromatics which are appearing in fractions previously thought to not be bioavailable, including bio reactive (toxic) compounds found in asphaltenes. In the future, EVOS researchers should monitor a larger set of compounds. More consideration is needed on what constituents should be studied.

French also discussed biomarkers. In the past, CYP-1A has been studied, however it is not the best biomarker as its induction is not specific to oil exposure. French is a member of the *State of the Science on Dispersants in the Arctic – Human Health* working group [https://crrc.unh.edu/dispersant_science]. The group is looking at the efficacy of various biomarkers, which differ in sensitivity by an order of magnitude. French hopes this new science can be reflected in efforts to investigate lingering oil in future science plans.

Adams continued her report with a discussion of habitat restoration projects. Multiple sites are being addressed in several Kenai Peninsula projects, while another habitat restoration project is underway in the Buskin River watershed on Kodiak Island. Restoration work includes improvements to fish passage and stream bank restoration. These projects involve significant leveraging of funding from the Alaska Department of Transportation, the U.S. Coast Guard, and many other partners. All projects are on track for on-schedule completion. A similar Copper River watershed stream restoration project is under development and will likely be presented next year.

The DNR Habitat Catalog update is proceeding. The project team has recommended updating the technology to transition from a series of downloadable maps (PDF format) to an online, scalable and searchable catalog. The goal is to have this interactive habitat catalogue completed by FY 2019. This approach will be more user-friendly and more cost-efficient, as it will be more easily maintained and updated in the future. French noted that some people in Alaska do not have ready access to computers and he recommended that print copies also be available for the public.

Studebaker, a long-serving PAC member, expressed concern about the lack of public knowledge on the tremendous legacy of work conducted by the Trustee Council. The Trustee Council needs to get the word out about accomplishments. For example many people on Kodiak Island are not aware of the Trustee Council's role in establishing the Termination Point Conservation Easement.

Adams noted that the EVOSTC staff routinely responds to many individual public inquiries and that the web site and ARLIS library resources are utilized by many thousands of public inquiries annually. In recent years, other outreach has been conducted by the individual trustee agencies. Obtaining approval of Trustee Council outreach products by all six trust agencies has been time-consuming and inefficient in the past. When the EVOSTC programs were made more streamlined and focused in the spend-down plan implemented by the Council several years ago, the budget for outreach activities was folded into the administrative budget as those activities overlap.

French remarked that so much information has been generated by the efforts of the Trustee Council, and there needs to be a way to reach the public about issues that can affect their lives. Some touting of accomplishments by the Trustee Council is warranted.

EVOSTC Annual Budget:

Adams reported that the annual budget is similar to last year and has remained fairly stable over the past several years. There is a proposed $61,000 increase for this year. This includes roughly $30,000 for habitat expenses, including expanded work on various parcels and due-diligence work. An increase of approximately $58,000 is for additional staff time at the Alaska Resources Library and Information Services (ARLIS) to help complete scanning and cataloging the backlog of historic Trustee Council documents. Trust agency staff support to the Trustee Council also increased by approximately $11,000. These increases were partially offset by cost reductions in other areas, as detailed in the budget.

The PAC asked about the decrease in the budget for PAC administrative costs. The Trustee Council staff reported that this reflected decreased federal agency costs, as DOI has been carrying over a balance and the agency wants to spend down this balance. The carryover was due to a reduction in meetings and travel costs, compared to the past. There has been no decrease in DOI or Trustee Council support for PAC activities. French asked if sufficient funding was available to support DOI time. Johnson responded that for this fiscal year the funding was sufficient and that the funding request for the next fiscal year would be evaluated prior to the next PAC meeting.

French reminded the PAC that the public outreach component was zero after 2016. Eilo also noted the importance of this issue, recommending various outreach avenues that might be pursued, including participation in various public forums. The PAC had been silent on this issue for years, and the public perception is that EVOS issues and work are done. Eilo recommended that as the science ramps down, the outreach efforts should ramp up. Fandrei discussed the need to remind the public of the EVOS and warned about complacency.

According to French, our understanding of oil science is tied to big events, such as EVOS and DWH. It takes 10-15 years to publish data and some of the DWH science papers are coming out at the same time that public awareness of that spill is decreasing. Considering the potential for increased development in the Arctic, we need to use the best available science and apply lessons learned. French recounted the example of the pesticide DDT, which nearly resulted in the extinction of some raptor species. Echoing Fandrei, he warned about the need to overcome complacency and to get the word out about the effects of oil spills on the environment. French also noted that such complacency was the cause of the EVOS.

French noted the need to trust in facts, including science and chemistry. The federal and State agencies are doing good work. The main need is to revive public knowledge of these issues. He encouraged the Trustee Council staff and/or scientists to present at AFE.

Andersen-Faulkner also warned about complacency, as our population ages and memory of the EVOS wanes. While the Trustee Council and the Prince William Sound Regional Citizens Advisory Council (PWSRCAC) staff know about these issues, there is a need to reach other demographics. She noted that the Alaska Federation of Natives was another potential audience. An example of public awareness is annual reminders of the 1964 earthquake that are published annually in Alaska newspapers. Andersen-Faulkner reminded the PAC that the 30th Anniversary of the EVOS is coming up and an outreach plan is needed. The Trustee Council does not need to spend a lot of money on it, but it is important.

Adams replied that the PAC's perspective was important and she would take this information back to the Trustee Council and the Executive Director for consideration. She also noted the importance of the EVOS web site and ARLIS in delivering information to the public.

Katrina Hoffman discussed NOAA efforts to develop a special issue on the first five-years of the Gulf Watch Alaska program. Fandrei appreciated the work presenting the science, but noted often that is "speaking to the choir." He advocated for taking the science to a non-technical audience.

French mentioned that most projects include a synthesis step. He reported that the PWSRCAC was trying to enhance their public messaging by issuing a request for proposals.

Emilie Springer emphasized the importance of connecting with younger age groups. It is very important to reach youth and inform them of these issues.

Studebaker provided an example of using social media to share information on a recent lingering oil report. She posted this as a member of the public, not as a PAC member.

Adams and Wang said they were looking for opportunities to accelerate the schedule for publishing reports. Eilo said there is a need to generate public interest in the results of the Trustee Council's work, not just serve up data.

State Parks Project:

Reauthorization of one of a suite of six State Parks Riverbank Restoration & Protection projects (17170116) originally approved by the Council in 2016 was considered. This project was previously authorized to fund up to $2.24 million to support six streambank and fish habitat projects on the Kenai Peninsula. Five of the six projects are currently underway. The sixth, Kenai River Flats Riverbank Protection Project, was approved by the Council last year for $327,000, anticipating the possibility of leveraging federal transportation funds for the remainder of the project's costs. The State's application for federal funding is due in the summer of 2018. Due to this timing, the project managers are requesting to reauthorize the previously-approved amount of $327,000. This restoration project is expected to be completed by 2020.

Studebaker recently floated the Kenai River and she had not realized previously the amount of erosion that is occurring. She said that the restoration work being conducted is impressive.

Rys Miranda, with the Alaska Department of Natural Resources State Parks Division, was asked whether the parking area at Kenai River Flats area was going to be expanded. He replied that the parking area would be improved, but not expanded, as the intent is to accommodate current use and allow public access to the river with fewer impacts to the habitat. Fandrei raised concerns that these improvements may cause additional traffic problems in the area. Miranda replied that the Kenai River Special Management Plan is also under review.

French asked whether the Trustees should consider projects for further protection of Kenai riverbank habitat. Adams explained that the agency staff overseeing the current slate of restoration projects is operating at full capacity right now, but that the restoration benefits of the projects are notable, and the Council is open to considering additional projects in the future. Miranda said he would discuss that issue with his management.

Fandrei noted that these areas get a lot of use for both fishing and duck hunting, and the Kenai River is a resource for the entire Peninsula.

FY 2018 Draft Work Plan:

The Science Coordinator presented information on the FY18 Draft Work Plan and the status of the various funded programs. FY18 is the second year of the second 5-year program. All projects submitted proposals for renewal.

Long-Term Monitoring Programs – Gulf Watch Alaska (GWA):

The GWA program is progressing well. The Science Panel is pleased with the quality of the proposals and recommends funding the entire program. Program Lead, Mandy Lindeberg, and her management team continue to strengthen coordination of logistics and synthesizing results. The program has had a productive year with 19 papers accepted in a peer-reviewed journal and 45 data sets have been made public. Principal Investigators (PIs) are achieving program and project goals in a timely manner. Plans for FY18 have not shifted from their original submission in FY17. Notable highlights from FY17 include the following:

One project "The Seward Line: Marine Ecosystem Monitoring in the northern Gulf of Alaska," led by Hopcroft/Danielson/Coyle was awarded the Long-term Ecological Research (LTER) funding by the National Science Foundation. This award will allow the program to enhance its monitoring footprint by expanding sampling on the shelf upstream of PWS, including near Middleton Island.

Recent findings for 2014 – 2016 are that a warm water anomaly was present throughout all of the Program regions and a decline of cold-water phytoplankton species, with an increase of warm water species, was observed. This anomaly may be linked to seabird die offs in 2015 and 2016 and also sea star wasting disease observed in the nearshore study regions during 2014 – 2016.

Middleton Island monitoring data indicate that capelin virtually disappeared from seabird diets in 2014 – 2016, and in 2017 showed Black-legged Kittiwake diets were comprised of few fish, with copepods as the major component of their diets.

GWA is working on forging new relationships with other research efforts by making contributions to the PICES (North Pacific Marine Science Organization) 5-year report, contributing to the

National Marine Fisheries Service (NMFS) Ecosystem Considerations Annual Report to the National Pacific Fishery Management Council (NPFMC). Additionally, there will be a special synthesis session and workshop with the NPRB-funded Gulf of Alaska Integrated Ecosystem Research Program (GOA IERP) at the Alaska Marine Science Symposium in January 2018.

***PAC Discussion of the GWA Program*:**

Studebaker reported that four dead humpback whales were found on Kodiak Island beaches this year. No whale biologists were available to perform necropsies. Capelin had been found to be closer inshore this year, potentially contributing to these stranding events.

French advocated for maintaining existing transects, but the Trustee Council should consider a new transect from Glacier Island to Hitchinbrook Entrance, along the southeast side of Montague Island, then south to the continental slope. This higher density of data would require more funding. Wang noted that the LTER funding will support an additional transect near Middleton Island. French said overall the researchers are making progress and that takes funding and staff. Collecting oceanographic data is expensive.

Studebaker asked if they are studying ocean acidification (OA). Wang said that the Seward Line does collect data on OA (now in its 10th year). The Alaska Ocean Observing System has published information on this in a newsletter. The Alaska Marine Highway System ferry Columbia has also been collecting data on OA.

Long-Term Monitoring Programs – Herring Research and Monitoring (HRM):

The HRM program is also continuing to make progress. Program goals are being achieved in a timely manner and all projects except for one are recommended for funding by the Science Panel.

The one exception is *Studies of Reproductive Maturity among Age Cohorts of Pacific Herring in PWS*, for which the Science Panel recommends that funding should be contingent upon the PI's satisfactory responses to questions and comments that are mainly related to some technical issues regarding using scales to assess the age of maturity of herring. The PI has been very responsive, quickly replying to the Science Panel's comments and questions. The Science Panel is reviewing the PI's responses and will review a revised proposal for this project before supporting a release of any approved funds.

The herring program has also been productive this year. Manuscripts from the first 5-year program are making their way through the review process; a special issue in Deep Sea Research II is due by the end of the year.

Overall, plans for FY18 HRM work have not changed from their original submission in FY17 except for two projects:

Herring Disease Program II (18120111-E Hershberger)

Last year the project developed a reliable test to detect antibodies associated with the viral hemorrhagic septicemia (VHS) virus, which may be contributing to the lack of recovery of herring populations in PWS. VHS virus outbreaks can occur over a short period of time with significant mortality. This test allows researchers to determine when herring were exposed to

the VHS virus within at least the last year, which will provide a better measure of mortality between sampling events.

Archived samples were analyzed for the virus antibodies and, notably, the concentrations were much higher in the PWS herring populations in all the years analyzed (2012-2016) compared to herring in Sitka. These results may indicate why the herring biomass suffered a rapid decline over the past few years. Because of this important development last year, the herring program would like to expand the PWS field sampling efforts to more fully understand the demographics of these observations. If these data were separated into age classes, then the antibodies could be followed by year class, and the life stage at which herring were exposed to the virus could be determined. This would allow managers to incorporate this more detailed information about disease and age of exposure into the age-structure assessment model and improve model performance.

The herring program has requested, and the Science Panel and the Science Coordinator support the request for an additional annual funding of $24.5K starting in FY18 to expand sampling efforts.

Post-doctoral Fellows

The other requested change in FY18 is in regard to the post-doc position(s). In the FY17-21 Invitation, approximately $278K for FY18-20 was designated for funding one 3-year post-doc position, which was included in the Herring Program FY17-21 Budget. Two highly qualified candidates applied for the post-doc position.

One proposal will be funded under the currently authorized funding and addresses the role of disease as a top-down force affecting both herring recruitment and standing biomass, which will be important in light of the catastrophic decreases in spawning biomass over the last three years.

A second proposal will examine statistical relationships between herring recruitment and bottom-up and top-down forcing factors, which will provide the critical synthesis of data between the Herring and GWA programs over the last five years.

The Programs' post-doc selection committee, Science Panel and Wang consider both post-doc proposals to be of high quality and merit funding. Each proposal will provide different but necessary information that will benefit the Trustee Council's Programs.

As noted, there is funding for one of the 3-year post-docs already included in the Herring program budget. There is no funding dedicated for a second 3-year post-doc. The FY17-21 Invitation included $150K for a Cross-Program Publication Group, which has not attracted any successful proposals. The Science panel recommends using these Cross Program Publication Group funds this year toward the first year of the second post-doc to undertake the data synthesis work. Funding for this second post-doc would be expected to continue in FY19 and FY20 and would be requested in those future years' budgets. This second post-doc would work with Trevor Branch (Modeling and stock assessment of PWS herring; 18120111-C Branch).

Some HRM highlights from FY17:

- *Annual Herring Migration Cycle (tagging study- Bishop)*

- In February 2017, additional receivers were deployed to determine which direction herring travel after detection, back into PWS or out towards the GOA.
- In April 2017 another acoustic receiver array was deployed at Port Gravina, the site of all known spawning by PWS herring during 2017. Researchers also tagged 125 herring at that location using tags with an extended transmitter life to find out when herring depart from monitored spawning areas and the time of year that they return. At last report 58 of the 125 fish tagged have been observed at entrances to PWS, most in Port Gravina.

- *Modeling and stock assessment (Branch)*
  - The PWS herring crash is unusual in magnitude and duration compared to other herring population crashes around the world. Most do not experience this degree of decline or the length of time to recover.
  - As mentioned previously, the Herring Program has requested additional funding for a second post-doc to work with the PI Trevor Branch.
- *Age at reproductive maturity (Gorman)*
  - Over 800 fish were processed last spring.
  - During the fall capture cruise, researchers were able to catch adult herring but not in ideal samples sizes. They found small schools of adult herring in Port Gravina but not at other locations.
- *Disease Program II (Hershberger)*
  - Development of the test to detect the VHS virus antibody has already been discussed.
  - Hiring of a 3-year post-doc to help address the role of disease in herring recruitment and biomass also was previously discussed.
- *Age & Aerial Surveys (Haught)*
  - Considerable effort was put into these surveys, with few fish found.
  - Little spawning activity was observed.
  - Fish ages ranged from 3-5 years, with older fish age classes missing.
- *Acoustic Surveys (Rand)*
  - Initial estimates from FY17 are slightly more than last year.

***PAC Discussion of the HRM Program*:**

Regarding the VHS study, French indicated that it is good to have more than one control site or area. He wondered what is happening at Kodiak Island. How expensive is it to add a site? The additional data would help us understand the distribution of the virus. Scott Pegau, HRM program lead responded, noting that this monitoring is also occurring in Puget Sound. Pegau said that Kodiak herring are genetically very different, which might complicate interpretation of the data. Also the sampling is expensive as fish have to be harvested live for this type of testing.

Studebaker asked a question about modeling of herring data. Lindeberg said that they use an ADF&G model which now includes a disease component. The model has been tweaked frequently over the years they are not just counting fish and biomass.

French and others also discussed the lost herring fishery in PWS and the increasing spot shrimp fishery.

Break:

Eilo adjourned the meeting at 12:05 pm for a lunch break. The meeting was reconvened by Eilo at 12:33 pm.

Data Management

The Science Panel recommends full funding for the data project. Coordination between this project and the long-term monitoring projects has greatly improved. The PIs are doing a good job of getting the data published and available to the public. Lindeberg reported that 45 data sets have been posted online. Johnson asked whether there is a link from the Trustee Council's web site to these databases. Trustee Council staff will check on this.

PAC Discussion of Data Management

French emphasized the importance of being able to access raw data, not just scientific papers, which provide a summary of the results. He also noted the great improvements in data availability in recent years. Access to Trustee Council data is better than it was in the 1990s.

Pigeon Guillemot Restoration Project

Fiscal Year 18 is the last year of this 5-year project. No new mink were trapped in the 2017 field season, but there was snow for the first time in four years and mink tracks were seen. Counts of pigeon guillemot individuals at Peak, Naked and Story Islands have doubled in two years. Numbers on control islands did not experience a similar increase. Also the number of nests quadrupled since 2014. Colonies are starting to form with up to ten nests in one area.

Productivity was high which indicates that adult birds were able to find enough food for their chicks. The project has requested additional funding to cover the higher costs of trapping in FY18 to continue to remove mink adjacent to the nesting sites in the Naked Island Group. The Science Panel recommends supporting the requested funding for this project.

Immunological Compromise of Fish (Whitehead)

This continuing project is progressing well. State and federal agency researchers at ADF&G and NOAA are collaborating well with Project PIs. The ADF&G staff has also been helpful and responsive by collecting tissue samples, which has contributed to achieving project goals in a timely manner. The analysis of samples has also been conducted cost-effectively, which has allowed for additional samples to be collected at other locations.

Activities proposed for FY17 are underway including:

- Sequencing of the reference genome for herring.
- Early life development and pathogen challenge experiments.

The FY17 work is ahead of schedule and some activities proposed for FY18 are already under way, such as receiving samples from ADF&G. Because the work is ahead of schedule the PI has proposed shifting a portion of future years funding forward to FY18 to hire a Post-doc now instead of later, to accommodate the increase in data generated. The Science Panel supports this request.

***PAC discussion of Immunological Compromise of Fish*:**

Given the proposed shifting of funding to FY18, Fandrei asked if the net amount for the project would remain the same. Wang confirmed that the overall cost for the project would not increase.

French asked how the fish were exposed, and in particular he was interested in whether the WAF [water accommodated fraction] was used for exposure. He noted that PAHs are ubiquitous in the environment. French also wanted to know what PAHs [polycyclic aromatic hydrocarbons] were analyzed. He further said that the 3 and 4-ring PAHs and their polar fractions were more soluble and therefore they may affect the immune system to a greater degree.

Habitat Program:

Adams briefed the PAC on Habitat Program activities. Habitat purchases are complex transactions, involving multiple steps. The Trustee Council becomes involved early in the process. Further work on these potential projects is conditional and subject to due diligence. The Trustee Council's action on parcels is to provide funding authorization to pursue the project.

During 2017, the EVOSTC has closed on two projects, the Termination Point parcel on Kodiak Island and the Thorsheim Drainage Project on Afognak Island. The Chief Cove project on Kodiak Island, within the Kodiak National Wildlife Refuge, is also nearly completed.

The PAC was briefed on a new proposed parcel, the Meals Hill Protection Project in Valdez, Alaska. Adams reported potential benefits, including the presence of kelp beds adjacent to the parcel, benefits to salmon, the proximity to other Trustee Council parcels, the high value of the habitat and the opportunity to provide public access by walking trails, enhancing recreation and tourism.

***PAC discussion – Habitat Program*:**

The PAC discussed the Meals Hill parcel. Bauer, a resident of Valdez, was asked her opinion about this proposal and what she knew about the perspective of the community. Bauer noted that this is one of the few areas in Valdez with large trees. Coastal old-growth forest is present. The tract is privately owned. Bauer's assessment was that the majority of residents want it protected, and she recommended that the Trustee Council pursue the purchase.

French was concerned that if the Trustee Council begins purchasing habitat within rural communities, where does it stop? Purchasing a parcel in the town of Valdez is an issue. What would prevent the Trustee Council from looking at upland areas in Seward and Homer, for example?

Adams said this would not be a first for a Trustee Council project, for example in Homer, the Beluga Slough parcel is within the city limits, and Termination Point on Kodiak is within the borough boundary. The Trustee Council pursues projects with the highest habitat values and works with communities to ensure local support is there.

Fandrei noted that this might not impede development, but it might re-direct it. He also asked if an inholding was involved. Adams said yes, there is an inholding, as well as an access road used by the homeowner. The inholding will not be purchased.

Andersen-Faulkner said that berry picking may not be the only subsistence use in this area. Making this site assessable to the public may also provide access to medicinal plants.

Springer thought this type of project would be opposed in Homer. Homer is a divided community, so some would support and some would not. She initially expressed opposition due to her concerns about potential community opposition in Valdez, but after hearing from other PAC members, ultimately voted in favor of the proposal.

Bauer said that the City of Valdez has discussed the project and that knowledge about it is widespread. Most residents support the acquisition, while a smaller number may be opposed. French noted that he had supported the Beluga Slough project as it mostly involved wetlands in need of protection. This project, which has a large upland component, is different.

Studebaker asked if this was the only old-growth forest in the area. Bauer said yes, at least old-growth that extends down to sea level.

Other PAC discussion:

Prior to meeting close, PAC members and the acting Executive Director shared some thoughts.

Adams reiterated that the Trustee Council appreciates the PAC's work, and that the Trustee Council values their viewpoints.

Andersen-Faulkner thanked the Trustee Council staff for the materials. She remarked that the PAC brings various perspectives from communities affected by the spill, as well as their subject-matter expertise.

Springer likes the public outreach and media emphasis. There is a need to reach non-science audiences. There are many ways to do this beyond social media, for example small-scale journalism.

French agreed that outreach is important. He noted that the PAC is smaller than it has been in the past, but it is still effective. He asked that the PAC members receive a copy of the Federal Register notice with the vacancy announcement. Johnson said that either he or Trustee Council staff will ensure PAC members get a copy of the notice. French suggested that PAC members should reach out to others they know. They should look for opportunities to spread the word and convey the importance of the mission.

Studebaker welcomed the new Science Coordinator. She suggested that the PAC take a "field trip" to ARLIS, as they have been doing a lot of excellent work and it has been a long time since the PAC visited. Studebaker also said she would like to see a presentation from the Great Land Trust. They are a very effective intermediary organization that works in the habitat arena. She is very impressed with their work. Studebaker also would like to hear presentations from the two post-docs.

Wang reminded the PAC they would be invited to attend a technical workshop organized by the Herring Research and Monitoring Program and Gulf Watch Alaska Program: Long-Term

Monitoring of Marine Conditions and Injured Resources 2019 which is year 3 of the second 5-year programs.

This was the first PAC meeting for Skaldal and he said that he learned a lot. Good information was conveyed during the meeting.

Bauer also thanked staff. The materials were, as usual, well organized.

PAC Motions:

Motion: Andersen-Faulkner introduced a motion to re-elect Kurt Eilo as the PAC chair. Second by Studebaker. **Motion carried.**

Motion: Andersen-Faulkner introduced a motion to re-elect John French as the PAC vice chair. Second by Eilo. **Motion carried.**

Motion: Andersen-Faulkner introduced a motion to approve the meeting agenda, as modified (change in the order of speakers). Second by Fandrei. **Motion carried.**

Motion: Andersen-Faulkner introduced a motion to approve the September 22, 2016 meeting summary. Second by Bauer. **Motion carried**.

Motion: Fandrei introduced a motion to approve the FY18 Annual EVOSTC Budget. He also recommended that the Trustee Council consider adding funding for outreach. Second by Studebaker. **Motion carried**.

Motion: Fandrei and Studebaker jointly introduced a motion recommending that the Trustee Council develop a plan, and devote funding to, increasing outreach using social media and other means to educate the public, emphasizing younger generations. Second by Andersen-Faulkner. **Motion carried**.

Motion: French introduced a motion to approve reauthorization of the Kenai River Flats Riverbank Protection Project in the amount of $327,000. Second by Fandrei. **Motion carried.**

Motion: Studebaker introduced a motion to concur with the Gulf Watch Alaska and Herring Research and Monitoring budgets as proposed by the Science Panel. Second by Fandrei. **Motion carried.**

Motion: Fandrei introduced a motion to recommend FY18 funding for the Long-Term Data Management Program. Second by Andersen-Faulkner. **Motion carried.**

Motion: Studebaker introduced a motion recommending approval of the requested FY18 funding for the Pigeon Guillemot Enhancement Project. Second by Fandrei. **Motion carried.**

Motion: French introduced a motion to recommend funding for Project 18170115 (Immunological Expressions of PAH Exposure in Fish) as requested for FY18. Second by Bauer. **Motion carried.**

Motion: Andersen-Faulkner introduced a motion to recommend approval of the Port Valdez Meals Hill habitat project. Second by Studebaker. **Motion carried *with one (French) opposing.***

Closing Remarks:

The meeting was adjourned by Eilo at 1:12 p.m.

I. FOLLOW-UP:

1. The PAC meeting notes and recommendations will be distributed to the EVOS Trustee Council prior to their next meeting, which will be held on November 14, 2017 in Anchorage. The DFO and the PAC Chair will attend the meeting. The DFO will update the Trustee Council on the status of filling the existing vacancy on the PAC. The Chair will summarize the results of the September 28, 2017 PAC meeting. The PAC members are welcome to attend in-person or telephonically.

J. NEXT MEETINGS:

Trustee Council Meeting (Anchorage on November 14, 2017)

K. ATTACHMENTS (provided to PAC members prior to the meeting):

1. September 28, 2017 *Exxon Valdez* Oil Spill Trustee Council (EVOSTC) Public Advisory Committee (PAC) draft meeting agenda.

2. September 22, 2016 *Exxon Valdez* Oil Spill Trustee Council (EVOSTC) Public Advisory Committee (PAC) draft meeting summary.

3. Draft FY18 EVOSTC Annual Budget

4. Draft Reporting Policy

5. ARLIS Cataloging Librarian I Funding Extension Proposal for completion of the EVOS Special Collection Cataloging Project

6. Reauthorization Request for EVOSTC Document Digitizing Project Funds Phase 4: EVOSTC Official Record (1991-Present)

7. State Parks Kenai River Flats Riverbank Protection Proposal (17170116)

8. EVOSTC Draft FY17 – FY21 Work Plan for Restoration, Research and Monitoring Projects: Fiscal Year 2018

10. Great Land Trust's Request for Habitat Conservation Project Funding

11. Benefits Report for Port Valdez Meals Hill Habitat Protection Project

L. CERTIFICATION:

PAC Chairperson	**Date**

Callan

April 2017

Exxon Valdez Oil Spill Trust Council

2017 Asset Allocation Review

Paul Erlendson
Senior Vice President

The Capital Markets at January 2017

U.S. and Global Capital Markets Rallied After Mid-Year Investor Uncertainty

- Stock and bond markets endured a wild ride around the world, with Brexit and the US elections roiling investors' emotions. Underlying economic data remain positive, and tell a story of persistent modest growth in the U.S. and weak recovery in Europe.
- Five-year US equity returns through 2016 are very strong. Ten-year returns no longer include the robust 2003-05 results. Fifteen-year equity returns are still below long-run averages, but are above those of fixed income, as 2000-2002 downturn as rolled off the calculation.

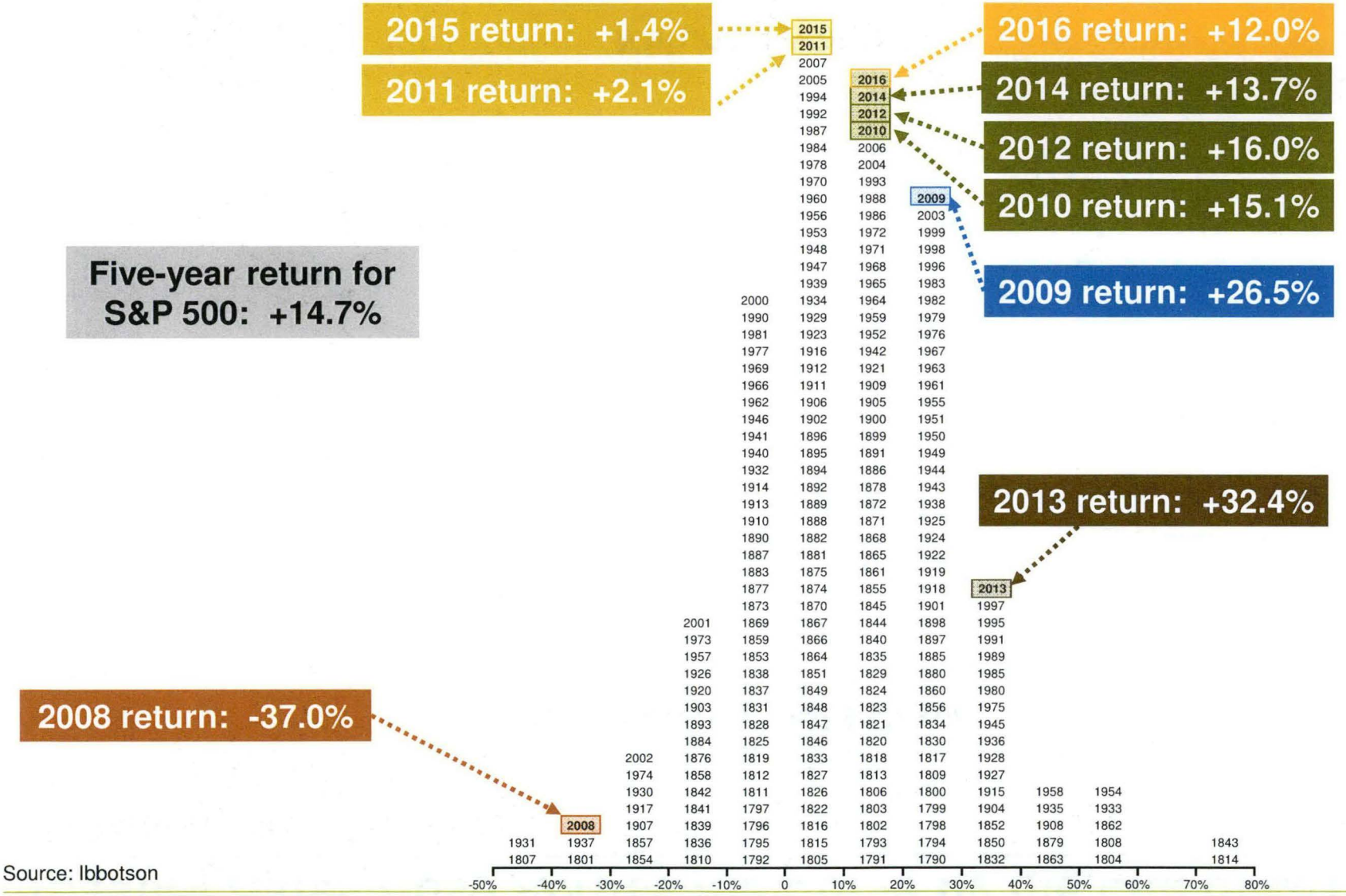
							Average Annual Returns for periods ended 12.31.2016		
	2011	2012	2013	2014	2015	2016	5 Years	10 Years	15 Years
Broad U.S. Stock Market									
Russell 3000	1.03	16.42	33.55	12.56	0.48	12.74	14.67	7.07	7.11
Large Cap U.S. Stocks									
S&P 500	2.11	16.00	32.39	13.69	1.38	11.96	14.66	6.95	6.69
Small Cap U.S. Stocks									
Russell 2000	-4.18	16.35	38.82	4.89	-4.41	21.31	14.46	7.07	8.49
Non-U.S. Stock Markets									
MSCI EAFE US$	-12.14	17.32	22.78	-4.90	-0.81	1.00	6.53	0.75	5.28
MSCI Emerging Markets	-18.17	18.63	-2.27	-1.82	-14.60	11.60	1.64	2.17	9.85
Fixed Income									
Barclays Aggregate	7.84	4.21	-2.02	5.97	0.55	2.65	2.23	4.34	4.58
Barclays Glbl Agg ex USD	4.36	4.09	-3.08	-3.09	-6.02	1.49	-1.39	2.44	4.96
Barclays Long Gov/Credit	22.49	8.78	-8.83	19.31	-3.30	6.67	4.07	6.85	7.03
Real Estate									
NCREIF	14.26	10.54	10.98	11.82	13.33	8.01	10.92	6.94	9.01
Hedge Funds									
CS Hedge Fund Index	-2.52	7.67	9.73	4.13	-0.71	1.25	4.34	3.75	5.74
Private Equity									
Cambridge Private Equity*	11.00	13.33	22.13	12.75	7.10	4.06*	10.89*	10.54*	10.22*
Commodities									
Bloomberg Commodity	-13.37	-1.14	-9.58	-17.04	-24.70	11.40	-9.06	-6.23	-0.11
Cash Market									
90-Day T-Bill	0.10	0.11	0.07	0.03	0.05	0.33	0.12	0.80	1.34
Inflation									
CPI-U	2.96	1.74	1.50	0.76	0.73	2.07	1.36	1.81	2.10

- Private equity data is time-weighted return series for periods ended 6.30.2016 rather than 12.31.2016 in select columns due to a reporting lag.

Source: Callan Associates

Stock Market Returns by Calendar Year

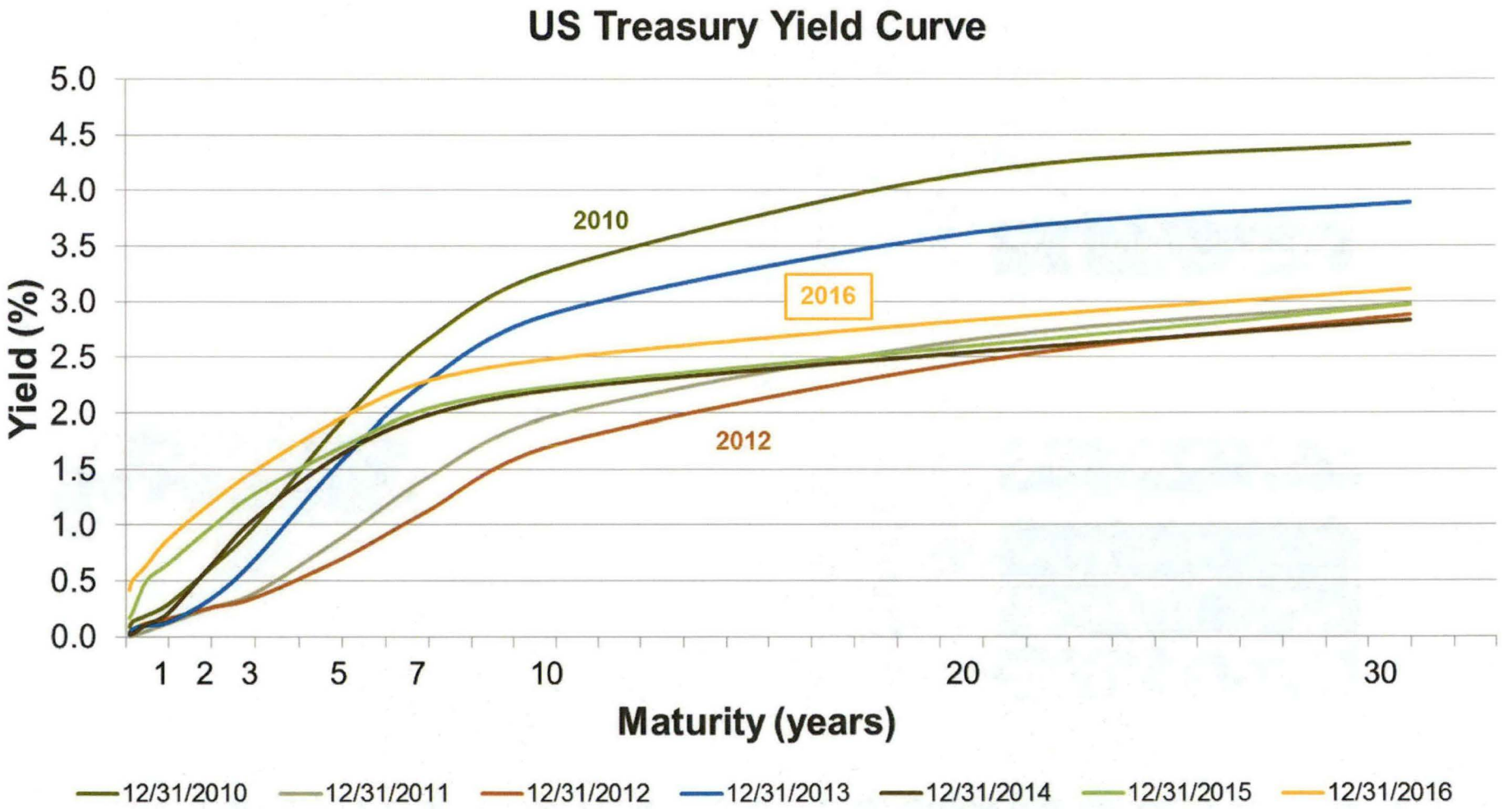
2016 Performance in Perspective: History of the U.S. Stock Market (228 Years of Returns)



Source: Ibbotson

Treasury Rates Rose Across the Curve by the End of 2016

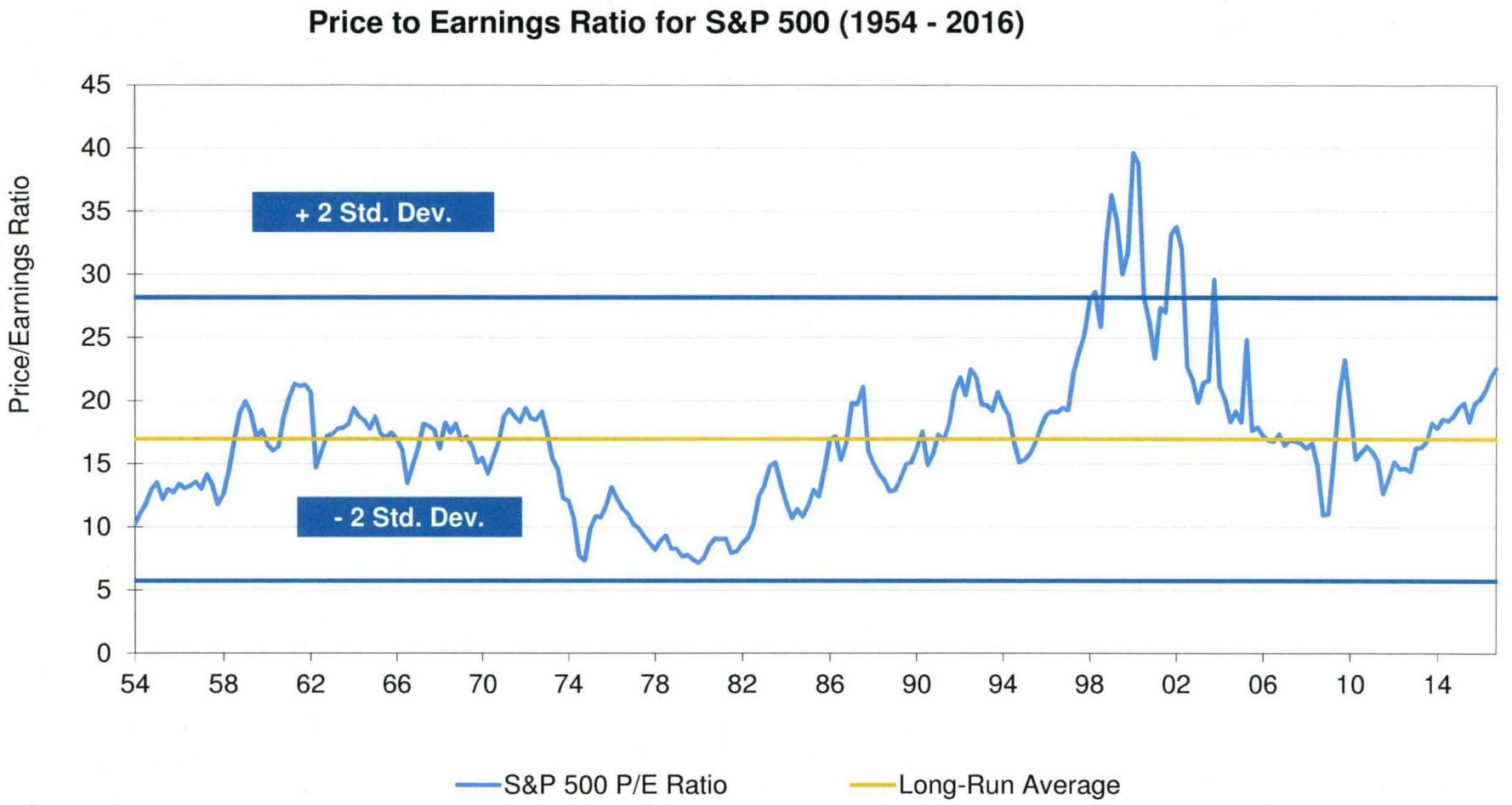
U.S. Treasury Yield Curves



Source: Federal Reserve and Callan

Egregiously Overvalued, Or the Best of What's Out There?

Trailing P/E for the S&P 500 Surges Past Its Long Run Average



Trailing earnings as reported for the fiscal year; includes negative earnings from 1998 onward.
Source: Standard & Poor's and Callan

Economic Outlook

Role of Economic Variables

- GDP and Inflation
  - GDP forecasts provide a very rough estimate of future earnings growth
  - Inflation forecasts provide an approximate path for short-term yields
  - Inflation is added to the real return forecasts for equity and fixed income
- GDP Forecasts
  - 2% to 2.5% for the US
    - *Higher growth rate than the post financial crisis time period but lower than the last half century average*
  - 1.5% to 2.0% for Developed Non-US Markets
    - *Lower than the US due to concerns about political, fiscal and monetary policy as well as the banking system*
  - 4% to 5% for Emerging Markets
    - *Growth rates still substantially exceed those of the developed markets*
- Inflation Forecasts
  - 2% to 2.5% for the US
  - 1.75% to 2.25% for Developed Non-US Markets
  - 2.5% to 3.5% for Emerging Markets

Equity Forecasts

Overview

- Fundamental Relationship

  Equity Return = Capital Appreciation + Income

- Broad US Equity
  - Return = 6.85%, Risk = 18.25%
  - Earnings growth likely to improve
    - *Stronger GDP growth*
    - *More expansive economic policies*
  - Dividend yield consistent with recent history
    - *Payout ratios close to historical norms*
    - *Yields have been stable for 20 years in the face of changing interest rates*

- Broad Non-US Equity
  - Return = 7.00%, Risk = 21.00%
  - Earnings growth likely to be moderate
    - *Significant uncertainty in future economic policies*
  - Relatively high dividend yields will support returns

Fixed Income Forecasts

Overview

- Fundamental Relationship

$$\text{Bond Return} = \text{Capital Appreciation} + \text{Income} + \text{Roll Return}$$

- Broad US fixed income
  - Return = 3.00%, Risk = 3.75%

  - Interest rates expected to rise
  - Yield curve expected to flatten
  - Higher yields expected to be earned over most of the forecast horizon
  - Capital losses expected as yields increase in early years
  - Little impact from changing credit spreads
  - Roll return expected to decline

2017 Capital Market Expectations—Return and Risk

Summary of Callan's Long-Term Capital Market Projections (2017 – 2026)

		PROJECTED RETURN			PROJECTED RISK			2016-2025		
Asset Class	Index	1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation	Sharpe Ratio	Projected Yield	10-Year Geometric*	Standard Deviation	Geometric* Delta
Equities										
Broad Domestic Equity	Russell 3000	8.30%	6.85%	4.60%	18.25%	0.332	2.00%	7.35%	18.70%	-0.50%
Large Cap	S&P 500	8.05%	6.75%	4.50%	17.40%	0.333	2.10%	7.25%	17.95%	-0.50%
Small/Mid Cap	Russell 2500	9.30%	7.00%	4.75%	22.60%	0.312	1.55%	7.55%	22.75%	-0.55%
Global ex-U.S. Equity	MSCI ACWI ex USA	8.95%	7.00%	4.75%	21.00%	0.319	3.10%	7.55%	21.30%	-0.55%
International Equity	MSCI World ex USA	8.45%	6.75%	4.50%	19.70%	0.315	3.25%	7.25%	20.05%	-0.50%
Emerging Markets Equity	MSCI Emerging Markets	10.50%	7.00%	4.75%	27.45%	0.301	2.65%	7.60%	27.85%	-0.60%
Fixed Income										
Short Duration	Barclays G/C 1-3	2.60%	2.60%	0.35%	2.10%	0.167	2.85%	2.60%	2.25%	0.00%
Domestic Fixed	Barclays Aggregate	3.05%	3.00%	0.75%	3.75%	0.213	3.50%	3.00%	3.75%	0.00%
Long Duration	Barclays Long G/C	3.75%	3.20%	0.95%	10.90%	0.138	4.50%	3.70%	11.40%	-0.50%
TIPS	Barclays TIPS	3.10%	3.00%	0.75%	5.25%	0.162	3.35%	3.00%	5.30%	0.00%
High Yield	Barclays High Yield	5.20%	4.75%	2.50%	10.35%	0.285	7.75%	5.00%	10.50%	-0.25%
Non-U.S. Fixed	Barclays Global Aggregate ex US	1.80%	1.40%	-0.85%	9.20%	-0.049	2.50%	1.40%	9.20%	0.00%
Emerging Market Debt	EMBI Global Diversified	4.85%	4.50%	2.25%	9.60%	0.271	5.75%	4.60%	9.90%	-0.10%
Other										
Real Estate	Callan Real Estate	6.90%	5.75%	3.50%	16.35%	0.284	4.75%	6.00%	16.45%	-0.25%
Private Equity	TR Post Venture Cap	12.45%	7.35%	5.10%	32.90%	0.310	0.00%	8.15%	32.80%	-0.80%
Hedge Funds	Callan Hedge FOF Database	5.35%	5.05%	2.80%	9.15%	0.339	2.25%	5.25%	9.30%	-0.20%
Commodities	Bloomberg Commodity	4.25%	2.65%	0.40%	18.30%	0.109	2.25%	2.75%	18.50%	-0.10%
Cash Equivalents	90-Day T-Bill	2.25%	2.25%	0.00%	0.90%	0.000	2.25%	2.25%	0.90%	0.00%
Inflation	CPI-U		2.25%		1.50%			2.25%	1.50%	0.00%

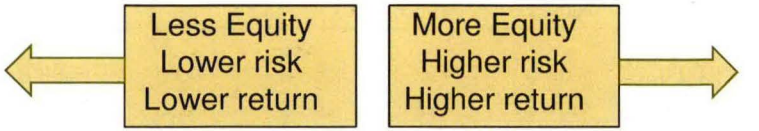
* Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).

2017's 10-year projections are lower than last year's.

Source: Callan Associates

EVOSTC Existing Asset Classes: Return and Risk Projections

EVOSTC Asset Mix Alternatives

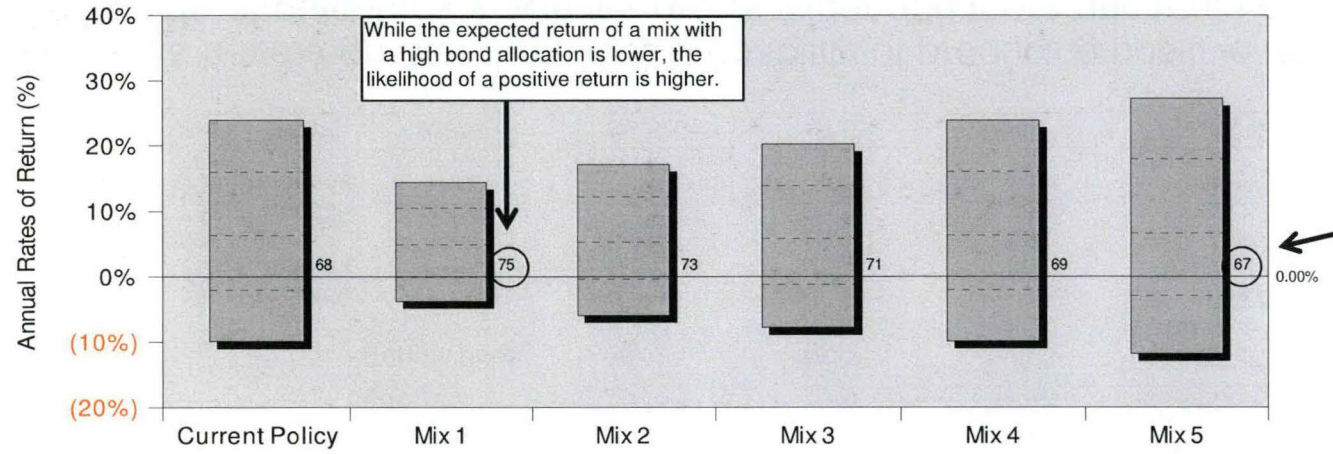


Portfolio Component	Current Policy	Min	Max	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
US Broad Equity	40	0	100	22	28	35	41	47
Global ex-US Equity	27	0	100	15	19	22	26	30
Domestic Fixed	33	0	100	63	53	43	33	23
Totals	100			100	100	100	100	100
Projected Arithmetic Return	6.75%			5.09%	5.64%	6.19%	6.74%	7.29%
Projected Standard Deviation	12.46%			7.04%	8.78%	10.59%	12.44%	14.32%
5 Yr. Geometric Mean Return	6.16%			4.95%	5.39%	5.79%	6.16%	6.49%
10 Yr. Geometric Mean Return	6.14%			4.94%	5.38%	5.78%	6.14%	6.46%
10 Yr. Simulated Sharpe Ratio	0.30%			0.37%	0.35%	0.32%	0.30%	0.29%

- Current policy includes both developed and emerging non-US markets in "Global ex-US Equity".
- Fixed income allocations are highlighted in red. Current allocation is 33%, the same as Mix 4. Mix 1 has the highest bond allocation, as well as the lowest return and risk levels.

Possible Short-term Outcomes

Range of Projected Rates of Return Projection Period: 1 Year



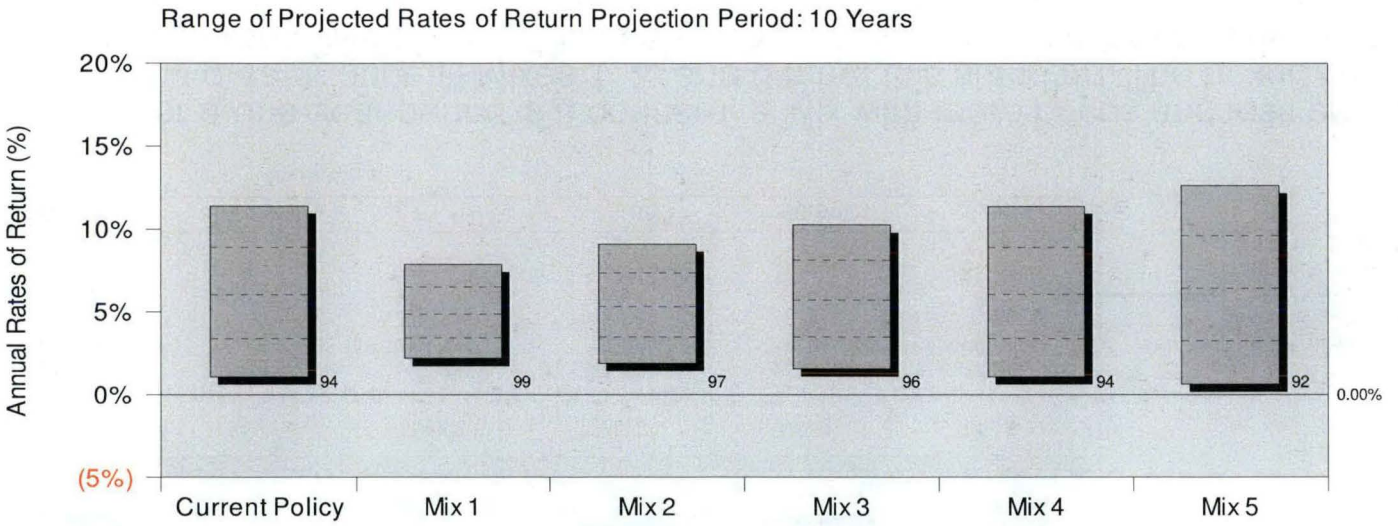
Higher equity allocations suggest a wider range of outcomes, but are less likely to produce short-term positive returns.

	Current Policy	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
10th Percentile	24.0%	14.4%	17.2%	20.2%	23.9%	27.2%
25th Percentile	16.0%	10.5%	12.2%	13.8%	16.0%	18.0%
Median	6.3%	4.9%	5.3%	5.8%	6.3%	6.6%
75th Percentile	(2.1%)	0.0%	(0.4%)	(1.2%)	(2.1%)	(3.0%)
90th Percentile	(9.9%)	(3.7%)	(5.9%)	(7.8%)	(9.8%)	(11.8%)
Prob > 0.00%	68.4%	74.9%	73.1%	71.3%	68.6%	67.4%

The 75th percentile represents the worst one-in-four outcome for each mix. Mixes 1,2 and 3, with higher bond allocations, have better returns than the Current Policy or Mixes 4 and 5, which have more equity.

- If losing money over a one-year period is a concern, a Mix with more bonds and less equity than the Current Policy has a greater appeal; Mixes 1, 2, and 3 meet this standard. The boxed line in the table above quantifies the probability of each Mix achieving a positive return over any one-year period.
- Mixes 1, 2 and 3 have lower expected returns at the median level (half the possible outcomes are higher, half are lower) than those Mixes with more equity (Mixes 4 and 5). Return variability is narrower, reflecting less risk.

Possible Longer-term Outcomes



	Current Policy	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
10th Percentile	11.4%	7.9%	9.1%	10.3%	11.4%	12.6%
25th Percentile	8.9%	6.5%	7.3%	8.1%	8.9%	9.6%
Median	6.0%	4.9%	5.3%	5.7%	6.0%	6.4%
75th Percentile	3.4%	3.4%	3.5%	3.5%	3.4%	3.2%
90th Percentile	1.1%	2.2%	1.9%	1.5%	1.1%	0.6%
Prob > 0.00%	93.7%	98.8%	97.5%	95.8%	93.7%	92.4%

- All Mixes have a greater than 90% probability of producing positive returns over a ten-year period. The range of outcomes, however, grows wider and more uncertain as equity allocations increase.
- A longer investment horizon (e.g. – 10 years) suggests greater wealth may result from a higher equity allocation at the median (and above) level. Expected returns below median are relatively lower as equity allocations increase.

Concluding Observations

2017 Asset Allocation Review

- The two most critical variables in establishing an appropriate asset allocation policy are:
  - Investment time horizon (what is the amount of time until the assets need be converted to cash?); and
  - Cash flow requirements (what is the amount of the Total Fund that is required for a distribution?).

Three asset allocation policy considerations:

1. Aggressive (higher equity): aligns with long investment horizons and low cash flow requirements
   - Higher equity allocations present the opportunity for higher rates of return over the long run. The risk is that the Trust is subject to greater short-term volatility and capital loss. If a distribution is required coincident with a market decline, a greater proportion of the Trust's market value will be withdrawn (since the asset base will be lower due to the market decline). The result will be less money available to fund future distributions.
2. Conservative (more bonds): aligns with shorter time horizons and higher cash flow requirements
   - Higher bond allocations will reduce the negative impact of equity market corrections, thereby retaining more of the Trust's assets to fund future distributions. This "safety" comes at the opportunity cost of potentially lower returns over the long-term.
3. Asset allocation must balance the Trust's ability to fund near-term distributions (limit risk) with the assets required to fund intermediate to longer-term distributions (maximize risk-adjusted return).

The Current Policy is aggressive. Its higher expected return over longer periods reflects a high allocation (67%) to equities. The attendant risk: this policy mix has a 32% chance of a negative return over any single year.

Exxon Valdez Oil Spill Trustee Council

DRAFT FY17 – FY21 Work Plan for Restoration, Research and Monitoring Projects:

Fiscal Year 2018

Revised October 16, 2017

Exxon Valdez Oil Spill Trustee Council
4230 University Drive, Suite 220
Anchorage, AK 99508-4650
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EVOSTC Restoration, Research and Monitoring Projects
Draft FY18 Work Plan
Prepared by:
Exxon Valdez Oil Spill Trustee Council

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Alaska Department of Law

JIM BALSIGER
Director, Alaska Region
National Marine Fisheries Service

STEPHEN WACKOWSKI
Senior Advisor to the Secretary for Alaskan Affairs
Office of the Secretary
US Department of the Interior

The *Exxon Valdez* Oil Spill Trustee Council administers its programs free from unlawful discrimination against any persons based on race, religion, color, national origin, age, sex, physical or mental disability, marital status, pregnancy, or parenthood. Each state and federal agency that implements programs funded by the Trustee Council also has legally mandated anti-discrimination policies that apply to any contracts entered into as a result of this FY2018 Work Plan. To obtain more information about the anti-discrimination policies of individual agencies, click on the link provided below for that agency.

USDA: http://www.usda.gov/wps/portal/usda/usdahome?navid=NON_DISCRIMINATION

NOAA: http://www.eeo.noaa.gov/

USDOI: http://www.doi.gov//pmb/eeo/index.cfm

ADF&G: http://www.adfg.alaska.gov/index.cfm?adfg=home.oeostatement

ADOL: http://doa.alaska.gov/dop/eeo/

ADEC: http://doa.alaska.gov/dop/eeo/

PLEASE COMMENT

You can help the Trustee Council by reviewing this draft work plan and letting us know your priorities for the Fiscal Year. You can comment by:

Mail:	4230 University Drive, Suite 220 Anchorage, AK 99508-4650 Attn: Draft Fiscal Year 2018 Work Plan
Telephone:	907-278-8012 1-800-478-7745 Collect calls will be accepted from fishers and boaters who call through the marine operator.
Fax:	907-276-7178
E-mail:	elise.hsieh@alaska.gov

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FY18 Proposal Funding Recommendations

The funding described in this document is for EVOSTC Restoration, Research, and Monitoring Projects. Please note that the funding amounts in this document are approximate. The Work Plan is a working document and may be revised as needed throughout the fiscal year. Please contact the EVOSTC office if you would like exact funding amounts.

					FY18 Funding Amount Recommended				
Page	**Project Number**	**Principal Investigator**	**Project Title**	**FY18 Requested**	**Science Panel**	**Science Coordinator**	**PAC**	**Executive Director**	**Trustee Council**
6	18180100	EVOSTC Admin	EVOSTC Annual Budget	$2,261,585	Not Applicable	Not Applicable	$2,261,585	$2,261,585	$
7	18100853	Kaler	Pigeon Guillemot Restoration Project	$173,438	$173,438	$173,438	$173,438	$173,438	$
14	17170116	Miranda	ADNR/DPOR - Habitat Restoration & Protection Reauthorization	$327,000	Not Applicable	Not Applicable	$327,000	$327,000	$
17	18120111	Pegau	PWS Herring Program - see table on page 2	$1,578,800	$1,578,800*	$1,578,800*	$1,578,800*	$1,578,800*	$
66	18120114	Lindeberg	Long-Term Monitoring Program – see table on page 3	$2,574,860	$2,574,860	$2,574,860	$2,574,860	$2,574,860	$
110	18120113	Janzen	Data Management for Long-Term Programs	$218,000	$218,000	$218,000	$218,000	$218,000	$
116	18170115	Whitehead	Lingering Oil – Immunological Compromise of Fish	$492,750	$492,750	$492,750	$492,750	$492,750	$
TOTAL REQUESTED, RECOMMENDED & APPROVED				**$7,626,433**	**$5,037,848**	**$5,037,848**	**$7, 626,433**	**$7, 626,433**	**$**

**Indicates this review group recommends a Fund Contingent for Project #18170111-D Gorman*

Herring Research and Monitoring Program Projects

The funding described in this document is for EVOSTC Restoration, Research, and Monitoring Projects. Please note that the funding amounts in this document are approximate. The Work Plan is a working document and may be revised as needed throughout the fiscal year. Please contact the EVOSTC office if you would like exact funding amounts.

The total for these projects can be found under 18120111-Pegau on the page one chart

Page	Project Number	Principal Investigator	Project Title	FY18 Requested	FY18 Approved	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
22	18120111-A	Pegau	Herring Program-Coordination & Logistics	$270,200	$	Fund	Fund	Fund	Fund	
25	18120111-B	Bishop	Herring Program - Annual Herring Migration Cycle	$379,500	$	Fund	Fund	Fund	Fund	
28	18120111-C	Branch	Herring Program - Modeling and stock assessment	$288,300	$	Fund	Fund	Fund	Fund	
34	18170111-D	Gorman	Herring Program - Reproductive Maturity among Age Cohorts	$172,000	$	Fund Contingent	Fund Contingent	Fund Contingent	Fund Contingent	
53	18120111-E	Hershberger	Herring Program – Herring Disease Program II	$228,900	$	Fund	Fund	Fund	Fund	
56	18160111-F	Haught	Herring Program – ASL Study & Aerial Milt Surveys	$166,300	$	Fund	Fund	Fund	Fund	
61	18120111-G	Rand	Herring Program - Adult Pacific Herring Acoustic Surveys	$73,800	$	Fund	Fund	Fund	Fund	

Long-Term Monitoring Program Projects

The funding described in this document is for EVOSTC Restoration, Research, and Monitoring Projects. Please note that the funding amounts in this document are approximate. The Work Plan is a working document and may be revised as needed throughout the fiscal year. Please contact the EVOSTC office if you would like exact funding amounts.

***The total for these projects can be found under 17120114-Lindeberg on the page one chart**

Page	Project Number	Principal Investigator	Project Title	FY18 Requested	FY18 Approved	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
69	18120114-A	Lindeberg	LTM Program - Science Coordination and Synthesis	$227,600	$	Fund	Fund	Fund	Fund	
72	18120114-B	Hoffman	LTM Program - Administration	$282,400	$	Fund	Fund	Fund	Fund	
75	18120114-C	Arimitsu	LTM Program - Forage Fish Distribution, Abundance, and Body Condition	$229,800	$	Fund	Fund	Fund	Fund	
79	18120114-D	Batten	LTM Program - Continuous Plankton Recorders	$78,800	$	Fund	Fund	Fund	Fund	
81	18120114-E	Bishop	LTM Program - Seabird Abundance in Fall and Winter	$92,700	$	Fund	Fund	Fund	Fund	
84	18120114-G	Campbell	LTM Program - Oceanographic Conditions in PWS	$223,400	$	Fund	Fund	Fund	Fund	
87	18120114-H	Coletti	LTM Program - Nearshore ecosystems the Gulf of AK	$452,700	$	Fund	Fund	Fund	Fund	
90	18120114-I	Danielson	LTM Program - GAK1 Monitoring	$148,400	$	Fund	Fund	Fund	Fund	
93	18120114-J	Holderied & Shepherd	LTM Program - Oceanographic Monitoring in Cook Inlet/Kachemak Bay	$174,400	$	Fund	Fund	Fund	Fund	
97	18120114-L	Hopcroft	LTM Program - Seward Line Monitoring	$136,100	$	Fund	Fund	Fund	Fund	

Page	Project Number	Principal Investigator	Project Title	FY18 Requested	FY18 Approved	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
100	18120114-M	Kuletz	LTM Program - PWS Marine Bird Surveys	$222,200	$	Fund	Fund	Fund	Fund	
103	18120114-N	Matkin	LTM Program -Long-term killer whale monitoring	$151,300	$	Fund	Fund	Fund	Fund	
106	18120114-O	Moran & Straley	LTM Program - Humpback Whale Predation on Herring	$155,000	$	Fund	Fund	Fund	Fund	

Project (not in a Program) Descriptions

Project Number: **18180100**

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 Requested:

FY18
$2,261,585

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 Program
- Trustee Agency Project Management
- 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.

FY18 Funding Recommendations:

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

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18100853**

Project Title: Pigeon Guillemot Restoration Research in Prince William Sound

Primary Investigator(s): Robb Kaler

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

EVOSTC Funding Requested FY17-21: $274,486

FY17	FY18	FY19	FY20	FY21
Auth: $149,778	$173,438*	$0	$0	$0

Requests include 9% GA.

*As noted in prior proposals, the field season and trapping effort was originally proposed to be reduced by 50% compared to FY16. However, given that this is the last year of the 5-year project a full trapping season in FY18 is proposed to ensure that there are no mink in the nesting areas; USDA-FS requests $13,623.9 for permit cost for working on Naked Island.

Funding From Non-EVOSTC Sources FY 17-21: $627,160

First line is from National Fish and Wildlife Foundation Grant, Second line is USFWS in-kind support

FY17	FY18	FY19	FY20	FY21
$215,580	$215,580	$0	$0	$0
$98,000	$98,000	$0	$0	$0

Total Past EVOSTC Funding Authorized (FY07-17): $2,031,075

Total EVOSTC Funding Authorized (FY07-17) and Requested (FY18-21): $2,155,783

Total Non-EVOSTC Funding (FY07-21): $1,707,300

Abstract:

This abstract is excerpted from the PI's Proposal, dated 4/16/17, budget updated 8/24/17.
This project is providing an opportunity to restore the population of Pigeon Guillemots (*Cepphus columba*) in Prince William Sound, Alaska, which had 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. **FY18 is the 5th year of the 5-year project.** We trapped for the first time in the winter and spring of 2014, at which time 76 mink were killed. During the 2015 trapping season 23 mink were killed in localized areas. During the 2016 trapping season seven mink were killed. Five were trapped on Peak Island and two were trapped on Naked Island, no mink were trapped on Storey Island. During the 2017 field season we caught no mink, but we had snow for the first time in 4 years and we saw mink tracks. While we believe few mink remain in the

pigeon guillemot nesting areas, we will trap again in 2018. Counts of pigeon guillemots at Peak, Naked and Story Islands has more than doubled since 2014; 69 birds in 2014, 95 birds in 2015, 151 birds in 2016 and 169 in 2017! Numbers of pigeon guillemots counted at control islands did not have an increase. We did not expect to see this large of increase in birds this quickly. We surveyed for breeding guillemots and found the number of nests had more than quadrupled since 2014; 11 nests in 2014, 30 nests in 2015, 39 nests in 2016 and 52 in 2017. Colonies are starting to form with up to 10 nests in one area. Productivity during the chick stage was high, around 80%, indicating that the adults could find enough food for their chicks.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel approves of the additional funding requested for a full field season to remove all mink from 70% of the shoreline where PIGU nested or currently nest. Again, the panel is very pleased with how quickly the population is increasing. As noted in past work plans, unless expanded trapping is permitted, the observed success will likely be temporary. A subsequent increase in the mink population resulting from only a partial eradication will probably, again, decimate the PIGU population over time. As noted in last year's work plan, population projections of both predator and prey may be useful to evaluate the merits and timeliness of future management agency decisions regarding predator controls.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments– FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Science Panel Comments – FY17

Date: September 2016

We have no additional comments for this project.

Date: May 2016

This project has continued to demonstrate marked progress toward the recovery of a historically important PIGU nesting site on Naked Island and the Panel is supportive of continued funding. The Panel has noted in past work plans that, unless expanded trapping is permitted, this success may only be temporary with mink remaining in other areas of the island. Ultimately, lacking a program to fully eradicate mink from this island, 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 regarding predator controls.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

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.

Project Number: **17170116**

Project Title: ADNR/DPOR Riverbed Habitat Restoration & Protection

Primary Investigator(s): Rys Miranda

PI Affiliation: ADNR **Project Manager:** ADNR

EVOSTC Funding Requested FY17-21: $2,214,444

FY17	FY18	FY19	FY20	FY21
Auth: $2,214,444	Reauth: $327,000	$0	$0	$0

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY 17-21: $1,600,000

FY17	FY18	FY19	FY20	FY21
$1,600,000	$0	$	$	$

Total Past EVOSTC Funding Authorized (FY17): $2,214,444

Total EVOSTC Funding Authorized (FY17) and Reauthorized (FY18-21): $2,214,444

Total Non-EVOSTC Funding FY17-21: $1,600,000

Abstract:

In Fall 2016, the Department of Natural Resources, Division of Parks and Outdoor Recreation (DNR-DPOR) submitted six projects for funding under the *Exxon Valdez* Oil Spill (EVOS) Restoration Program. **The Council approved funding for projects 2-6. As noted in 2016, reauthorization of Project 1 is needed due to the multi-year nature of the work and schedule for application for potential Federal ATAP funding. Thus, the request is for Project 1 of 6:**

Project 1: Kenai River Special Management Area (KRSMA): Kenai River Flats Riverbank Protection, Phase I – Total project cost: $1,436,650 | Total recommended by ED for funding (with GA): $327,000

The projects that were approved Fall 2016:
Project 2: KRSMA: Eagle Rock Riverbank Protection – Total project cost $410,450 | Total recommended by ED for funding (with GA): $447,391
Project 3: Crooked Creek State Recreation Site Riverbank Restoration– Total project cost $445,900 | Total recommended by ED for funding (with GA): $486,**031**
Project 4: KRSMA: Kenai River Ranch Riverbank Restoration – Total project cost $166,200 | Total recommended by ED for funding (with GA): $181,158
Project 5: KRSMA: Pipeline Crossing Riverbank Restoration – Total project cost $282,450 | Total recommended by ED for funding (with GA): $307,871
Project 6: Anchor River State Recreation Area Riverbank Protection – Total project cost $426,600 | Total recommended by ED for funding (with GA): $464,994

These six projects address fish habitat restoration and protection of spill area ecosystems that support numerous species affected by EVOS. The primary goal of each project is to restore fish habitats that have been adversely impacted by human activity and to provide continuing habitat protection into the future. These projects restore and protect fish habitats that have been and continue to be adversely impacted by human activities and will limit future access so that those restored areas will be protected while still accommodating human activities, such as recreational use. These projects are very similar in character, scope, and objective as the previous EVOSTC- funded project "Kenai River Habitat Restoration and Recreational Enhancement Project" (Restoration Project 96180/99180), which was performed during the late 1990s. Additionally, these projects are also aligned with DNR-DPOR management documents or development plans such as the Kenai River Comprehensive Management Plan.

FY18 Funding Recommendations:

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

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

Executive Director Comments – FY17

Date: September 2016

There are no project specific comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Herring Research and Monitoring Program Project Descriptions

Project Number: **18120111**

Project Title: Herring Research and Monitoring Program

Primary Investigator(s): W. Scott Pegau

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

EVOSTC Funding Requested FY17-21: $6,617,500

FY17	FY18	FY19	FY20	FY21
Auth: $1,252,900	$1,578,800*,[a]	$1,478,900*,[a]	$1,403,100*,[a]	$903,700*

Requests include 9% GA.

*Plasma sample processing for disease work to be included in the revised ASA model has increased in FY 18-21 by $24.5K (See Herschberger, pg. 44). [a]Post-doc salary to be included for FY18-20 for synthesis of data between the Herring Research and Monitoring and Gulf Watch Alaska programs over the last five years (See Branch, pg. 28).

Funding From Non-EVOSTC Sources FY 17-21: $790,000

FY17	FY18	FY19	FY20	FY21
$157,200	$159,700	$160,700	$162,700	$149,700

Total Past EVOSTC Funding Authorized (FY12-17): $7,491,243

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $12,855,743

Total Non-EVOSTC Funding (FY12-21): $944,731

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 7/31/17.*

This proposal addresses the Herring Research and Monitoring section of the EVOSTC FY17-21 Invitation for Proposals.

The overall goal of the Herring Research and Monitoring (HRM) program is to: **Improve predictive models of herring stocks through observations and research**. The program objectives are to:

1) Expand and test the herring stock assessment model used in Prince William Sound.
2) Provide inputs to the stock assessment model.
3) Examine the connection between herring condition or recruitment to physical and biological oceanographic factors.
4) Develop new approaches to monitoring.

The program is made up of seven projects; Modeling and Stock Assessment of Prince William Sound Herring; Surveys and Age, Sex, and Size Collection and Processing; Adult Pacific Herring Acoustic Surveys; Herring Disease Program; Studies of Reproductive Maturity among Age Cohorts of Pacific Herring; Annual Herring Migration Cycle; and HRM Coordination.

Through these projects we expect to address areas of interest outlined within the herring research and monitoring section of the original invitation for proposals. The modeling project and a postdoctoral fellow in the coordination project are envisioned as two integrating projects that use data and information from all of the

others. The postdoc will also work with the Gulf Watch Alaska and Data Management programs. The primary beneficiaries of our efforts are expected to be Alaska Department of Fish and Game and Prince William Sound herring fishermen.

Dr. Pegau will serve as the program lead to ensure the proper coordination within the program, with other EVOS funded programs, and as a point person for communications with the EVOSTC. An independent scientific oversight group exists that will provide feedback on the program.

FY18 Funding Recommendations:

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

**Indicates this review group recommends a Fund Contingent for Project #18170111-D Gorman*

Science Panel Comments – FY18

Date: September 2017

Overall, the Panel is pleased with the Program's progress. The Panel strongly recommends that all proposals include hypotheses, highlights and figures reflecting progress made during the previous year(s), as did PIs for two of the proposals (18120111-C Branch and 18120111-E Hershberger/Purcell). The LTM proposal provide good examples of what the Panel is looking for, as they nicely addressed our previous request for this information. They also included a list of publications and datasets uploaded during the previous year, which we endorse and recommend that all proposals now include. This information is very helpful to determine whether changes are warranted in study plans for the upcoming year. Toward this end, improvements to the proposal forms will help. The Panel supports Scott's request to hire Maya Groner for the Post-doc position.

PI Response (10/11/2017)
As the program lead I will review the proposals to ensure they have the hypotheses, goals, and highlights as requested.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments. I will revise the proposal forms to address the Panel's recommendations.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund Reduced	Fund Reduced	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

This is a complex proposal with many integrated parts. A key strength of the proposal is the required collaboration and cooperation of PI's from very different disciplines. This cohesion was an initial requirement for the herring program and Dr. Pegau has met this challenge successfully. There were, however, many questions and comments following the initial proposals presented earlier this year. The Panel appreciated the responses of Dr. Pegau and the PI's within the revised Herring Program. Most questions or comments requested clarification or more information, and were not necessarily intended to point out shortcomings or errors. In this regard, the Panel was pleased and generally satisfied with the responses that we considered to be constructive and informative.

There was one aspect of the revised proposal that elicited some concerns: the brevity of scientific context and rationale for the herring program, as a whole. We acknowledge that this is a demanding request: it is difficult enough to provide such context for individual proposals, let alone a collection of proposals such as the integrated herring program. Nevertheless the Panel would like to have seen more attention provided to explaining how the composite set of proposals addressed basic scientific issues. The two general hypotheses listed in the opening pages of the Herring program (i) bottom-up forcing and (ii) age-specific migration are fine, but there are many other fundamental questions in the literature that are germane to the projects in the herring program. For example, within the initial overview of the herring proposals, there is scant reference to the potential impacts of climate change, as a factor that could affect herring or the research efforts directed at herring. We note, however that this specific issue is mentioned specifically in two projects. The Panel was somewhat reassured, however, when we heard directly from Dr. Pegau during a telephone conversation when he indicated that he shares some of this perspective but is constrained by time and assistance. There is some promise that the additional of a post-doc position may provide some assistance in this regard.

Date: May 2016

The Science Panel noted some possible inconsistency between the lists of hypothesis in the 'Program proposal summary' (Appendix A) and similar text from Appendix C. Appendix A presents text explaining the roles of a future post-doc position.

Appendix A states: " . . . the post-doc position will be directed to test the hypothesis: "Herring recruitment is driven by bottom up forcing and the total population level is determined by disease and predation."

Appendix C (HRM Coordination) repeats this hypothesis and adds two more: "Three hypotheses have arisen over the past seven years that guide our current efforts. Individual projects have additional hypotheses that they will address.

These three hypotheses are copied below (in Italic font):
H1: Herring populations exists in two states, high and low biomass, and the transition between states is rapid. *This hypothesis comes from the EVOS* supported *modeling effort of Dale Keifer (EVOS project 070810) prior to the formation of the integrated programs.* ***H2: Herring recruitment is driven by bottom up forcing and the total population level is determined by disease and predation.*** *A postdoctoral research position is proposed to allow a focused effort on using historical data to test this hypothesis.* ***H3: Larger herring migrate out of PWS during the summer, while smaller ones remain in PWS.***

The Panel was surprised by the inclusion of the specific hypotheses: H1 and H3. Also, we do not necessarily agree that these are three important hypotheses that have 'arisen over the last 7 years'. We note that there have been no publications of accessible reports to explain the origins of any of these hypotheses. This text is not well presented and is superfluous to the main thrust of most of the individual proposals. We recommend major editing and appropriate modification of related study plans.

Under the project called "HRM Coordination" there is general text referring to a post-doc position that reads as follows (in Italic font) with sentences numbered.
(1) The focus of the postdoctoral research will be to examine connections between herring recruitment and condition with the physical and biological environmental conditions. (2) We will be seeking proposals for the postdoctoral position in which the specifics of the approach will be described. (3). The intent is to address the hypothesis: Herring recruitment is driven by bottom up forcing and the total population level is determined by disease and predation. (4) The postdoctoral position is proposed to as a method that allows a focused effort on using historical data to test this hypothesis. (5) Testing this hypothesis is expected to inform the population modeling effort in a manner that improves the predictive capacity of the modeling. (6) The improved model would then lead to resource managers having a better understanding of potential changes in the population.

Revision of Items 3-5 is strongly advised. Items 3-5 present a specific hypothesis that has already been examined in a number of papers for different herring populations. This comment does not mean to imply that the hypotheses are incorrect, or inappropriate, but it does unnecessarily restrict the scope of the postdoctoral position. It may be simpler and more productive to limit the 'focus' to examining connections between herring recruitment and condition with the physical and biological environmental conditions. The Panel also points out that a UAF doctoral student, Fletcher Sewall, located at NOAA's Ted Stevens Marine Research Institute with Ron Heintz, is examining potential relationships between PWS herring recruitment and environmental and ecological factors. Sewall's results may help jump start efforts by the post-doc and there may be possibilities of collaboration. Finally, the recruitment process for the post-doc described on page 31 was confusing, but was explained by PI Pegau more clearly over the phone. The text should be clarified.

The Panel reflected on the scope of the herring proposals and whether there might have been other types of approaches. One example was raised during the phone call with Scott Pegau during which it was suggested that a review of the 2015 Incardona et al. paper may be helpful to consider whether low levels of lingering oil might have chronic impacts on recruitment. The Panel was surprised by the categorical rejection of this suggestion and that such experimental approaches may not have merit. We do not concur.

The Panel also reflected on the types and scope of synthesis work that might be conducted by the post-doc, and others, during the next 5 years. The Panel noted that there were a number of potential process-based connections that might be examined – such as connections between disease and predation. Further, there are potentially relevant data on other factors that might affect herring that are not considered in either the herring or LTM programs, such as juvenile salmon competition and impacts on herring growth of condition, or pinniped predation, etc.

**Incardona, J., M. G. Carls, L. Holland, T. L. Linbo, D. H. Baldwin, M. S. Myers, K. A. Peck-Miller, M. Tagal, S. D. Rice, N. L. Scholz. 2015. Very low embryonic crude oil exposures cause lasting cardiac defects in herring and salmon. Scientific Reports, 5:13499*

Science Coordinator Comments – FY17

Date: September 2016

I concur with the Science Panel's comments. I appreciate the Team Lead and individual PI's careful attention to the Panel's May comments and feel that the applicable changes made to the Program will benefit both the Herring and Long-Term Monitoring Programs.

Date: May 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

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

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120111-A**

Project Title: Herring Program – Program Coordination

Primary Investigator(s): Scott Pegau

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

EVOSTC Funding Requested FY17-21: $1,039,400

FY17	FY18	FY19	FY20	FY21
Auth: $138,400	$270,200	$284,100	$256,100	$90,700

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $136,100

FY17	FY18	FY19	FY20	FY21
$26,000	$26,600	$27,200	$28,000	$28,300

Total Past EVOSTC Funding Authorized (FY12-17): $2,078,500

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $2,979,500

Total Non-EVOSTC Funding (FY12-21): $247,800

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 7/31/17.*

This proposal is to provide coordination of the Herring Research and Monitoring (HRM) program. In addition to the coordination efforts, it includes a postdoctoral researcher to analyze the relationships between herring stocks and physical and biological oceanographic conditions. Furthermore, it covers the community involvement and outreach activities of the program. The goal of the project is to provide coordination within the HRM program and with the Gulf Watch Alaska (GWA) and Data Management (DM) programs. The objectives of the project are:

1) Coordinate efforts among the HRM projects to achieve the program objectives, maximize shared resources, ensure timely reporting, and coordinate logistics.

2) Oversee a postdoctoral researcher.

3) Provide outreach and community involvement for the program.

The proposed approach follows that used during the Prince William Sound Herring Survey and initial HRM programs. Coordination will primarily be through e-mail and teleconference. The management team of GWA and the lead of Data Management will be included in the emails to HRM PIs to ensure they are aware of our activities. We also plan joint PI meetings and community involvement activities.

The postdoctoral researcher will be recruited in year one and is funded for three years. The focus area of the research was chosen to overlap with the activities of both HRM and GWA programs.

Outreach efforts will be focused on providing up-to-date information on the projects and their findings. Community involvement includes regular communications with stakeholders, such as the herring division of the Cordova District Fishermen United and Alaska Department of Fish and Game to

stay aware of their findings and observations. We also are planning listening sessions in two of the villages to seek additional local and traditional ecological knowledge.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel appreciates Scott's hard work and effort in the coordination of the Herring Research Monitoring Program. We were pleased to hear that PIs are compliant and rapidly uploading their data to the data portal. The panel is especially pleased to see Scott's involvement in promoting the inclusion of a postdoc in the Herring Program.

PI Response (10/11/2017) Thank you

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel also appreciates that Dr. Pegau's program has endured a number of changes in personnel, with some departing PI's and some new ones. Such changes can be disruptive and the Panel heartily commends Dr. Pegau for his steady and dedicated supervision of a number of complex and varied management issues. In particular we salute the continued operational integration of the projects,

especially the collaborative sharing of vessels and other forms of cooperation among PI's, both with and between the Herring and LTM programs.

The Panel appreciates the extension of the postdoc for a full three years.

Date: May 2016

The Panel strongly recommends that the Council consider the addition of funding to support a third year of the post-doc position, which the proposer currently budgets as funded for slightly more than two years. In recommending three years of funding, the Panel notes that much of the first year will be spent becoming familiar with existing programs and data. The proposal also needs to add a mentoring plan for the post-doc position. This plan could profit by including interactions between the post-doc and Hershberger, whose disease research continues to inspire new insights into causes of the lack of herring recovery in PWS.

The request for an additional $500,000 in funding to allow for flexibility to respond to changing conditions is not supported by the Panel. If the Program would like to pursue expanded or new work, specific proposals for the expanded or new work should be submitted during the annual proposal cycle to allow for review by the Panel. On the other hand, the Panel supports strongly the need to provide additional assistance to Pegau, whose work load alone is a Herculean task.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120111-B**

Project Title: Herring Program - Annual Herring Migration Cycle

Primary Investigator(s): Mary Anne Bishop

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

EVOSTC Funding Requested FY17-21: $1,231,100

FY17	FY18	FY19	FY20	FY21
Auth: $381,900	$379,500	$268,300	$201,400	$0

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $60,000

FY17	FY18	FY19	FY20	FY21
$15,000	$415,000	$15,000	$15,000	$0

Total Past EVOSTC Funding Authorized (FY12-17): $654,500

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $1,503,700

Total Non-EVOSTC Funding (FY12-21): $475,500

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17*
This project is a component of the Herring Research and Monitoring (HRM) program. The goal of the HRM program is to: Improve predictive models of herring stocks through observations and research. Within Prince William Sound (PWS), adult Pacific herring (*Clupea pallasii*) movements between spawning, summer feeding, and overwintering areas are not well understood. Addressing this knowledge gap will improve our ability to assess biomass trends and recovery of this ecologically important species. 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, which are located in the major entrances and passages connecting PWS with the Gulf of Alaska (GoA). However, the 2013 study could not establish if herring were seasonally leaving PWS and migrating into the GoA. With funding from EVOS in FY16, we will improve our ability to detect movements between PWS and the GoA by deploying additional acoustic receivers at the Ocean Tracking Network arrays. The primary goal of this 2017-2021 project is to clarify the annual migration cycle of PWS adult herring by leveraging this expanded acoustic infrastructure. The specific objectives of this project are to 1) document location, timing, and direction of Pacific herring seasonal migrations between PWS and the GoA; 2) relate large-scale movements to year class and body condition of tagged individuals; and 3) determine seasonal residency time within PWS, at the entrances to PWS, and in the Gulf of Alaska. During spring 2017 we tagged 125 herring at Port Gravina in northeast Prince William Sound. For FY18 we will expand our efforts to two tagging sites and tag a total of 210 herring.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel is once again very pleased with the quality of this proposal. These results are relevant and important; the PI has answered the questions that were asked.

PI Response (10/11/2017) Thank you

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

This appears to be a very productive project, in terms of acquiring valuable observations about herring movements in PWS. The original proposal was both well-presented and interesting. This generated questions from the Panel – which were addressed in detail. The Panel thanks the PI for detailed and thorough response to Panel interest and concerns, which put both her work and the proposal at large into broader perspective. We also appreciate the PI adjusting sampling based on Panel comments.

Date: May 2016

The Panel was pleased by the work and rapid reporting of results in the literature. While the Panel endorsed the elements and detail of the proposal, we wondered if the work was limited by funding, or whether there were some incremental tasks that might be considered. Specifically, we wondered if additional tag releases, from different areas and different times, might be considered. While speculative, we wondered if additional tagging might address some key hypotheses that cannot be considered within the present level of funding. For example, does the propensity to migrate out of PWS, or stay within PWS, vary with tagging (spawning) location, or perhaps fish size? Would there be merit in tagging at different times of year – and not only in the spawning season? The main comment was to suggest to the PI that additional increments to this work might be considered if such increments were cost-effective and addressed important hypotheses. Additionally, the Panel was very appreciative of the power analyses presented in the proposal, but cautions that sample sizes estimated for simulated herring in Table 1 may underestimate samples actually required for wild herring.

The Panel understands that annual migrations within PWS, while potentially interesting, are beyond the scope of the project as envisioned. However, we wonder if there may be supplementary data (e.g., herring bycatch in other fisheries) that may be useful to help cobble together a more complete picture of herring migration within and outside PWS.

A different comment on tagging reflects comments made during our call with Scott Pegau who indicated that recent genetics work showed significant differences between PWS herring and those of Kodiak. Less clear was whether there were any genetic differences found within PWS. Based on previously published work, the Panel thought that the likelihood of genetic differences among herring within PWS to be very small – but, on the other hand, if such differences were found then it would be sensible to ensure that tagging was conducted on each of any potential different stocks or sub-stocks. Perhaps a review of fish genetic research done by the Seebs when they worked for ADFG could reveal comparisons among PWS populations that could inform this issue.

The Panel would be supportive of additional project funding for increased tagging as discussed above.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120111-C**

Project Title: Herring Program – Modeling and stock assessment of PWS herring

Primary Investigator(s): Trevor Branch

PI Affiliation: University of WA **Project Manager:** NOAA

EVOSTC Funding Requested FY17-21: $1,161,800

FY17	FY18	FY19	FY20	FY21
Auth: $124,300	$288,300*	$297,000	$303,300	$148,900

Requests include 9% GA.

*Post-doc salary to be included for FY18-20 for critical synthesis of data between the HRM and GWA programs over the last five years.

Funding From Non-EVOSTC Sources FY17-21: $0

FY17	FY18	FY19	FY20	FY21
$0	$0	$0	$0	$0

Total Past EVOSTC Funding Authorized (FY12-17): $551,400

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $1,588,900

Total Non-EVOSTC Funding (FY12-21): $0

Abstract:

**This abstract is excerpted from the PI's Revised Proposal, dated 9/11/17.*

Prince William Sound (PWS) herring collapsed shortly after the *Exxon Valdez* oil spill, and has yet to recover. Here, we proposed a modeling component to the long-term herring monitoring project, which has as its chief goal an understanding of the current status of PWS herring, the factors affecting its lack of recovery, and an assessment of research and fishery needs into the future, with the following key products:

1. The core product of the modeling project is the maintenance and updating of the new Bayesian age-structured assessment (BASA) model based on the ASA model used by ADF&G, including annual assessment updates of PWS herring and the revision of BASA to fit to new data sources such as the age-0 aerial survey, condition data, and updated age at maturity.
2. Adapting the BASA model to better model the disease component of natural mortality. Specifically, this would be based on new methods for detecting antibodies of viral hemorrhagic septicemia virus (VHSV) in archival and planned future collections of herring serum.
3. Continued collection and expansion of catch, biomass, and recruitment time series from all herring populations around the world to place the lack of recovery of PWS herring into context given patterns of change in herring populations around the world.
4. An initial exploration of factors that may be used to predict herring recruitment, including oceanography, climate, competition, and predation.
5. A management strategy evaluation to test alternative harvest control rules for managing the

fishery in the future, given realistic variability in productivity over time, and the possibility that the population has moved into a low productivity regime. Ecological, economic and social factors would be considered in the MSE.

Simulations to evaluate which data sources are the most useful in assessing future herring biomass, based on an MSE of the impact of each form of data on the accuracy of the BASA model.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel is pleased to see the data presented and supports the elimination of the Ricker SRR. The Panel has some suggestions in regards to the model:

The BASA is a logical extension of the preceding ASA assessment model for PWS herring, and may be of use to fishery managers as a model intended to determine such quantities as the stock abundance relative to the stock size threshold for opening a fishery. Some aspects of the BASA model pose difficulties for the examination of environmental relationships. The Panel does not consider the present BASA to be an adequate operating model for purposes of Management Strategy Evaluation (MSE). EVOSTC research needs would be better met by implementing the following changes to the BASA model to aid in identifying critical population processes and environmental influences on PWS herring:

A. Extend the time series as early a date as possible (previous assessments go back to 1925). This will greatly increase the statistical power for examining environmental influences. The present BASA model begins in 1980, reducing the length of the time series.

PI Response (10/11/2017)
It is our indeed our intent to extend the time series of the BASA model further back in time than the current ASA model used by ADF&G for stock assessments. At present, both BASA and ASA start in 1980, because this marks the start of indices of abundance for this population. In the absence of biomass indices prior to 1980, annual stock assessment estimates of recruitment and biomass will be far more uncertain and less useful in examining the influence of environmental processes. However, prior to 1980, there are data on total catch, proportion at age in catch, and length at age are available (e.g. Reid 1971). It should be noted that while much more uncertain estimates of biomass and recruitment can be obtained prior to 1980, this is not true of most of the time series of explanatory factors, many of which rely on time series of data started under the EVOSTC program, or on satellite imagery. Indeed, there are far fewer explanatory variables extending back in time beyond 1980 that could be used in the analysis, reducing the usefulness of this exercise.

B. Allow the background natural mortality rate to vary in time and estimate it. An example methodology is provided by the Canadian herring assessments (DFO 2015). This should increase accuracy of recruitment estimates and allow additional insight into possible alternative population states. This also will examination of the influence of top-down drivers

(predation) and comparison with trends in predator abundance.

PI Response (10/11/2017)
The Canadian herring assessments (DFO 2015) differ from BASA in two key ways: (1) they estimate varying natural mortality constrains by a random walk with autocorrelation, such that natural mortality cannot vary much from year to year; and (2) they do not estimate additional mortality from disease. There is considerable debate in the stock assessment literature about whether natural mortality can be estimated, since it changes with estimates of recruitment and selectivity. Indeed, in the DFO models, there are unrealistically large changes in natural mortality over time from 0.15 to 1.2 (Figure 5, DFO 2015). Setting that technical issue aside, allowing time-varying natural mortality in BASA would remove the ability to estimate additional mortality from disease, since any signal in natural mortality would be soaked up by time-varying natural mortality. This would compromise goal 2 of the project: the inclusion of new antibody data for VHSV into BASA. It is therefore premature to alter the structure of BASA at this time.

C. Consider constructing a similar BASA model for the Sitka fishery. To the extent that Sitka shares previously-identified large-scale environmental influences with PWS (Williams & Quinn 2000), combined models will increase statistical power. Conversely, if this pattern of correlation no longer applies in recent years, comparing models should help isolate the important differences or changes in the PWS system relative to Sitka. A long-term Sitka assessment may possibly allow the time-series gap in PWS assessments (no assessments 1957-1971) to be filled on the basis of correlated recruitment patterns.

PI Response (10/11/2017)
This would be a very interesting addition, especially if the correlations in recruitment for Sitka, Seymour Canal, and Kah-Shakes have continued beyond the 1993 end point in Williams & Quinn (2000). Indeed the herring meta-analysis (in prep.) from the 2011-2016 program examines factors that might explain recruitment in all herring populations worldwide. A new model for Sitka is beyond the scope of our proposal, and would require substantial additional work, but if additional funds are available to support this expansion, we would gladly construct another BASA-type model for Sitka.

The Panel strongly encourages addressing items A and B before the use of the BASA model for analysis of environmental influences and to take into consideration item C, even though it is not within the scope of the proposal the additional model will add to the already high quality of this project. The Panel also noted the merits of conducting sensitivity analyses to evaluate the importance of errors in assumptions or parameters, such as natural mortality, on model performance. Together with Items A and B, this would help to determine when the model is ready for MSE.

PI Response (10/11/2017)
Sensitivity tests for model parameters are an integral part of the model assessment process for BASA. For instance, Muradian et al. (2017) reran the model with natural mortality of 0.15 and 0.35 in addition to the base value of 0.25 (excluding disease mortality), and also examined retrospective runs to test for bias in recent years.

The Panel whole-heartedly supports the request to use the CPPG funding (total $150K) toward 1.5 years of salary for another postdoc (David McGowan) to conduct synthesis work via modeling project with Trevor Branch. However, herring program needs to request an additional $150K for the

remaining 1.5 years (part of FY19 and FY20) needed to create a three-year synthesis, which would provide the minimum time needed for achieve appropriate synthesis.

PI Response (10/11/2017)
We are excited to start work with David McGowan.

References:
DFO 2015. Stock assessment and management advice for BC Pacific herring: 2015 status and 2016 forecast. Fisheries and Oceans Canada, Canadian Science Advisory Secretariat, Pacific Region, Science Response 2015/038.

Williams, E. H., Quinn, T. H. 2000. Pacific herring, Clupea pallasi, recruitment in the Bering Sea and north-east Pacific Ocean, I: relationships among different populations. Fish. Oceanogr. 9:285-299.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The original proposal, and the revision, was very well presented. The Panel appreciates the feedback from the PI on our concerns and the removal of some aspects of the proposal as suggested by the Panel. We understand the PI's justification to retain other aspects.

Date: May 2016

This is a well-written proposal that clearly shows the linkages with most of the other projects. The proposal lists six tasks, that are listed below (in Italics), with some short comments from the Science Panel on each.

(1) maintenance and updating of the new Bayesian age-structured assessment (BASA) model based on the ASA model used by ADF&G, including annual assessment updates of PWS herring and the revision of BASA to fit to new data sources such as the age-0 aerial survey, condition data, and updated age at maturity.

The Panel wondered what was meant by 'condition data'. Does this refer to the estimates of condition that can be derived from ASL data or does it refer to something else? Also, we assume that the updated maturity data would come from the Gorman proposal. The Panel also had some discussion on the benefits of new information on size-at-maturity and age-at-maturity or both for BASA. Regarding maturity data, we repeat that there is broad evidence of temporal and spatial structuring of herring on spawning grounds, and sometimes even in over-wintering areas. During spawning, larger, older fish tend to spawn earliest, and perhaps even at different locations than younger fish. Sampling during the spawning time can lead to bias in estimates of age composition, and may lead to errors in assumptions about age-at-maturity. Therefore, the Panel endorses the approach to provide empirical estimates of age-at-maturity with such temporal and spatial structuring in mind (also see Panel comments on Gorman proposal).

(2) Adapting the BASA model to better model the disease component of natural mortality. Specifically, this would be based on new methods for detecting antibodies of viral hemorrhagic septicemia virus (VHSV) in archival and planned future collections of herring serum.

The Panel endorses this task.

(3) Continued collection and expansion of catch, biomass, and recruitment time series from all herring populations around the world to place the lack of recovery of PWS herring into context given patterns of change in herring populations around the world.

The Panel is puzzled and perhaps ambivalent about this. This seems like a worthy task but the implications for PWS seem remote. Providing that this task is not a big-ticket item, it does not present any issues, although it is not clear why this needs to be shown as a distinct task, when it could have been conducted sub-rosa.

(4) An initial exploration of factors that may be used to predict herring recruitment, including oceanography, climate, competition, and predation.

The Panel strongly endorses this task.

(5) A management strategy evaluation to test alternative harvest control rules for managing the fishery in the future, given realistic variability in productivity over time, and the possibility that the population has moved into a low productivity regime. Ecological, economic and social factors would be considered in the MSE.

The Panel does not foresee the resumption of active herring fisheries in PWS anytime in the near future. Therefore while this task may have eventual worth, it belongs closer to the back-burner than the front.

(6) Simulations to evaluate which data sources are the most useful in assessing future herring biomass, based on an MSE of the impact of each form of data on the accuracy of the BASA model.

We recommend caution. While it may be sensible to proceed with data evaluation, it also is essential to have a concurrent examination of the efficacy and integrity of some of the key databases used in the assessment model. In particular the factors that might affect the time series of acoustics data have not been well explained in any document to date. Similar comments might be made about some other types of data used in the assessment model (see comments made in response to the Moffitt and Gorman proposals).

The proposal would also benefit from a discussion of how this model could be transferred to ADFG for their future use.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18170111-D**

Project Title: Herring Program - Studies of Reproductive Maturity among Age Cohorts of Pacific Herring in Prince William Sound, Alaska

Primary Investigator(s): Kristen Gorman

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

EVOSTC Funding Requested FY17-21: $850,000

FY17	FY18	FY19	FY20	FY21
Auth: $170,000	$172,000	$165,100	$169,600	$173,300

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $0

FY12-17	FY18	FY19	FY20	FY21
$0	$0	$0	$0	$0

Total Past EVOSTC Funding Authorized (FY12-17): $170,000

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $1,020,000

Total Non-EVOSTC Funding (FY12-21): $0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 7/26/17*
To address the lack of recovery of Pacific herring (*Clupea pallasii*) in Prince William Sound (PWS), Alaska, research by the Herring Research and Monitoring (HRM) Program has been focused on improving predictive models of PWS herring stocks through observations and research. To this end, the goal of the project described here is to improve the HRM program's updated (Bayesian) PWS herring Age-Structured Assessment (ASA) model's ability to more accurately predict the total population's biomass by empirically assessing reproductive maturity among age cohorts. Currently, the age at maturity function in the ASA model is not based on empirical data. An improved understanding of age at maturity will allow for more accurate estimates of the total population biomass, which is central to the management of this fishery. The objectives of the studies proposed here are fourfold: 1) assess the seasonal timing (spring, summer, and fall) that allows for accurate determination of both previously spawned and maturing female herring based on ovary histology to determine maturation states; 2) couple histology results with annual scale growth information at the individual level, within specific age cohorts across seasons, to understand if scale growth patterns reflect reproductive investment; 3) assess whether annual scale growth patterns can be used to infer age at maturity at the individual level across age cohorts given results from objectives 1 and 2, and 4) assess inter-annual variability in age at maturity based on coupled histology and scale growth over a five-year period by focused, increased sampling during the optimal seasonal period given results from objectives 1-3. The proposed approach will advance preliminary work conducted previously by HRM investigators by testing the appropriate sampling time of wild PWS herring for ovary characteristics, as opposed to lab-based studies, and increasing sample sizes for more powerful analyses. Studies proposed here address a key demographic

parameter. Therefore, this research will not only contribute to the management of PWS herring, but also to a more general understanding of herring demography. As world-wide herring populations encounter more variable environmental conditions in the future, basic knowledge of herring demography and ecology will be invaluable.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel appreciates the PI's work and effort during FY17 and understands that if the fish are not present, they can't be caught. The Panel whole-heartedly endorses the histology component to its full capacity. The Panel also strongly suggests recording gonad weights to determine age of maturity.

Updated Science Panel and Science Coordinator comments (10/16/2017):

The Panel thanks the PI for her responses to the Panel's concerns and comments. After reading the most recent response dated September 25, 2017 the Panel's recommendation remains fund contingent for FY18 on the submission of a more thoroughly revised proposal, with recommendations to fund in future years dependent on results and progress in this coming year.

The Panel is pleased to see that the main focus for FY18 has been changed to Objective 1 (addressing direct measures of female and male maturity). The Panel emphasizes that any scale work should focus on methods and validation of the approach as it applies to PWS herring.

Although a bit brief, the Panel appreciates the inclusion of the FY17 highlights and updates. This section will become part of future proposal forms for all projects and used to evaluate progress in the preceding year and plans for the upcoming year.

The Panel found the additional description of sampling plans using hydroacoustics and jigging techniques, as well as exploring use of "ships of opportunity" in winter to be helpful. The Panel will look to see that sampling difficulties in FY17 are resolved in FY18.

The Panel still has some concerns. The Panel notes that the proposal revisions are quite modest and appear to have been prepared with minimal effort to address their comments. The Panel's assessment is that relative to other proposals, especially those in the LTM, this proposal remains weak and the revised proposal appears to be set on the same original course. The Panel and Science Coordinator note the lack of attention paid to details: there are quite a few grammatical errors, including incomplete sentences, the proposal number is still incorrect and not all comments were addressed (see below).

With respect to references made to Heinz and Vollenweider as personal communications and the reference to an AMSS poster, the Panel recommends that their final report should be cited – at least to the extent that information to be cited can be found in the final report by Vollenweider et al. (2017) as preliminary results reported as personal communications or symposium posters often change in the final analysis.

The Panel's comments about project milestones were not addressed:
"At present the project milestones mainly include field collections and sending off histology samples. In the revised proposal, please include timelines for other project milestones (e.g. data analysis, conference attendance) for each project component. It is important for all of us to be able to track progress on the

objectives to assess any course corrections that may be necessary with each new annual proposal."

The Panel requests a revised proposal to include specific, measurable milestones by which to judge project progress and success. For instance, next year the Panel will be looking for some results of data analyses associated with Objective 1 to track project progress and the merits for additional funding beyond FY18. It is imperative that tangible, measurable milestones are presented by which project success can be evaluated, at least in terms of Objective 1 next year. The Panel does not find it sufficient to simply state how many fish were caught and how many samples were sent to a third-party lab for analysis. Examples of these milestones are also given in the proposal form:

B. Measurable Project Tasks for FY18 Specify, by each quarter of each fiscal year, when critical project tasks (for example, sample collection, data analysis, manuscript submittal, etc.) will be completed, as submitted in your original proposal. Please identify any substantive changes and the reason for the changes.

Overall, the Panel expects more scientific rigor with more attention paid to the broad scientific literature related to this project and greater use of existing databases, especially bio-sampling databases that provide information (i.e., catch dates, locations, growth rates, etc.).

The Panel and Science Coordinator acknowledge and commend your productive scientific publication record and your ability to collaborate effectively with other researchers. We recognize and thank you for your dedication. We look forward to receiving your revised proposal.

Below at the end of the FY18 comments, for those interested, is the discussion between the Panel and PI regarding various technical issues the Panel and Science Coordinator requested be resolved before any approved funding is released.

Date: September 2017

I concur with the Science Panel's comments. I greatly appreciate Panel's suggestions and the PI's responses to the Panel's concerns.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee. I appreciate the Science Panel's detailed comments and the PI's responsiveness.

EVOSTC FY18

SCIENCE PANEL COMMENTS AND RECOMMENDATIONS FOLLOWING FROM THE RESPONSE TO REVIEWER COMMENTS

PROJECT TITLE

Herring Research and Monitoring Program: Studies of Reproductive Maturity among Age Cohorts of Pacific Herring (*Clupea pallasii*) in Prince William Sound, Alaska

PROJECT NUMBER
18170111-D

PRIMARY INVESTIGATOR AND AFFILIATION
Kristen B. Gorman, Prince William Sound Science Center (PWSSC), P.O. Box 705, Cordova, AK 99574

DATE PI RESPONSE SUBMITTED
September 13, 2017, September 25, 2017

DATE SCIENCE PANEL REPLY SUBMITTED
September 15, 2017

Note from the Science Coordinator:
In an effort to keep this as organized as possible, initial Science Panel comments are under the header "**SCIENCE PANEL COMMENTS (9.11.17)**". First round of PI comments are *italics* under the header "***PI RESPONSE (9.13.17)***". Science Panel follow-up comments are under the header "**SCIENCE PANEL COMMENTS (9.15.17)**". Line numbers referenced can be found in the document preceding this one. Second round of PI comments are italics under the header "***PI RESPONSE (9.25.17)***".

SCIENCE PANEL COMMENTS (9.11.17)

In general the science panel endorses work to estimate the age at maturity but the panel notes the following:

- Some reconsideration of the approaches may be warranted, especially those involving the use of scales for retrospective analyses. (See comments on methods, below).
- There may be some implicit biological assumptions about the connection between herring distributions and age-specific maturation that warrant more explanation – and perhaps re-consideration relative to work that has occurred in other Pacific herring populations. (See comments on methods, below).
- There is no mention of direct measures of maturity, using simple, inexpensive and accurate estimation by simply weighing gonads, or other, direct measures that might be considered.

Of the four objectives listed in the proposal, three involve the use of scales. To date, and as the proposal points out, the use of scale measurements, as criteria of *past* maturation, has yet to be demonstrably successful for Pacific herring. Therefore, we advise that parts of the proposed work, as presented, appear risky. The Science Panel is concerned about the emphasis on scales, and the probable success of this approach, for two reasons.

Reason One. Similar approaches were tried in BC and failed. Regrettably there is no report on such failed projects but the reasons for failure were related to the degrees of error associated with scale measurements of retrospective growth. Scale measurements can be crude. By the time Pacific herring have reached age 2 (24 months), most are roughly 15 cm long. Fully mature herring (mainly ages 5-10+) may reach 30 cm but few reach such a length (allowing for differences in definitions of length ('standard' versus 'fork' versus 'total). The point is that most herring, prior to maturity have already achieved half or more of their final total length (or L-infinity) and scale growth are near-exact replicas of past growth (i.e., one-scale per myomere and the growth of the scale 'edge' (BTW not 'layer') occurs in an anterior direction between the focus and the outer annulus. The proposed scale measurement requires a careful measure between tiny segments of the scales: between the focus, and each subsequent annulus. In theory this is simple. In practice it can be messy. First, the precise location of the focus point (which is also the point closes to the exposed edge of the scale – or non-readable part) can be difficult to determine, perhaps because of scale wear. Then each subsequent measure may have some fuzziness to the estimate because it can be difficult to estimate the exact point of each annulus. The vital measures are between the second and third annulus and the third and fourth annulus, which at most, would only be a small part of most scales, especially on the oldest fish. Therefore, it would be vital to ensure that such measurements were as accurate as possible. One recommendation would be to *take multiple independent measurements from different scales from the same fish*, to determine the relative amount of error associated with measurement versus the natural variation in actual retrospective age-specific (or annulus-specific) growth. Unless this was done there would be little assurance that the measurements were valid estimators of past growth. There are many potential artifact-inducing processes (i) scale source or scale locations (small differences in location can have large impacts on inter-annulus measurements); (ii) time of year of collection when the scales are still growing (affecting measures of scale edge and age-specific estimates of total body length). Note that scales may continue to grow, even during winter periods when nutrition may be limited, which is mainly seen as a distortion of the annulus); and (iii) year-specific effects. Scale-readers have noted that scales can be difficult to read in some years or for some cohorts, perhaps reflecting unique oceanographic or trophic conditions. Finally, we know that herring resorb calcium and perhaps other minerals from their scales, as they expand

their gonads prior to spawning. Such a resorption of material is part of the rationale for this proposed work (i.e., an impact of maturation on somatic growth) but it is also part of the potential source of error.

Reason Two. A second reason for recommending caution, is that PWS herring are not generally as long-lived as the Norwegian Spring-Spawning (NSS) herring (that can live for 20 years or longer), or even as long as Pacific herring in the Bering Sea that can live well into their teens. In such longer-lived herring there may be a higher likelihood of delayed age at maturity ('right-shifted' ogive) relative to smaller, shorter-lived herring.

PI RESPONSE (9.13.12)

As the panel notes there are four objectives to the research and three include mention of working with scales. The objectives of the proposed research follow:

1) Assess the seasonal timing (spring, summer, and fall) that allows for accurate determination of both previously spawned and maturing female herring based on ovary histology to determine maturation states

2) Couple histology results with annual scale growth information at the individual level, within specific age cohorts, to understand if scale growth patterns reflect reproductive investment.

3) Assess whether annual scale growth patterns can be used to infer age at maturity at the individual level across age cohorts given results from objectives 1 and 2.

4) Assess inter-annual variability in age at maturity based on coupled histology and scale growth over a five-year period by focused, increased sampling during the optimal seasonal period given results from objectives 1-3.These objectives address the hypotheses in the proposal and are meant to build upon each other. What is not clear from the wording is that this study relies on histology as the primary measure of ovary maturity in female Pacific herring. The project is designed to use histology to discern proportions of mature and immature herring per age cohort, which is something the earlier pilot study by Vollenweider et al. (EVOS Final Report 13120111-J, 2017) did not report. We include work on scales from fish collected in PWS, mainly because the earlier pilot study suffered from low sample sizes of wild caught fish. They were unable to demonstrate a connection between histology and scale growth based on their low sample sizes for wild caught fish during their study (our second objective). Importantly, the pilot study by Vollenweider et al. (EVOS Final Report 13120111-J, 2017) suggested that it may be possible to use scale growth to discriminate spawners from non-spawners using the larger sample sizes available from the ADF&G scale library.

However, it would now be interesting to extend the retrospective analysis using the ADF&G scale library to ask if there is evidence of a shift in age at maturity that follows the ASA model output. The model suggests a change in maturity function between two time periods (before and after 1996). This is a component of the project that had not been proposed, but could replace Objective 3 in the proposal. Our fourth objective uses both histology and scale measurements to look for inter-annual changes in maturity. If this can be achieved it can be used to validate the ASA model output of maturity. This follows the conclusions of Vollenweider et al. (EVOS Final Report 13120111-J, 2017) that future efforts examine inter-annual variability in the proportions of mature herring among age cohorts.

SCIENCE PANEL COMMENTS (9.15.17)

LINES 79-83: It is good to have this point clarified, although we still advise that even simple visual assessments of gonads, and gonad weights, can be informative. We also advise that estimation of age-at-maturity should also apply both to males and females. Please revise the proposal to include these analyses.

PI RESPONSE (9.25.17)

I agree that simple visual assessment of gonads and gonad weights can be informative. Therefore, in the original proposal (FY17) and noted on the response dated 9.13.17 (FY18 proposal), it is stated that data are taken to develop a GSI:

*From Procedural and Scientific Methods (FY17 proposal): All fish within these ages [3+ - 5+] will be measured for length (mm) and wet weight (g). Gonads will be dissected from the body and a gonadosomatic index (GSI) will be developed by weighing the gonad separately where GSI = (ovary weight/whole wet weight)*100.*

From PI Response (9.13.17): For all collections, including spring 2017, we examined age using scale information, and maturity is examined primarily using histology. However, during lab processing, we obtain information to develop a GSI index including fish length, weight, and gonad weight, as well as the Hjort criteria.

The Hjort criteria were not identified in the original FY17 proposal and was added during spring 2017 processing as this is the criteria used by ADF&G. This is updated in the FY18 proposal.

Thank you for clarifying that the age at maturity analysis should apply to both males and females. The original FY17 proposal focused only on females and did not propose to assess maturity of males, and because the FY17 proposal was funded, in spring 2017 I did not obtain data on gonad weights and Hjort criteria for males. The requested change to assess GSI and Hjort criteria in males will be updated in the FY18 proposal edits.

LINES 83-89: At best, the intention of using archived scales to retrospectively estimate age-at-maturity is speculative and should be conducted cautiously. We still see this as having a low likelihood of success. Therefore, it would be in the best interests of everyone to conduct such investigations as an "expendable appendage" to the main thrust of the research, which would focus on direct estimates of maturity, using histology or other approaches.

PI RESPONSE (9.25.17)
The use of archived scales, although proposed as part of the 5 year project, is not something that would be accomplished in FY18 as both FY17 and FY18 are focused on the successful seasonal collection of fish and obtaining initial data on age at maturity using histology, and direct measurement of gonad weights and the Hjort criteria. The specifics on any retrospective analysis would be outlined in future annual proposals for this project, thus it is understood that this aspect of the project would only proceed with further input from the SP.

LINES 91-99: While we appreciate the thought and detail related to the listing of the four detailed objectives or hypotheses, we also suggest that there is a risk of getting too far ahead of the anticipated results. It might be clearer and simpler to stick with the main objective and hypothesis: estimation of the age of maturity.

PI RESPONSE (9.25.17)
I understand the SP's concern that the research not get ahead of anticipated results as the original objectives outlined in FY17 all built upon each other. The main objective will be highlighted in the FY18 proposal edits.

PI RESPONSE (9.13.12)
LINES 22-54: Regarding "Reason One". I appreciate the detailed comments by the reviewer, as they are legitimate concerns. In response, there has been past work to determine the precision of scale growth measurements for PWS Pacific herring, see Moffitt (EVOS Final Report 13120111-N, 2017), specifically the results from the Precision Test reported in Table 3. Moffitt tested the precision of scale measurements by randomly selecting 101 scales from fish aged 4, 5, and 6 to measure a second time. The reader was not informed that these scales had been measured previously to reduce the possibility of a different process being followed for the second measurements. Results show that 91-96% of the variation in scale growth was detected by second reads of the scales, which suggests a high accuracy of reading scale growth. Further, based on ADF&G protocols, the scales taken for growth measurements are better when taken from specific areas of the fish (see Moffitt EVOS Final Report 13120111-N, 2017, Figure 1), which this project is doing and would reduce issues related to "small differences in location can have large impacts on inter-annulus measurements". Without a doubt the proportional error increases with age, which may explain the result of Vollenweider et al. (EVOS Final Report 13120111-J, 2017) where they found increasing evidence of skip spawning at age-6.

Previous unpublished work by ADF&G led them to have a preferred area on the fish to collect scales. This is in large part due to wanting to collect scales from an area that tends to have the best quality scales for reading, but also ensures uniform measures of scale growth that may be lost by collecting scales from multiple locations on a single fish as suggested. We have no issue with collecting multiple scales from a single fish to look at growth variability. We actually collected multiple scales from our samples in 2017 so we can easily do this test, but suggest the work of Moffitt (2017) addresses the ability to consistently read scales with precision.

SCIENCE PANEL COMMENTS (9.15.17)
It is gratifying to see that issues or measurement error had already been considered. A simple statement in the proposal would have been useful. Please add this information into the revised proposal for the purposes of clarity.

PI RESPONSE (9.25.17)
The information regarding measurement error will be updated in the FY18 proposal edits.

PI RESPONSE (9.13.12)
LINES 56-60: Regarding "Reason two". I am not entirely sure how this comment applies. Yes, there are different maturation functions in different populations, but there still is a maturation function that is important for use with the PWS ASA model to expand from the spawning population to the actual population. We note that there are even major differences in the estimated maturity between PWS and Sitka.

SCIENCE PANEL COMMENTS (9.15.17)
We agree that this does not seem to apply at this time. Thank you for the reply.

PI RESPONSE (9.25.17)
No response.

SCIENCE PANEL COMMENTS (9.11.17)
The proposed scale work should be re-examined and de-emphasized relative to other approaches to estimating age-at-maturity. A specific prerequisite task would be to determine the relative error related to scale measurements of annuli. To do this samples should be taken where there are multiple scales per fish (~10) so the degree of error related to retrospective annulus-specific growth can be estimated.

PI RESPONSE (9.13.12)
As noted above the precision of the approach was tested by Moffitt (2017), but in a different manner. In the spring 2017 collections, several scales per individual female were collected and this approach will be retained in subsequent sampling. Thus, it would be possible to determine the relative error related to scale measurements of annuli.

SCIENCE PANEL COMMENTS (9.15.17)
As stated above, it is re-assuring to see that you took this issue into consideration. A simple statement in the proposal would have been useful. Please revise the proposal to include these analyses.

PI RESPONSE (9.25.17)
Again, the information regarding measurement error will be updated in the FY18 proposal edits.

SCIENCE PANEL COMMENTS (9.11.17)
Comments and questions related to the proposal heading: **"Changes to Project Design"**
(proposal text in quotations)

"In spring 2017, we were able to successfully collect herring from the spawning population in adequate sample sizes across all age cohorts of interest."

Did you examine both age and maturity – by visual analyses for maturation state – or simply take weights of gonads? If not, why not? This is the simplest, least expensive, and most accurate way to detect (and confirm) that herring are, or are not, sexually maturing.

PI RESPONSE (9.13.12)
Yes, we scored the ovaries based on the criteria reported in Hay 1985 "The Hjort maturity scale for Pacific herring" as this is the criteria used by ADF&G. For all collections, including spring 2017, we examined age using scale information, and maturity is examined primarily using histology. However, during lab processing, we obtain information to develop a GSI index including fish length, weight, and gonad weight, as well as the Hjort criteria.

SCIENCE PANEL COMMENTS (9.15.17)
It is good to learn that there was a substantial effort made in the spawning season of 2017 to assess maturity by direct measures and assessments of gonads. A preliminary overview or summary of the work, plus any results, would have helped to clarify the proposal for 2018 work. If possible, please present preliminary analyses or summary of the work from FY17 (tables and/or figures) in the revised proposal. For future proposals, preliminary analyses of the data will be appreciated.

Additionally, in the statement above you state that the intention is to collect samples from "all age cohorts of interest". What ages would these be? The reason for asking is that it appears (from the tabular data provided at the end of this document) that the main ages of interest could be age 2 (between 24-36 months of age) and age 3 (between 36 and 48 months of age). If there is a shifting maturity ogive in PWS then we suggest that researchers may be well advised to consider inclusion of samples from younger, smaller fish, collected later in the spawning season and from over-wintering aggregations. We highly suggest that this be incorporated into the revised proposal, provided that this is logistically possible.

PI RESPONSE (9.25.17)
It is understood that the SP would like to see preliminary results in future proposals. Please note, that although we processed fish from the spring 2017 collection, we do not have histology results yet for these fish. I have updated the FY18 proposal with information on the spring 2017 collection results.

All age cohorts of interest are 3+ to 5+ as described in the original FY17 and the hypotheses in FY18 proposal. The suggestion of including age 2 fish is a good idea. In reality, we process in the lab all fish collected, so if we get age 2 fish they will be processed, but in terms of relevance to the ASA model, the ages of interest to the model are ages 3-5, as noted in the FY17 and FY18 proposals.

SCIENCE PANEL COMMENTS (9.11.17)
Re: "However, we were unable to collect herring from the non-spawning population during spring due to limited logistics, i.e., ship time or flights in regions of PWS where fish in non-spawning populations might occur."

It is not clear what is meant by the 'non-spawning population' in the spring. Where would you be looking? How would they be captured? (See the notes summarizing the issues for BC herring). If you intend to use histology, then samples of herring at any date can be used, from mid-summer (when early oogenesis begins) to late winter. Ideally, you probably would want to look at some time between the late fall and early winter – or October to March. There are merits to sampling the portion of the herring population that does not migrate to nearshore areas for spawning. Fish that are not mature in the current year may not undertake these migrations. Thus, if you only sample the fish that spawn, the proportion of mature fish at age will be significantly biased for the younger ages.

PI RESPONSE (9.13.12)
The reason for wanting to sample fish in the spring that are not part of the spawning population is the exact reason identified, "*if you only sample the fish that spawn, the proportion of mature fish at age will be significantly biased for the younger ages*". We would like to obtain samples from fish that are not part of the spawning population in the spring. The location of these fish remains unknown. The difficulty in the non-spawning fish led to the seasonal sampling proposed that is consistent with this recommendation.

SCIENCE PANEL COMMENTS (9.15.17)
The response statement indicates a distinct difference in perspective between the researcher and some of the SP reviewers. In one sense, this is not a problem, because heterogeneity of opinion is valuable – but only if it is clear to all that there is such heterogeneity. In this case, the response statements above reveal that that there is a belief (preferably called a 'hypothesis) that there is a component of the 'non-spawning' population that exists somewhere in an unknown location (see underlined sentence above). The alternate hypothesis is that if such a non-spawning component exists, it would be mainly composed of small, young fish (mainly age two's - between 24-36 months) and perhaps some age three's (between 36 and 48 months). There may also be some age one's (between 12-24 months). Part of the 'alternate hypothesis' (as opposed to the researcher's hypothesis) is that such small, young fish may only be spatially disjunct during the spawning season. At other times of the year, they may well be in roughly the same locations as the spawning (or sexually maturing) component of the population. Probably ALL groups may be in the same general vicinity during the over-wintering aggregations, that supported the fisheries during the reduction fishery era.

There is a concern that the proposed research intends to look for herring in new locations – a form of 'prospecting' that, depending on the context, can be risky (see the PI response statement above LINES 233-234: "*The difficulty in the non-spawning fish led to the seasonal sampling proposed that is consistent with this recommendation.* "). However, and importantly, the intention of seasonal sampling, especially outside of the spawning period is a really good suggestion, and such an approach, when coupled by analyses of maturity (by size and age and sex) could be very useful and informative approach. Please include this approach in the revised proposal.

PI RESPONSE (9.25.17)
The issue of seasonal sampling was included in the original FY17 proposal. Reviewer comments about the FY17 proposal highlighted the importance of temporal and spatial structuring:

From FY17 Reviewer Comments: The Panel also reiterates comments made on the age-structured model here about the likelihood that there is temporal and spatial structuring of herring with respect to size- and age-at-maturity. Estimation of age-at-maturity should keep such temporal and spatial structuring in mind when considering sampling protocols and data analysis (see again AUTHOR RESPONSE 1).

This approach will be included in the revised FY18 proposal.

SCIENCE PANEL COMMENTS (9.11.17)
"In mid-June 2017 during our summer sampling event, although we had adequate ship time and aerial survey support, we were unable to collect adult herring at many locations scouted throughout PWS. We may need to revisit our knowledge of adult herring distribution during this time period to better direct sampling activities in order to be successful. In addition, the mid-water trawl used by PWSSC would benefit from the use of a trawl master so that real-time information could be obtained

on net depth during trawls in order to fish more efficiently. PWSSC does have equipment that would help us collect real time information on the mid-water trawl and we will consider the possibility of requesting additional ship time to calibrate and test this equipment."

While testing and calibration of trawl equipment is probably a good idea, does it need to be part of this project? It runs the risk of modifying the work to be more of an exercise in a study of gear configurations, OR, a study of herring distributions (horizontal and vertical). Such work might be warranted but it deviates from the main thrust of the proposal – unless you prefer to adjust the proposal to include such work. As it stands now, the requirement of this trawl survey calibration work, as a pre-requisite, is unclear.

PI RESPONSE (9.13.12)
The proposal is not advocating for a calibration of trawl equipment. Simply, that having an efficient capture method would expedite the sampling of fish and cut down on the ship and staff time needed to conduct the project. When the project was designed it was recognized that it may be difficult to capture fish outside of the spawning period and thus the original proposal suggested that modifications to the approach may be necessary in the first two years. As we complete this first year we will examine what changes in approach may be necessary and what techniques are most likely to lead to success of the project.

SCIENCE PANEL COMMENTS (9.15.17)
Thank you for this clarification. Please add a brief explanation in the revised proposal for clarity.

PI RESPONSE (9.25.17)
This information will be included in the revised FY18 proposal.

SCIENCE PANEL COMMENTS (9.11.17)
"Another issue we ran into this season is that the vessel we run the trawl from also seines in PWS, and therefore, the timing of our collections is driven by the availability of the ship, which doesn't allow us to explore other timing in the summer to collect herring. Therefore, we may need to consider alternative approaches for catching fish, such as chartering with a gillnet vessel and using a gillnet to catch herring. Gillnet vessel likely have greater availability throughout the summer."

The difficulties encountered to sample herring in the first year do not appear to bode well toward meeting your first objective, which is to evaluate seasonal timing for accurate maturity/spawning status from spring, summer, and fall. From the FY 18 proposal, it is not clear what new information on herring distributions or alternative sampling opportunities will allow this project to collect samples to meet this objective. Such sampling difficulties will also compromise the other three objectives. Thus, it appears risky to build a 5-year research project on a presumption that you can collect samples from PWS where and when you want. Methods for getting the required samples are clearly a prerequisite for this work. As indicated in our comments on this proposal in May 2016, the Science Panel again had discussions about the need for a five-year proposal. It seems to us that it should not require more than a year, or two, to collect specimens and evaluate the utility of scales as indicators of past maturity.

PI RESPONSE (9.13.12)
Finding and collecting Pacific herring outside the spawning event is a difficult task even in populations that have not been reduced to extremely low levels. Part of our effort in year 1 (2017) is to determine what methods work to obtain samples, both in the field and in the lab. The summer 2017 collection was constrained by the timing the vessel with trawl gear was able to work given its fishing schedule. We cannot simply load this trawl on other vessels due to the specs of the stanchions. For the fall 2017 collection, we are aiming to collect fish as part of the Gulf Watch Alaska forage fish and whale survey and we anticipate having more success at finding herring given what we know from the telemetry work and the seasonal presence of herring in PWS. However, given the extremely low numbers of herring in PWS currently, we may again suffer from not being able to find fish. We can only try and see what we are able to accomplish.

By no means is it our intent to have a five year project dedicated to learning how to capture fish, but we recognized that we might have to try different approaches in the first two years to achieve the captures that we want. The idea of the 5-year program was to have at least three years of collections that could be used for looking at inter-annual changes in maturity.

SCIENCE PANEL COMMENTS (9.15.17)
The difficulties in collecting appropriate samples, especially in the context of other cooperative and collaborative research is understood. We also continue to recommend that the researcher pays special attention to small, young herring collected either in the winter months (in winter aggregations) or by trying to collect herring later in the spawning period, especially April and May. As requested earlier, please include this in the revised proposal.

PI RESPONSE (9.25.17)
This information will be included in the revised FY18 proposal.

SCIENCE PANEL COMMENTS (9.11.17)
The question of the age of sexual maturation for BC herring was an issue for decades. As the proposal points out, it is an important parameter for stock assessments. Uncertainty arises because the youngest and smallest herring can seem under-represented in the age composition of samples, especially from commercial fisheries samples collected during the roe fishery. Probably similar issues occur in PWS, although there does not appear to have been a detailed description or analysis of this issue.

An example of an under-represented maturing (age 3) cohort occurs in northern BC where the frequency of age 4 herring may exceed the frequency of age 3 herring. A simple explanation for this, and one adopted by the DFO assessment biologists for years, was that some substantial part of the age 3 cohort, in most (or all years) did not mature. In contrast, in southern waters, the age 3 cohort, in most years, was more abundance that the age 4 cohort – so the assumption made there was that most of the age 3 cohort was maturing.

In short, there was an *assumption* that the maturation ogive varied between the north and the south. This was an assumption we challenged for several reasons:

(1) we usually see a partial, or sometimes near-complete geographic separation of cohorts on spawning grounds, with larger, older herring spawning earliest an smaller, younger herring spawning later (similar trends occur in other species – it is more of a norm than an oddity). We also note that in the roe fishery, most of the catches, and the biological sampling, occurs in the early part of the season, and inadvertently but selectively target, older, larger fish.

(2) Herring sampling by DFO in BC has examined over two million herring for size, age and sex since the 1940s and in almost all there are one or two estimates of mature (a visual 'Hjort' maturity scale) and a gonad weight. These herring have been collected over the entire coast, in all areas, seasons and by different types of gear. Various types of spatial and temporal analyses have shown evidence of strong and weak cohorts, changes in spatial distribution, changes in size-at-age, etc. There is evidence of spatial distinction between maturing and non-maturing herring, but the instances of non-maturing fish are almost exclusively samples of mainly age-2 herring or juvenile schools, mainly age 1. **There are no clear examples of large numbers of immature age-3, or age-4 herring after November.** There are, however, many instances of immature age-2 herring. Thus, attempts to sample non-spawning age 3 and 4 herring in PWS may be futile.

By about November, nearly all sexually maturing herring can be distinguished visibly using a Hjort maturity scale, or by a gonad weight. Maturity of herring from samples taken earlier, in September or October can be determined by simple measurements of oocytes – using the criterion that developing (vitellogenic) oocytes will be greater than 150 microns. Again, using such criteria, there is no evidence of any large, geographically distinct abundance of immature herring. Usually the incoming age-3 cohort is the most numerous (by number) and comprises a substantial part of the total spawning biomass (~20-50%). Consider, for a moment that this observation were incorrect that, say, half of the age-3 cohort were immature and somehow, not accessible to our any of the DFO sampling to date. That would require large abundances of herring, constituting thousands of tons of herring that have somehow gone unnoticed for decades! If there were a large group of such fish that were routinely residing elsewhere, and which as somehow never been part of the sampling, it is very unlikely that they would have continually avoided detection, after tens of thousands of samples. Nevertheless, there is still some reluctance by some people working in assessments to accept the conclusion that most age-3 herring are mature and they want to push the maturity ogive to the left.

(3) What is the impact of error in the estimate of age-specific maturity – by assuming that there is a large-non-spawning component of age-3 herring? On concern is that an assessment model may assume that there is some undetected, premature, biomass. Probably, in most instances this would tend to inflate biomass estimates, and lead to less risk-averse recommendations.

PI RESPONSE (9.13.12)
We appreciate the panel sharing this information. ADF&G and the HRM program are aware of the issues associated with separation of age classes during spawning and are striving to ensure the sampling for age-structure is appropriate to capture the full spawning population. Sadly, with the recent collapse of the herring population the age structure no longer has many fish over the age of 5. We will be looking for the separation of age classes as the population hopefully recovers.

We too have an assumption that there is a difference in maturation between PWS and Sitka. At this point the assumption is based on the ASA model suggesting different maturation. It is through the work that we proposed that we hope to have a model independent approach to the question of maturity. The model results suggest that there are immature age-3 and age-4

fish in PWS and this is what we are trying to confirm. These results are a result of changes in the proportion of fish in the stock from a brood year that is explained by new fish recruiting to the spawning population. The results from BC obviously suggest an earlier maturation than we expect in PWS. At the same time the maturation function used in PWS expects much more mature age-3 fish than the model in Sitka suggests.

In your third point about the impact of the error, it can be large as the model suggests that nearly half of the fish at age-3 have not recruited to the spawning stock. This again emphasizes the importance of being able to find a mechanism that provides a measure of the maturity of each age class and how that may change over time.

Additionally, I would like to review the context and timeline of this project. This project was originally proposed in 2016 to EVOS FY17-FY21 invitation for proposals. A pilot project was initiated on PWS herring age at maturity in the previous funding cycle, FY12-16, led by J.J. Vollenweider at NOAA Auke Bay Labs. The results of this pilot project were not available when the original proposal for FY17-FY21 was written, so I did my best to build from the pilot project's ideas and focus on increasing sample sizes from field collected fish as this was the primary weakness of the pilot study. The proposal to the FY17-FY21 invitation was funded and we have since conducted 2 of 3 proposed collections for the first year of study (2017), with the 3rd collection occurring next week (Sept 17-24, 2017). We have not yet received histology results back from the lab for fish collected in spring 2017. Therefore, with the FY18 proposal, the entire project was kept exactly the same, which is the project that was funded in FY17.

SCIENCE PANEL COMMENTS (9.15.17)

Thank you for the clarifications. We understand that sometimes there is limited time to absorb and build on related work (such as that by Vollenweider) but such connections are essential.

Below, we offer some related points.

On inter-project (and proposal) integration, there may be opportunities to include results from other projects. For example, it is clear that disease can be widespread in some years, and may impose metabolic costs on some fish, perhaps resulting in slower growth, impacts on maturity, etc. In BC there are infrequent but continuing instances of fish with only one gonad developing, and this could affect energy allocation between the gonads and soma. Further, there can be instances of disease and pathology, in older fish that may interrupt sexual maturation. If examined by scales, would this appear to be an example of 'skipped spawning'? The recent fatty acid work found different signatures among herring from different locations in PWS, and a number of previous reports have noted area-specific differences in growth rate. Therefore such variation could impact retrospective analyses from scales, and also might impact estimates of real-time age-specific maturity.

PI RESPONSE (9.25.17)

Integrating the results from other projects is most definitely of interest to the PI.

We encourage the PI to make use of the bio-sampling database as an indicator of past age-specific maturation. We also would encourage the researchers to use any of their results to *challenge* output from the ASA model regarding age-specific maturity. We suggest that there are presumptions about age-specific maturity that may actually reflect age-specific catchability or availability. This could arise because of sampling bias related to the later spawning of younger fish. Please look at the tables and figures at the end of this document that show a rough and simple analysis of PWS bio-sampling data from 1973-2014. It shows two key things: (1) looking at >200,000 specimens in all collections, age 3 herring dominate in May and age 2 (probably about 30 months of age) in November; (2) of about 8000 herring specimens where gonad weights were measured, virtually all had GSI estimates that are consistent with sexual maturation – in both sexes. Note also that no samples were available in May – which could be very revealing OR that no GSI estimates were taken from small, young fish in November. Such samples may be very revealing.

Specifically, consider re-thinking maturity ogives to put more emphasis on younger smaller fish, of both sexes. In this regard we are strongly supportive of your intentions to sample at different times of the year. This approach, which could result in a left-shift of the presumed maturity ogive, could have very important implications for all aspects of PWS herring.

If there is one main point from all the our comments, it is that the PI should emphasize direct estimates of age-specific maturation and proceed cautiously, and in a limited way with scale work especially when directed at retrospective estimates of maturation. To the extent that scale work is pursued, it should not occur at the cost of direct estimation from gonad analysis.

We recommend a revised proposal that prioritizes direct estimation of maturity. Work on scale-based inferences about maturity should be staged, beginning with validation. In other words, we are looking for a convincing demonstration that the method works and will pass muster with the scientific community. Failing this, other scale-based objectives should be dropped from future efforts. At present the project milestones mainly include field collections and sending off histology

samples. In the revised proposal, please include timelines for other project milestones (e.g. data analysis, conference attendance) for each project component. It is important for all of us to be able to track progress on the objectives to assess any course corrections that may be necessary with each new annual proposal.

PI RESPONSE (9.25.17)

It is understood that the SP would like the proposal to focus primarily on direct measures of maturity, this was included in the original FY17 proposal that was funded as histology, GSI and now Hjort criteria are used for direct estimation of maturity with the later two measures especially important for males as an addition to the project.

SCIENCE PANEL COMMENTS (9.11.17)

Some potentially useful references (most relevant in bold):

Hay, D.E. and P.B. McCarter. 1999. Age of sexual maturation and recruitment in Pacific herring. Canadian Stock Assessment (CSAS) Research Document 99/175. 39p.

Hay, D.E., D.N. Outram, B.A. McKeown, and M. Hurlburt. 1987. Ovarian development and oocyte diameter as maturation criteria in Pacific herring (*Clupea harengus pallasi*). Can. J. Fish. Aquat. Sci. 44: 1496-1502.

Hay, D.E. and Outram, D.N. 1981. Assessing and monitoring maturity and gonad development in Pacific herring. Can. Tech. Rep. Fish. Aquat. Sci. 998: 31p.

Gillis, D.J., B.A. McKeown, and D.E. Hay. **1990**. Ultrastructural observations on the ovary and eggs, and the development of egg adhesion in Pacific herring (*Clupea harengus pallasi*). Can. J. Fish. Aquat. Sci. 47: 1495-1504.

Gillis, D.J., B.A. McKeown, and D.E. Hay. **1990**. Physiological and histological aspects of late oocyte provisioning, ovulation, and fertilization in Pacific herring (*Clupea harengus pallasi*). Can. J. Fish. Aquat. Sci. 47: 1505-1512.

Hay, D.E. and J.R. Brett. **1988**. Maturation and fecundity of Pacific herring: an experimental study with comparisons to natural populations. Can. J. Fish. Aquat. Sci. 45: 399-406.

Hay, D.E., J.R. Brett, E. Bilinski, E.M. Donaldson, D.T. Smith, G.A. Hunter and A. Solmie. **1988**. Experimental impoundments of pre- spawning Pacific herring: effects of feeding and density on maturation, growth and proximate analysis. Can. J. Fish. Aquat. Sci. 45: 388-398.

Hay, D.E., Outram, D.N., Shimozawa, A.C. and Stubbington, K.L. **1980**. Data record from a study of gonad maturation of Pacific herring. Can. Data. Rep. Fish. Aquat. Sci. 209: 57p.

PI RESPONSE (9.13.12)

Thank you very much for these references. ADF&G and we have been using the Hay (1985) paper as our primary reference for maturation and these expand the information greatly. We will also continue to follow the results coming from the Institute of Marine Research in Norway.

SCIENCE PANEL COMMENTS (9.15.17)

Suggested SP reply. We also thank you for your rapid and detailed reply. We hope you consider our comments that are intended to be constructive. We wish you success with your work

SCIENCE PANEL COMMENTS (9.15.17)

Rough analyses of sampling and age-of maturity from PWS biosampling database, 1973-2014.

Two tables and one figure, using data extracted from an Excel sheet on the EVOSTC or Axiom websites. This analysis was made to respond to proposed research on age-at-maturity in PWS. These analyses may have errors and have not been used elsewhere and would not be used anywhere else without first securing permission from the agencies involved.

Note, these analyses were conducted without reference to the 'birthdate' of PWS herring: specifically when does a herring change from being classified as age 3 to an age 4? If it is at the turn of the year (January 1) then some of the age classifications in the following text may require revision, especially those later months of the year.

PI RESPONSE (9.25.17)

From the HRM perspective we use an April 1 birthday because of spawn timing and the end of the winter annulus. The aging is going to become important since we are now trying to collect adults in September and hopefully later in the year. We have a query out to Steve Moffitt about this issue, who lead the herring work while he was in Cordova regarding ageing of adult PWS fish. For SE fish, we asked Sherri Dressel and Detlef Buettner, Detlef responded, "A fish that hatched in May is age zero in September. When the growth for the season ends – one could say roughly in October -the summer growth is counted and turns the fish to age 1 on October 1st. An age 4 fish caught in the spring, will not show any new summer growth at all (three annuli and plus growth form the previous summer). But by October 1st, the whole summer growth of the same year is now counted (scales from the fish look the same on October 1 as in April of the next year) and the fish will turn age 5".

Table 1. Numbers of fish collected by age and by month and by different types of gear, in Prince William Sound, 1973-2014. The numbers of age 3 and 4 fish are highlighted. Note that the relative numbers vary, by month and gear type. Of particular interest is the difference in relative frequency between April (the month when most samples are collected and the approximate time of most spawning) and May, when the relative frequency of age 3 fish increases.

Results for January

AGE	*	Beach_Seine	Cast_Net	Dip_Net	Gillnet	Hand_picked	Jig	Purse_Seine	Purse_Seine_Trawl	Trawl	Missing	All
1	0	0	0	0	0	0	0	3	0	0	0	3
2	0	0	0	0	0	0	0	80	0	0	0	80
3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**196**	**0**	**0**	**0**	**196**
4	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**440**	**0**	**0**	**0**	**440**
5	0	0	0	0	0	0	0	242	0	0	0	242
6	0	0	0	0	0	0	0	116	0	0	0	116
7	0	0	0	0	0	0	0	49	0	0	0	49
8	0	0	0	0	0	0	0	20	0	0	0	20
9	0	0	0	0	0	0	0	15	0	0	0	15
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	1	0	0	0	1
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	3	0	0	0	3
15	0	0	0	0	0	0	0	1	0	0	0	1
Missing	0	0	0	0	0	0	0	107	0	0	0	*
All	0	0	0	0	0	0	0	1166	0	0	*	1166

Results for February

AGE	*	Beach_Seine	Cast_Net	Dip_Net	Gillnet	Hand_picked	Jig	Purse_Seine	Purse_Seine_Trawl	Trawl	Missing	All
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	6	0	0	0	6
3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**47**	**0**	**0**	**0**	**47**
4	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**126**	**0**	**0**	**0**	**126**
5	0	0	0	3	0	0	0	144	0	0	0	147
6	0	0	0	1	0	0	0	94	0	0	0	95
7	0	0	0	5	0	0	0	42	0	0	0	47
8	0	0	0	5	0	0	0	11	0	0	0	16
9	0	0	0	0	0	0	0	7	0	0	0	7
10	0	0	0	0	0	0	0	1	0	0	0	1
11	0	0	0	0	0	0	0	2	0	0	0	2
12	0	0	0	1	0	0	0	0	0	0	0	1
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
ing	0	0	0	3	0	0	0	70	0	0	0	*
	0	0	0	15	0	0	0	480	0	0	*	495

Results for March

AGE	*	Beach_Seine	Cast_Net	Dip_Net	Gillnet	Hand_picked	Jig	Purse_Seine	Purse_Seine_Trawl	Trawl	Missing	All
1	0	0	0	0	0	0	0	596	6	0	0	602
2	0	0	110	0	0	0	0	4817	639	0	0	5566
3	**0**	**0**	**494**	**0**	**0**	**0**	**0**	**7638**	**255**	**25**	**23**	**8412**
4	**0**	**0**	**357**	**0**	**0**	**0**	**0**	**6933**	**121**	**38**	**314**	**7449**
5	0	0	247	0	0	0	0	3516	150	7	516	3920
6	0	0	245	0	0	0	0	2218	49	1	135	2513
7	1	0	884	0	0	0	0	1026	5	1	240	1917
8	0	0	218	0	0	0	0	951	6	0	145	1175
9	0	0	42	0	0	0	0	636	20	0	106	698
10	0	0	20	0	0	0	0	341	3	0	31	364
11	0	0	12	0	0	0	0	121	2	0	5	135
12	0	0	5	0	0	0	0	50	0	0	1	55
13	0	0	1	0	0	0	0	32	0	0	0	33
14	0	0	0	0	0	0	0	14	0	0	0	14
15	0	0	0	0	0	0	0	4	0	0	0	4
Missing	0	0	37	0	0	0	0	1604	448	451	27	*
All	1	0	2635	0	0	0	0	28894	1256	72	*	32858

Results for APRIL

AGE	*	Beach_Seine	Cast_Net	Dip_Net	Gillnet	Hand_picked	Jig	Purse_Seine	Purse_Seine_Trawl	Trawl	Missing	All
1	0	0	0	0	0	0	0	766	0	0	0	766
2	0	3	98	1	2	0	1	2090	6	1	7	2202
3	**0**	**686**	**4326**	**126**	**166**	**1**	**2**	**15186**	**1355**	**166**	**260**	**22014**
4	**0**	**591**	**6137**	**28**	**394**	**16**	**18**	**20985**	**2401**	**215**	**841**	**30785**
5	0	1316	3564	357	1439	7	28	15802	2897	54	1189	25464
6	0	1183	2411	19	2419	27	41	12384	2052	14	324	20550
7	0	383	1336	6	1974	54	23	11892	1641	8	571	17317
8	0	96	1084	20	1654	90	1	6242	867	10	603	10064
9	0	80	1075	46	1071	81	3	3131	417	1	584	5905
10	0	157	341	2	526	9	3	1391	127	0	219	2556
11	0	19	202	0	108	7	5	801	94	0	23	1236
12	0	5	195	0	53	2	2	217	32	0	7	506
13	0	0	50	0	18	0	0	71	5	0	1	144
14	0	0	18	0	7	0	0	20	1	0	1	46
15	0	0	11	0	0	0	0	6	0	0	0	17
ing	0	303	323	14	970	8	15	4042	819	41	174	*
	0	4519	20848	605	9831	294	127	90984	11895	469	*	139572

Results for May

AGE	*	Beach_Seine	Cast_Net	Dip_Net	Gillnet	Hand_picked	Jig	Purse_Seine	Purse_Seine_Trawl	Trawl	Missing	All
1	0	0	1	0	0	0	0	0	0	0	0	1
2	0	2	6	0	2	0	0	15	0	0	0	25
3	**0**	**417**	**1081**	**0**	**35**	**0**	**0**	**301**	**0**	**0**	**0**	**1834**
4	**0**	**62**	**413**	**0**	**29**	**0**	**0**	**348**	**0**	**0**	**0**	**852**
5	0	18	181	0	67	0	0	358	0	0	0	624
6	0	36	436	0	184	0	0	163	0	0	0	819
7	0	30	22	0	75	0	0	196	0	0	0	323
8	0	4	34	0	5	0	0	46	0	0	0	89
9	0	2	10	0	1	0	0	61	0	0	0	74
10	0	1	10	0	6	0	0	18	0	0	0	35
11	0	1	3	0	2	0	0	14	0	0	0	20
12	0	0	2	0	0	0	0	0	0	0	0	2
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
Missing	0	27	51	0	34	0	0	138	0	0	0	*
All	0	573	2199	0	406	0	0	1520	0	0	*	4698

Results for June

AGE	*	Beach_Seine	Cast_Net	Dip_Net	Gillnet	Hand_picked	Jig	Purse_Seine	Purse_Seine_Trawl	Trawl	Missing	All
1	0	0	0	0	0	0	0	968	0	0	0	968
2	0	0	0	0	0	1	0	790	0	0	0	791
3	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**356**	**0**	**0**	**0**	**363**
4	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**115**	**0**	**0**	**0**	**122**
5	0	0	0	0	0	4	0	90	0	0	0	94
6	0	0	0	0	0	0	0	99	0	0	0	99
7	0	0	0	0	0	0	0	37	0	0	0	37
8	0	0	0	0	0	0	0	11	0	0	0	11
9	0	0	0	0	0	0	0	2	0	0	0	2
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
Missing	0	0	0	0	0	1	0	495	0	0	0	*
All	0	0	0	0	0	19	0	2468	0	0	*	2487

Results for September

AGE	*	Beach_Seine	Cast_Net	Dip_Net	Gillnet	Hand_picked	Jig	Purse_Seine	Purse_Seine_Trawl	Trawl	Missing	All
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	2	0	0	0	0	0	46	0	0	0	48
3	**0**	**24**	**0**	**0**	**0**	**0**	**0**	**386**	**0**	**0**	**0**	**410**
4	**0**	**41**	**0**	**0**	**0**	**0**	**0**	**275**	**0**	**0**	**0**	**316**
5	0	29	0	0	0	0	0	255	0	0	0	284
6	0	16	0	0	0	0	0	129	0	0	0	145
7	0	2	0	0	0	0	0	59	0	0	0	61
8	0	3	0	0	0	0	0	27	0	0	0	30
9	0	0	0	0	0	0	0	8	0	0	0	8
10	0	0	0	0	0	0	0	3	0	0	0	3
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	1	0	0	0	1
14	0	0	0	0	0	0	0	1	0	0	0	1
15	0	0	0	0	0	0	0	0	0	0	0	0
Missing	0	3	0	0	0	0	0	90	0	0	0	*
All	0	117	0	0	0	0	0	1190	0	0	*	1307

Results for October

AGE	*	Beach_Seine	Cast_Net	Dip_Net	Gillnet	Hand_picked	Jig	Purse_Seine	Purse_Seine_Trawl	Trawl	Missing	All
0	0	0	0	0	0	0	0	390	0	0	0	390
1	0	0	0	0	0	0	0	643	0	95	45	738
2	0	116	0	0	0	0	0	1113	0	856	292	2085
3	**0**	**110**	**0**	**0**	**0**	**0**	**0**	**1143**	**0**	**78**	**115**	**1331**
4	**0**	**165**	**0**	**0**	**0**	**0**	**0**	**3051**	**0**	**55**	**354**	**3271**
5	0	139	0	0	0	0	0	1261	0	30	25	1430
6	0	76	0	0	0	0	0	601	0	62	14	739
7	0	42	0	0	0	0	0	306	0	5	6	353
8	0	11	0	0	0	0	0	237	0	2	10	250
9	0	2	0	0	0	0	0	76	0	1	3	79
10	0	1	0	0	0	0	0	9	0	1	2	11
11	0	0	0	0	0	0	0	2	0	1	0	3
12	0	0	0	0	0	0	0	1	0	0	0	1
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	1	0	0	0	1
15	0	0	0	0	0	0	0	0	0	0	0	0
Missing	0	28	0	0	0	0	0	320	0	158	34	*
All	0	662	0	0	0	0	0	8834	0	1186	*	10682

Results for November

AGE	*	Beach Seine	Cast Net	Dip Net	Gillnet	Hand picked	Jig	Purse Seine	Purse Seine Trawl	Trawl	Missing	All
0	0	0	0	0	0	0	0	454	0	0	1	454
1	0	0	0	0	0	0	0	1313	0	35	42	1348
2	0	0	0	0	0	0	0	3994	0	162	401	4156
3	0	0	0	0	0	0	0	2247	0	43	25	2290
4	0	0	0	0	0	0	0	1379	0	158	22	1537
5	0	0	0	0	0	0	0	918	0	46	6	964
6	0	0	0	0	0	0	0	694	0	118	6	812
7	0	0	0	0	0	0	0	198	0	1	0	199
8	0	0	0	0	0	0	0	225	0	6	2	231
9	0	0	0	0	0	0	0	100	0	5	0	105
10	0	0	0	0	0	0	0	36	0	9	0	45
11	0	0	0	0	0	0	0	20	0	0	0	20
12	0	0	0	0	0	0	0	20	0	0	0	20
13	0	0	0	0	0	0	0	2	0	0	0	2
14	0	0	0	0	0	0	0	1	0	0	0	1
15	0	0	0	0	0	0	0	0	0	0	0	0
Missing	0	0	0	0	0	0	0	1592	0	28	4	*
All	0	0	0	0	0	0	0	11601	0	583	*	12184

Results for December

AGE	*	Beach Seine	Cast Net	Dip Net	Gillnet	Hand picked	Jig	Purse Seine	Purse Seine Trawl	Trawl	Missing	All
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	120	0	0	0	120
3	0	0	0	0	0	0	0	315	0	0	0	315
4	0	0	0	0	0	0	0	302	0	0	0	302
5	0	0	0	0	0	0	0	83	0	0	0	83
6	0	0	0	0	0	0	0	35	0	0	0	35
7	0	0	0	0	0	0	0	17	0	0	0	17
8	0	0	0	0	0	0	0	2	0	0	0	2
9	0	0	0	0	0	0	0	1	0	0	0	1
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	1	0	0	0	1
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
Missing	0	0	0	0	0	0	0	52	0	0	0	*
All	0	0	0	0	0	0	0	876	0	0	*	876

Table 2. Numbers of fish with gonad weights (and therefore GSI estimates) sorted by year, month and sex. The samples are from all gear types. Note that most samples were taken between February and April, except for some in 1994, collected in October and November.

Results for SEX = 1 (Male)

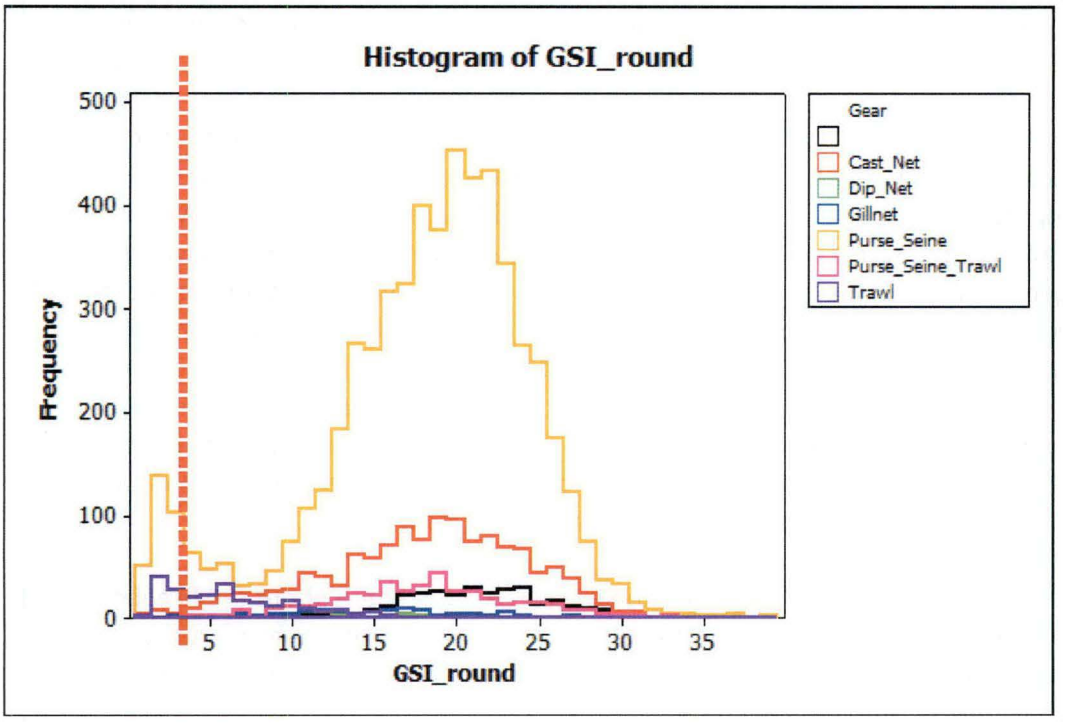
	February	March	April	October	November	All
1983	0	0	0	0	0	0
1994	0	0	0	44	233	277
1995	0	0	414	0	0	414
1996	0	0	351	0	0	351
1997	0	97	579	0	0	676
1998	0	145	57	0	0	202
1999	0	0	91	0	0	91
2001	0	100	101	0	0	201
2002	0	151	50	0	0	201
2003	0	251	0	0	0	251
2004	0	100	0	0	0	100
2005	0	50	50	0	0	100
2006	0	52	50	0	0	102
2007	0	52	49	0	0	101
2008	0	0	202	0	0	202
2009	0	0	151	0	0	151
2010	0	98	0	0	0	98
2011	0	0	98	0	0	98
2012	7	50	100	0	0	157
2013	0	0	47	0	0	47
2014	0	49	51	0	0	100
All	**7**	**1195**	**2441**	**44**	**233**	**3920**

Cell Contents: Count

	February	March	April	October	November	All
1983	0	0	56	0	0	56
1994	0	0	0	128	218	346
1995	0	0	402	0	0	402
1996	0	0	341	0	0	341
1997	0	100	588	0	0	688
1998	0	150	61	0	0	211
1999	0	0	99	0	0	99
2001	0	100	99	0	0	199
2002	0	148	50	0	0	198
2003	0	249	0	0	0	249
2004	0	100	0	0	0	100
2005	0	50	50	0	0	100
2006	0	48	50	0	0	98
2007	0	50	51	0	0	101
2008	0	0	197	0	0	197
2009	0	0	148	0	0	148
2010	0	97	0	0	0	97
2011	0	0	100	0	0	100
2012	11	50	100	0	0	161
2013	0	0	53	0	0	53
2014	0	51	49	0	0	100
All	**11**	**1193**	**2494**	**128**	**218**	**4044**

Cell Contents: Count

Figure 1. Histogram of the GSI (gonosomatic index) by gear type for all of the observations of GSI shown in Table 2 (3920 males and 4044 females). Note that the doted red line, at a GSI of 3, is a rough guide to maturity: any fish with a GSI greater than three has developing gonads. Even fish with lower GSI's may be maturing and the lower mode (less than three) represents fish collected in November when gonads of ALL fish were small. However, even in November most had GSI scores that were diagnostic of fish in the early stages of maturation.



FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

We appreciate that the PI responded thoroughly to Panel comments and felt that the responses dealt effectively with some of our concerns. The proposal, and responses to questions made in the Panel review, made good use of the international scientific literature. We recognize a dilemma faced by this PI, however, that is trying attempting to build on results of past EVOSTC-funded work (by other PI's in earlier projects), that do not yet have accessible reports.

Date: May 2016

The four objectives are:

(1) assess the seasonal timing (spring, summer, and fall) that allows for accurate determination of

both previously spawned and maturing female herring based on ovary histology to determine maturation states;
(2) couple histology results with annual scale growth information at the individual level, within specific age cohorts, to understand if scale growth patterns reflect reproductive investment;
(3) assess whether annual scale growth patterns can be used to infer age at maturity at the individual level across age cohorts given results from objectives 1 and 2; and
(4) assess inter-annual variability in age at maturity based on coupled histology and scale growth over a five-year period by focused, increased sampling during the optimal seasonal period given results from objectives 1-3.

This is an ambitious project and the Panel endorses the intentions of the proposed work, but not necessarily all of the details. First, and most importantly, the Panel strongly endorses the objective of determining an 'empirical' estimate of 'age-at-maturity'. It is widely recognized that spawning herring often show spatial and temporal segregation during spawning, with larger, older fish spawning early and smaller, younger fish spawning later. This is well documented for herring and for many other spring-spawning fish species. Ignoring this, by assuming that the age structure of samples taken during spawning represents the population at large can lead to serious errors in age-structured-assessments. Therefore to the extent that this proposal recognized that issue, the Panel is strongly supportive. To this end the Panel recommends the measurement of gonad size, and the estimation of a gonosomatic index, as the basis for estimating maturity of individuals. Collection of size data will also allow estimation of size-at-maturity, which may be important, as well.

The Panel also reiterates comments made on the age-structured model here about the likelihood that there is temporal and spatial structuring of herring with respect to size- and age-at-maturity. Estimation of age-at-maturity should keep such temporal and spatial structuring in mind when considering sampling protocols and data analysis.

Objectives 2-4 of this proposal are concerned with herring scales and the assumption that growth increments (or some other feature of scales) can provide a meaningful estimate of the age-of-maturation of a herring. If this were possible, the Panel agrees that such a measure would useful, providing the criteria were rigorous and repeatable. However, the Panel has several concerns. One is that this proposal makes no mention of similar work that was recently conducted, and supported by the EVOSTC, by NOAA staff. Namely, is there evidence that this approach will work? This comment applies especially to the proposed study on scales, as potential indicators of age-of-maturity, and ovarian histology objectives. Insufficient information was provided to allow the Panel to evaluate the chances for success of this portion of the proposal. It is essential that this proposal shows that the proposed work will build on existing results and knowledge. Absent some basis for this approach, the Panel is rather dubious of the chances for its success. The second concern is that there are a number of publications on herring and clupeid maturation, and criteria used for assessing maturation. The revised proposal should make it clear that the PI is aware of this work, and when appropriate, build on the existing knowledge base. Finally, the Panel does not understand why this work is proposed for five years. It should not require more than a year, or two, to evaluate the utility of scales as indicators of past maturity. The proposal should be revised accordingly.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120111-E**

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

Primary Investigator(s): Paul Hershberger

PI Affiliation: USGS **Project Manager:** USGS

EVOSTC Funding Requested FY17-21: $1,166,400

FY17	FY18	FY19	FY20	FY21
Auth: $197,800	$228,900*	$236,700*	$243,400*	$259,600*

Requests include 9% GA.

*Plasma sample processing for disease work to be included in the revised ASA model has increased in FY 18-21 by $24.5K.

Funding From Non-EVOSTC Sources FY17-21: $321,400

FY17	FY18	FY19	FY20	FY21
$61,700	$63,600	$64,000	$65,200	$66,900

Total Past EVOSTC Funding Authorized (FY12-17): $1,069,600

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $2,038,200

Total Non-EVOSTC Funding (FY12-21): $405,600

Abstract:

This abstract is excerpted from the PI's Proposal, dated 7/16/17
We will investigate fish health factors that may be contributing to the failed recovery of Pacific herring populations in Prince William Sound. Field samples will provide infection and disease prevalence data from Prince William Sound and Sitka Sound that will inform the age-structured analysis (ASA) model, serological data that will indicate the prior exposure history and future susceptibility of herring to VHS, and diet information that will provide insights into the unusually high prevalence of *Ichthyophonus* that occurs in juvenile herring from Cordova Harbor. Laboratory studies will validate the newly-developed plaque neutralization assay as a quantifiable measure of herd immunity, provide further understanding of disease cofactors including temperature and salinity, investigate the possibility of an invertebrate host for *Ichthyophonus*, and assess the virulence of other endemic pathogens to Pacific herring. Information from the field and laboratory studies will be integrated into the current ASA model, a novel ASA-type model that is based on the immune status of herring age cohorts.

FY18 Funding Recommendations:

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

Date: September 2017

The Panel is pleased with the results, supports the additional funding requested, and finds the request to be reasonable and justified. Would it be beneficial (and cost-effective) for the Post-Doc (Maya

Groner) to help with this project without compromising her proposed research plan? If it can be managed, the Panel feels that this involvement would benefit both the new post-doc and this project.

PI Response (10/11/2017)
Thank you. We anticipate integrating Dr. Groner's work into the HDP, as we feel Dr. Groner's contributions will be beneficial the HDP, the Herring Research and Monitoring Program, and her scientific career. We foresee no conflicts and we are eager to start working with her.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The PI adequately responded the questions the Panel raised about methodologies. The Panel fully supports the proposal by this PI. The brevity of this response should be seen as a tribute to the continued excellent work done in this project and the inter-projected cooperation and collaboration.

Date: May 2016

As in the past, the Panel reviewed the Herring Disease Program II proposal favorably overall. However, the Panel noted that some of the draft text was repetitious from previous submissions. Further, the Panel noted that not all of the previous objectives were fulfilled, especially related to inter-population comparisons. Therefore there are some distinct revisions that should be considered and incorporated in a final version of the proposal. The following are the points that were discussed:

- Several of the Objectives were from the previous 5-year proposal and there was not a clear rationale why these were nearly identical to the previous proposal. While an extension of the

earlier objectives makes sense, inadequate descriptions of previous accomplishments and

- application of these accomplishments will advance the knowledge of disease in PWS herring in the coming 5 years.
  - Pathogen-free herring have already been established to the Science Panel's knowledge. The proposal should explain how these fish will be used in studies, not how they are cultured. The Panel feels it is critical that disease free populations should be established for PWS and a Sitka or Kodiak/Cook inlet. That is, genetically distinct populations that may have differing disease susceptibilities.
  - The plaque neutralization assay data were already presented. The proposal should explain how these data will be employed in the coming 5 years.

- The past proposal indicated that there was to be a comparative study of herring populations from SE Alaska, including populations that are now established as genetically different from PWS fish. These include Sitka and Cook Inlet or Kodiak populations. Puget Sound populations may have different life histories and demographics so geographical comparisons may be less relevant than data from other Alaskan populations. At the Synthesis Symposium in Anchorage 2 years ago, a discussion of the immunity and exposure differences of populations was prominent but this approach is not described clearly in this proposal. Taking into account the very recent discovery of the unique genetic character of PWS herring, this comparative population susceptibility to disease becomes a high priority to the Science Panel.

Further, the Panel noted that there is some interesting new technology (high throughput pathogen monitoring systems based on Fluidigm's Biomark TM technology**) that could be relevant to basic questions about the presence and persistence of diseases in Prince William Sound herring. The Panel is also aware that the PI is familiar with these technical developments. Therefore we would be interested in learning why such an approach was not considered – or alternatively, if such an approach could be considered in a revision of the proposal.
*(**https://pag.confex.com/pag/xxiv/webprogram/Paper21716.html)*

Science Coordinator Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Date: May 2016

I concur with the Science Panel's comments. The proposal would benefit from further discussion of how the work completed by this team from 2006 to present informed the proposed work.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18160111-F**

Project Title: Herring Program – Surveys and age, sex, and size collection and processing

Primary Investigator(s): Stormy Haught

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

EVOSTC Funding Requested FY17-21: $831,500

FY17	FY18	FY19	FY20	FY21
Auth: $166,300	$166,300	$166,300	$166,300	$166,300

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $272,500

FY17	FY18	FY19	FY20	FY21
$54,500	$54,500	$54,500	$54,500	$54,500

Total Past EVOSTC Funding Authorized (FY12-17): $226,300

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $891,500

Total Non-EVOSTC Funding (FY12-21): $321,487

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 7/26/17.*
This proposed project will conduct spring aerial surveys to document Pacific herring *Clupea pallasii* milt distribution and biomass as well as the distribution and abundance of sea lions, other marine mammals, and birds associated with herring schools or spawn. This proposed project will also provide a research platform (R/V Solstice) for an adult herring acoustics survey and disease sample collection and processing. Finally, this proposed project will collect and process age, sex, and size samples of herring collected by the acoustics survey, spawning surveys, and the PWS Herring Research and Monitoring Program disease sampling. Aerial survey and age, sex, and size data have been 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. Acoustics surveys have been conducted consistently since 1995 and the age-structured model is also tuned to acoustics biomass estimates. This project will help to meet the overall program goal to improve predictive models of herring stocks through observations and research by providing necessary inputs to the age-structured assessment models of the Alaska Department of Fish and Game and the PWS Herring Research and Monitoring Program Bayesian model.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

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

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

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

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

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

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

Date: May 2016

The Panel recognizes that this project provides essential information and services for all other projects on the herring program. To reiterate the list of activities, the proposed project will:

1) conduct spring aerial surveys to document milt distribution and biomass;
2) document distribution and abundance of sea lions, other marine mammals, and birds associated with herring schools or spawn;
3) provide a research platform (R/V Solstice) for an adult herring acoustics survey and disease sample collection and processing; and
4) collect and process age, sex, and size samples of herring collected by the acoustics survey, spawning surveys, and disease sampling.

While supportive of all of these tasks the Science Panel has the following comments on several topic items (underlined below).

Distribution and abundance of sea lions, other marine mammals, and birds. The Panel strongly

endorses this line of inquiry and notes that evaluation of the potential impacts of pinniped predation on herring is an active area of research in other parts of the northeast Pacific. The proposers should familiarize themselves with current research.

Aerial surveys. The Panel is aware of the discrepancy between results of past aerial surveys of milt and estimates made from SCUBA diver surveys, as discussed in the paper by Hulson et al (2008). Further, as explained in the Hulson paper, there was a substantial difference between aerial survey estimates of milt and estimates based on dive surveys. In view of the importance of estimates of milt, and/or egg deposition for herring assessments, the Panel strongly recommends that some effort be made to 'ground-truth' the aerial surveys. Specifically, at least some of the aerial survey data should be checked by visits to the site to confirm the geographic distribution of eggs. This does not necessarily require quantitative SCUBA surveys to estimate total egg counts (as was done by Willette et al. 1999). Simpler, less expensive approaches could be considered, such as site visits on small vessels, and use of grappling hooks to look for presence/absence of eggs. Regardless, some effort must be made to calibrate the aerial survey data on milt distribution.
Ideally, this effort such an effort at ground-truthing could even provide opportunities to provide some retrospective calibration of past milt surveys. We note elsewhere (see comments on Gorman proposal) however, that an additional measurement of 'gonad weight' could provide very useful information related to 'age-at maturity'. Such an addition to the routine sampling would be relatively inexpensive.

Acoustics surveys. The Panel notes the pivotal role of acoustics survey data in the assessment methodology. However, we also note that this is the only time-series data that have not been systematically examined to account or any variation attributable to varying survey designs or modification of equipment – which could include vessel types. Of course we are aware of the 2008 paper by Thorne et al. (written as a companion paper to the Hulson paper in the same journal). However, unlike aerial survey data (from which there is a large and readily accessible data base), and also unlike the ASL (age-sex-length) databases, there is no readily accessible database on the historical acoustics data. However, there should be such a database, especially if such data are used in support of vital biomass assessments. Therefore a recommendation from the Panel is for the development of a report on the acoustics data, as it is used, and has been used for herring assessments. Such a report should point out the strengths and limitations of such data, with emphasis on any methodological factors that might affect temporal trends in the data. Finally, to conform to normal protocols for assessments, we advise that the data, as it is used in the assessments, should be made accessible.

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.

Willette, T. M., Carpenter, G. S., Hyer, K., and Wilcock, J. A. 1999. Herring natal habitats, Exxon Valdez Oil Spill Restoration Project. Final Report (Restoration Project 97166), Alaska Department of Fish and Game, Division of Commercial Fisheries, Cordova,Alaska.

Thorne, R. E., and Thomas, G. L. 2008. Herring and the "Exxon Valdez" oil spill: an investigation into historical data conflicts. ICES Journal of Marine Science, 65: 44–50.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Footnote: This project has gone through several titles and PIs
FY12: 12120111-F Buckhorn Juvenile Herring Abundance Index
FY13: 13120111-F Buckhorn Juvenile Herring Abundance Index
FY14: 14120111-F Buckhorn Juvenile Herring Abundance Index
FY15: 15120111-F Buckhorn Juvenile Herring Abundance Index
FY16:16120111-F Rand Juvenile Herring Abundance Index and 16160111-T Moffit ASL Study & Aerial Milt Surveys began
FY17: the work in 16120111-F was rolled into 16160111-T to create 17160111-F Moffit ASL Study & Arial Milt Surveys.
FY18: the project has a new PI, correct number is 18160111-F Haught

Project Number: **18120111-G**

Project Title: Herring Program – Adult Pacific Herring Acoustic Surveys in PWS

Primary Investigator(s): Peter Rand

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

EVOSTC Funding Requested FY17-21: $337,300

FY17	FY18	FY19	FY20	FY21
Auth: $74,200	$73,800	$61,300	$63,100	$64,900

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $0

FY17	FY18	FY19	FY20	FY21
$0	$0	$0	$0	$0

Total Past EVOSTC Funding Authorized (FY12-17): $408,200

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $671,300

Total Non-EVOSTC Funding (FY12-21): $0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 7/26/17.*
We propose to continue a long term data set of biomass estimates of the spawning population of Pacific herring in Prince William Sound. This proposal primarily addresses Objectives 1 (expanding and testing the herring age-structured analysis (ASA) model) and 2 (providing input to the ASA model). Since 1993, the Prince William Sound Science Center (PWSSC) has been carrying out acoustic surveys as a cost-effective approach to estimate the biomass of adult Pacific herring just prior to the spawning period. Here we propose to continue this sampling during 2018. Our main goal for this proposed project is to produce a reliable estimate of adult biomass of the spawning population of Pacific herring during 2018 in support of the ASA model

Prince William Sound herring stock biomass estimates from hydroacoustic surveys provide a measure of the stock abundance for use in the ASA model that is the forecasting tool used for management. Prior to 2001, the hydroacoustic surveys were conducted exclusively by the Prince William Sound Science Center (PWSSC). Since 2001, the effort has been shared between PWSSC and the Cordova office of Alaska Department of Fish and Game (ADF&G). While the ADF&G considers the hydroacoustic surveys to be critical (Steve Moffitt, ADF&G, pers. comm.) the lack of a commercial herring fishery in PWS since 1998 has reduced management priorities for herring. Thus the PWSSC contribution has become critically important for the long-term, especially if a future fishery appears only a remote possibility. With the level of effort available over the past several years, PWSSC and ADF&G individually have achieved herring biomass estimates with a precision of about ±30%. As in recent years, we intend to continue to survey the two main spawning aggregation regions (Port Gravina and Fidalgo, and along the northeast coast of Montague Island). This will allow us to continue generating accurate estimates

of the total herring spawning biomass in PWS and provide an alert to changes in biomass in these two different regions. We propose to carry out this assessment in spring (March-April) to assess adult spawning biomass. This project will use the ADF&G data from direct sampling for age, sex and length in the estimates of biomass. The estimate will then be provided to the modeling project.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel agrees that the acoustic surveys provide valuable information toward achieving the goals of the herring program. As noted in last year's work plan, the Panel appreciates the progress made to date but would like to see included results from the previous years, history of assessments and maps of survey tracks.

PI Response (10/13/2017)

We thought the results from previous years was already available on the AOOS Gulf of Alaska data catalog. We are working with the Data Management program to make it available as soon as possible. The history of assessments and maps of survey tracks are available in the cruise reports and EVOS annual reports from 2000-2016. Raw data from 1993-1999 was not collected digitally and is no longer available, only the final processed biomass estimates remain. We will work with the data management program to make these available through the AOOS data catalog.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel particularly appreciated the assembly of the historical acoustic database. This database is one of two key databases used for annual biomass assessments. Such an accessible database, supported by an accessible report is an essential component for continued biological assessments.

Therefore we salute the progress made to date but urge the complete of the documentation of past acoustic surveys.

Date: May 2016

This proposal was well-written and the objectives are very clearly stated: "to continue a long term data set of biomass estimates of the spawning population of Pacific herring in Prince William Sound." This proposal primarily addresses Objectives 1 (expanding and testing the herring ASA model) and 2 (providing input to the ASA model). Since 1993, the Prince William Sound Science Center (PWSSC) has been carrying out acoustic surveys as a cost-effective approach to estimate the biomass of adult Pacific herring just prior to the spawning period. The stated goal is to "produce a reliable estimate of adult biomass of the spawning population of Pacific herring for each year during 2017-2021 in support of the age-structured assessment (ASA) model".

The Panel notes that this work provides essential information for the herring assessment model, and for this reason the work should continue as proposed. We also note and commend the PI for ensuring that the continuity of this work will continue as it has been conducted in the past. The Panel has several concerns and comments, however, one of which was mentioned in the response to the Moffitt proposal. That is, there is not a readily accessible database of the past acoustic surveys. Ideally there should have been annual reports showing dates and time and location of surveys, and locations where herring were, and were not, found. As much as possible these last surveys should also have commented on any issues (technical, methodological or biological) related to species identification and other factors that might have affected that validity of the data. In lieu of this and in recognition of the vital importance of these past acoustics data to the herring assessment process, the Panel recommends that a quantitative synopsis of past work be prepared, as an essential element in the assessment process. Further, the Panel appreciated that comments on target strength of herring, but also notes that there have been changes in size-at-age, and perhaps condition of PWS herring during the past several decades. Could such changes affect target strength? Perhaps there have been other changes? Therefore we wonder how such changes in the physical and biotic environment would have affected estimates of herring biomass. Clearly there may be other concerns about acoustic work as reliable indicators of herring biomass. In view of such uncertainties, the Panel encourages the PI to take a more rigorous and critical approach to acoustic assessments. We suggest that such an approach would be, in the longer term, the most valuable information that could be provided, regardless of whether it supported, or challenged the historical time-series of acoustics data. The PI of this project, more than anyone else, is in a position to put many assumptions to the test – while still providing the necessary data that will provide a time-series input to the assessment model.

Science Coordinator Comments – FY17

Date: May 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Long-Term Monitoring Program
Project Descriptions

Project Number: **18120114**

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

Primary Investigator(s): Mandy Lindeberg

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

EVOSTC Funding Requested FY17-21: $12,049,840

FY17	FY18	FY19	FY20	FY21
Auth: $2,278,750	$2,574,860	$2,351,260	$2,502,340	$2,342,630

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $8,340,000

FY17	FY18	FY19	FY20	FY21
$1,671,000	$1,712,000	$1,658,000	$1,677,000	$1,622,000

Total Past EVOSTC Funding Authorized (FY12-17): $16,307,650

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $26,078,740

Total Non-EVOSTC Funding (FY12-21): $17,023,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
The Gulf Watch Alaska (GWA) program directly addresses the *Exxon Valdez* Oil Spill Trustee Council's focus area of integrated long-term monitoring of marine conditions and injured resources services. The overarching goal of GWA 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 injured resources. GWA has a consortium of 14 projects organized in the following functional groups: three monitoring components (environmental drivers, pelagic, and nearshore), a program management team, a science review panel, a science coordinating committee, and an outreach steering committee.

The program has five 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 science synthesis products to assist management actions, inform the public and guide monitoring priorities for the next 15 years, 4) continue to build on collaborations between the GWA and Herring Research and Monitoring (HRM) programs, as well as other Trustee program focus areas including the data management program, lingering oil and potential cross-program publishing groups, and 5) leverage partnerships with outside agencies and groups to integrate data and expand capacity through collaborative efforts.

Recent highlights from the first six years of the GWA program show continued development of program infrastructure and compilation of scientific information for the long-term. Five-year final reports were submitted to the EVOSTC, 45 datasets were published to the public on DataONE, and 19 papers were accepted for a special journal issue of Deeps Sear Research II.

Our plans for FY18 have not changed and include continuing the legacy of our LTM datasets and expanding our knowledge of the GOA ecosystem and its changing conditions.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel is very pleased with Mandy's role in coordinating logistics and synthesizing results. The Panel is pleased about the hiring of Rob and Donna as the Science Coordinator and Program Coordinator, respectively, and looks forward to working with them. The quality of this proposal has improved greatly compared to previous years. The Panel is encouraged to see data presented and the evaluation of past years data to determine what the projects should do in the future. This Program has published many papers, which is a positive development and the panel is excited about the Long-Term Ecological Research funding (National Science Foundation) awarded to some of the projects. The Panel was encouraged and about Rob's plans for synthesis products including an analysis and publication(s) on biological impacts of the recent environmental changes.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments. I also greatly appreciate the addition of point 7 in the proposal and will add it as a requirement for future proposals.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund Reduced	Fund Reduced	N/A	N/A	N/A
Sept 2016	Fund Reduced	Fund Reduced	Fund Reduced	Fund Reduced	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel appreciated the thorough and organized responses to our comments. The responsiveness of the program to Panel concerns was very much appreciated. Project specific comments for each proposal are included on each proposal's individual page below.

Date: May 2016

This LTM Program includes spatially and temporally linked studies that monitor abundances of many important predator-prey systems, especially ones involving forage fishes, a key forage-fish-consuming marine mammal – humpback whales, seabirds, and an apex predator – the killer whale, all in the context of continued monitoring of historic long-term transects for physical, chemical, and biological (phytoplankton, zooplankton) parameters . This set of concurrent temporal information holds promise for understanding how ocean conditions and climate change are modifying the PWS and NGOA ecosystems. Unfortunately, the proposed program did not seem to build off of the Program's 2013 Synthesis document. There is a lack of some descriptions of previous work where needed and an absence of depth of hypotheses, comparisons and evolving discussions on the work proposed, so much of which is a continuation from past or related projects. For example, there continues to be a lack of discussion in individual project designs of previous scientific work that may be used to develop their hypotheses or that could be treated as a contrasting interactive web of species.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-A**

Project Title: LTM Program – Program Management I - Program Coordination and Science Synthesis

Primary Investigator(s): Mandy Lindeberg

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

EVOSTC Funding Requested FY17-21: $1,170,500

FY17	FY18	FY19	FY20	FY21
Auth: $226,800	$227,600	$229,000	$237,700	$249,300

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $345,000

FY17	FY18	FY19	FY20	FY21
$69,000	$69,000	$69,000	$69,000	$69,000

Total Past EVOSTC Funding Authorized (FY12-17): $935,300

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $1,879,000

Total Non-EVOSTC Funding (FY12-21): $410,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
The Program Management I project provides program coordination and science synthesis of data for the EVOSTC's integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services program, referred to as Gulf Watch Alaska (GWA). The leadership team of the GWA program manages over two dozen principal investigators and collaborators producing a wealth of scientific information on the northern Gulf of Alaska ecosystem and spill-affected area. Program coordination and science synthesis is a key component that improves linkages between monitoring efforts spanning large regional areas (Prince William Sound, Gulf of Alaska shelf, lower Cook Inlet). Program coordination includes facilitating program planning and sharing of information between principal investigators, other Trustee-funded programs, and non-Trustee organizations. High quality products and science synthesis efforts help communicate monitoring results by delivering reports, publishing data, developing scientific papers, supporting outreach and integrating information across the entire program. The GWA program has matured in the first five years and successful management of the program will continue to rely on effective program and science coordination into the next five-year increment. Major accomplishments of program management and science coordination in FY17 included coordinating completion, review, and submission of FY12-16 GWA final reports, completion of the Deep-Sea Research II GWA special issue (19 papers), and inauguration of the second 5-yr period of GWA for the program management team. Inauguration included orientation of new personnel, evaluating successes and challenges of first 5-yrs and identifying improvements and efficiencies for the second 5-yr period. During FY18, key directions of program coordination and science synthesis will include improving efficiencies and facilitating program reporting requirements for PIs, identifying GWA

indicators from each project to contribute to annual ecosystem status and oil spill recovery assessments, standardizing reporting, and identifying main cross-program science synthesis products for GWA, HRM, and other Gulf of Alaska investigations. We are not proposing any major changes to this project for FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

As stated above, the Panel is pleased with Mandy's leadership skills and very pleased with the proposal and organizational structure. The Panel appreciates the different management aspects of this proposal and proposal 18120114-B and suggests consolidating these two proposals into one Program management proposal. This would help to clarify how the two program management components relate to one another and to demonstrate lack of duplication.

PI Response (10/11/2017):
The Program Management Team appreciates the Science Panel's suggestion to consolidate the management proposals: 1) 18120114-A or Program Management I and 2) 18120114-B or Program Management II projects. We are willing to consolidate the program management proposals and reports; however, the budgets for PMI and PMII need to remain separate, and would be reported on separately. We will work with EVOSTC staff to develop a reasonable format for consolidation and tracking.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments. I will work with Mandy to address the Panel's suggestion.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Science Panel was pleased with the proposal and organizational structure. The structure of the coordinating committee and science review Panel sets the mechanisms for evaluation and adaptive management of the project. We also appreciated the responsiveness to Panel requests to streamline the budget.

Date: May 2016

The Panel is encouraged and gratified by Mandy Lindeberg's acceptance and participation in the role of Science Lead and looks forward to her leadership. The Panel did express concern that the science coordinator position is intended to be filled after the start of the Program. This key position will be responsible for the design and implementation of the Program and it may take longer than anticipated to find an individual with the appropriate education and skill sets. Is there a plan in place, if the hiring process takes longer than planned or a qualified candidate is not identified? If the position is not a NOAA employee as hoped, will this impact the projected five year cost?

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-B**

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

Primary Investigator(s): Katrina Hoffman

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

EVOSTC Funding Requested FY17-21: $1,476,900

FY17	FY18	FY19	FY20	FY21
Auth: $277,100	$282,400	$303,900	$300,600	$312,900

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY12-21: $0

FY17	FY18	FY19	FY20	FY21
$0	$0	$0	$0	$0

Total Past EVOSTC Funding Authorized (FY12-17): $1,695,300

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $2,895,100

Total Non-EVOSTC Funding (FY12-21): $0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
This project is the administrative and outreach component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services program referred to as Gulf Watch Alaska (GWA). PWSSC serves as the fiscal agent for non-Trustee Agency recipients of GWA funds with Hoffman as Administrative Lead. This continues Hoffman's role, as with GWA during FY12–16. Hoffman is also serving as Outreach and Community Involvement Lead for FY17-21, a new role as compared to the previous five years. As a Program Management Team member, Hoffman contributes to the coordination and management of over two dozen scientists generating monitoring data and synthetic information about the ecosystems and marine conditions within the spill area. PWSSC has extensive fiscal experience with the National Oceanic and Atmospheric Administration (NOAA), and is the party through which all non-Trustee Agency funds are distributed. PWSSC issues and manages contracts for subawards to the various non-Trustee Agencies participating in GWA, for whom we also coordinate semi-annual reporting to NOAA. PWSSC also works with Trustee Agency principal investigators, with whom we coordinate reporting to the EVOSTC. PWSSC ensures regular program engagement with EVOSTC staff, Trustees, and Public Advisory Committee members. We coordinate logistics for annual PI meetings for all GWA participants and make telecommunications available for remotely-connected meetings. We support travel and logistics for all GWA Science Review Panel members. We will convene the Outreach Steering Committee, which will guide the development of products to inform the public and managers about changes in the environment and the impact of said changes on injured resources and services. PWSSC is also the administrative lead agency for the Herring Research and Monitoring program, allowing for efficient fiscal management of and reporting for both programs. We are not

proposing any major changes to this project for FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel appreciates the PI's coordination activities. The Panel suggests combining this proposal with 18120114-A into one Program management proposal.

PI Response (10/11/2017):
See response in section above for project 18120114-A.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel appreciated the responsiveness to Panel requests to streamline the budget.

Date: May 2016

The administrative budget is substantial and the Program should be cautious with regard to such costs.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-C**

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

Primary Investigator(s): Mayumi Arimitsu & John Piatt

PI Affiliation: USGS **Project Manager:** USGS

EVOSTC Funding Requested FY17-21: $1,106,400

FY17	FY18	FY19	FY20	FY21
Auth: $198,800	$229,800	$221,300	$224,500	$232,000

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $1,280,000

FY17	FY18	FY19	FY20	FY21
$256,000	$256,000	$256,000	$256,000	$256,000

Total Past EVOSTC Funding Authorized (FY12-17): $1,166,400

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $2,074,000

Total Non-EVOSTC Funding (FY12-21): $2,119,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
Identifying drivers of change in forage fish populations is key to understanding recovery potential for piscivorous species injured by the Exxon Valdez oil spill. Forage fish are small pelagic schooling fish such as capelin (*Mallotus villosus*), Pacific sand lance (*Ammodytes personatus*), Pacific herring (*Clupea pallasii*), and juvenile walleye pollock (*Gadus chalcogrammus*) that are important in marine ecosystems because they are primary food resources for marine predators. Krill (*Euphausiidae*) are also important prey taxa sampled in this study. The goals of the Gulf Watch Alaska (GWA) forage fish monitoring project are to provide information on the population trends of forage species in the Gulf of Alaska (GOA) and to better understand how underlying predator-prey interactions influence recovering species and pelagic ecology within Prince William Sound (PWS). In FY18 we will conduct acoustic-trawl surveys for forage fish during an integrated predator-prey survey in PWS during fall (Sept/Oct), and conduct seabird diet sampling at Middleton Island during spring/summer (Apr – Aug). Forage fish indices from seabirds on Middleton Island provide the critical mid-trophic level link to spring/summer lower and upper trophic levels studied during GWA Environmental Drivers cruises in the GOA. The FY18 sampling activities will continue newly initiated predator prey studies (FY17-FY21) and ensure the continuity of long-term datasets that will collectively provide an important contribution to knowledge of ecosystem function. Furthermore, our continued sampling will provide insight into how forage fish populations respond to the persistence of or recovery from the recent Pacific marine heat wave. Expansion of environmental drivers sampling (National Science Foundation Long-term Ecological Research) to the GOA shelf area adjacent to Middleton Island provides additional linkages to

GWA forage fish studies and lower trophic level processes. We are not proposing any major changes to this project for FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel was gratified to see a broader and stronger use of the Middleton Island monitoring data into the overall project and appreciates the sound science being conducted by the PIs. Huge improvements were made in data management, which can be attributed to the leadership of the Program.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund Reduced	Fund Reduced	Fund Reduced	Fund Reduced	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel expressed some concern about how the data would be interpreted. The PIs recognize they cannot provide sound-wide abundance estimates because of limited spatial sampling, but do not consider the implications of their limited sampling being a biased subset of potential sampling locations (only locations with whales). Some interpretations seem potentially circular: if there are fewer predators and fewer prey is that because the prey populations have declined and predators are

declining or moving elsewhere, or because predators have reduced prey populations and are foraging elsewhere? Presumably within a season the correlation might even shift from initially positive to negative as the season moves on. Care will need to be taken in the interpretation of these data and what they mean for forage fish abundance. The PIs should carefully consider exactly how and for what the data will be used.

Regarding the Middleton Island sampling, the Panel considered the relevance of this sampling both on biological and geographic considerations. It was not clear to us how the PIs would use data on presence in the diet to estimate abundance of forage fish? Presumably the bird diet is not just a strict reflection of abundance due to prey selectivity, spatial patterns in abundance of different prey species, etc. The Panel has concerns regarding the location of this work in the project and recommends the removal of the proposed effort at Middleton Island.

Date: May 2016

This project is part of a newly proposed "Integrated Predator-Prey Survey" program that seeks to integrate three proposed projects (Arimitsu, Moran, Bishop) into a single integrated survey. The survey would be conducted in the fall and would target persistent humpback whale feeding locations.

While the Panel is supportive of continued forage fish work, there are concerns regarding the actual integration of the three projects. The proposal appears to be an integration of PIs collecting data at the same time and location through a shared vessel. It was unclear from any of the three proposals how the data would actually be integrated to address the hypotheses of the Integrated Predator-Prey Survey. If the intent is not a true integration, then the project should be renamed accordingly. Also, based on the focus on known seabird and marine mammal foraging areas, the proposal should note that it does not intend to scale-up results to the level of PWS. Moreover, the Panel was unsure of how the seabird diet data from Middleton Island would be incorporated into the Survey, given its offshore GOA location, 130 km southwest of Cordova. The other projects are benefiting from data collected at the same time and location, but Middleton Island is not within any of the anticipated survey areas. The Panel acknowledges that inclusion of Middleton Island allows incorporation of a set of important seabirds not included elsewhere in the LTM Program, specifically an auklet, black-legged kittiwake, and puffins. The proposal is short on methodology. The Panel requests the proposers to expand the description of their methods as there is insufficient information for a thorough review.

Science Coordinator Comments – FY17

Date: September 2016

I concur with the Panel's comments and, like the Panel, remain concerned regarding the applicability of the proposed Middleton Island data set. I appreciate the desire to maintain an existing data set but do not believe that the data is useful to either the individual project or the overall LTM Program. A stated goal of this project is an integrated data set from simultaneous surveys of three component projects to reduce vessel cost while combining sampling efforts with spatial and temporal consistency. Middleton Island is not within any of the proposed survey areas and the data will not be collected at the same intervals as the rest of the project. I recommend removing the requested amount for this work ($40,000 for FY17) from the funding request and removing the scope of the work for the entire five-year Program.

Date: May 2016

I concur with the Science Panel's comments. I support the individual projects that are part of the proposed "Integrated Predator-Prey Survey" but cannot determine how, if at all, the projects will actually integrate beyond sharing vessel time. The Middleton Island bird diet work appears incongruous with the other projects.

Executive Director Comments – FY17

Date: September 2016

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

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-D**

Project Title: LTM Program - Continuous Plankton Recorders

Primary Investigator(s): Sonia Batten

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

EVOSTC Funding Requested FY17-21: $406,200

FY17	FY18	FY19	FY20	FY21
Auth: $76,500	$78,800	$81,200	$83,600	$86,100

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $801,600

FY17	FY18	FY19	FY20	FY21
$183,700	$183,900	$186,300	$188,300	$190,300

Total Past EVOSTC Funding Authorized (FY12-17): $356,000

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $680,300

Total Non-EVOSTC Funding (FY12-21): $1,394,100

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
The Continuous Plankton Recorder (CPR) transect samples the Alaskan shelf from lower Cook Inlet across the slope into the open Gulf of Alaska, providing a 17 year record of taxonomically resolved, seasonal, near-surface zooplankton and large phytoplankton abundance over a wide spatial scale. Sampling takes place approximately monthly, six times per year, usually between April and September. Outputs from the project include indices of plankton abundance (e.g., large diatom abundances, estimated zooplankton biomass), seasonal cycles (phenology of key groups) and community composition (e.g., appearance of warm water species, change in dominance by some groups). Variability in any, or all, of these indices might be expected to flow-through to higher trophic levels such as herring, salmon, birds and mammals that forage across the region, some which have been impacted by the *Exxon Valdez* oil spill. Recent results show that inter-annual variability in plankton dynamics is high and plankton responded clearly and rapidly to the recent warm conditions, with changes evident in abundance, composition and timing. We are not proposing any major changes to this project for FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel has no project specific comments.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel has no project specific comments.

Date: May 2016

The Panel notes this is a continuing time series of zooplankton information useful to a variety of other projects. The proposer (Batten) has a solid record of producing timely results, including a consistent dataset.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-E**

Project Title: LTM Program - Long-term monitoring of marine bird abundance and habitat associations during fall and winter in PWS

Primary Investigator(s): Mary Anne Bishop

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

EVOSTC Funding Requested FY17-21: $478,800

FY17	FY18	FY19	FY20	FY21
Auth: $90,100	$92,700	$95,700	$98,600	$101,700

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $265,000

FY17	FY18	FY19	FY20	FY21
$53,000	$53,000	$53,000	$53,000	$53,000

Total Past EVOSTC Funding Authorized (FY12-17): $471,000

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $859,700

Total Non-EVOSTC Funding (FY12-21): $511,500

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*

The fall-winter marine bird surveys in Prince William Sound (PWS) will continue to build upon a 10-year time series of marine bird abundance and habitat associations (2007-2017) and are further integrated with forage fish assessments of prey availability and humpback whale prey consumption and population monitoring. All three projects will share logistics, timing, and location of sampling. Marine bird surveys occur onboard research vessels conducting oceanographic, fisheries, or marine mammal surveys, thereby increasing opportunities for cross-project collaboration and reducing project costs. We use established protocols employed by all other Gulf Watch Alaska marine bird survey efforts (Kachemak Bay/Cook Inlet, Seward Line/Gulf of Alaska, PWS summer). For FY18, we have identified four fall-winter marine bird cruises: PWS Science Center Ocean Tracking Network maintenance cruise (February), Gulf Watch Alaska Pelagic Integrated Predator Prey Surveys (September), Alaska Department of Fish and Game spot shrimp survey (October), and a NOAA pollock cruise (November).

Of the marine birds that overwinter in PWS, nine species were initially injured by the *Exxon Valdez* oil spill, including three species that have not yet recovered or their recovery is unknown (pigeon guillemot, marbled murrelet, and Kittlitz's murrelet). Fall through winter are critical periods for survival as food tends to be relatively scarce or inaccessible, the climate more extreme, light levels and day length reduced, and water temperatures colder. By monitoring marine birds during fall and winter we will improve our predictive models of species abundance and distribution across PWS in relation to biological and physical environmental factors. Our long-term monitoring has shown that the nonbreeding season cannot be characterized as a single time period when describing marine bird distribution and suggests that multiple surveys are required to quantify wintering populations and understand changes in marine bird distribution.

Our participation in the Gulf Watch Alaska pelagic integrated predator-prey surveys will allow us to identify and estimate the forage biomass at the same locations in which marine birds and humpback whales are feeding,

which will provide comparable information on both predator density and prey availability. We are not proposing any major changes to this project for FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

This proposal was very well presented and seems very reasonable. The Panel was pleased to see that the PI incorporated previous suggestions into the proposal. The Panel commends the PI's effort to integrate seabirds and mammals in her work on herring.

Regarding a statement on pg. 66 of this proposal: "As currently designed for FY17-21, the fall/winter marine bird project will not be working directly with the PWS Herring Research and Monitoring Program." The Panel would like clarification on what is meant here. The Panel recommends coordinating and collaborating to the extent reasonable.

PI Response (10/11/17):
Thank you for the opportunity to clarify our coordination and collaboration with the Herring Research and Monitoring (HRM) program. In past years, we have placed a marine bird observer onboard HRM project cruises. The HRM program has no scheduled cruises between September 2018 and March 2019. Thus, we are not able to collaborate directly with HRM during FY18. However, this project will share data with the HRM program and we will explore possibilities for joint publications.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel was pleased with the changes made by the PIs in response to Panel comments, including the methodology. Some concerns were raised about the interpretation of data given that survey tracks are specifically targeted to the presence of whales. If survey tracks are chosen because of whale foraging presence, then how useful will it be to use these data to detect associations? Almost by definition any birds in their survey will be associated with whales. The question is, how close and are they interacting? Is 150 m close enough? Too close?

Date: May 2016

The Panel noted that the proposal was difficult to review as a majority of the text was copied from the other Predator-Prey Survey proposal. It was challenging to find information within the text specific to this project. The Panel requests a revised proposal that focuses on the details of this specific project and how its data will be integrated into a wider cross-project set of analyses of interacting forage "fish", and piscivorous seabirds, and whales (humpback whales explicitly) .

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-G**

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

Primary Investigator(s): Robert Campbell

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

EVOSTC Funding Requested FY17-21: $1,142,300

FY17	FY18	FY19	FY20	FY21
Auth: $218,700	$223,400	$228,300	$233,300	$238,500

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $1,425,000

FY17	FY18	FY19	FY20	FY21
$300,000	$300,000	$275,000	$275,000	$275,000

Total Past EVOSTC Funding Authorized (FY12-17): $1,260,300

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $2,183,900

Total Non-EVOSTC Funding (FY12-21): $1,774,900

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
This project will continue physical and biological measurements to assess trends in the marine environment and bottom-up impacts on the marine ecosystems of Prince William Sound (PWS). Regular (~6 per year) vessel-based surveys of PWS will be conducted to maintain ongoing time series observations of physical (temperature, salinity, turbidity), biogeochemical (nitrate, phosphate, silicate, dissolved oxygen), and biological (chlorophyll-a concentration, zooplankton abundance and composition) parameters in several parts of PWS. Sampling sites include central PWS, the entrances (Hinchinbrook Entrance and Montague Strait), and four priority bays that were part of the *Exxon Valdez* Oil Spill Trustee Council- (EVOSTC)-funded Sound Ecosystem Assessment (SEA) project in the 1990s and the ongoing Herring Research and Monitoring project.

Additionally, an autonomous profiling mooring will be deployed each year in central PWS to provide high frequency (at least daily) depth-specific measurements of the surface layer that will be telemetered out in near real-time. The profiler will include measurements that complement the survey activities (temperature, salinity, oxygen, nitrate, chlorophyll-a, turbidity). An *in situ* plankton camera is under development and will be used to enumerate zooplankton, large phytoplankton and other particles, with some taxonomic discrimination.

FY17 spring and early summer observations in PWS indicate the spring bloom was about on time, the surface layer water temperature was 1-2 °C above average, but still showing negative anomalies below the surface layer. Some warm water zooplankton (southern species) are still present. We are not proposing any major changes to this project for FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel believes the PI is conducting important work that supports the goals of the EVOSTC. The Panel was happy to see that there are peer-reviewed publications in press and encourages the PI to keep publishing.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel has no project specific comments.

Date: May 2016

The Panel acknowledges the value of continued time series of physical, chemical, and biological primary production data to provide the basis for analyses of how changing environmental conditions are affecting the higher trophic level animals of the PWS and other spill-affected regions of the Northern Gulf of Alaska.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-H**

Project Title: LTM Program –Nearshore Ecosystems in the Gulf of Alaska

Primary Investigator(s): Heather Coletti, Dan Esler, Brenda Konar, Katrin Iken

PI Affiliation: NPS, USGS, NOAA **Project Manager:** USGS

EVOSTC Funding Requested FY17-21: $2,071,000

FY17	FY18	FY19	FY20	FY21
Auth: $401,900	$452,700	$411,400	$402,300	$402,800

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $2,014,000

FY17	FY18	FY19	FY20	FY21
$410,000	$410,000	$410,000	$392,000	$392,000

Total Past EVOSTC Funding Authorized (FY12-17): $1,961,800

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $3,630,900

Total Non-EVOSTC Funding (FY12-21): $3,502,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
Nearshore monitoring in the Gulf of Alaska (GOA) provides ongoing evaluation of the status and trend of more than 200 species, including many of those injured by the 1989 *Exxon Valdez* oil spill (EVOS). The monitoring design includes spatial, temporal and ecological features that support inference regarding drivers of change. Application of this monitoring design to date include assessment of change in sea otter populations in relation to EVOS recovery and density dependent factors as well as the assessment of the relative roles of static versus dynamic environmental drivers in structuring benthic communities. Continued monitoring will lead to a better understanding of variation in the nearshore ecosystem across the GOA and a more thorough evaluation of the status of spill-injured resources. This information will be critical for anticipating and responding to ongoing and future perturbations in the region, as well as providing for global contrasts. In 2018 we propose to continue sampling in Kachemak Bay, Katmai National Park and Preserve, Kenai Fjords National Park, and Western Prince William Sound following previously established methods. Monitoring metrics include marine invertebrates, macroalgae, sea grasses, birds, mammals, and physical parameters such as temperature. In addition to taxon-specific metrics, monitoring includes recognized important ecological relations such as predator-prey dynamics, measures of nearshore ecosystem productivity, and contamination. Preliminary FY17 observations indicate low sea star densities across all four regions, while nearshore bird surveys of common murre distributions have returned to pre die-off states. We are not proposing any major changes to this project for FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel appreciates the amount of data being collected on multiple nearshore sites. There is not a clear integration with oceanographic studies, but there is enough substance to make this a meaningful, stand- alone nearshore ecosystem project. The Panel is very pleased with their productivity and integration of students into the studies.

PI Response (10/11/2017):
The nearshore component greatly appreciates the Science Panel's support of our progress towards an integrated nearshore program. There have been recent discussions to use oceanographic data, initially temperature, across all components to examine linkages between offshore and nearshore systems. We anticipate that analyses of temperature data will be our first step in integrating other oceanographic processes to pelagic and coastal systems for the GWA program.

The Panel would like to see more of the synoptic surveys, what they are finding or not finding temporally and on a spatial scale. A question from the Panel for the PIs to ponder: Have egg-eating seabirds/waterfowl changed their distribution in regards to location in time and space to herring spawning?

PI Response (10/11/2017):
Several PIs in the nearshore program did publish a paper in Ecosphere (http://onlinelibrary.wiley.com/doi/10.1002/ecs2.1489/full) that examined temporal trends in sea otter abundance, energy recovery rates, and demographics at varying spatial scales. However, based on the design of the nearshore component, an exercise examining trends across space and time could be done for a variety of species. We are meeting as a component prior to the PI meeting in November to examine data trends to date and develop product ideas for the next 1-3 years within the nearshore component. Specific to the Science Panel's question about changing seabird/waterfowl distribution, we have set aside time for cross-component bird data integration and synthesis discussions at the PI meeting in November. All parties will have data summaries to discuss and determine how we may be able to look at trends over time, and changes in distribution, and integration with data from other components, including environmental drivers.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel wished to draw attention of the PIs to similar recent declines in mussels in the Gulf of Maine in the Atlantic. No action is required by the PIs, but they might find parallel research on a similar problem interesting. A paper by Sorte et al. in Global Change Biology would be once place to look: Sorte, C. J. B., Davidson, V. E., Franklin, M. C., Benes, K. M., Doellman, M. M., Etter, R. J., Hannigan, R. E., Lubchenco, J. and Menge, B. A. (2016), Long-term declines in an intertidal foundation species parallel shifts in community composition. Glob Change Biol. doi:10.1111/gcb.13425

Date: May 2016

The Panel has no project specific comments.

Science Coordinator Comments – FY17

Date: May and September 2016

I have no project specific comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-I**

Project Title: LTM Program – Long-term Monitoring of Oceanographic Conditions in the Alaska Coastal Current from Hydrographic Station GAK-1

Primary Investigator(s): Seth Danielson

PI Affiliation: UAF **Project Manager:** NOAA

EVOSTC Funding Requested FY17-21: $680,800

FY17	FY18	FY19	FY20	FY21
Auth: $146,800	$148,400	$132,600	$125,600	$127,400

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $0

FY17	FY18	FY19	FY20	FY21
$0	$0	$0	$0	$0

Total Past EVOSTC Funding Authorized (FY12-17): $726,100

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $1,260,100

Total Non-EVOSTC Funding (FY12-21): $0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
This project 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 quasi-monthly conductivity-temperature versus depth casts and a mooring outfitted with seven temperature/conductivity recorders distributed throughout the water column and a fluorometer at 20 m depth. The project monitors five important Alaska Coastal Current (ACC) ecosystem parameters that quantify and help us understand hourly to seasonal, interannual, and multi-decadal period variability in: 1) temperature and salinity throughout the 250 m-deep water column, 2) near surface stratification, 3) surface pressure fluctuations, 4) fluorescence as an index of phytoplankton biomass, and 5) along-shelf transport in the ACC. All of these parameters are basic descriptors that characterize the workings of the inner shelf and the ACC, an important habitat and migratory corridor for organisms inhabiting the northern Gulf of Alaska, including Prince William Sound and resources injured by the *Exxon Valdez* oil spill. We are aware of 69 publications utilizing data collected at station GAK-1, and since 2000 the citation list has grown by nearly three publications per year. Topics covered by these publications range from physical oceanography and climate through trophic (including commercial fisheries) level components and ecosystem analyses. Recent water temperatures have returned to average in the upper 100 m, but warmer than average water remains below 100 m. A newly awarded National Science Foundation Long-term Ecological Research program (awarded to GWA PIs R. Hopcroft and S. Danielson) will leverage and compliment this and other environmental drivers sampling within GWA. We are not proposing any major changes to this project in FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

This is an important long-term data collection project that needs to continue. The Panel supports the research and welcomes the news of the Long-Term Ecological Research (National Science Foundation) funding awarded to the PIs, which will insure the stability of gathering long-term data while expanding the scope of the project. PIs are using graduate students productively.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel has no project specific comments.

Date: May 2016

This long-term data set provides critical information to both Programs and to researchers beyond the Programs. The resultant data are heavily used. The Panel supports the continued funding of this work. The Panel also awaits seeing new analyses that integrate these environmental variables into the changing abundances of members of the food webs of importance.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-J**

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

Primary Investigator(s): Kris Holderied and Jessica Shepherd

PI Affiliation: NOAA and KBRR **Project Manager:** NOAA

EVOSTC Funding Requested FY17-21: $796,500

FY17	FY18	FY19	FY20	FY21
Auth: $169,700	$174,400	$183,400	$135,700	$133,300

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $1,044,000

FY17	FY18	FY19	FY20	FY21
$205,000	$213,000	$215,000	$217,000	$194,000

Total Past EVOSTC Funding Authorized (FY12-17): $316,500

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $1,375,800

Total Non-EVOSTC Funding (FY12-21): $0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
The Cook Inlet/Kachemak Bay monitoring project provides year-round, high temporal resolution oceanographic and plankton data to assess the effects of seasonal and inter-annual oceanographic variability on nearshore and pelagic species injured by the *Exxon Valdez* Oil Spill. We continue a 6-year time-series of shipboard oceanography surveys along the estuarine gradient from Kachemak Bay into southeast Cook Inlet, as well as a 16-year time series of continuous nearshore water quality station observations in Kachemak Bay. Shipboard surveys are conducted on repeated transects monthly in Kachemak Bay, seasonally in southeast Cook Inlet and annually across the Cook Inlet entrance. Shipboard sampling includes conductivity-temperature-depth casts (including fluorescence, turbidity, and dissolved oxygen), phytoplankton, and zooplankton. The project provides oceanographic data to support Gulf Watch Alaska (GWA) nearshore component monitoring in Kachemak Bay and important environmental driver information downstream of other GWA components. By sampling across Prince William Sound, Cook Inlet and the northern Gulf of Alaska shelf, in connection with other GWA Environmental Drivers component projects, we strengthen the ability of the GWA program to evaluate local (within estuary) and remote (shelf, North Pacific) climate forcing effects on nearshore ecosystems. Recent results show that during 2014-2016: 1) water temperatures were warmer than average throughout the water column and fresher below the pycnocline - consistent with the upper 100m of the water column at GAK1, but different from the lower water column, with warm water possibly contributing to sea star declines observed by the nearshore sampling team; 2) increased blooms of Alexandrium phytoplankton species caused paralytic shellfish poisoning events in Kachemak Bay which may have contributed to marine mammal and seabird mortalities; and 3) abundances of

warm water zooplankton species increased relative to 2012-2013. We are not proposing any major changes to this project in FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel was happy to see that the PIs explained how data from this study tie into the decline in sea stars, marine mammal and seabird mortalities and changes in the presence of zooplankton species. The Panel was pleased to see how the funding is being used and how the PIs found connections as previously requested.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Do Not Fund	Do Not Fund	N/A	N/A	N/A
Sept 2016	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Science Panel appreciated the PI's responses to our comments. The proposal is fundamentally sound. However, our primary concern was not addressed. The proposed research is beyond the core area of interest, and it remains unclear how the study would significantly advance the core mission of EVOSTC and justify a second cycle of $800,000 in funding.

As noted in a follow-up Panel discussion with the Program Team Leads, the results from the original research proposal in Cook Inlet and Kachemak Bay provided data that may be useful to those interested in this project's study area, and, for example, the proposal may serve those with an interest in harmful algal blooms, bivalve mariculture, invasive species and to EVOSTC PIs currently sampling in PWS but who would be pleased to expand activities to the project area. However, the proposal did not demonstrate actual use of these data by other projects in either the Long-Term Monitoring Program or the Herring Program and it still remains to be seen just how relevant these data will be to EVOSTC.

Date: May 2016

The Panel does not recommend funding this project. The investigators propose to modify sampling conducted in 2012-2016 to profile oceanographic variables (water temperature, salinity, nutrients) and plankton from ship and shore in lower Cook Inlet and Kachemak Bay in response to the anomalously warm waters in 2014-2015. The warm-water event was concurrent with harmful algal blooms with consequences for shellfish, otters and murres, much like elsewhere along the West Coast. Higher frequency sampling (monthly, quarterly) on the eastern side of the study area together with semiannual (spring, fall) sampling across the entrance to Cook Inlet would better resolve the exchange of water masses and nutrients between the Gulf of Alaska and a hotspot for primary production and foraging by fishes, seabirds and marine mammals near lower Cook Inlet and outer in Kachemak Bay in response to changing oceanographic forcing. To compensate for this increased effort, sampling at locations on the northern side of Cook Inlet is proposed to be reduced.

The Panel does not feel that the proposed research is a priority, given the cost and the relative lack of connection to the larger program. Answers to the proposed hypotheses are largely self-evident as stated and seemingly could be tested with data already in hand. A more compelling justification for the proposed research would have been helpful. For instance, hypothesis 1 that lower Cook Inlet is mostly synchronous with PWS suggests that continued oceanographic measurements in Cook Inlet may be redundant. It is not clear that extending a modified version of the previous five years of research via monitoring would significantly advance our understanding of productivity and links to nearshore species, seabirds and marine mammals in the study area, especially given the expense of the project. The proposal also would have benefitted from a robust statement of how the expected outcomes of the proposed research would be integrated with those from the rest of the program. The methods appear to be appropriate; though including a fluorometer with the CTDs to profile chlorophyll fluorescence throughout the water column would have been beneficial.

Science Coordinator Comments – FY17

Date: September 2016

I concur with the Science Panel's comments. The project offers sound science and is managed by an experienced team but the applicability of the data toward addressing the LTM Program's hypotheses appears weak at best after the first five years of funding.

Date: May 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

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

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-L**

Project Title: LTM Program – Seward Line Monitoring

Primary Investigator(s): Russell Hopcroft

PI Affiliation: UAF **Project Manager:** NOAA

EVOSTC Funding Requested FY17-21: $697,900

FY17	FY18	FY19	FY20	FY21
Auth: $132,700	$136,100	$139,500	$143,000	$146,600

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $7,180,300

FY17	FY18	FY19	FY20	FY21
$1,424,000	$1,438,000	$1,411,800	$1,466,000	$1,450,500

Total Past EVOSTC Funding Authorized (FY12-17): $910,900

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $1,476,100

Total Non-EVOSTC Funding (FY12-21): $2,717,300

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
Long times-series are required for scientists to tease out pattern and causation in the presence of substantial year-to-year variability. For the 5 year period beginning in 2017, we propose continued multi-disciplinary oceanographic observations begun in fall 1997 in the northern Gulf of Alaska. Cruises occur in early May and early September to capture the typical spring bloom and summer conditions, respectively, along a 150-mile cross shelf transect to the south of Seward, Alaska. The line is augmented by stations in the entrances and deep passages of Prince William Sound. We determine the physical-chemical structure, the distribution and abundance of phytoplankton, microzooplankton, and mesozooplankton, and survey seabirds and marine mammals. These observations enable descriptions of the seasonal and inter-annual variations of this ecosystem. Our goal is to characterize and understand how different climatic conditions influence the biological conditions across these domains within each year, and what may be anticipated under future climate scenarios. We are not proposing any major changes to this project for FY18. Newly acquired funding as one of National Science Foundation's 30 Long-term Ecological Research (LTER) sites, will allow us to expand sampling on the shelf upstream of Prince William Sound, including near Middleton Island.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

This is an important long-term data collection project that needs to continue. The Panel is enthusiastic about the incorporation of an LTER site to expand the scope of this project. The Panel is pleased to see that sampling will occur around Middleton Island, and that there will be integration with the predator-prey project.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Science Panel appreciates transfer of funds among projects to support additional sampling relevant to the spill area.

Date: May 2016

The Science Panel notes that this transect of moorings has value as professed in the proposal for purposes of assessing long-term environmental forcing of the base of the pelagic food chains.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-M**

Project Title: LTM Program –PWS Marine Bird Population Trends

Primary Investigator(s): Kathy Kuletz

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

EVOSTC Funding Requested FY17-21: $519,100

FY17	FY18	FY19	FY20	FY21
Auth: $24,900	$222,200	$24,900	$222,200	$24,900

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $180,000

FY17	FY18	FY19	FY20	FY21
$23,000	$56,000	$23,000	$56,000	$22,000

Total Past EVOSTC Funding Authorized (FY12-17): $706,500

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $1,200,700

Total Non-EVOSTC Funding (FY12-21): $392,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
We propose to conduct small boat surveys to monitor abundance of marine birds in Prince William Sound, Alaska, during July 2018 and 2020. Fourteen previous surveys over a 27-year period have monitored population trends of marine birds and mammals in Prince William Sound after the *Exxon Valdez* oil spill. We will use data collected to examine trends from summer to determine whether populations in the oiled zone are increasing, decreasing, or stable. We will also examine overall population trends for the Sound. Continued monitoring of marine birds and synthesis of the data are needed to determine whether populations injured by the spill are recovering. Data collected from 1989 to 2016 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 projects of the GWA Long-term Monitoring Program as well as the Herring Research and Monitoring project. We are not proposing any major changes to this project for FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel is pleased with the work the PIs are conducting and impressed with the survey coverage. Would it be worth surveying a subset of sites to monitor annually?

PI Response (10/11/2017):

We agree with the Science Panel that, ideally, we would improve trends analysis by adding surveys to include even numbered years to our current 'odd year' July surveys. However, budgetary constraints make such an effort impractical. The additional time and costs would include boat preparation and post-survey maintenance, hiring extra personnel or covering salary of in-house personnel, lodging, per diem, fuel, and additional data control and analyses. Even selecting a much reduced number of transects to survey during even years (by 'subset of sites' we presume the panel is referring to transects), the cost of gearing up and operating a survey in Prince William Sound (PWS) is not substantially reduced by reducing the number of transects. A rough estimate of surveys during even years would be $150-180K per year, in addition to the current $222K per odd year under the current work plan.

If additional funds were added to this project to cover a reduced survey during even years, we would first want to conduct an analysis to determine what level of effort would be statistically robust, and how those transects or regions (sites) should be selected. Such an analysis could be useful for future planning, but would require additional funds for a contract or to cover time for the U.S. Fish and Wildlife Service (USFWS) biometrician.

We have some indication of what a reduced level of effort can provide, based on an analysis conducted for USFWS by WEST, Inc. in 2003 (Nielson et al. 2003). In brief, although the effect varied among species, the conclusion was that, on average, the coefficient of variation (CV) would not decrease substantially at 80% of our current effort, but increased substantially after that, which would greatly reduce our ability to detect population trends of < 50%. The report states: "However, for many species with low CVs at 100% of the original sample size (i.e., CV around 0.2 or less), the CV almost doubles when the sampling effort is reduced to 30%." We add that for species of conservation concern, typically with low or variable numbers, an unusually low or high abundance estimate in any given year will result in much reduced probability of detecting change in the population over time. The report also notes, however, that "... a systematic sample of blocks across habitats will likely provide more precise estimates of species abundance than the stratified random sample." With additional years of data since 2003, analysis of sampling effort by habitats may help with design of a reduced effort during even years.

Alternative to reduced surveying during even years, additional funds for the PWS marine bird surveys could be directed towards 'winter' (March) surveys. The March survey had fewer transects than July surveys, but has not been funded since 2010. The species composition of PWS changes substantially between July and March, with nine species or species groups primarily represented only in March (see Table 1 of the WEST, Inc. report); these were waterfowl, seaducks, and grebes. March surveys would provide population estimates and trends for all species during this critical season.

Literature Cited:

Nielson, R., S. Howlin, L. McDonald. 2003. "Bootstrapping to investigate effects of sample size on variance and bias of estimated species totals for Prince William Sound Marine Bird Surveys". Report by WEST, Inc. to U.S. Fish and Wildlife Service, Anchorage, Alaska, April 28, 2003.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

The Panel has no project specific comments.

Date: May 2016

There are no project specific comments.

Science Coordinator Comments – FY17

Date: May and September 2016

I have no project specific comments.

Executive Director Comments – FY17

Date: September 2016

I have no project specific comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-N**

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

Primary Investigator(s): Craig Matkin

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

EVOSTC Funding Requested FY17-21: $725,900

FY17	FY18	FY19	FY20	FY21
Auth: $152,800	$151,300	$142,100	$140,300	$139,500

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $125,000

FY17	FY18	FY19	FY20	FY21
$25,000	$25,000	$25,000	$25,000	$25,000

Total Past EVOSTC Funding Authorized (FY12-17): $688,900

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $1,262,000

Total Non-EVOSTC Funding (FY12-21): $242,500

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
The proposed project is a continuation of the long-term photo-identification based program that has continuously monitored killer whale populations in Prince William Sound since 1984. A primary focus has been on resident killer whales and the recovery of AB pod and the threatened AT1 population of transient killer whales. These two groups of whales suffered serious losses at the time of the oil spill and have not recovered at projected rates. Assessment of population dynamics, feeding ecology, movements, range, and contaminant levels for all major pods in the area will help determine their vulnerability to future perturbations and environmental change, including oil spills. In addition to population dynamics from annual photo-identification, this project uses other techniques to determine the health and trends of the population. These techniques include biopsy/skin sampling to compare genetics between populations, biopsy/blubber to investigate contaminants, fatty acid, and stable isotope profiles, prey sampling of flesh, fish scales, and whale scat to investigate diet, behavioral observation, and remote acoustic monitoring to determine important off-season habitat. We are not proposing any major changes to this project for FY18; however, some opportunistic sampling has been de-emphasized.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel applauds the work being conducted by the PI demonstrating the impact of oil on killer whales depends on whether the group of whales is transient or resident. These results help refine the restoration goal of this species, which might otherwise not capture the genetic differences between pods. These differences suggest unanswered questions about their social activities, which will be further addressed by the PI. The Panel appreciates that the PI does an excellent job regarding outreach.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: May and September 2016

There are no project specific comments.

Science Coordinator Comments – FY17

Date: May and September 2016

I have no project specific comments.

Executive Director Comments – FY17

Date: September 2016

I have no project specific comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Project Number: **18120114-O**

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

Primary Investigator(s): John Moran and Jan Straley

PI Affiliation: NOAA and UAS **Project Manager:** NOAA

EVOSTC Funding Requested FY17-21: $777,400

FY17	FY18	FY19	FY20	FY21
Auth: $161,900	$155,000	$157,900	$154,900	$147,600

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $730,000

FY17	FY18	FY19	FY20	FY21
$146,000	$146,000	$146,000	$146,000	$146,000

Total Past EVOSTC Funding Authorized (FY12-17): $753,800

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $1,369,300

Total Non-EVOSTC Funding (FY12-21): $955,000

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
The humpback whale monitoring project is part of the Gulf Watch Alaska pelagic component's integrated fall/winter predator-prey survey. Humpback whale predation has been identified as a significant source of mortality on wintering Pacific herring in Prince William Sound (PWS) and a likely top-down force constraining their recovery. Humpback whales in PWS have a higher percentage of herring in their diet during the winter months and forage longer on wintering herring shoals than their counterparts in Southeast Alaska. Currently, North Pacific humpback whales in the Gulf of Alaska may be experiencing nutritional stress and increased use of inland waters like PWS could result in increased predation on herring. We will continue to evaluate the impact by humpback whales foraging on Pacific herring populations in PWS, following protocols established during the winters of 2007/08 and 2008/09 (EVOSTC project PJ090804). Prey selection by humpback whales will be determined through acoustic surveys, visual observation, scat analysis, and prey sampling. Chemical analysis of skin and blubber biopsy samples will provide a longer term perspective on shifts in prey type (trophic level from stable isotopes) and quality (energy content). These data will be combined in a bioenergetic model that will allow us to assess the impact of recovering humpback whale populations on the PWS ecosystem. By integrating with the forage fish and fall/winter marine bird components, we will be able to provide a comprehensive understanding of bottom-up influences and top-down controls on the PWS herring population. We are not proposing any major changes to this project for FY18.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel was excited to see the results presented in Figure 1 in the proposal and encourages the PIs to make comparisons to the relevant study conducted by the National Center for Ecological Analysis and Synthesis (NCEAS) working group. Results shown in Figure 1 of the proposal are important and so strikingly incompatible with what was suggested previously by the time series analysis of the NCEAS working group (Ward et al 2017). That working group's model, of necessity, made some quite restrictive assumptions. Can the PIs look at the NCEAS model, and consider whether the new findings invalidate one or more key conclusions from that synthesis work?

PI Response (10/11/2017):
Thank you for the close review of project 18120114-O's work plan. Comparisons to Ward et al. (2017) are problematic because these authors depend on summer whale counts from western PWS (Teerlink et al. 2014), while our project focuses on fall/winter and spring time periods when herring form large, dense schools that are most vulnerable to whale predation. Observations of whales and prey when herring are aggregated allow us to study the potential impact of foraging humpback whales on herring as a possible contributor to the lack of herring recovery. The following are three important differences between our approach and the Teerlink et al. (2014) approach to modeling whale predation on herring:

1. The Teerlink et al. (2014) study estimates the number of whales that use PWS in summer, not the number that are present at any given time (for example, 10 whales spending 90 days in the Sound would have the same effect on prey as 900 whales spending one day in the Sound). It is important to know how many whales are feeding on herring for how many days within the Sound and the Ward et al. (2017) paper does not address this.
2. Ward et al. (2017) used whale population estimates from summer surveys, when overall whale abundance is generally low in PWS compared to other seasons. Our work identified adult herring as the preferred prey of humpbacks in PWS, especially when herring are aggregated in the fall, winter, and spring (spawning); thus, whale numbers peaked in the fall and spring, and dropped during the summer months.
3. Neither Ward et al. (2017) nor Teerlink et al. (2014) identify prey consumed by humpback whales.

Additionally, the Panel is concerned that objective #3 may be overly ambitious and suggests re-wording and editing to "predation rate"?

PI Response (10/11/2017):
With regards to objective #3 being overly ambitious and the Science Panel's suggestion of rewording and editing to "predation rate"? We agree and will change the wording of this objective.

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	N/A	N/A	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: May and September 2016

There are no project specific comments.

Science Coordinator Comments – FY17

Date: May and September 2016

I have no project specific comments.

Executive Director Comments – FY17

Date: September 2016

I have no project specific comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Data Management Program
Project Descriptions

Project Number: **18120113**

Project Title: Data Management Program

Primary Investigator(s): Carol Janzen

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

EVOSTC Funding Requested FY17-21: $1,090,000

FY17	FY18	FY19	FY20	FY21
Auth: $218,000	$218,000	$218,000	$218,000	$218,000

Requests include 9% GA.

Funding From Non-EVOSTC Sources FY17-21: $14,359,000

FY17	FY18	FY19	FY20	FY21
$2,705,000	$2,786,000	$2,869,000	$2,955,000	$3,044,000

Total Past EVOSTC Funding Authorized (FY12-17): $3,471,200

Total EVOSTC Funding Authorized (FY12-17) and Requested (FY18-21): $4,343,200

Total Non-EVOSTC Funding (FY12-21): $16,695,200

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*
The *Exxon Valdez* Oil Spill Trustee Council (EVOSTC) requires a data management program composed of tools covering the entire data lifecycle, from immediately after data collection, to long-term preservation, to discovery and reuse. During the last EVOSTC five-year funding cycle, the Alaska Ocean Observing System (AOOS) provided data management services for both the "Long-Term Monitoring of Marine Conditions and Injured Resources and Services" Program, referred to as Gulf Watch Alaska (GWA), and the "Herring Research and Monitoring" (HRM) Program. These two programs leveraged the existing data management capacity of AOOS, but also helped inform and improve AOOS' overall data and metadata management, access, and visualization tools. Because of these past investments, the AOOS team and infrastructure are best situated to provide data services to the EVOSTC for the next five years and thus maintain continuity and build upon the ongoing efforts and data management system development. Through these efforts, AOOS will continue to provide access to these tools and services for which the principal investigators (PIs) of the GWA and HRM Programs depend. Among these, the Research Workspace (an enhanced version of the former web-based data management platform, the Ocean Workspace) will be maintained and supported to upload, organize, and document data, as well as to facilitate program administration. This platform is familiar to GWA and HRM PIs from the prior funded effort, and allows data to be made promptly and securely available to team members and program administrators. During the spring of 2016, the existing Ocean Workspace will be updated with an enhanced metadata editor designed to help researchers more easily generate flexible yet robust, standards-compliant metadata. As in previous years, GWA and HRM Program data will be shared publicly (or 'published') through the AOOS Gulf of Alaska Data Portal, where it can be accompanied by any supplemental files or project documentation. Publishing through AOOS makes the

data available to a wide-ranging and established network of resource managers, scientists, and the general public to support decision-making. In addition, the GWA and HRM Program datasets will be ingested into DataONE for long-term preservation, where each dataset will be assigned a digital object identifier (DOI) and made discoverable through other DataONE nodes. Through the AOOS data management system, the significant expertise of the data management staff at its technical partner organization, Axiom Data Science, is leveraged. The Axiom staff have extensive experience with the GWA and HRM Programs and their associated data through the prior five-year effort. Building upon these established relationships and infrastructure, AOOS is well-poised to deliver continued success in its data management services to facilitate the access and curation of data to support decision-making related to Spill affected ecosystems.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel greatly appreciates the PI's efforts on this project. The coordination between the data management program and the HRM and LTM Programs has greatly improved. The proposal was well written and organized.

Can the PI confirm that data will be available and not require specially approved access to get to the data?

PI Response (10/13/2017):
The process for making data from the EVOS Gulf Watch Alaska (GWA) and Herring Research and Monitoring (HRM) programs publicly available is as follows. Project PIs upload preliminary and final datasets to the Research Workspace within one year of collection for sharing among collaborators. PIs maintain ownership of the data they have submitted to the Research Workspace; therefore, they have access to data from the 2012-16 and 2017-21 funding cycles without needing special permissions. Once data are finalized (e.g., within one year of data collection, in most cases) data are published from the Research Workspace to the AOOS Gulf of Alaska (GOA) data portal.
All data published to the GOA portal are accessible by the public with no restrictions or specially approved access. In the portal, these data are discoverable alongside the publicly-available final data from the 2012-2016 GWA and HRM projects. These data are further made available to the public through the Research Workspace DataONE member node, a preservation-oriented data repository that is openly accessible to the public. The DataONE archives, similar to the GOA portal, will continue to be updated with final data from the 2017 to 2021 funding cycle.
To navigate to the public-facing data in the GOA portal:

1. *Visit the AOOS website (http://data.aoos.org) and select the Gulf of Alaska portal (image below), or navigate directly to the portal at http://portal.aoos.org/gulf-of-alaska.*
2. *To view data, click on Data Layer Catalog*
3. *From the catalog labels on the left hand side, select the Gulf Watch or Herring Projects*
4. *Click on the project you want to open from the list.*
5. *To view data files, click 'Project Data' in the upper right (top image below). Browse the files and click those you want to download*

Are the ADFG herring data sets available on the DataOne portal? If not, they should be made accessible.

PI Response (10/13/2017):
The ADFG Prince William Sound datasets have been submitted to the Research Workspace for sharing among collaborators. Some of these datasets have been made available to the public through both the GOA data portal and DataONE. An inventory of these datasets and their publication status are shown in the below table.

ADFG Herring Surveys, Prince William Sound: aerial survey route, biomass, age sex length, and spawn
EVOS Herring Research Workspace c https://workspace.aoos.org/project/283281/files

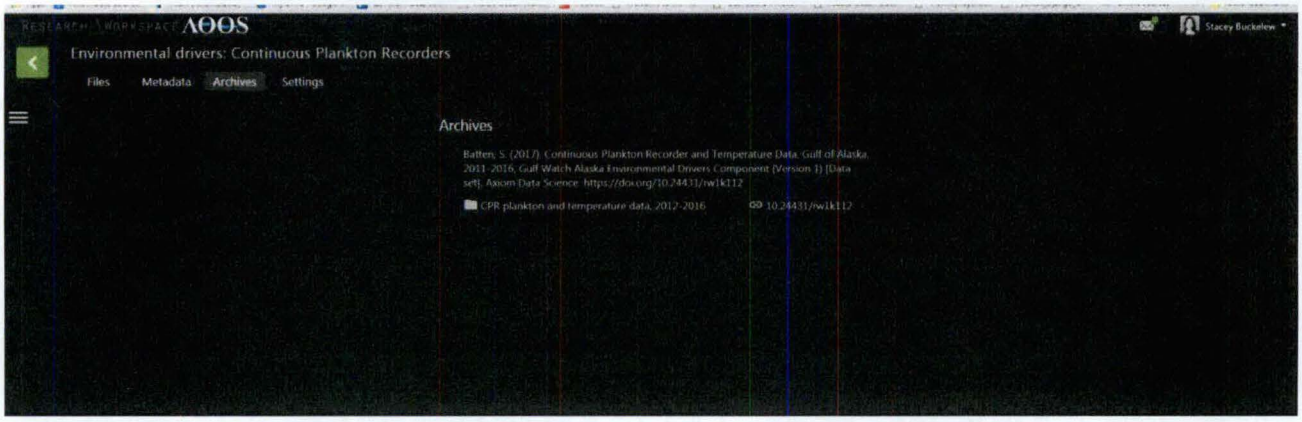
Dataset	Years	Public in GOA portal?	GOA portal link	Archived with DataONE?	DataONE doi link
Aerial herring biomass observations	1973-2016	yes; visualized & available for download	http://portal.aoos.org/gulf-of-alaska.php#module-metadata/ad7118be-ea24-11e0-b488-0019b9dae22b/ee8a692c-ea24-11e0-b73c-0019b9dae22b	yes; 2007-09 only	https://search.dataone.org/#view/df35a.22.16
Aerial herring spawn observations	1973-2016	yes; visualized & available for download	http://portal.aoos.org/gulf-of-alaska.php#module-metadata/ad7118be-ea24-11e0-b488-0019b9dae22b/ee8a753e-ea24-11e0-a20d-0019b9dae22b	yes; 2007-09 only	https://search.dataone.org/#view/df35a.22.17
Aerial herring spawn observations	1973-2016	yes; visualized & available for download	http://portal.aoos.org/gulf-of-alaska.php#module-metadata/ad7118be-ea24-11e0-b488-0019b9dae22b/79b1cc76-5f1f-41d7-bb79-3f7e995d6d89	yes; 2007-09 only	https://search.dataone.org/#view/df35a.22.18
Aerial survey marine bird observations	2008-2016	yes; visualized & available for download	http://portal.aoos.org/gulf-of-alaska.php#module-metadata/258864ed-5fe3-4ae1-af41-fee3222612aa/d3964546-4786-11e5-953e-00265529168c	yes; 2007-09 only	https://search.dataone.org/#view/df35a.22.19
Aerial survey marine mammal observations	2008-2016	yes; visualized & available for download	http://portal.aoos.org/gulf-of-alaska.php#module-metadata/c893364d-0e8a-42de-8947-9212b588cc43/00357656-e3b9-4d22-9d03-345ffb0b7320	yes; 2007-09 only	https://search.dataone.org/#view/df35a.22.20
Aerial survey sea lion observations	2008-2016	yes; visualized & available for download	http://portal.aoos.org/gulf-of-alaska.php#module-metadata/c893364d-0e8a-42de-8947-9212b588cc43/d39650b8-4786-11e5-9543-00265529168c	yes; 2007-09 only	https://search.dataone.org/#view/df35a.22.21
Age Sex Length Data	1973-2014	no	-	yes	https://search.dataone.org/#view/df35b.273.7
Age Sex Length Data	2015-2016	no	-	no	-
PWS Herring Acoustics	1997-2014	no	-	no	-
Scale Measurement Data	1982-2016	no	-	no	-
PWS Herring Acoustic	1997-2014	no	-	no	-
Scale Measurement Data	1982-2016	no	-	no	-

The data management team is awaiting a final decision from ADFG Commercial Fisheries division about whether to make the remainder of the data available publicly. We will update the EVOSTC and the EVOS Science Panel with this information as soon as we have a response.

What is the status on linking DataOne to Workspace for all the projects?

PI Response (10/13/2017):
In June 2017, we launched the Research Workspace DataONE1 Member Node, a preservation-oriented data repository serving as the archival home for datasets published from the Research Workspace (news release here). Datasets published from the Research Workspace to the Research Workspace DataONE Member Node are issued a citable digital object identifier (DOI), and are discoverable through DataONE search interfaces alongside datasets and metadata from the other 40+ repositories that make up the DataONE federation. The final data holdings from the 2012-2016 GWA and HRM programs were archived in the Research Workspace DataONE Member Node and are now publicly discoverable and citable through both the AOOS Gulf of Alaska data portal2 and the DataONE Search3 catalog. These archived resources are linked to any related datasets from the EVOS historical data salvage project (conducted by NCEAS), which are also stored in DataONE. Within the Research Workspace, the GWA and HRM program datasets archived with DataONE are visible under the Archives tab within each project (see below image). Here PIs can view the resource title, DOI, and link to the associated data and

metadata. Additionally, the DOI is reflected in the Gulf of Alaska data portal, from which any member of the public can navigate from the Gulf of Alaska portal to the archived dataset within DataONE. In future Research Workspace updates, an archive page will be added to the EVOS GWA and HRM campaign which lists the archive dataset citations for the entire program (as opposed to individually by projects), and this list will include links to DataONE.



Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments. I greatly appreciated the Key Highlights section.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

FY17 Funding Recommendations:

Date	Science Panel	Science Coordinator	PAC	Executive Director	Trustee Council
May 2016	Fund	Fund	Fund	Fund	N/A
Sept 2016	Fund	Fund	Fund	Fund	Fund

Science Panel Comments – FY17

Date: September 2016

We appreciate the Team Lead's thorough responses to our questions and comments. We do not have any additional questions or comments on the revised proposal.

Date: May 2016

The Panel appreciates the refocusing of the data management program to better meet the needs of the Programs and the EVOSTC. Making the data collected by the Programs available to other researchers and trust agencies is the primary goal of the data management program. The development and implementation of the data portal in conjunction with the partnership with DataONE in the first five-year program has helped to meet that goal.

The Panel was encouraged to see a more defined data policy that provided clear repercussions for non-compliant PIs. The Panel was gratified to learn that AXIOM has developed or is developing a presumably online training course for PIs on how to construct metadata for their projects, so as to address one cause for slow compliance with data submittal time tables.

The Panel is concerned about the availability of data from the first five-years of the Program to the new and continuing PIs. Milestone 2 on page 21 of the proposal needs further clarification. "Some PIs in the current funding cycle may need access to previously collected datasets in the Workspace." Does this mean that new and continuing PIs will not be able to routinely access data collected in the first five-year Program unless they submit a special request? Access to both the historical data assembled by NCEAS and data collected by projects in the first five years is critical to the success of both Programs.

The Panel strongly encourages the continued coordination and collaboration with both major Programs (Long-Term Monitoring and Herring Research) in the design and updating of the system.

The Panel was concerned that the Program lead was unable to answer several questions regarding the design of the Program and the PI appeared unfamiliar with the content of the proposal, thus inhibiting a full discussion of the Workspace functionality.

Science Coordinator Comments – FY17

Date: May and September 2016

I concur with the Science Panel's comments.

Executive Director Comments – FY17

Date: September 2016

I concur with the Science Panel's comments.

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Lingering Oil
Project Descriptions

Project Number: **18170115**

Project Title: Immunological Expressions of PAH Exposure in Fish

Primary Investigator(s): Andrew Whitehead

PI Affiliation: UC Davis **Project Manager:** USGS

EVOSTC Funding Requested FY17-21: $1,697,628.7

FY17	FY18	FY19	FY20	FY21
Auth: $224,703.5	$492,750.4*	$420,259.3*	$319,845.2*	$240,070.3*

Requests include 9% GA.

* Some components have progressed ahead of schedule necessitating a shift in funding among remaining years.

Funding From Non-EVOSTC Sources FY17-21: $0

FY17	FY18	FY19	FY20	FY21
$0	$0	$0	$0	$0

Total Past EVOSTC Funding Authorized (FY17): $224,703.5

Total EVOSTC Funding Authorized (FY17) and Requested (FY18-21): $1,697,628.7

Total Non-EVOSTC Funding (FY17-21): $0

Abstract:

**This abstract is excerpted from the PI's Proposal, dated 8/23/17.*

The long-term health of fisheries is of crucial importance for the economic health of our coastal communities and for the food security of our nation. Therefore, the causes and consequences of changes in stock abundance merit careful scientific evaluation. The causes of the collapse of the Prince William Sound (PWS) Pacific herring stock are controversial, and the reasons for the lack of recovery remain a mystery. In the research proposed here we interrogate the genome structure and genome function of PWS fish to test hypotheses about the causes and consequences of the collapse, by revealing ecological, evolutionary, and genetic mechanisms governing the demographic trajectory of PWS fish over the past ~30 years. Conspicuous events that coincided with the dramatic PWS collapse include the *Exxon Valdez* oil spill (EVOS) four years previous, and the emergence of disease. We test hypotheses concerning the effects of oil exposure, the effects of disease challenge, and their potential interactive effects, on herring health and fitness. We will test predictions and hypotheses by reconstructing genome-wide genetic change through time (over the past 30 years) in PWS fish, and compare this to population genetic change through time in two reference site populations. Furthermore, a series of laboratory-based experiments will test for population differences in their response to oil exposure in early life and subsequent resilience to pathogen exposures. Physiological measurements and patterns of genome-wide gene expression will serve to reveal similarities and differences in mechanisms of response to these stressors between PWS and reference population fish. These studies should provide novel insights into the causes and consequences of recent dramatic demographic changes in PWS fish, potentially inform novel intervention strategies, and provide modern genomic resources for management and conservation of Pacific herring.

FY18 Funding Recommendations:

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

Science Panel Comments – FY18

Date: September 2017

The Panel was pleased to see the integration with Paul Hershberger's disease work, linking them to see if see if there is a genomic change in response to these different pathogens in the PWS herring population. The Panel appreciates that goals are being achieved ahead of schedule and cost-effectively, allowing for additional samples at other locations. The Panel approves the shift of funds from future years to FY18 to get the postdoc onboard to work with the data being generated. There are many great collaborations being made. The Panel is excited to have the entire genome and transcriptome for herring mapped for other studies, including the possibility of adding more value to herring stock responses in Southeast Alaska. There might be another source of archived samples in Pacific Northwest (Doug Hay - Barkley Sound?).

Science Coordinator Comments – FY18

Date: September 2017

I concur with the Science Panel's comments.

PAC Comments – FY18

Date: September 2017

The PAC meeting was 28 September 2017 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Executive Director Comments – FY18

Date: September 2017

I concur with the recommendations of the Science Panel, Science Coordinator and Public Advisory Committee.

FY17 Funding Recommendations:

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

Science Panel Comments – FY17

Date: September 2016

This innovative proposal complements the Herring Research and Monitoring Program by conducting a retrospective (pre-spill to present) analysis of genome diversity and the potential impacts of oil exposure on immune deficiency, as well as an assessment of the ability of current genetic diversity to cope with ongoing disease issues. The current Herring Program is focused primarily on stock assessments and current factors affecting the lack of recovery (e.g., whale predation, disease monitoring, and recruitment issues). The Science Panel is supportive of the proposal because of the potential to answer important questions about the cause of the herring population crash as well as important genetic factors that may inhibit recovery. Notably, this project combines genome

(Whitehead) and disease (Hershberger) expertise, and makes use of valuable genetic samples archived by ADFG pre-spill to present. The Panel is quite enthusiastic about this new approach and opportunity to assess the evidence for mechanistic ties between oil and herring immune deficiency by bringing genomic expertise to bear on herring disease issues. The PI has an excellent track record of productivity and expertise. A major strength of the proposal is the utilization of fish tissues samples that have been archived for almost 30 years at ADFG. This work draws upon ADFG's existing tissue collection, in combination with advanced genomic techniques, to provide a unique (and possibly unparalleled) view into the population, genetic and evolutionary history of Alaskan herring before, during and after the oiling event. This unique opportunity to utilize ADFG samples, collected and archived across decades, will facilitate a novel approach to the pressing problem of lack of herring recovery and result in valuable information regarding the PWS herring genome.

The PI builds a strong case in support of the hypothesis that oil exposure has suppressed the immune response of herring to disease thereby contributing to the crash and slowing recovery of PWS herring. The PI is uniquely positioned to address this question given that he has found strong evidence that exposure to PAHs and oil on the Atlantic and Gulf Coasts respectively has suppressed immune responses of killifish. The PI works with Paul Hershberger, who has produced internationally groundbreaking herring disease work supported by EVOSTC funding. The second tier of experiments will rear disease-naïve herring embryos from PWS and two other stocks, expose embryos to oil, and determine if there is a difference in response and in genome diversity with disease response genes. Rearing and exposure of fish will take place in the laboratory of Paul Hershberger, who has vast experience in producing disease naïve fish. This research on herring immune deficiency will be valuable in determining the potential of PWS herring to resist disease after exposure to oil compared to other stocks and will be an important contribution to understanding the dynamics of PWS herring, as well as the potential for fish stocks in general exposed to other spills elsewhere. In addition, the research is valuable regardless of the outcome (i.e., whether the link between oil and herring immune deficiency is supported mechanistically and whether or not there is a genetic diversity bottleneck effect) as the proposed work has the potential to contribute significantly to our understanding of both the causes of herring decline and the failure to recover to date – key issues to the mission of the EVOSTC.

The proposal's costs have been reviewed and are found to be appropriate for this level of technological capacity and typical for these types of advanced genomic techniques.

General Comments:
The PWS herring population collapsed several years after the spill and has not since had a sustained period of incremental growth. Scientific reports that describe potential causative linkages are matched by an approximately equal number of reports that describe alternative explanations for either the collapse, or lack of sustained recovery, or both. In short, even after several decades of research, we are still uncertain about whether there have been any long-term impacts of the spill on herring, or the herring collapse in 1993-94 and the lack of any sustained recovery. This project has the greatest potential to have a retrospective look at the past in a scientifically meaningful way.

This proposal has an unprecedented capacity to apply novel, highly technical research on Alaskan herring genomics to actually test the hypothesis that exposure to oil during the egg (or embryo) and early larval stages has led to a decrease in the genetic capacity of PWS herring to resist naturally-occurring, endemic disease organisms. This retrospective genome determination from archived

genetics samples would determine if present-day PWS herring would be detectably different than their ancestors residing in PWS prior to the spill, and from other Alaskan herring populations. The proposal consists of several tests. One would be based on a time-series analyses of archived samples of herring collected and stored annually since the spill to test for change in the frequency of alleles related to disease resistance or susceptibility in PWS versus areas that were not exposed to oil. A related test of differences in disease resistance of PWS herring from other herring would be based on laboratory experiments of reared herring from PWS and two other populations.

The proposal is important to EVOSTC and the State of Alaska. It addresses the most fundamental question of the herring program: what is the impact of the spill on herring and what factors are now affecting recovery? This project builds off the current herring monitoring program, and, most importantly, builds off the unique collection of archived herring collections from ADFG, the work proposed in this proposal, regardless of the results, will reflect positively on the EVOSTC. Moreover, the proposed work will likely have worldwide implications and applications for coastal marine fishes.

Specific Technical Comments:
As is often the case with such novel, groundbreaking proposals, the Panel had a number of questions that the PI should address and submit to EVOSTC before reaching a final decision on the recommendation for funding the proposal. We are confident, given the expertise and track record of the investigators, that the PIs will submit appropriate details to these comments:

1. Add technical detail on pathogen exposure experiments. The Panel had several questions that need clarification. Which pathogens will fish be exposed to? Are these from purified sources that can be used at different times of exposure? Given the population differences and pathogen responses, this is a key detail that needs to be included. Will embryos/larvae from the different populations be tested simultaneously for oil and disease exposure in the lab? If not what assurances will be made that exposure (oil as well as pathogens) conditions are identical across populations? For example, how reproducible is the oiled gravel treatment and the pathogen challenge? What steps will be taken to ensure and verify this reproducibility? What will be the age of embryos at collection? That is, 10-14 day embryos may have a different transcriptome than 5-7 day embryos because they might have been exposed to environmental stressors such as UV, desiccation and salinity changes.

2. Aim 3 needs more details on replication, exposure duration and intensity.

3. Functional annotation of genes. It would be useful to mention existing genomic resources for similar species to assure the Panel that these genes and others of potential relevance can be identified and the genome annotated.

4. Add detail on retrospective population genomics sampling. Please provide information on where fish were sampled and the age classes of collected fishes to clarify how the longitudinal time series will be interpreted. For example, age 3 fish collected in 1993 would not have been exposed to oil, but age 8 would have been. Additional information is needed to ensure that samples were representative of the population at the time of sampling and that sample numbers are sufficiently large and were preserved in such a way that genomic level data can be recovered from the samples.

5. Ignoring alleles with less than 5% frequency. While this makes sense, with N=50 individuals, this means that genotypes with fewer than 3 individuals will be discarded. Depending on the degree of polymorphism, if diverse populations have large numbers of rare genotypes, this could result in many genotypes being ignored. This is a question, especially if disease perhaps maintains diversity via negative frequency dependent selection. It would be helpful if the PI could address this potential issue.

6. Clarify Hershberger's role and budget needs. There appears to be considerably more effort from Hershberger than indicated by the total dollar request. We assume that this is the result of "in-kind" contributions, but it would be good to document the source of those funds so that we can both be assured that they will happen and to account for any leveraging of funds. The Panel noted that this sort of in-kind contribution might be time sensitive and this is another very good reason to support funding the project in this cycle.

7. Add additional detail on the budget. Please clarify budget details for each objective to allow the reviewers and Trustees to know what the cost for each piece of the work would be and to assess what funds from other projects (both those funded by EVOSTC and others) might be being already leveraged in this proposal (see #6).

Science Coordinator Comments – FY17

Date: September 2016

This proposal comes from a highly qualified team and offers a new and novel approach. I concur with the Panel's comments and recommendations for further detail.

Executive Director Comments – FY17

Date: September 2016

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

Public Advisory Committee Comments – FY17

Date: September 2016

The PAC meeting was Sept. 22, 2016 and fund recommendations are included in the table above. Any project-specific comments from that meeting will be added to the Work Plan when the comments are finalized in the meeting notes.

Cross Program Publication Group
Project Descriptions

No Projects Submitted for FY18.

Exxon Valdez Oil Spill Trustee Council

Procedures for the Preparation and Distribution of Reports

Adopted: _____ 2017

Table of Contents

Exxon Valdez Oil Spill Trustee Council

Procedures for the Preparation and Distribution of Reports

I. INTRODUCTION

These *Procedures for the Preparation and Distribution of Reports* provide instructions regarding the preparation, peer review, printing and distribution of reports for scientific and technical programs and projects funded by the *Exxon Valdez* Oil Spill Trustee Council. For projects that are not scientific or technical, please contact the EVOSTC office regarding any reporting requirements.

A. Additional Guidelines

These *Procedures for the Preparation and Distribution of Reports* update and supersede earlier versions of this document and should be read together with the report writing guidelines published by the *Journal of Wildlife Management:*

> Krausman et al. 2016. Journal of Wildlife Management Author Guidelines.
>
> http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1937-2817/homepage/ForAuthors.html

Comment [HDW1]: Updated link to JW… Report Writing Guidelines

To the extent that there are any inconsistencies between these *Procedures for the Preparation and Distribution of Reports* and the guidance provided by Krausman, et al. 2016, the instructions provided in these *Procedures* shall be followed.

B. Project Numbers

For purposes of identification each project is assigned a unique number.

1. **Final Report Number –** The project number that appears on the final report will be the number of the final year of funding.
2. **Projects Funded from FY 2010 to Present –** These projects have eight-digit project numbers:
   - a) the first two digits designate the current funding year,
   - b) the second two digits represent the year the initial funding was authorized by the Trustee Council, and
   - c) the last four digits are the unique project identifier.
3. **Trustee Council-Funded Programs –** Programs are given an eight-digit number that follows the same numbering scheme as

described above. Each project within a program receives the program's eight-digit number with the addition of a letter designation beginning at "A".

4. **Amendments –** Projects that submit amendments receive a designation of "Am" followed by the date of the amendment.

5. **Examples –**

   a) **Projects –**

   10071234 indicates the project received funding in 2010.

   10071234 indicates the project was initially funded by the Council in 2007.

   10071234 can be cross-referenced with projects from other funding years such as 071234, 081234, etc.

   10071234-Am12.12.10 indicates an amendment to project 10071234, adoption date December 12, 2010.

   b) **Programs –**

   12120114 indicates the Long-Term Monitoring Program.

   12120114-A indicates a project within the Long-Term Monitoring Program.

   12120114-A-Am12.12.12 indicates an amendment adoption date December 12, 2012 to a project within the Long-Term Monitoring Program.

6. **Previous Numbering Conventions –** Over time the Trustee Council's project numbering system has evolved to meet the changing needs of the Restoration Program. For information on previous project numbering conventions, *See* Attachment A, *How to Find EVOSTC Project Reports*.

II. FINAL REPORTS

A. Preparation of Final Reports

1. **Content Format –** Authors shall follow the monograph style format set out below to prepare final reports. If the use of chapters are preferred, the chapters will come after the Objectives Section and replace the Methods, Results and Discussion sections described in II (A) (1). Reports shall meet normal scientific standards of completeness and detail that permit an independent scientific reader to evaluate the reliability and validity of the methods, data and analyses. Submissions must be in electronic format, as a Microsoft Word document with any figures and tables embedded, and watermarked "DRAFT".

Comment [WHD2]: Edited for clarity

Comment [HDW3]: Throughout the document, it has been changed to require submissions be in electronic format; deleted "may"; added clarification of submission format requirements

a) **Report Cover –** An example of a final report cover is provided. *See*, Attachment B. A final report cover shall:

i. identify the report, using the appropriate series title, for example:

(a) *Exxon Valdez* Oil Spill Restoration Project Final Report,

(b) *Exxon Valdez* Oil Spill Long-Term Monitoring Program (Gulf Watch Alaska),

(c) *Exxon Valdez* Oil Spill Long-Term Herring Research and Monitoring Program, or

(d) other series that may be designated by the Trustee Council.

ii. provide report title;

iii. include the project identification number;

iv. identify the author(s) with appropriate affiliation(s);

v. include the date (month and year) of publication; and

vi. include the following non-discrimination statement toward the bottom of the page on the inside front cover:

"The *Exxon Valdez* Oil Spill Trustee Council administers all programs and activities free from discrimination based on race, color, national origin,

age, sex, religion, marital status, pregnancy, parenthood, or disability. The Council administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972. If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information, please write to: EVOS Trustee Council, 4230 University Drive, Ste. 220, Anchorage, Alaska 99508-4650, or dfg.evos.projects@alaska.gov; or O.E.O., U.S. Department of the Interior, Washington D.C. 20240."

Comment [HDW4]: Updated EVOSTC mailing and email addresses

b) **Title Page –** The Title Page of the report shall immediately follow the report cover page and non-discrimination statement and be identical in content and format to the front of the report cover page. *See*, Attachment B.

c) **Study History, Abstract, Key Words, Project Data and Citation** – Following the Title Page, the report shall include, on not more than two pages: a study history; an abstract; key words; summary of data gathered during the project; and a recommended citation for the final report. *See*, Attachment B.

i. *Study History* – A brief study history shall include reference to any prior project numbers; changes in the title of the project or report over time; annual project reports or other reports which contributed to the final report; and citation of publications that have preceded publication of the final reports. If the final report includes information regarding related projects or synthesis, the study history should reference this information.

ii. *Abstract* – An abstract, with a maximum length of 200 words, shall enable readers to quickly identify the basic content of the report, determine its relevance to their interests and thus decide whether to read the document in its entirety. If the final report consists of several chapters or

manuscripts, the abstract shall summarize the entire report. *See*, Use of Manuscripts for Final Report Writing, II (A) (3). Do not use abbreviations or acronyms in the abstract. This abstract is submitted by the Alaska Resources Library and Information Services (ARLIS) to the National Technical Information Service.

iii. *Key Words* – A short list of key words, up to 12 **in alphabetical order**, shall be provided. Include words from the title and others that identify:

(a) common and scientific names of principal organisms, if any;

(b) geographic area or region;

(c) phenomena and entities studied (e.g., behavior, reproduction);

(d) methods (only if the report describes a new or improved method); and

(e) other words not covered above but useful for indexing.

iv. *Project Data* – A summary of the data collected during the project shall be provided in order to preserve the opportunity for other researchers and the public to access this data in the future. The summary shall:

(a) describe the data;

(b) indicate the format of the available data collections;

(c) identify the archive in which the data have been stored or the custodian of the data (including contact name, organization, address, phone/fax, e-mail, and web address where data may be acquired); and

(d) indicate any access limitations placed on the data. Limiting access requires written pre-approval by the Trustee Council Office.

v. *Citation* – A recommended citation for the final report shall be provided. *See*, Attachment B for the correct citation format.

d) Table of Contents – including Lists of Tables, Figures and Appendices.

e) Executive Summary – The executive summary shall:

i. consolidate principal points of the report in one place and provide enough detail for the reader to understand the significance of the report without having to read it in full;

ii. be written so that it can be understood independently of the report (i.e., it must not refer to figures, tables or references contained elsewhere) and all acronyms, uncommon symbols, and abbreviations must be spelled out;

iii. not exceed four singled-spaced pages;

iv. concisely state the objectives, methods, results and conclusions of the report and reference any related projects or synthesis; and

v. be organized in the same manner as the report it summarizes.

f) Introduction – The introduction shall reference any related projects or synthesis, where appropriate, and:

i. clearly present the nature and scope of the problem investigated, including the general area in which field activities were conducted; and

ii. review pertinent literature, state the method(s) of investigation and briefly state principal results.

g) Objectives – The statement of objectives shall be the same as the objectives identified in the approved proposal. If the objectives have changed, describe what has changed and why.

i. If using chapters, the chapters for which the objectives are described will be listed in this section. For example:

Objective 1: Document location, timing, and direction of Pacific herring seasonal migrations (Chapter 1)

Objective 2: Relate large-scale movements to year class and body condition (Chapter 2)

Comment [WHD5]: Section added to address further clarity in report

h) **Methods** – The discussion of methods shall include a clear description of the study area. To the extent the methodology differs from that described in the proposal, explain the reason for the deviation.

i) **Results** – The presentation of results shall provide an objective and clear presentation of the data collected.

j) **Discussion** – The discussion section shall:

i. interpret the study results and explore the meaning and significance of the findings, including alternative interpretations of the results;

ii. discuss whether the study hypotheses are upheld or disproven;

iii. note where there are unanswered questions; and

iv. where appropriate, cite relevant findings from other *Exxon Valdez* oil spill restoration studies, including published literature.

k) **Conclusions** – This shall be a brief, clear statement of the conclusions that are apparent from the discussion. Major unanswered questions shall be identified.

l) **Acknowledgments**

m) **Literature Cited**

n) **Peer-Reviewed Publications** – Provide a list of all peer-reviewed publications that were published based on work completed by this specific project.

o) **Other References –** List any presentations (indicate oral or poster and name of conference and date), reports, or outreach materials that were created based on the work of this project. Provide links to the materials that are publicly available and the location and audience for any listed presentations. For example:

Cushing, D., K. Kuletz, R. Hopcroft, S. Danielson, and E. Labunski. 2017. Shifts in cross-shelf distribution of seabirds in the northern Gulf of Alaska under different temperature regimes, 2007-2015. Poster Presentation. The 44th Meeting of the Pacific Seabird Group, Tacoma, WA. 25-29 January.

Comment [HDW6]: Edited for clarification; example added

2. **Technical Format –** The following guidelines shall help provide consistent formatting:

a) **Word Processing Conventions**

i. *Standard Settings*

Line

Line spacing:	single
Hyphenation:	off (i.e., do not hyphenate at right margin)
Justification: margins)	left (i.e., do not right-justify
Margins:	1 inch at top, bottom 1 inch at left, right
Tabs:	every 0.5 inch
Widow Protection:	yes

Page

Page numbers:

Position:	bottom center
No numbers:	cover, OEO/ADA page (inside of front cover), title page
Roman numerals:	lower case (i, ii, iii, iv, v, vi, etc.); front matter, includes Study History, Table of

Contents, List of Tables, List of Figures, and List of Appendices.

Arabic numbers: (1, 2, 3, etc.); narrative, beginning with the Executive Summary.

Header: none

Watermark: **DRAFT** (all pages)

Comment [HDW7]: New requirement, so that submitted reports not yet accepted will be easily identified

Font
Times: 12 point
Note: If Times is not available, some other serif font shall be used (e.g., Palatino, Bookman or New Century Schoolbook).

ii. *Literature Citations* – For citations, use the format below. Start each citation with a hanging indent as shown:

Byrd, G.V., D. Gibson, and D.L. Johnson. 1974. The birds of Adak Island, Alaska. Condor 76:288-300.

Comment [HDW8]: Edited for clarification, no substantive change

b) Other Conventions

i. *Electronic Format* – Submissions must be in electronic format. An electronic report or summary shall be submitted as a Microsoft Word document with all figures and tables embedded.

ii. *Italics* – Use italics, rather than underlining, for Latin names and for *Exxon Valdez*.

iii. *Terms for oil spill* – When referring to the oil spill that occurred because the *Exxon Valdez* ran aground, use *Exxon Valdez* oil spill. After the first mention of the *Exxon Valdez* oil spill, refer to it simply as the spill.

iv. *Acronyms* – Clearly define any acronyms. Avoid the use of acronyms completely in the Abstract and Executive Summary.

v. *Terms* – Use the terms "damages" and "injury" as defined by CERCLA regulations (*See*, 43 CFR 11.14):

(a) *"Damages"* means the amount of money sought by the natural resource trustee as compensation for injury, destruction or loss of natural resources.

(b) *"Injury"* means a measurable adverse change, either long or short-term, in the chemical or physical quality or the viability of a natural resource resulting either directly or indirectly from exposure to a discharge of oil. Injury encompasses the phrases "destruction" and "loss".

(c) *"Destruction"* means the total and irreversible loss of a natural resource.

(d) *"Loss"* means a measurable adverse reduction of a chemical or physical quality or viability of a natural resource.

3. Use of Manuscripts for Final Report Writing – The Trustee Council encourages Principal Investigators to publish the results of their work in peer-reviewed journals. With the written approval of the Trustee Council's Science Coordinator, and on a project-by-project basis, manuscripts or journal articles may be used to satisfy project final report writing requirements.

a) Authority to Use Manuscripts – Principal Investigators shall contact the Science Coordinator to request written approval to use a manuscript(s) as the body of a final report.

b) Objectives – Because final reports are the primary and permanent record of how Trustee Council funds have been spent and what has been accomplished with those funds, it is necessary that these reports address all of the objectives for which the Trustee Council has provided funds.

i. If all of the project's objectives are completely described within one or more manuscripts being prepared for publication, a copy of the manuscript(s) may be submitted as the entire body

of the report. *See*, Standard Format requirements, II (A) (3) (c).

ii. If a project's objectives are not all described completely within one or more manuscripts, the manuscript(s) may serve as a portion of the report. For example, if only two of five objectives are addressed in a manuscript, the report shall include – in addition to the manuscript – information on the three objectives not covered in the manuscript. The two objectives covered by the manuscript shall be referenced in the report as appropriate (e.g., in the Methods and Results sections) and substantially integrated into the Discussion section, where there shall be an overall discussion of the project. In such cases, the combination of the manuscript and additional report material shall present an organized, integrated and complete account of the project activities and results.

c) **Standard Format –** Every report, regardless of whether it is in the standard format or includes manuscripts, shall adhere to the formatting prescribed for the Report Cover, Title Page, Study History, Abstract, Key Words, Project Data and Citation. *See*, Content Format, II (A) (1).

d) **Copyright and Publication Rights –** When a manuscript is used to fulfill report writing requirements, it must be in a form that can be duplicated freely and posted on the Trustee Council website. This may require obtaining permission from the publisher. When appropriate:

i. the author shall provide the Trustee Council Office with a copy of the publisher's written permission to duplicate and post the article as part of the report.

ii. the statement "This article is reprinted with permission from the publisher." shall precede the journal article(s) in the report.

e) **Disclaimer Statement –** Investigators seeking to publish the results of Trustee Council-sponsored projects shall include the following statement with all manuscripts:

"The research described in this paper was supported by the *Exxon Valdez* Oil Spill

Trustee Council. However, the findings and conclusions presented by the author(s) are their own and do not necessarily reflect the views or position of the Trustee Council."

f) **Reprints –** Investigators who publish the results of Trustee Council-sponsored projects shall provide the Trustee Council Office (attention: Science Coordinator at dfg.evos.projects@alaska.gov) an electronic copy with reprint rights.

Comment [HDW9]: Updated to reflect current practice

4. **Due Date**

a) **Due Dates –** Unless a different date is specified in the approved proposal or contract, draft final reports shall be submitted for peer review by March 1 in the year following the fiscal year in which project work was completed. For a February 1-January 31 fiscal year, the report is due by March 1 immediately following the end of the fiscal year. Submissions must be in an electronic format, and shall be submitted as a Microsoft Word document with any figures and tables embedded, and watermarked "DRAFT".

Comment [WHD10]: New requirement

b) **Request for Extension –** If the due date cannot be met, the Principal Investigator shall file an extension request with the Science Coordinator at least 15 days prior to the due date. The request must be in writing and state a reason the report will be late. With approval of the Executive Director, an alternative final report due date may be identified.

B. Review Process: Final Reports

Comment [HDW11]: **The peer review process has been an issue in timely** publication of reports. This section has been streamlined to clarify and define the review process, responsibilities and requirements.

1. **For Projects which are not in a Trustee Council-funded Program -** The Principal Investigator's Agency Liaison or Institution Liaison will conduct a review for completeness, provide comments, identify questions, and suggest revisions as appropriate for the draft final report. If applicable, draft final reports will also go through an agency or institution internal review.

2. **For Projects within a Trustee Council-funded Program –** Program Leads, and if applicable, the Program Coordinator or similar member(s) of a program leadership team will conduct a review for completeness, provide comments, identify questions, and suggest revisions as appropriate for the draft final report. It is also

strongly suggested that a member of the Program's Science Review Panel conduct a review of the draft final report.

3. **Revision and Submission**

a) **Revision –** Within 30 days of receiving review comments, Principal Investigators will revise their draft final reports to address review comments.

b) **Submission –** After revision, Principal Investigators will submit one (1) electronic copy of the revised draft final report to the Science Coordinator via email (dfg.evos.projects@alaska.gov) or via Research Workspace for review. The electronic copy shall be submitted as a Microsoft Word document with any figures and tables embedded, and watermarked "DRAFT". If needed, the Science Coordinator may request a copy of the reviewers' comments and authors' responses.

c) **Format Review –** Once the content of the report is accepted by the Science Coordinator, the Science Coordinator will send an electronic copy of the final report as a Word file to EVOSTC's Librarian at ARLIS for format review.

d) **Revisions –** Within 15 days of receipt of the draft final report, EVOSTC's Librarian shall review it for compliance with the report format standards, remove all references to "draft", and make any revision needed for format compliance. If necessary, the draft final report may be returned to the Principal Investigator for completion of required revision.

e) **Approval –** the Science Coordinator shall notify the Principal Investigator, Project Manager, EVOSTC's Librarian at ARLIS, and Program Leads, where applicable, by email of final report acceptance and format approval, and will include an attachment of the final copy of the report.

C. Printing and Distribution Process

1. **Reproduction and Number of Copies –** Printed hard-copies of final reports will be produced by ARLIS. After emailed confirmation to the Principal Investigator indicating acceptance of the final report and format, ARLIS staff will produce five (5) two-sided, bound copies of the report.

Comment [HDW12]: This section has been edited to simplify, clarify and define the revision/resubmission and acceptance processes, responsibilities and requirements.

2. **Binding –** ARLIS staff will bind copies of the final reports using comb binding.

3. **Distribution of Final Reports –** ARLIS staff shall add three copies of final reports to the ARLIS collection and send two bound copies of final reports to the Trustee Council Office for the Science Coordinator and the Trustee Council's Official Record. Final reports, in locked PDF format, shall be posted on the Trustee Council website at www.evostc.state.ak.us. ARLIS will provide URLs for final reports to the Alaska State Library and National Technical Information Service (NTIS) to fulfill state and federal depository requirements. *See*, Attachment A, *How to Find EVOSTC Project Reports*.

III. ANNUAL PROJECT REPORTS AND ANNUAL PROGRAM STATUS SUMMARY

A. Projects not in a Trustee Council-Funded Program

1. **Annual Project Report –** The Principal Investigator for a project is responsible for the submission to the Trustee Council of an annual project report.

2. **Multi-Year Projects –** An annual project report shall be submitted each year until the project is completed, at which time a final report shall be submitted.

3. **Due Date –** Unless a different date is specified in the approved proposal or contract, annual project reports shall be submitted for each fiscal year for which a project received funding. For a February 1-January 31 fiscal year, annual reports are due by March 1 immediately following the end of the fiscal year. Submissions must be submitted as a Microsoft Word document with any figures and tables embedded.

B. Trustee Council-Funded Programs and Projects within a Program

1. **Annual Project Reports –** The Principal Investigator for a project within a Trustee Council-funded program is responsible for production of an annual project report for submission to the Trustee Council by the Program Leads, as required in III (B) (3) (b).

2. **Multi-Year Projects –** An annual project report shall be submitted each year until the project is completed, at which time a final report shall be submitted.

3. **Program Lead Submission –** Program Leads are responsible for:

   a) collecting, reviewing and collating the annual project reports from the individual projects within the program, including any agency projects;

   b) submission to the Trustee Council of:

      i. the annual project reports from the individual projects within the program; and

      ii. an annual program status summary.

4. **Due Date –** Unless a different due date is specified in the approved proposal or contract, annual project reports and annual program status summaries shall be submitted for each fiscal year for which a project within a Trustee Council-funded program received funding. For a February 1-January 31 fiscal year, the annual project report and annual program status summary are due by March 1, immediately following the end of the fiscal year. Submissions must be submitted as a Microsoft Word document with any figures and tables embedded. Documents can be submitted to Science Coordinator either by email (dfg.evos.projects@alaska.gov) or via the Research Workspace digital platform.

Comment [WHD13]: Edited to clarify submission pathways.

C. **Annual Project Report Content –** Content of annual project reports, including for projects within a Trustee Council-funded program, shall include the information listed below and be submitted on the appropriate form. *See*, Attachment C for the report form and Attachment E or F for the budget form, as appropriate.

1. **Project Number**

2. **Project Title**

3. **Principal Investigator's Name(s) –** Include the Principal Investigator's name and the names of any researchers submitting the report.

4. **Time Period Covered by the Report–** The annual reports will report on the prior fiscal year's work.

5. **Date of Report–** Specify month and year.

6. **Project Website –** If applicable.

7. **Summary of Work Performed –** This section shall include a brief summary of work performed during the reporting period, including any results available to date, scientific findings, and their relationship to the original project objectives. Discuss the evolving status of the working hypothesis in light of the research findings obtained to date. Any deviation from the original project objectives, procedures or statistical methods, study area, or schedule shall be included. Any known problems or unusual developments, and any other significant information pertinent to the project shall also be described. Detail or highlight any noteworthy finding relating to the project. Budget issues can be detailed in the Budget section (11), below.

8. **Coordination and Collaboration –** For this section, provide information on coordination and collaboration with:

   a) **Projects Within a Trustee Council-Funded Program –** Provide a list and clearly describe the functional and operational relationships, where applicable, with other Trustee Council-funded program projects that occurred during the reporting period. This includes what form the coordination took (e.g., shared field sites or researchers, research platforms, sample collection, data management, equipment purchases, etc.). Suggested subheadings:

      (1) Within the Program

      (2) Across Programs

         (a) Gulf Watch Alaska

         (b) Herring Research and Monitoring

         (c) Data Management

         (d) Lingering Oil

   b) **Projects not Within a Trustee Council-funded Program –** Indicate how the project relates to, complements or includes collaborative efforts with other projects funded by the Trustee Council that are not part of a Trustee Council-funded program.

Comment [WHD14]: Example added

c) **With Trustee or Management Agencies –** Please discuss if there are any aspects of the project which have supported EVOSTC trust or other agency work or which have received EVOSTC trust or other agency feedback or direction, including the contact name(s) of the agency staff. Please include specific information as to how the subject area assisted the EVOSTC trust or other agency work. If the project required or included collaboration with other agencies, organizations or scientists to accomplish this work, such arrangements should be fully explained and the names of agency or organization representatives involved in the project should be provided. If the project is in conflict with another project, note this and explain why.

9. **Information and Data Transfer –** This section shall list, for the reporting period:

a) publications produced during the reporting period;

b) dates and locations of any conference or workshop presentations where EVOSTC-funded work was presented. Indicate oral or poster presentation;

For example:

Cushing, D., K. Kuletz, R. Hopcroft, S. Danielson, and E. Labunski. 2017. Shifts in cross-shelf distribution of seabirds in the northern Gulf of Alaska under different temperature regimes, 2007-2015. Poster Presentation. The 44th Meeting of the Pacific Seabird Group, Tacoma, WA. 25-29 January.

c) data and/or information products developed during the reporting period, if applicable; and

d) data sets and associated metadata that have been uploaded to the program's data portal.

10. **Response to EVOSTC Review, Recommendations and Comments –** Describe how the project has addressed recommendations from EVOSTC reviews, including from the EVOSTC Trustees, Science Panel and Staff.

11. **Budget –** For this section,

a) for a project not within a Trustee Council-funded program, complete the column 'Actual Cumulative' on the Summary

Comment [HDW15]: Clarified, with ex added

Page of the Project Budget Proposal and Reporting Form, submitted with the original proposal, form available on the EVOSTC website and at Attachment E;

b) for a project within a Trustee Council-funded program, complete the column 'Actual Cumulative' on the Summary Page of the Program Project Budget Proposal and Reporting Form, submitted with the original proposal, form available on the EVOSTC website and at Attachment F; and

c) on the Annual Project Report Form, form at Attachment C, provide any information required by the Financial Policy Section II regarding budget adjustments from the authorized level of funding.

Comment [HDW16]: Streamlined for clarity

D. **Annual Program Status Summary Content –** Content of the annual program status summary shall include the information listed below and be submitted on the appropriate form. *See*, Attachments D and F.

1. **Program Number**

2. **Program Title**

3. **Program Lead Name(s) –** Include the name of the Program Lead submitting the summary.

4. **Time Period Covered by the Summary –** The annual project reports and annual program status summary will report on the prior fiscal year's work.

5. **Date of Summary –** Specify month and year.

6. **Program website –** If applicable.

7. **Overview of Work Performed during the Reporting Period –** Include any results available to date; the overview of work shall contain, for the reporting period:

   a) progress toward addressing hypotheses and achieving goals;

   b) detail or highlight of any noteworthy issues or findings relating to the program and projects within the program;

   c) description of efforts undertaken to achieve the community involvement/traditional ecological knowledge

(TEK) and resource management application provisions of the proposal, if applicable;

d) any known problems or unusual developments; and

e) any other significant information pertinent to the program.

8. Coordination and Collaboration – For this section, provide information on coordination and collaboration with:

a) Projects within a Trustee Council-Funded Program – Provide a list and clearly describe the functional and operational relationships, where applicable, with other Trustee Council-funded program projects that occurred during the reporting period. This includes what form the coordination took (e.g., shared field sites or researchers, research platforms, sample collection, data management, equipment purchases, etc.). Suggested subheadings:

(1) Within the Program

(2) Across Programs

(a) Gulf Watch Alaska

(b) Herring Research and Monitoring

(c) Data Management

(d) Lingering Oil

Comment [WHD17]: Example added

b) Projects not within a Trustee Council-Funded Program – Indicate how the program relates to, complements or includes collaborative efforts with other projects funded by the Trustee Council that are not part of a Trustee Council-funded program.

c) With Trustee or Management Agencies – Please discuss if there are any aspects of the program which have supported EVOSTC trust or other agency work or which have received EVOSTC trust or other agency feedback or direction, including the contact name(s) of agency staff. Please include specific information as to how the subject area assisted the EVOSTC trust or other agency work. If parts of the program required or included collaboration with other agencies, organizations or scientists to accomplish the work, such arrangements should be fully

explained and the names of agency or organization representatives involved should be provided. If the program is in conflict with another program or project, note this and explain why.

9. **Information and Data Transfer** – For this section, list, for the reporting period:

   a) publications produced;

   b) dates and locations of any conference or workshop presentations. Indicate oral or poster presentation;

      For example:

      Cushing, D., K. Kuletz, R. Hopcroft, S. Danielson, and E. Labunski. 2017. Shifts in cross-shelf distribution of seabirds in the northern Gulf of Alaska under different temperature regimes, 2007-2015. Poster Presentation. The 44th Meeting of the Pacific Seabird Group, Tacoma, WA. 25-29 January.

   c) data and/or information products developed, if applicable; and

   d) data sets and associated metadata that have been uploaded to the program's data portal.

10. **Response to EVOSTC Review, Recommendations and Comments** – Describe how the program has addressed recommendations from EVOSTC reviews, including those from the EVOSTC Trustees, Science Panel and Staff.

11. **Budget** – For this section, complete the column 'Actual Cumulative' on the Summary Page of the Program Budget Proposal and Reporting Form, submitted with the original proposal, form available at the EVOSTC website and at Attachment F.

E. Submission, Review and Distribution

1. **Submission for Review** – The Principal Investigator, or Program Lead, as applicable, shall electronically submit each report as a separate electronic document to the Science Coordinator, at dfg.evos.projects@alaska.gov or via the Research Workspace digital platform.

Comment [HDW18]: Clarified, with example added

Comment [HDW19]: This section edited for clarity

a) **Subject Line –** The subject line of the e-mail transmitting the annual project report or summary must include the project number and the words "annual project report" (e.g., "035620 Annual Project Report), or "annual program status summary" (e.g., "035620 Annual Program Status Summary").

b) **Electronic Format –** Submissions must be in electronic format. An electronic report or summary shall be submitted as a Microsoft Word document with all figures and tables embedded.

2. **Review Process –** Annual project reports and annual program status summaries shall be reviewed by the Science Coordinator. These reports and summaries shall also be reviewed by the Program's Science Review Panel and the Trustee Council's Science Panel. The review process may be used to determine whether continued funding of the project is warranted and to guide further work on the project. Any written comments on a report or summary shall be provided to the Principal Investigator(s) or Program Lead(s), as applicable, and kept on file at the Trustee Council Office, available upon request.

Comment [WHD20]: Edited to clarify requirements and responsibilities

3. **Distribution –** Annual project reports and annual program status summaries shall be kept on file as public documents at the Trustee Council Office, available upon request. These reports and summaries shall also be posted on the Trustee Council's website at www.evostc.state.ak.us.

ATTACHMENT A ***How to Find EVOSTC Project Reports***

A list of EVOS Trustee Council (EVOSTC) final reports and annual (prior to 2002) reports is maintained at the EVOSTC website at www.evostc.state.ak.us/Publications/bibliographies.cfm.
EVOSTC reports are available as listed below. Reports are also submitted to the Alaska State Library and the National Technical Information Service in fulfillment of state and federal depository requirements.

Final project reports are available full-text at:

- EVOSTC website. The Trustee Council's database of restoration projects is searchable via Project Search by project number, researcher, or project title.
- ARLIS catalog. The catalog is searchable by title, project number, Principal Investigator, additional authors, series title, subject heading, and key words. A searchable notes field in the catalog record may describe the report and provide additional access points. When available from the catalog record, a link takes the researcher to the full-text report. Paper copies of reports are available for check-out at ARLIS and are loaned worldwide through interlibrary loan.
- National Technical Information Service (NTIS). Copies of most final reports can be purchased in electronic, paper or microfiche formats through NTIS at (703) 487-4650 or www.ntis.gov.

Annual project reports are available full-text at:

- EVOSTC website. The Trustee Council's database of restoration projects is searchable via Project Search by project number, researcher, or project title.
- ARLIS catalog. Annual reports for projects funded prior to 2002 are available full-text through the ARLIS catalog. Paper copies are available for check-out and are loaned worldwide through interlibrary loan.

Program Status Summaries are available full-text at the EVOSTC website. The Trustee Council's database of restoration projects is searchable via Project Search by project number, researcher, or project title.

Report Numbers: When locating a report, it may be helpful to understand how the reports are numbered. For purposes of identification each project is assigned a unique number. The project number that appears on the final report is the number of the final year of funding. Over time the Trustee Council's project numbering system has evolved to meet the changing needs of the Restoration Program.

- Natural Resource Damage Assessment (NRDA) Studies: Funded in 1989 to 1992, these studies were designated by alpha-numeric study numbers (e.g., MM6 for

"Marine Mammal Study 6" or FS2 for "Fish/Shellfish Study 2"). These reports were published in the series, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Annual Report, or *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report.

- Restoration Projects: In 1993 the Trustee Council shifted the program emphasis from damage assessment to restoration, and projects were given five-digit numbers. The first two digits indicate the funding year and the last three digits identify the individual project. Initially, continuing projects received a new project number each year, but in 1995 the Trustee Council began using the unique project identifier, and the same last three digits were used to identify an individual project each year it was funded. Large projects were divided into several smaller subprojects, and numbers and/or letters were added to the project number to identify these subprojects (e.g., 95320S or 95139C1). Some NRDA studies focused on restoration activities were continued as restoration projects in 1993. From 1993 to 2001 restoration project annual reports were published in the series, *Exxon Valdez* Oil Spill Restoration Project Annual Report. Beginning in 2002, annual reports were no longer published, but are available in electronic format at the EVOSTC website. Restoration project final reports are published in the series, *Exxon Valdez* Oil Spill Restoration Project Final Report.
- *Exxon Valdez* Oil Spill Gulf Ecosystem Monitoring and Research Program (GEM): These projects were funded between FY 2002 and FY 2006. GEM projects funded in 2002 have five-digit numbers as described above. GEM projects funded after FY 2002 have six-digit project numbers (e.g., 030647). The first two digits identify the fiscal year in which the project was funded, and the last four digits are the unique project identifier. Some early GEM report numbers are preceded by a "G", but this practice was discontinued. These final reports were published in the series, *Exxon Valdez* Oil Spill Gulf Ecosystem Monitoring and Research Project Final Report.
- Restoration Projects funded in 2003 to 2009: These projects have six-digit project numbers. The first two digits represent the fiscal year of funding and the last four digits are the unique project identifier. These final reports were published in the series, *Exxon Valdez* Oil Spill Restoration Project Final Report.
- Projects funded from FY 2010 to present: The projects have eight-digit project numbers: the first two digits designate the current funding year, the second two digits represent the year the initial funding was authorized by the Trustee Council, and the last four digits are the unique project identifier. Trustee Council-funded programs are given an eight-digit number that follows the same numbering scheme. Each project within a program receives the program's eight-digit number with the addition of a letter designation beginning at "A". Projects that submit amendments receive a designation of "Am" followed by the date of the amendment. These project final reports are published in the series, *Exxon Valdez* Oil Spill Restoration Project Final Report. Reports from projects within a

program are published in the series, *Exxon Valdez* Long-Term Monitoring Program (GulfWatch Alaska), *Exxon Valdez* Long-Term Herring Research and Monitoring Program, or other series that may be designated by the Trustee Council.

For assistance in locating EVOSTC final and annual reports, contact ARLIS at:

Alaska Resources Library and Information Services (ARLIS)
3211 Providence Drive, Suite 111 Library Building
Anchorage, AK 99508
(907) 27-ARLIS (272-7547)
reference@arlis.org www.arlis.org

ATTACHMENT B ***EVOSTC Final Report Example***

Exxon Valdez Oil Spill
Restoration Project Final Report

Comment [HDW21]: All pages watermarked DRAFT until format review is complete

Responses of River Otters to Oil Contamination: A Controlled Study of Biological Markers

Restoration Project 99348
Final Report

*This example cover page shows how to indicate the authors' (Ben-David, Bowyer, Duffy) affiliation when the report was done at the direction of an agency (ADF&G) and the agency wants to be acknowledged.

Merav Ben-David
R. Terry Bowyer
Lawrence K. Duffy

Institute of Arctic Biology
311 Irving Building
University of Alaska Fairbanks
Fairbanks, Alaska 99775

for:

Alaska Department of Fish and Game
Habitat and Restoration Division
333 Raspberry Road
Anchorage, Alaska 99518

September 1999

Exxon Valdez Oil Spill
Restoration Project Final Report

Responses of River Otters to Oil Contamination: A Controlled Study of Biological Markers

Restoration Project 99348
Final Report

Merav Ben-David
R. Terry Bowyer
Lawrence K. Duffy

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311 Irving Building
University of Alaska Fairbanks
Fairbanks, Alaska 99775

for:

Alaska Department of Fish and Game
Habitat and Restoration Division
333 Raspberry Road
Anchorage, Alaska 99518

September 1999

Responses of River Otters to Oil Contamination:
A Controlled Study of Biological Stress Markers

Restoration Project 99348
Final Report

Study History: Project 99348 originated from the need to better understand the effects of contamination by crude oil on biomarkers in river otters (*Lontra canadensis*). Previous studies demonstrated elevated levels of biomarkers in river otters from oiled areas compared with those from non-oiled areas throughout Prince William Sound, Alaska, shortly following the *Exxon Valdez* oil spill (EVOS). Although the data collected to date strongly indicated a correlation between oil contamination and physiological stress in river otters, this evidence required verification through controlled experiments as identified by the EVOS Trustee Council review process (1997). This 2-year project was conducted at the Alaska SeaLife Center in Seward, Alaska, USA, between April 1998 and March 1999. Additional funding was provided by the Council for completion of 3 manuscripts in FY 2000 for publication in a peer-reviewed journal.

Abstract: In this study, we experimentally determined the effects of oil contamination on river otters. Fifteen wild-caught male river otters were exposed to 2 levels of weathered crude oil (i.e., control, 5 ppm/day/kg body mass, and 50 ppm/day/kg body mass) under controlled conditions in captivity at the Alaska SeaLife Center in Seward, Alaska. Responses of captive river otters to oil ingestion provided mixed results in relation to biomarkers. Although hemoglobin, white blood cells, alkaline phosphates, and possibly interleukin–6 immunoreactive responded in the expected manner, other parameters did not. Aspartate Aminotransferase Alanine Aminotransferase haptoglobin did not increase in response to oiling or decrease during rehabilitation. In addition, although expression of P450-1A increased in captive river otters during oiling, several inconsistencies in the data complicated data interpretation. Nonetheless, we were able to establish that reduction in hemoglobin led to increase in energetic costs of terrestrial locomotion, decrease in aerobic dive limit, and potential increase in foraging time due to a decrease in total length of submergence during each foraging bout. We offer a theoretical physiological model to describe interactions between the different biomarkers and advocate the exploration and development of other biomarkers that will be independent of the heme cycle.

Key Words: Aerobic dive limit, Alaska, captivity, crude oil, CYP1A, hemoglobin, immuno-histochemistry, liver enzymes, *Lontra canadensis*, lymphocytes, oxygen consumption, quantitative RT-PCR.

Project Data: *Description of data* – data was collected from live animals held in captivity at the Alaska SeaLife Center. Blood and other tissues were sampled and processed in different laboratories. Additional samples are archived at the Institute of Arctic Biology, UAF. *Format* – All data were entered as Excel spreadsheets. *Custodian* – contact Merav Ben-David, Institute of Arctic Biology, 311 Irving Building, University of Alaska Fairbanks, Fairbanks, Alaska 99775.

Citation:

Ben-David, M., R.T. Bowyer, and L.K. Duffy. 1999. Responses of river otters to oil contamination: A controlled study of biological stress markers, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 99348), *Exxon Valdez* Oil Spill Trustee Council, Anchorage, Alaska.

Comment [HDW22]: Recognizes EVOSTC as publisher of this report

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

Form Rev. 9.14.17

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

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

Text

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

Text

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

Text

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

Text

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

Text

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

Text

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

Text

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

Text

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

Text

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

Text

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

Text

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

ATTACHMENT D ***EVOSTC Annual Program Status Summary Form***

Form Rev. 9.14.17

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

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

Text

2. Program Title: *See,* Reporting Policy at III (D) (2).

Text

3. Program Lead Name(s): *See,* Reporting Policy at III (D) (3).

Text

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

Text

5. Date of Summary: *See,* Reporting Policy at III (D) (5).

Text

6. Program Website: *See,* Reporting Policy at III (D) (6).

Text

7. Overview of Work Performed during the Reporting Period: *See,* Reporting Policy at III (D) (7).

Text

8. Coordination and Collaboration: *See,* Reporting Policy at III (D) (8).

Text

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

Text

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

Text

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

Text

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

ATTACHMENT E ***EVOSTC Project Budget Proposal and Reporting Form***

Form Rev. 8.11.16

For this Excel document, please see the Reporting Procedures page at the EVOS Trustee Council website.

ATTACHMENT F ***EVOSTC Program Budget Proposal and Reporting Form***

Form Rev. 8.11.16

For this Excel document, please see the Reporting Procedures page at the EVOS Trustee Council website.

FY18 EVOSTC Annual Budget
February 1, 2018 – January 31, 2019

For the actual amounts authorized for funding during a particular fiscal year, please see the Annual Funding Overview (AFO).

This budget provides a **12-month** allocation of Trustee Council activities. The program components are:

- Administration Management
- Data Management
- Science Program
- Public Advisory Committee (PAC)
- Habitat Program
- Trust Agency Project Management
- Trust Agency Funding
- Alaska Resources Library & Information Services (ARLIS)

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

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FY18 ANNUAL BUDGET SUMMARY INFORMATION - $2,261,585

The Council's FY18 Annual Budget is funded by the *Exxon Valdez* Oil Spill Investment Fund Research and Habitat sub-accounts, which are managed by the Alaska Department of Revenue. The following summary tables show budget allocations by component, budgeted amount, and include 9% General Administration (GA) costs. The remainder of the document provides additional detail for each component and, where applicable, the agency distribution for the funds.

Component	FY17 Total Budget	**FY18 Total Budget**
Administration Management	$740,380	$738,019
Data Management	$48,723	$33,463
Science Program	$224,213	$211,460
Public Advisory Committee (PAC)	$17,113	$9,701
Habitat Program	$732,698	$773,638
Trust Agency Project Management	$261,678	$261,024
Trust Agency Funding	$33,790	$44,690
Alaska Resources Library & Information Services (ARLIS)	$131,239	$189,590
Total	$2,189,834	**$2,261,585**

($71,751 increase)

Annual Budget Comparison					
Component	FY08	FY09	FY16	FY17	FY18
Administration	$743,824	$720,572	$707,030	$740,380	$738,019
Data Management	$214,294	$210,902	$67,035	$48,723	$33,463
Science Management	$457,242	$696,129	$399,121	$224,213	$211,460
Public Information & Outreach	$40,330	$183.665	$0	$0	$0
Public Advisory Committee (PAC)	$37,060	$48,505	$18,094	$17,113	$9,701
Habitat Program	$109,000	$109,000	$661,980	$732,698	$773,638
Trust Agency Project Management	$363,951	$354,339	$252,849	$261,678	$261,064
Trust Agency Funding	$29,975	$29.975	$35,970	$33,790	$44,690
Alaska Resource Library & Information Services (ARLIS)	$167,533	$177,565	$239,961	$131,239	$189,590
Total	$2,163,209	$2,530,652	$2,322,040	$2,189,834	**$2,261,585**

Public Information & Outreach component added to Administration Management in FY2011.

FY18 ANNUAL BUDGET SUMMARY INFORMATION - $2, 261,585

Cost by Component Type Comparison					
Cost Type	FY08	FY09	FY16	FY17	FY18
Personnel	$1,313,100	$1,433,092	$1,102,412	$1,012,125	$957,094
Travel	$98,500	$78,000	$64,500	$30,600	$35,500
Contractual	$552,807	$795,607	$934,900	$947,498	$1,060,606
Commodities	$22,500	$15,000	$24,500	$16,800	$19,650
Equipment	$0	$0	$4,000	$2,000	$2,000
Subtotal	$1,902,907	$2,321,699	$2,130,312	$2,009,023	$2,074,850
GA – 9%	$176,302	$208,953	$191,728	$180,811	$186,735
Total	$2,163,209	$2,530,652	$2,322,040	$2,189,834	**$2,261,585**

Total FY18 Annual Budget by Agency											
Cost Type	ADF&G	ADNR	ADEC	NOAA	DOI USGS	DOI FWS	DOI SEC	DOI - BLM	DOI OEPC	USFS	Total FY18 Budget
Personnel	$667,122	$70,000	$0	$78,000	$0	$95,972	$28,000	$7,000	$2,000	$9,000	$957,094
Travel	$32,200	$1,000	$0	$2,300	$0	$0	$0	$0	$0	$0	$35,500
Contractual	$479,846	$79,000	$0	$0	$87,000	$411,760	$0	$3,000	$0	$0	$1,060,606
Commodities	$14,650	$0	$0	$0	$5,000	$0	$0	$0	$0	$0	$19,650
Equipment	$2,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,000
Subtotal	$1,195,818	$150,000	$0	$80,300	$92,000	$507,732	$28,000	$10,000	$2,000	$9,000	$2,074,850
GA – 9%	$107,623	$13,500	$0	$7,227	$8,280	$45,695	$2,520	$900	$180	$810	$186,735
Total	$1,303,441	$163,500	$0	$87,527	$100,280	$553,427	$30,520	$10,900	$2,180	$9,810	**$2,261,585**

ADMINISTRATION MANAGEMENT - $738,019

Cost Category	FY17 Total Budget for Comparison	FY18 Total Budget
Personnel	$475,573	$479,652
Travel	$1,000	$1,000
Contractual	$186,975	$179,680
Commodities	$15,700	$16,750
Equipment	$0	$0
Subtotal	$679,248	$677,082
GA - 9%	$61,132	$60,937
Total	$740,380	**$738,019**

($2,361 decrease)

PERSONNEL - $479,652

Position	Range /Step	Months	Monthly Cost	12-Month Cost
Executive Director – Elise Hsieh	28/J	12	$16,512	$198,143
Associate Coordinator – Cherri Womac	18/N	12	$11,319	$135,825
Administrative Manager – Linda Kilbourne	19/J	12	$10,214	$122,566
Librarian III – Helen Woods	20/B	2.5	$9,632	$23,118
Personnel Total				$479,652

Cost includes benefits. Librarian 12-month allocation split Admin (20%) & ARLIS (80%).

TRAVEL - $1,000

These funds are for travel support for meetings and trainings.

CONTRACTUAL – $179,680

Reduction of Investment Advisor Costs

From FY12-16, EVOSTC contracted with Callan associates as an investment advisor. Prior to FY12, EVOSTC relied on ADOR for investment advising. ADOR has graciously offered to resume these services for FY18. Callan is available on an as-needed basis to review the EVOSTC investment program at some time in the future and/or at junctures where the Trustees may have specific questions or concerns to review with an additional third-party advisor.

- **Program Coordinator** **$42,000**

Provides services and consultation (Lauri Adams of Adams Strategic Consulting) regarding all activities of the EVOSTC program.

- **Trustee Council's Office Space** **$87,000**

The Trustee Council's office relocated to Grace Hall on the Alaska Pacific University campus in Anchorage in summer 2012. The space for the Trustee Council's office is administered through a Memorandum of Agreement (MOA) with the U.S. Geological Survey of the Department of Interior.

- **Agreed-Upon Services Contract** **$25,000**

These funds support an Agreed-Upon Procedures (AUP) contract (Elgee, Rehfeld, Mertz) for the review of targeted financial transactions of the Trustee Office and agencies receiving EVOSTC funds.

- **Administrative Support** **$3,000**

These funds support EVOSTC document review and administrative tasks as assigned by the EVOSTC Executive Director (Veronica Varela – DOI/USFWS).

- **Telephone and Internet Service** **$6,000**

These funds are for recurring charges for telecommunications, increased bandwidth, teleconferencing meetings, and long distance phone services. Also includes annual cell phone allowance for the ED and the AM.

- **Public Notices** **$1,000**

These funds are for advertising Trustee Council public meetings and workshops in newspapers in the spill-affected areas.

- **Postage & Courier Services** **$80**

These funds are for US Postal Service mailings, express mailings, and courier services beyond those provided under interagency supplies below.

- **Transcription** **$1,400**

These funds are for the transcription service contract to record and preserve Trustee Council meetings.

- **Shredding Service** **$1,200**

These funds are for shredding service in response to the U.S. District Court's vacating of the Retention Order.

- **Interagency Contracted Services** **$13,000**

These funds are for the Trustee Office's share of the Reimbursable Services Agreement costs relating to services **paid by all ADF&G** divisions: Telecommunications, Computer Services, ADA, Central Mail and AKSAS & AKPAY charge-backs. These costs are based on the number of full time positions divided by the total cost.

COMMODITIES - $16,750

- **Office Supplies** **$5,250**

These funds are for miscellaneous office supplies, paper, toner, meeting materials, etc. Also includes supplies needed to complete the official record.

- **Trustee Council Meetings** **$1,500**

These funds are for materials and incidentals for one teleconferenced and one in-person TC meeting.

- **Administrative Operations** **$5,000**

These funds are for unanticipated expenses due to the extensive tailoring of the budget.

- **Interagency Supplies** **$5,000**

These funds are for the Trustee Office's share of **USGS** costs including office supplies, postage usage, office equipment usage, Glen Olds Hall receptionist.

EQUIPMENT - $0

AGENCY DISTRIBUTION:

Admin Management Cost Category	ADF&G	USFWS	USGS	**FY18 Total Budget**
Personnel	$479,652	$0	$0	$479,652
Travel	$1,000	$0	$0	$1,000
Contractual	$89,680	$3,000	$87,000	$179,680
Commodities	$11,750	$0	$5,000	$16,750
Equipment	$0	$0	$0	$0
Subtotal	$582,082	$3,000	$92,000	$677,082
GA - 9%	$52,387	$270	$8,280	$60,937
Component Total	$634,469	$3,270	$100,280	**$738,019**

DATA MANAGEMENT - $33,463

Cost Category	FY17 Total Budget for Comparison	FY18 Total Budget
Personnel	$0	$0
Travel	$0	$0
Contractual	$42,200	$28,200
Commodities	$500	$500
Equipment	$2,000	$2,000
Subtotal	$44,700	$30,700
GA - 9%	$4,023	$2,763
Component Total	$48,723	**$33,463**

($15,260 decrease: reduced IT services cost)

PERSONNEL - $0

TRAVEL - $0

CONTRACTUAL – $28,200

- **Equipment Maintenance** **$500**

These funds are for minor equipment maintenance and repairs.

- **IT Services RSA: Alaska Dept. of Fish & Game** **$27,700**

The funds are for supporting the IT needs of the Trustee Council office by ADFG/SF.

COMMODITIES - $500

- **Computer Software, Hardware & Upgrades** **$500**

These funds are for necessary purchases and upgrades to computer hardware, software, software licenses, and networking equipment for the Trustee Council Office (i.e. annual Microsoft licensing Agreement).

EQUIPMENT - $2,000

These funds are for replacement of existing equipment and/or new equipment purchases.

AGENCY DISTRIBUTION

Data Management Cost Category	ADF&G	FY18 Total Budget
Personnel	$0	$0
Travel	$0	$0
Contractual	$28,200	$28,200
Commodities	$500	$500
Equipment	$2,000	$2,000
Subtotal	$30,700	$30,700
GA - 9%	$2,763	$2,763
Component Total	$33,463	**$33,463**

SCIENCE PROGRAM – $211,460

Cost Category	FY17 Total Budget for Comparison	**FY18 Total Budget**
Personnel	$0	$0
Travel	$19,000	$25,500
Contractual	$186,700	$166,500
Commodities	$0	$2,000
Equipment	$0	$0
Subtotal	$205,700	$194,000
GA - 9%	$18,513	$17,460
Component Total	$224,213	**$211,460**

($12,753 decrease: reduction in science coordinator cost)

PERSONNEL – $0

TRAVEL - $25,500

- **Travel & Support** **$5,000**

This provides support and travel for science oversight, TC meetings, and symposia and to allow for unanticipated additional participants at science review sessions.

- **Science Coordinator Travel** **$5,500**

This provides travel support costs for the EVOSTC Science Coordinator to represent EVOSTC at Trustee Council, PAC, annual Long-Term Programs' workshops and/or meetings, Science Panel, and other meetings as deemed necessary by the Executive Director.

- **Science Panel Meeting Travel** **$15,000**

These funds support travel for the Science Panel, Science Coordinator, and Executive Director to review FY19 Proposals and the FY19 Work Plan in 2-day meeting. Costs for the Science Panel's participation [contractual services] are paid out of authorized contracts.

CONTRACTUAL - $ 166,500

- **Science Coordinator:** Shiway Wang **$91,000**

These funds support a contract for science management services including Project Management; Invitation and Proposal coordination, implementation, and oversight; and Work Plan support.

- **Science Panel Services** **$70,000**

The Science Panel provides advice and feedback to the Executive Director and Council. Their work includes: providing funding recommendations on scientific proposals to the Executive Director, providing assistance on special projects at the Executive Director's or Trustee Council's request, and participating at one in-person meeting.

The members are: Gary Cherr, Douglas Hay, Gordon Kruse, Steven Morgan, Roger Nisbet, Charles Peterson, and John Stachowicz. Each contract covers services provided for the EVOSTC fiscal year, and payable by actual time invoiced. The contracts are set at **$11,000 for each member, except Mr. Stachowicz's contract is set at $4,000.**

- **Peer and Science Review Contracts** **$5,500**

To ensure the scientific integrity of findings, and to assist with the review of the Council's programs, the Trustee Council requires review by nationally-recognized experts within applicable scientific and technical disciplines.

COMMODITIES – $2,000

These funds support meals during the annual Science Panel meeting where the members work through meals and therefore breakfast and/or lunch are generally catered in.

EQUIPMENT – $0

AGENCY DISTRIBUTION:

Science Program Cost Category	ADF&G	NOAA	FY18 Total Budget
Personnel	$0	$0	$0
Travel	$23,200	$2,300	$25,500
Contractual	$166,500	$0	$166,500
Commodities	$2,000	$0	$2,000
Equipment	$0	$0	$0
Subtotal	$191,700	$2,300	$194,000
GA - 9%	$17,253	$207	$17,460
Component Total	$208,953	$2,507	**$211,460**

PUBLIC ADVISORY COMMITTEE (PAC) - $9,701

Cost Category	FY17 Total Budget for Comparison	**FY18 Total Budget**
Personnel	$7,100	$2,000
Travel	$6,500	$5,500
Contractual	$1,500	$1,000
Commodities	$600	$400
Equipment	$0	$0
Subtotal	$15,700	$8,900
GA - 9%	$1,413	$801
Component Total	$17,113	**$9,701**

($7,412 decrease: reduction in DFO cost due to carryover.)

PERSONNEL - $2,000

Annual funds are provided for the **designated federal officer** (DFO - Philip Johnson) assigned to the PAC as required by the Federal Advisory Committee Act (FACA). This individual coordinates with the EVOSTC Associate Coordinator in the scheduling of meetings and reviews the developed agenda, prepares meeting minutes and presents outcomes to the EVOSTC Executive Director and TC Council, and provides assistance to the PAC Chair and the EVOSTC Restoration Office as needed.

TRAVEL - $5,500

These funds are for one teleconferenced and one in-person meeting for **10** PAC members at an estimated average cost of $550 per person to include: airfare, ground transportation, per diem, and lodging.

CONTRACTUAL - $1,000

These funds are for advertising PAC meetings in newspapers in the spill-affected areas.

COMMODITIES - $400

These funds are for materials and incidentals for one teleconferenced and one in-person PAC meeting.

EQUIPMENT – $0

AGENCY DISTRIBUTION

PAC Cost Category	ADF&G	DOI-OEPC	FY18 Total Budget
Personnel	$0	$2,000	$2,000
Travel	$5,500	$0	$5,500
Contractual	$1,000	$0	$1,000
Commodities	$400	$0	$400
Equipment	$0	$0	$0
Subtotal	$6,900	$2,000	$8,900
GA - 9%	$621	$180	$801
Component Total	$7,521	$2,180	**$9,701**

HABITAT PROGRAM - $773,638

Cost Category	FY17 Total Budget for Comparison	**FY18 Total Budget**
Personnel	$174,400	$104,000
Travel	$2,000	$2,000
Contractual	$495,800	$603,760
Commodities	$0	$0
Equipment	$0	$0
Subtotal	$672,200	$709,760
GA - 9%	$60,498	$63,878
Component Total	$732,698	**$773,638**

($40,940 increase: Habitat Director-related costs moved from Admin to this component; increase in due diligence, and title, hazmat and survey review activities)

PERSONNEL - $104,000

- **ADNR** **$70,000**

Funds are provided for designated Realty Services and other ADNR personnel to coordinate and process large and small parcel habitat acquisitions by the State, including completing title reviews, approval and recording of conveyance documents, assistance with closings and other support to the Council regarding this program (i.e. Habitat Acquisition Catalog update). ADNR also provides expertise and any needed determinations regarding public use and management of Council-approved restoration lands.

- **DOI-FWS/DOI-BLM** **$34,000**

Funds provided to assist with habitat acquisitions, easements, timber rights, etc. on parcels approved for purchase by the Council.

DOI-FWS	$27,000
DOI-BLM	$7,000
Total	$34,000

TRAVEL - $2,000

Funds provided for necessary designated travel.

CONTRACTUAL - $603,760

Habitat Director: Lauri Adams of Adams Strategic Consulting **$113,000**

Funds are provided for contracted services regarding habitat acquisitions, including parcel negotiations, drafting of purchase and sale agreements and related conveyance documents, working with agency staff, managing funds authorizations and transfers, handling closings, and providing information to the Council, the PAC and the public regarding this program.

- **TRUST AGENCY HABITAT SUPPORT** **$72,000**

Funds are provided in support of agency efforts assisting with the Council's habitat projects, including completion of all agency-required reviews and approvals necessary for habitat acquisitions.

ADNR	$69,000
DOI-BLM	$3,000
Total	$72,000

- **ADNR - MAP UPDATE & INTERPRETIVE INFORMATION** **$10,000**

As the primary trust agency for the EVOSTC Habitat Protection Program, the Alaska Department of Natural Resources (ADNR or DNR) is responsible for holding title for restoration lands and limited interests in lands, as funded by the Council. The DNR Land Administration Records (LAS) and the EVOSTC Habitat Protection and Acquisition Catalog require periodic review and updates of land status. The Catalog was last updated in 2006 and DNR, at the direction of the Council office, is currently working on an update. This task includes intensive title research and identifying LAS data that is incorrect with regard to EVOSTC-funded properties and includes researching what projects took place in the interim, researching each project to determine the interests acquired and the associated costs, writing project narratives and creating associated GIS maps, including resolution of land status discrepancies. Correcting this data will allow DNR reference maps to display accurate land status for such properties. Accurate record keeping and maintenance is vital to the overall management of EVOSTC lands and for the dissemination of information, including in responding to inquiries by the public, media and governmental agencies.

HABITAT PROTECTION PROGRAM SUPPORT, INCLUDING OUTREACH TO WILLING SELLERS, DUE DILIGENCE WORK, HAZMAT REVIEW, MAPPING, SURVEY REVIEW AND OTHER ASSISTANCE TO THE PROGRAM **$408,760**

- Great Land Trust $242,660

Funds are provided in support of efforts to identify high habitat value parcels and work with willing sellers to bring viable habitat proposals to the Council for consideration, as per the proposal dated 08/25/17.

- Due Diligence Expenses $166,100

Funds are provided to support necessary due diligence work on individual parcels. The purchase of any interest in land requires Trustee Council review and approval.

COMMODITIES - $0

EQUIPMENT - $0

AGENCY DISTRIBUTION

Habitat Cost Category	ADF&G	ADNR	DOI-FWS	DOI-BLM	FY18 Total Budget
Personnel	$0	$70,000	$27,000	$7,000	$104,000
Travel	$1,000	$1,000	$0	$0	$2,000
Contractual	$113,000	$79,000	$415,760	$3,000	$603,760
Commodities	$0	$0	$0	$0	$0
Equipment	$0	$0	$0	$0	$0
Subtotal	$114,000	$150,000	$435,760	$10,000	$709,760
GA - 9%	$10,260	$13,500	$39,218	$900	$63,878
Component Total	$124,260	$163,500	$474,978	$10,900	**$773,638**

TRUST AGENCY PROJECT MANAGEMENT – $261,024

Cost Category	FY17 Total Budget for Comparison	**FY18 Total Budget**
Personnel	$237,972	$237,972
Travel	$2,100	$1,500
Contractual	$0	$0
Commodities	$0	$0
Equipment	$0	$0
Subtotal	$240,072	$239,472
GA - 9%	$21,606	$21,552
Component Total	$261,678	**$261,024**

(**(**$654 decrease: reduction in travel costs.)

PERSONNEL - $237,972

Project Management – DOI & NOAA - $134,972

Project Management funds to provide lead Trustee Agency staff with funds necessary to manage contracts and report on the status of projects; to facilitate communication between the agencies, Principal Investigators, and the Restoration Office; to assist with the annual financial audit; and perform other administrative functions necessary for implementation of projects authorized by the Trustee Council. Project management funds are also included below for management of multi-year projects that have been previously authorized.

DOI/USFWS – Veronica Varela	up to $56,972
NOAA – Pete Hagen	$6,000
NOAA – Shawn Carey	$36,000
NOAA – Bonita Nelson	$36,000
TOTAL	**$134,972**

Project Management: ADF&G - $75,000

Herring Program Coordinator (Sherri Dressel)
This funding provides for partial support of an ADF&G Fisheries Specialist I to coordinate with the Council's Herring program. This position will provide review and feedback to the Council and work with the Program to ensure coordination and relevancy with ADF&G resource management and Council goals.

ADF&G – Sherri Dressel or other ADG&G staff	$75,000

Trustee Council Investment Funds - Federal Account and Transfer - $28,000

This funding provides for a Federal Budget Officer (Bruce Nesslage) to process Investment Fund transfers and account requests.

TRAVEL - $1,500

This funding provides support for the Herring Program Coordinator (Sherri Dressel) to travel to appropriate and authorized meetings.

CONTRACTUAL - $0

COMODITIES - $0

EQUIPMENT - $0

AGENCY DISTRIBUTION:

Agency Project Management Cost Category	ADEC	ADF&G	ADNR	USFS	NOAA	FWS	DOI/SEC	**FY18 Total Budget**
Personnel	$0	$75,000	$0	$0	$78,000	$56,972	$28,000	$237,972
Travel	$0	$1,500	$0	$0	$0	$0	$0	$1,500
Contractual	$0	$0	$0	$0	$0	$0	$0	$0
Commodities	$0	$0	$0	$0	$0	$0	$0	$0
Equipment	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal	$0	$76,500	$0	$0	$78,000	$56,972	$28,000	$239,472
GA - 9%	$0	$6,885	$0	$0	$7,020	$5,127	$2,520	$21,552
Component Total	$0	$83,385	$0	$0	$85,020	$62,099	$30,520	**$261,024**

TRUST AGENCY FUNDING - $44,690

Cost Category	FY17 Total Budget for Comparison	**FY18 Total Budget**
Personnel	$31,000	$41,000
Travel	$0	$0
Contractual	$0	$0
Commodities	$0	$0
Equipment	$0	$0
Subtotal	$31,000	$41,000
GA - 9%	$2,790	$3,690
Component Total	$33,790	**$44,690**

($10,900 increase: additional support cost for ADFG & USFWS)

PERSONNEL - $41,000

This provides for Trustee Council staff support funding at the request of the Trustee(s).

ADF&G – David Rogers /ADF&G staff	$12,000
ADF&G – Mark Fink /ADF&G staff	$8,000
USFS – Ron Britton / USFS staff	$9,000
DOI /FWS – Veronica Varela / FWS staff	$12,000
TOTAL	**$41,000**

TRAVEL - $0

CONTRACTUAL - $0

COMMODITIES - $0

EQUIPMENT - $0

AGENCY DISTRIBUTION

Trustee Agency Cost Category	ADF&G	ADEC	ADOL	NOAA	FWS	USFS	DOI-SEC	**FY18 Total Budget**
Personnel	$20,000	$0	$0	$0	$12,000	$9,000	$0	$41,000
Travel	$0	$0	$0	$0	$0	$0	$0	$0
Contractual	$0	$0	$0	$0	$0	$0	$0	$0
Commodities	$0	$0	$0	$0	$0	$0	$0	$0
Equipment	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal	$20,000	$0	$0	$0	$12,000	$9,000	$0	$41,000
GA - 9%	$1,800	$0	$0	$0	$1,080	$810	$0	$3,690
Component Total	$21,800	$0	$0	$0	$13,080	$9,810	$0	**$44,690**

ALASKA RESOURCES LIBRARY & INFORMATION SERVICES – $189,590 (ARLIS)

Cost Category	FY17 Total Budget for Comparison	FY18 Total Budget
Personnel	$86,080	$92,470
Travel	$0	$0
Contractual	$34,323	$81,466
Commodities	$0	$0
Equipment	$0	$0
Subtotal	$120,403	$173,936
GA - 9%	$10,836	$15,654
Component Total	$131,239	**$189,590**

($58,351 increase: staff scheduled merit increase; increased digitization costs)

PERSONNEL – $92,470

Position	Range /Step	Months	Monthly Cost	Total Cost
Librarian III – Helen Woods	20/C	9.5	$9,061	$92,470
Personnel Total				$92,470

Cost includes benefits. Librarian III 12-month allocation split between ARLIS [80%] & Admin [20%].

TRAVEL – $0

CONTRACTUAL – $81,466

With the reorganization in 2009-2011, the Restoration Program's need for ARLIS services was expected to diminish and ARLIS's funding was reduced. However, the Deepwater Horizon oil spill refocused attention on EVOS and increased the demand for EVOS-related information. Funding was increased in FY15 to ensure staffing levels were appropriate to meet the EVOS information needs of government agencies, NGOs, researchers, the media, and the public.

- ARLIS EVOSTC Document Digitization Services, Phase IV – Reauthorization **$13,450**

Phase IV was accepted by the Council in November 2015, authorizing funding for digitization and cataloging of the *Exxon Valdez* Oil Spill Trustee Council Official Record documents. To date, 75% of the project has been completed, with the remainder of the project in process. It has encountered

delays due to vacant positions at ARLIS, as well as unanticipated time needed for document preparation on the part of the EVOSTC Librarian. Reauthorization is requested to support the completion of Phase IV. See proposal dated **08.18.17**.

- ARLIS EVOSTC Cataloging Librarian I Contract **$68,016**

The Council began funding support in June 2016 for a Cataloging Librarian I to assist with processing the backlog of EVOS-related materials, and meeting the ongoing information and research needs of the Trustee Council staff, Public Advisory Committee, researchers, and the general public. Work completed includes creating catalog records to improve access to ARLIS's collection of Shoreline Surveys 1989-1992 and its collection of EVOS-related videos. Additional work is required to fully catalog several previously uncatalogued collections, update old catalog records to meet the current standard, and complete the establishment of the EVOS Special Collection at ARLIS. Information and research needs of the Trustee Council staff, Public Advisory Committee, researchers and the general public are ongoing. Funding is requested to support the completion of these goals. See proposal dated **08.18.17**.

COMMODITIES – $0

EQUIPMENT – $0

AGENCY DISTRIBUTION:

ARLIS Cost Category	ADF&G	**FY18 Total Budget**
Personnel	$92,470	$92,470
Travel	$0	$0
Contractual	$81,466	$81,466
Commodities	$0	$0
Equipment	$0	$0
Subtotal	$173,936	$173,936
GA - 9%	$15,654	$15,654
Component Total	$189,590	**$189,590**

Reauthorization Request for EVOSTC Document Digitizing Project Funds

Phase 4:

EVOSTC Official Record (1991-Present)

August 18, 2017

The attached proposal was accepted by the EVOSTC in November 2015, authorizing funding for digitization and cataloging of the *Exxon Valdez* Oil Spill Trustee Council Official Record documents. The original RSA provided $57,905 for the project. To date, 75% of the project has been completed, with the remainder of the project in process. It has encountered delays due to vacant positions at ARLIS, as well as unanticipated time needed for document preparation on the part of the EVOSTC Librarian.

Funds remaining equal $12,341.68. They have been extended once, and are not able to be re-extended.

This proposal is to reauthorize the remaining funds to support the work required to complete Phase 4 of the EVOSTC Document Digitizing Project.

Funds would be used to hire one or two Library Technicians to do the scanning necessary to complete this project. Funds are requested to be available beginning December 1, 2017 through the end of FY18. Funds would be used as follows:

685.5 hours of project labor @ $18/hr		$	12,339
9% GA			1,111
Total requested:	**Not to exceed**	**$**	**13,450**

Original Proposal submitted September 2, 2015:

PROPOSAL SUMMARY

In February 2013, the EVOS Trustee Council began a multi-phase project to digitize select EVOSTC files for ease and speed of retrieval, to facilitate web access where appropriate, save future storage/office space and expense, and ensure long-term preservation of information.

Phase 1: Completed: This phase was funded in February 2013 to digitize the administrative records of the Restoration Planning Work Group (RPWG) and Restoration Plan Final Environmental Impact Statements (FEIS) and was completed in December 2013.

Phase 2: Completed: Funded for FY14, this phase addressed a need identified by the National Center for Ecological Analysis and Synthesis (NCEAS) to digitally consolidate project information which could not be completely accommodated in the EVOSTC project database. This included correspondence documenting the administration of projects, letters of support, and publicity as well as project information predating the project database. The EVOSTC Project Files 1991-2009 and the Chief Scientist Files 1992-2002 have been digitized as the first step in consolidating the project information into one location. Additional EVOSTC database work is needed to complete the consolidation.

Phase 3: in progress: This phase was funded in FY15 to digitize the following active and/or historical file collections:

- Habitat Protection Program (1993-present)
- Public Advisory Committee (1992-present)
- Science and Technology Advisory Committee (2000-2006)
- Community Involvement (1996-2000)

The project is on schedule to be completed by January 31, 2016.

Phase 4 Proposal: This phase proposes to digitize the EVOSTC Official Record (1991-present), design ARLIS catalog retrieval structure, and create catalog records and finding aids for the file collections that comprise the EVOSTC Official Record.

PROPOSAL DETAILS

Need: Digitization of EVOSTC Official Record files for ease and speed of retrieval, to facilitate web access where appropriate, save future storage/office space and expense, and ensure long-term preservation of information.

Background: Alaska Resources Library and Information Services (ARLIS, www.arlis.org), is a special library focusing on the natural and cultural resources of Alaska and arctic areas.

Established in 1997 and located on the campus of the University of Alaska Anchorage, ARLIS is an innovative partnership of state, federal and university entities whose primary purpose is to meet the information needs of its founding agencies: the Alaska Department of Fish and Game, *Exxon Valdez* Oil Spill Trustee Council, U.S. Bureau of Land Management, U.S. Bureau of Ocean Energy Management, U.S. Fish and Wildlife Service, U.S. National Park Service, U.S. Geological Survey and University of Alaska Anchorage. ARLIS is open to the public and also serves the university community, non-profit organizations and the private sector. ARLIS is directed by the ARLIS Management Team, which is responsible to the ARLIS Founders Board. The Board consists of directors from the above founding agencies.

ARLIS serves as the EVOSTC repository for EVOS-related materials and has housed this collection since the Trustee Council's Oil Spill Public Information Center became part of ARLIS in 1997. ARLIS also maintains the EVOSTC Public Record and public versions of the administrative records of the Restoration Planning Work Group (RPWG) and Restoration Plan Final Environmental Impact Statement (FEIS).

Scope: Phase 4 of the project will digitize the EVOSTC Official Record (1991-present). The final deliverables will be a collection of searchable full-text digital versions of the documents contained in these files, inclusion in the ARLIS catalog, and finding aids indexing the file collections within the EVOSTC Official Record. The digitized documents will be provided to the EVOSTC office to be added to the intranet by EVOSTC staff or associated IT staff. The digitized documents and finding aids will support EVOSTC staff in responding to questions pertaining to the Official Record; electronic files will reduce response time and ensure a complete response. The documents will be indexed in the ARLIS catalog, and will be ready to link to the ARLIS website and catalog for public availability. The linking of selected file collections via the ARLIS website and catalog is planned for Phase 5 of the EVOSTC Document Digitizing Project.

EVOSTC Official Record (1991-present): Volume – 107 boxes; 1600 inches; 320,000 pages.

The EVOSTC Official Record Files document the Trustee Council decision-making process. Comprised of 26 discrete categories of record types, and housed in twelve four-drawer file cabinets and several boxes, this file collection is largely letter- sized papers in folders or binders, with some documents contained with staples, clips, or rubber bands. Some items have comb or glue bindings. The collection contains some handwritten items and notes, oversize documents, postcards and newspaper pages.

Process: Scanning will be performed from originals to ensure image quality and collection completeness. Non-print items, such as audio or video tapes, CDs or DVDs, and documents protected by copyright will not be scanned, but will be noted with an entry that will refer the user to a source for the item. Metadata will be input as specified for handwritten documents. Boxes of documents will be sent to ARLIS and returned to the EVOSTC office via the UAA courier.

EVOSTC staff will:

- Provide ARLIS with instructions as needed, including guidance on file names.
- Review the files to identify bound items without marginalia that have already been scanned.
- Provide extra copies of bound items without marginalia, as available, that will not require reassembly after scanning.
- Identify items protected by copyright that will not be scanned, and provide citations for these items, to be included in the digital collection.
- Box the files, label the boxes, and route them to ARLIS in batches via the UAA courier.
- Unbox and re-file the documents after scanning.
- After delivery of the digital documents, work with EVOSTC IT staff to add the files to the EVOSTC intranet.

ARLIS staff will:.

- Design cataloging structure appropriate to the EVOSTC Official Record; create catalog records for each file collection
- Create finding aids for ease of use in locating needed records.
- Prepare the documents for scanning, including removing staples, other fasteners, and/or bindings.
- Scan each file into a separate electronic file, including all file folder contents, post-it notes, and the folder itself, if there are notes written on it or fastened to it.
- Apply Optical Character Recognition (OCR) software to each file for searchability.
- Provide each file with an appropriate file name via a specified naming convention that identifies the file collection and provides for ease of retrieval.
- Create metadata for handwritten documents, as needed.
- Provide quality assurance by reviewing each file for image quality and OCR.
- Re-fasten each document to pre-scanning condition and return to the original folder or binder.
- Return the folders and binders to the appropriate box and return the boxes to the EVOSTC office via the UAA courier.
- Deliver the digital documents to the EVOSTC office.

Final Deliverables: The final deliverables of Phase 4 of the EVOSTC Document Digitizing Project will be a collection of searchable full-text digital versions of the documents contained in the EVOSTC Official Record. The digitized documents will be provided to the EVOSTC office for addition to the intranet and website by EVOSTC staff or associated IT staff. Digitized documents will be indexed in the ARLIS catalog as 26 discrete file collection series, and will be held on the document servers as part of the ARLIS collection for public availability.

Timeline: This project will begin February 1, 2016 and be completed by January 31, 2017. Future phases will include scanning of continuing Official Record documents to maintain currency of the collection, and web linkage of documents for public access.

Budget:

Staffing	Tasks	Cost	Funding
Project labor	EVOSTC Official Record—107 boxes—Prep, scan, return documents to pre-scanning condition, QA, create metadata as needed, and collection transfers	$325 per box (includes support services and supplies)	$34,775
Librarians	Technical Services—Project Supervision/Cataloging oversight—214 hours Cataloger – Index/Create catalog records—120 hours	$75/hour $59/hour	$16,050 $7,080
	Total		**$57,905**

ARLIS Cataloging Librarian I Funding Extension Proposal

for completion of the
EVOS Special Collection Cataloging Project

August 18, 2107

PROPOSAL SUMMARY

In June 2016, the EVOS Trustee Council began funding support for a Cataloging Librarian I to assist with processing the backlog of EVOS-related materials, and meeting the ongoing information and research needs of the Trustee Council staff, Public Advisory Committee, researchers, and the general public.

The original RSA provided $73,106 for this purpose. To date, this funding has supported a part-time cataloger (.25-.5 FTE); $39,198 (53%) of the funding remains. Authority to expend these funds has expired as of June 30, 2017, and the funds are not able to be extended.

Work completed includes creating catalog records to improve access to ARLIS's collection of Shoreline Surveys 1989-1992 and its collection of EVOS-related videos. Additional work is required to fully catalog several previously uncataloged collections, update old catalog records to meet the current standard, and complete the establishment of the EVOS Special Collection at ARLIS. Information and research needs of the Trustee Council staff, Public Advisory Committee, researchers and the general public are ongoing.

We would like to contract a full time cataloging librarian for one year of full-time work toward completion of these goals, and propose to extend funding to cover that cost. Funds are requested to be available beginning December 1, 2017 through the end of FY18.

PROPOSAL DETAILS

Need:

As we look to the eventual sunset of the EVOSTC activity, ARLIS intends to catalog and make accessible all items in its collection relating to the *Exxon Valdez* oil spill. It is imperative that this information is organized and accessible to researchers, students and historians in the future. ARLIS proposes to supplement the remaining funds to a level that will allow this project to be the focus for one year of a qualified full time cataloging librarian working as a contract employee.

Background:

Alaska Resources Library and Information Services (ARLIS, www.arlis.org), is a special library focusing on the natural and cultural resources of Alaska and arctic areas. Established in 1997 and located on the campus of the University of Alaska Anchorage, ARLIS is an innovative partnership of state, federal and university entities whose primary purpose is to meet the information needs of its founding agencies: the Alaska Department of Fish and Game, *Exxon Valdez* Oil Spill Trustee Council, U.S. Bureau of Land Management, U.S. Bureau of Ocean Energy Management, U.S. Fish and Wildlife Service, U.S. National Park Service, U.S. Geological Survey and University of Alaska Anchorage. ARLIS is open to the public and also serves the university community, non-profit organizations and the private sector. ARLIS is directed by the ARLIS Management Team, which is responsible to the ARLIS Founders Board. The Board consists of directors from the above founding agencies.

ARLIS serves as the EVOSTC repository for EVOS-related materials and has housed this collection since the Trustee Council's Oil Spill Public Information Center became part of ARLIS in 1997. ARLIS also maintains the EVOSTC Public Record and public versions of the administrative records of the Restoration Planning Work Group (RPWG) and Restoration Plan Final Environmental Impact Statement (FEIS).

Scope of Work:

The ARLIS cataloging librarian will assist with processing the backlog of EVOS-related materials, and meeting the ongoing information and research needs of the Trustee Council staff, Public Advisory Committee, researchers, and the general public. The work will include creating catalog records to improve access to ARLIS's collection of uncataloged EVOS-related materials, which currently occupy several ranges of shelving. Work will also include continuing set up of a special collection to house these items, to improve organization and accessibility and to ensure long-term preservation of this information, accomplishing a large portion of the long range goal of completing the EVOS collection at ARLIS. Additionally, this contract will support reference services to meet the ongoing information and research needs of the Trustee Council staff, Public Advisory Committee, researchers, and the general public.

Final Deliverables:

- Establishment of the EVOS Special Collection at ARLIS, including cataloging of previously uncataloged EVOS-related items.
- Finding aids created as needed for these collections, with increased accessibility to all items/information this collection holds.
- Reference services to meet the ongoing information and research needs of the Trustee Council staff, Public Advisory Committee, researchers, and the general public.

Budget:

ARLIS is requesting a total of $68,016, calculated as follows:

1950 hours Cataloging Librarian I time @ $32/hr	$	**62,400**
Current funding in place (will revert back to EVOSTC)	39,198	
Needed to supplement for 1.0 FTE	23,202	
9% GA on total of 62,400		**5,616**
Total requested: **Not to exceed**	**$**	**68,016**

Budget history:

Currently, there is $39,198 remaining from the previously allocated funding for this purpose. To bring this up to the level necessary to cover one full year of funding ($68,016), an additional $28,818, including GA is requested.

Great Land Trust's Request for Habitat Conservation Project Funding

Prepared for the Exxon Valdez Oil Spill Trustee Council
August 25, 2017

Project Summary
Great Land Trust (GLT) requests funding from the *Exxon Valdez* Oil Spill Trustee Council (EVOSTC) Habitat Acquisition Fund to implement multiple habitat conservation projects throughout the spill area. Projects will aid in the recovery and enhancement of the long term health and viability of resources, services, and species injured by the *Exxon Valdez* Oil Spill (EVOS) and benefit spill area ecosystems.

GLT will seek to acquire through fee-simple acquisition or to otherwise protect through conservation easements priority lands within the entire EVOS area and increase the capacity of the existing, established EVOS habitat program.

GLT has a strong history of successfully performing similar work over the past five years. This proposal is for the first year of a second five-year funding cycle.

Project Goals and Objectives
With this funding request, GLT will continue to implement habitat protection projects that permanently conserve important habitat for the benefit of injured services and injured species across the entire EVOS-affected area.

GLT will use the 2014 GLT EVOS Habitat Land Prioritization mapping to identify and conduct outreach to landowners of parcels with high-ranking conservation value and determine their interest in habitat conservation. GLT will then conduct negotiations and other due diligence activities for willing landowners with high-priority properties. As appropriate and feasible, GLT will seek to leverage additional funds for projects, and, working closely with partners, will complete or make substantial progress on at least two large-scale conservation projects within each performance year.

Great Land Trust proposes to carry out the project goals and objectives in the EVOS area through a multi-step process:

1. Project Identification
GLT will use the 2014 GLT EVOS Habitat Land Prioritization for the entire spill area to identify habitat with the highest conservation value (see prioritization map attached).

This prioritization incorporates the latest information on land ownership including all projects previously completed with EVOS funding. All unprotected private lands, in addition to State lands owned by the Alaska Mental Health Trust Authority (AMHTA), are ranked for their habitat conservation value. GLT will continue to obtain feedback on the prioritization from EVOS Trustees, staff, USFWS, ADFG, ADNR, USFS, BLM, and other key landowners and government officials.

2. Landowner Contact

GLT will initiate contact with the landowners of high-ranking parcels to determine their willingness to sell for conservation through a fee simple acquisition or conservation easement interest. Discussions with the landowners will also include determining acreage and parcel configuration, timelines, and other due diligence activities.

GLT will meet frequently with agency and EVOSTC staff during this phase of the project to discuss progress and obtain feedback on potential projects.

3. Appraisal

GLT will contract a one- or two-phased appraisal of the highest ranking parcels with willing landowners.

In some instances, a two-phased appraisal may be advantageous. The first phase of the appraisal will include a meeting with the appraiser after he/she has conducted research. The appraiser will report the expected high- and low- range of values for the property. A full appraisal will be completed only if the initial range of values is acceptable to both the buyer and the seller.

4. Matching Funds Partner Outreach

As appropriate, GLT will seek supplemental funds for projects that appear to be a good fit for EVOS funding. This may include funding from sources such as the Forest Legacy Program, USFWS National Coastal Wetlands Program, and private foundations. This process, while requiring additional time, may yield funding that allows additional acreage to be purchased.

5. Final Project Completion

GLT will work closely with EVOS Trustee Council Staff, ADNR, ADF&G, USFWS, BLM, USFS, and other partners to complete up to approximately 10 high priority conservation projects with willing landowners in the Spill Area over the 5-year period.

Project Milestones:

Each year, from February 1 through January 31, GLT will:

- Complete due diligence on up to two spill area habitat protection projects.
- Submit spill area project packages to EVOSTC for full funding.
- Facilitate or execute habitat protection transactions in collaboration with state and/or federal project sponsors.

Anticipated Products/Outputs

Anticipated outputs for this funding include the prioritization and acquisition of high priority fee title properties within the EVOS area. Additionally, some projects may include conservation easements to be held by the appropriate government agency.

GLT will complete a variety of projects across the spill area that vary in size, location, and habitat attributes, but each of which must demonstrate high conservation values and aid in

the recovery and enhancement of the long term health and viability of those resources and services injured by the *Exxon Valdez* Oil Spill (EVOS).

GLT will measure and report on specific outputs each year over a five year period such as:

- Substantial progress toward the completion of fee title property acquisitions within the EVOS area, including acreage conserved.
- Permanent protection of wetlands within the EVOS area.
- Permanent protection of coastline within the EVOS area.
- Permanent protection of anadromous streams within the EVOS area.

Project Monitoring and Evaluation

GLT will submit updates to EVOSTC staff on the status of the completion of project objectives.

Sustainability

Upon completion of each purchase of habitat with EVOSTC funding, a permanent conservation easement will be held by an appropriate State or Federal agency or another entity as appropriate.

Description of Organization Undertaking the Project

GLT is an independent non-profit land conservation organization founded by Alaskans in 1995 and is Southcentral Alaska's regional land trust. GLT's service area includes more than 50 percent of Alaska's total population and ranges from the Alaska Range in the North to Prince William Sound and Kodiak in the south. GLT is the only Alaska-based land trust working in Kodiak. The other adjacent land trusts and national conservation organizations in Alaska were consulted prior to GLT's expansion to the EVOS spill area in 2012 and agreed that GLT was in the best position to work in this important area.

GLT works in partnership with willing private and public landowners to permanently conserve important habitats, signature landscapes, and waters essential to the quality of life and economic health of communities in the region. GLT seeks to protect the integrity of natural ecosystems, wetlands and streams, public access to recreational lands, and conserve lands important for towns and cities.

GLT, an accredited land trust, has extensive experience with fish and wildlife habitat and wetland conservation projects. Since 1995, GLT has completed 47 land conservation projects totaling over 49,000 acres in southcentral Alaska, including over 45 miles of salmon streams. GLT has professional staff skilled at carrying out complex land transactions and has been nationally recognized for wetland conservation successes including the LTA Living Lands Publication, the Coastal America 2007 Partnership Award, the US DOI Cooperative Conservation Award 2008 and was awarded the Outstanding Partner Award by the Region 7 Director of USFWS for 2011.

GLT was the first land trust in Alaska and one of only 300 nationwide to achieve accreditation with the Land Trust Alliance Accreditation Commission. GLT's accreditation

status was renewed on August 10, 2017, by the Land Trust Alliance Accreditation Commission.

GLT has completed significant projects with a wide range of partners including the Municipality of Anchorage, the Mat-Su Borough, Kodiak Island Borough, State of Alaska Department of Fish and Game, State of Alaska Department of Natural Resources, US Fish and Wildlife Service, BLM, Army Corps of Engineers, National Oceanic and Atmospheric Administration, Alaska Native corporations, Ducks Unlimited, Pacific Coast Joint Venture, , and numerous private businesses and landowners. GLT has experience raising and managing significant public and private funding, having over 15 Federal, State, and private foundation grants ongoing in the last 12 months. GLT also has extensive experience with wetland mitigation funding, having operated an In-lieu Fee program under a Memorandum of Understanding with the Army Corps of Engineers since 1998.

Great Land Trust Past Performance under Previous 5-year EVOSTC Award:
Beginning in 2013, the first year of the project, GLT focused on the Kodiak Afognak Archipelago area. The scope broadened under EVOSTC direction to include all of the spill area in 2014, the second year of the project. Using a land habitat values prioritization that GLT developed originally for the Kodiak Afognak Archipelago, GLT identified multiple high-ranking conservation projects in the spill area and began due diligence and negotiations with landowners on six of the highest ranking projects. During year three, GLT completed outreach to key landowners within the spill area and initiated several new projects. In year four, GLT completed a 36,000 acre project on northern Afognak Island and a 65 acre project known as the Triplets, while also making significant progress on current projects, and conducting outreach to landowners in the spill area on potential new projects. During year five, GLT continued to conduct outreach with key landowners, initiated new projects, and continued due diligence and work to complete existing projects throughout the entire spill area. In 2017, GLT completed a 1,028 acre project known as Termination Point on Kodiak Island, a 1,953 acre project in the Thorsheim Drainage of Northern Afognak Island, and is proceeding with the Long Island project (1,258 acres) and the Portage Lake project (approximately 3,080 acres) also in the Kodiak archipelago. Other projects are under development and will be continued in the 6th year of the project.

GLT works closely with EVOSTC staff, the Alaska Department of Natural Resources, the Alaska Department of Fish and Game, the U. S. Department of the Interior and U.S. Forest Service, and other partners in order to complete these projects. GLT actively seeks grant funding from other sources as well to complement EVOS funding to carry out high-priority projects.

To demonstrate GLT's capacity to undertake and complete complex habitat conservation projects, recent projects include:

Ouzinkie Northern Afognak Island Project
In early 2016, Great Land Trust facilitated a landmark deal with Ouzinkie Native Corporation to permanently conserve and make public over 36,000 acres on northern Afognak Island, as well as the adjacent Triplet Islands, which are home to some of Alaska's

most famous seabird rookeries and the largest colony of tufted puffins in the Kodiak archipelago.

GLT had been working on this project for over three years with many dedicated public and private partners. The conservation project connects the Kodiak National Wildlife Refuge with Afognak Island State Park, and includes 13 miles of coastline, 10 miles of salmon streams and over 6,000 acres of wetlands. The combination of abundant fish and wildlife habitat, as well as its scenic beauty and rugged remoteness makes the island an attractive and popular destination for hunting and fishing. The lands also offer other recreational opportunities such as sightseeing, kayaking, hiking, photography, and camping and will be managed for public use compatibly with the adjacent Afognak Island State Park.

In 1892, Afognak Island was identified as one of the Nation's first fish and wildlife conservation areas. It was originally designated as the Afognak Forest and Fish Culture Reserve because of its outstanding wildlife and salmon habitat value. In 1908 it was reclassified as part of the Chugach National Forest, then conveyed in 1980 to several native corporations through the Alaska Native Claims Settlement Act. The island is known for its rugged topography, dense old-growth Sitka spruce forests, abundant marine mammals and salmon spawning habitat. It is home to the Kodiak brown bear, the Sitka black-tailed deer, the Roosevelt elk, whales, otters, seals, sea lions, tufted puffins, and marbled murrelets.

After the *Exxon Valdez* Oil Spill, the Kodiak archipelago became a priority for species recovery and habitat protection. Injured Species in the Kodiak archipelago are dependent on the coastal, riparian, wetland, and upland habitats provided by the 36,000 acres that GLT helped protect.

Termination Point

The Kodiak community has prioritized the conservation of Termination Point for over 20 years. After years of negotiations, Great Land Trust facilitated the transaction in 2017, resulting in the 1028-acre property, owned by Leisnoi, Inc. and known locally as Termination Point, to be permanently conserved and available for the public to enjoy.

The property boasts a recreational trail system that winds through Kodiak's old-growth forest, treating hikers to year-round majestic vistas and wildlife viewing opportunities close to and accessible from the City of Kodiak.

Termination Point is located within the Marmot Bay Colonies Important Bird Area (IBA), an area of global importance due to its unique bird habitat. Habitat for the estimated 108,472 seabirds in eight colonies within the Marmot Bay Colonies IBA is threatened by habitat fragmentation as well as nutrient and water pollution. Hikers visiting the coastal trail on the newly-conserved property can see a Tufted Puffin colony located on the cliffs above the water.

By conserving the property, Leisnoi is protecting its habitat values and granting public access to the property. The Kodiak Island Borough Assembly will manage the land as a borough park.

Thorsheim Drainage Project

In 2017, Great Land Trust facilitated an EVOSTC Habitat Conservation project that resulted in the conservation of almost two thousand acres of coastal habitat in and around the Thorsheim Drainage on Northern Afognak Island. The U.S. Fish and Wildlife Service identifies Afognak Island among the most productive habitat in the Gulf of Alaska. The Thorsheim Drainage consists of wetlands, a dense coastal forest, and a river corridor that supports multiple types of salmon. The property is also home to coastal wildlife communities such as sea otters, birds identified by the EVOSTC as Injured Species, and provides excellent habitat for the area's bear population.

Continuous kelp beds and eel grass occurring along the parcel's coastline provides important juvenile fish habitat. In addition to the three species of salmon that are known to spawn in the drainage, rainbow trout and Dolly Varden also use the stream, and Steelhead and Arctic Char are present in the drainage. The protection of this parcel will continue to help bolster commercial, sport and subsistence fisheries, particularly salmon fisheries that were injured by the *Exxon Valdez* oil spill.

The property is now open to public fish and wildlife-oriented recreation and will be managed by the Alaska Department of Natural Resources.

GLT Budget for Habitat Conservation Projects

Based on past performance, GLT respectfully requests the following budgeted amount for the EVOSTC fiscal year: February 1, 2018 – January 31, 2019.

This budget reflects structuring GLT staff time and related expenses to complete goals/objectives committed to in this proposal. GLT anticipates moving forward on multiple Habitat Conservation projects simultaneously including landowner outreach, negotiations, due diligence management, and project completion, under this budget.

GLT Direct Operating Budget

Budget Item		Calculation	Subtotal	Budget for 2.1.18 thru 1.31.19
GLT staff		GLT staff time, including fringe benefits (employer taxes, insurance, retirement, paid time off, etc.) average $60/hour. 2,800 hours/year		**$ 168,000.00**
	Travel - transportation	Airfare from ANC to KOD (or Prince William Sound, Alaska Peninsula, and other Spill area project locations) $1,200/trip/staff @ 5 trips for 2 staff = $12,000; travel within Travel via float plane @ $650/hr @ 15 hrs= $9,750	$ 21,750.00	
	Travel - food and lodging	5 trips x 2 days x $150/day car rental = $1500; 5 trips x 2 staff x 2 nights @ $200/night = $4,000; 5 trips x 2 staff x 2 days @ $70/day average meals = $1400	$ 6,900.00	
	Travel - mileage	Mileage at 0.54/mile x 2500 miles = $1350	$ 1,350.00	
Travel Subtotal				**$ 30,000.00**
Supplies		Supplies for outreach, mapping, and communication costs (technology support for GIS mapping, printing expenses, postage, mailing, general office/field supplies directly related to EVOS - e.g. bear spray, thumb drives, etc.)		**$ 7,500.00**
Subtotal – GLT Direct Operating Costs				**$ 205,500.00**

Due Diligence Expenses

GLT also directly coordinates and manages the contracting for many due diligence activities associated with habitat projects. Including expected due diligence contractual costs in GLT's budget allows GLT flexibility, timely responsiveness with engaged landowners and contractors, and has enabled the recently completed Habitat Conservation Projects to occur.

The information gathered by GLT during due diligence allows thorough Habitat Program acquisition proposals to be presented to the Trustee Council as well as project partners and sponsors in a timely manner. Time is of the essence with real estate transactions and conducting due diligence in an efficient manner is critical to successful projects. As described below, there are multiple steps necessary in order to complete due diligence. Many of the projects under consideration are remote parcels requiring complex logistics over short field seasons for successful results.

The following budgeted items are based on past experience and reflect what is typical for due diligence for successful Habitat Conservation Projects including:

- Appraisals - GLT will contract a one- or two-phased EVOS compliant appraisal for engaged landowners of high-ranking parcels. In some instances, a two-phased appraisal may be advantageous and save both time and funding. The first phase of the appraisal will include a meeting with the appraiser after he/she has conducted research. The appraiser will report the expected high- and low- range of values for the property. A full appraisal will be contracted and completed only if the initial range of values is acceptable to both the buyer and the seller. GLT will contract a review appraiser to review the EVOS compliant appraisal. For some projects a timber appraisal and a timber cruise will be separately required. Timber appraisals will be reviewed by a qualified timber review appraiser.
- Surveys – Surveys are often conducted during the negotiation process when it is necessary to create a legal description, or determine project boundaries or acreage more precisely. By directly contracting surveys, GLT can advance the project to timely conclusion.
- Phase I/Environmental Site Assessment – GLT will directly coordinate the Phase I Environmental Site Assessment field work and contracted report to determine the condition of the property. GLT will time the completion of the Phase I report to align as needed with the development of the project and needs of project partners.
- Legal Consultation – Due to the unique and complex nature of some of the projects and transactions, outside expert legal counsel is needed on occasion.

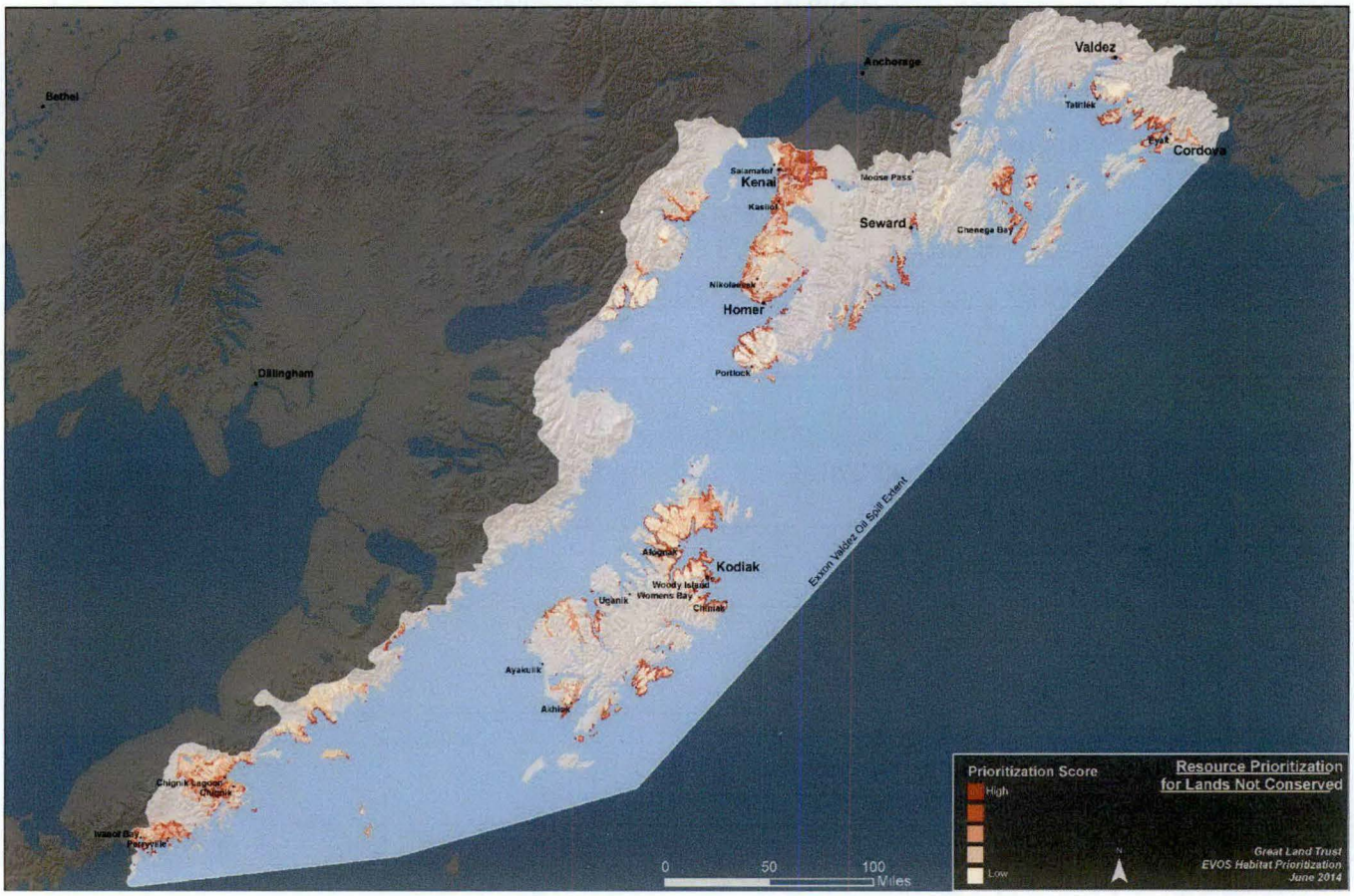
Due Diligence/Contractual Budget

Due Diligence Costs	Surveys	Surveys - as needed, depending on property/parcel specifications; $0-$35,000/project/year	$ 50,000.00	
	Appraisals	Appraisals - 3 @ $25,000 (average) each	$ 75,000.00	
	Phase 1 Environmental Assessments	Phase 1 ESA reports @ $10,000 each (average); 3 Phase 1 reports/year	$ 30,000.00	
	Legal	$370/hour x 30 hours	$ 11,100.00	
Contractual Subtotal				**$ 166,100.00**

GLT Habitat Project Budget Total

Direct Operating Costs				**$ 205,500.00**
Due Diligence/Contractual Costs				**$ 166,100.00**
Direct Cost Subtotal				**$ 371,600.00**
de minimis indirect rate – 10%				**$ 37,160.00**
TOTAL REQUEST				**$ 408,760.00**

Map of Project Area



THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Natural Resources
DIVISION OF PARKS AND OUTDOOR RECREATION
DESIGN AND CONSTRUCTION
550 West 7th Avenue, Suite 1340
Anchorage, AK 99501-3565
Main: 907.269.8731
Fax: 907.269.8917

August 31, 2017

Ms. Elise Hsieh
EVOS Trustee Council
4210 University Drive
Anchorage, Alaska 99508

Re: Request for Reauthorization of remaining funds for
DNR-DPOR Habitat Restoration and Protection, Project 17170116
Quarterly Project Report for August 2017

Dear Ms. Hsieh:

Last fall the Council approved funding for the six riverbank restoration projects noted below. The primary goal of each project is to restore fish habitats that have been adversely impacted by human activity and to provide continuing habitat protection into the future. In their FY17 approval, the Council funded up to approximately $2.214 million for the proposed six projects.

It was anticipated that portions of the funding will require reauthorization. **Thus, reauthorization for the KRSMA: Kenai River Flats Riverbank Protection in the amount of $327,000 is requested for FY18**. All other funding has been received. Table 1 summarizes those distinct scopes along with the approved funding for each.

APPROVED BY COUNCIL FY17 PROJECT SCOPE	APPROVED FUNDING
KRSMA: Eagle Rock Riverbank Protection	*$ 447,390*
Crooked Creek SRS Riverbank Restoration	*$ 486,031*
KRSMA: Kenai River Ranch Riverbank Restoration	*$ 181,158*
KRSMA: Pipeline Crossing Riverbank Restoration	*$ 307,871*
Anchor River SRA Riverbank Protection	*$ 464,994*
FY18 Reauthorization Request; KRSMA: Kenai River Flats Riverbank Protection	**$ 327,000**
FY18 Request for Reauthorization	*$ 327,000*

Attached for your files is the status report for the subject project to include budgetary information, anticipated completion date, and narrative of progress. Also attached is the proposal component for the KRSMA: Kenai River Flats Riverbank Protection, Phase I scope. This project is awaiting the request for project proposals from the Alaska Transportation Alternatives

Program (ATAP), which is expected to come out in the summer of 2018. As such, the timeline for completion of that scope is anticipated toward the end of 2020. All other scopes are expected to be completed by the end of 2019. If successful, the ATAP grant will fund $1,149,320 of the that scope's total cost. If unsuccessful, then we will revisit the project with the Council at that time.

Please let me know if you need additional information regarding this project.

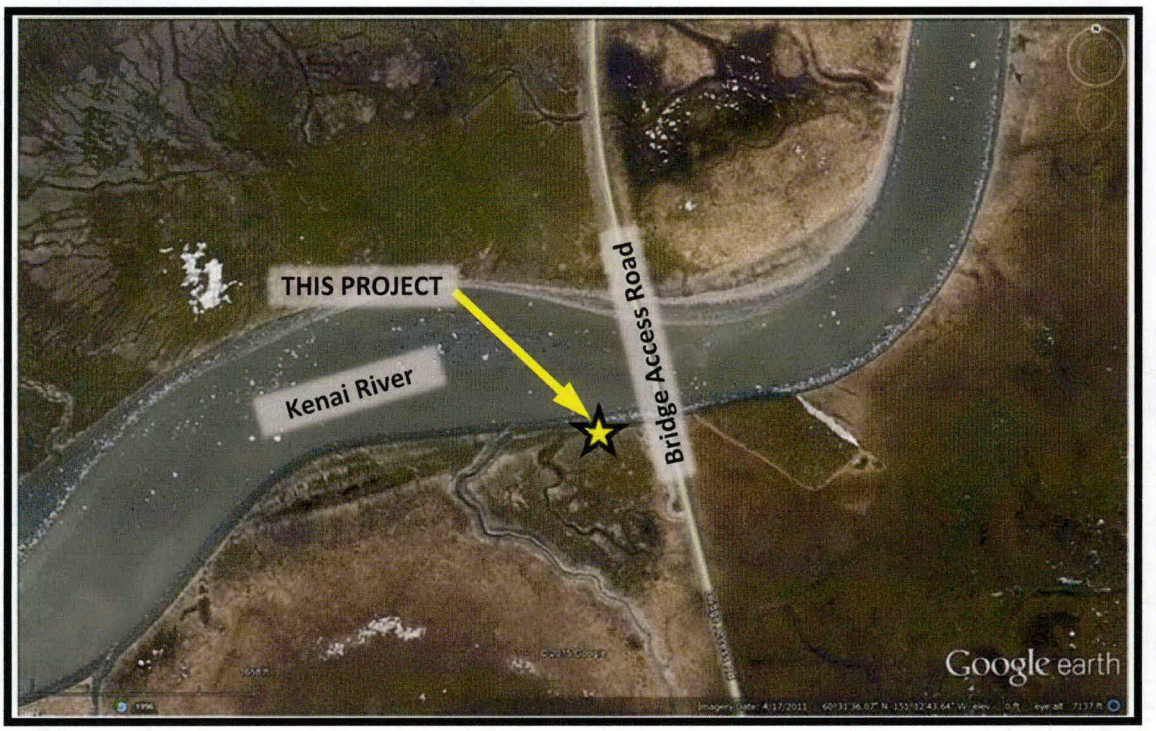
Sincerely,

Rys Miranda, P.E.
Chief of Design and Construction
Division of Parks and Outdoor Recreation

Attachments as stated

ALASKA STATE PARKS
CAPITAL PROJECT WORKSHEET

Project Title: KRSMA: Kenai River Flats Riverbank Protection, Phase I
Project Location: Kenai, Alaska
Latitude: 60°31'31.53"N **Longitude:** 151°12'41.32"W



Project Description:
The Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation (DNR-DPOR) is proposing to construct Phase I of a two-phase project which consists of approximately 500 linear feet of elevated light-penetrating (ELP) walkway along a heavily trampled riverbank along the Kenai River Estuary at the Kenai River Flats Unit of the Kenai River Special Management Area (KRSMA). Four sets of river access stairs will also be constructed in addition to the ELP walkway. The combination of ELP walkway and river access stairs will allow foot traffic to travel above the sensitive riverbank and into the river without impacting the riparian resources. The ELP walkway will be designed and constructed in accordance with Kenai Peninsula Borough Ordinance 21.18 for light penetration criteria.

This project will also install one orientation kiosk panel and two interpretive signs intended to facilitate redirecting human impacts and to promote public participation in the long term success of the project and project objectives.

Project Justification:
The Kenai River Flats Unit is quickly becoming a popular fishing access site. Visitor counts show an increasing trend, from state fiscal year 2010 through state fiscal year 2013 (see Table 1). As more well-

known fisheries become over-crowded, anglers and dip-netters go to this site as an alternative river access point. The increase in use has led to more people trampling the riverbank to gain river access resulting in damage to its riparian resources and fish habitat deterioration as depicted in Figure 1. This project will provide managed river access for this popular fishery and be proactive in preventing further deterioration of riparian resources along this section of the Kenai River. Without this project, people will continue to trample over the riverbank to gain river access which will inhibit the natural recovery of damaged resources and further deteriorate fish habitat along the riverbank. Degradation of the riverbank habitat affects more than the area that is directly impacted. Overhanging vegetation is lost as banks slough which can decrease areas of cooler water in times of high heat, in addition the sediment transfer of degraded banks can cause an increase in turbidity downstream of the impacted area making the effects of the habitat degradation larger than the localized area. Creating infrastructure may deter user groups from creating many paths to a destination and decrease the overall footprint of impact.

Table 1 - Facility Visitation Counts

	FY2010		FY2011*		FY2012		FY2013	
	Resident	Non-Res	Resident	Non-Res	Resident	Non-Res	Resident	Non-Res
July	3,441	620	---	---	5,971	1,228	6,913	1,333
August	678	797	---	---	2,232	837	2,312	917
September	837	0	---	---	1,256	419	1,256	698
October	0	0	---	---	698	0	837	0
November	0	0	---	---	0	0	0	0
December	0	0	---	---	0	0	0	0
January	0	0	---	---	0	0	0	0
February	0	0	---	---	0	0	0	0
March	0	0	---	---	0	0	0	0
April	917	159	---	---	0	0	698	0
May	0	1,767	---	---	593	0	558	0
June	1,116	0	---	---	488	558	2,511	2,232
Totals	6,989	3,343	---	---	11,238	3,042	15,085	5,180
	10,332		---		14,280		20,265	

*Data is not available for FY2011

This project will primarily address injured resources Dolly Varden (recovered), Pink Salmon (recovered), and Sockeye Salmon (recovered) and the injured human service Recreation and Tourism (recovering). The referenced injured resources are listed as recovered (2014 Injured Resources and Services Update), however, this project seeks to provide long term habitat protection which plays a critical role in ensuring that the recovered status of those resources are sustained. Protection and of the natural vegetation will also benefit injured resources Bald Eagle (recovered), Barrow's Goldeneye (recovered), Common Loons (recovered), Common Murres (recovered), Harlequin Ducks (recovered), and Pigeon Guillemots (not recovering), which are found at the Kenai River Flats.

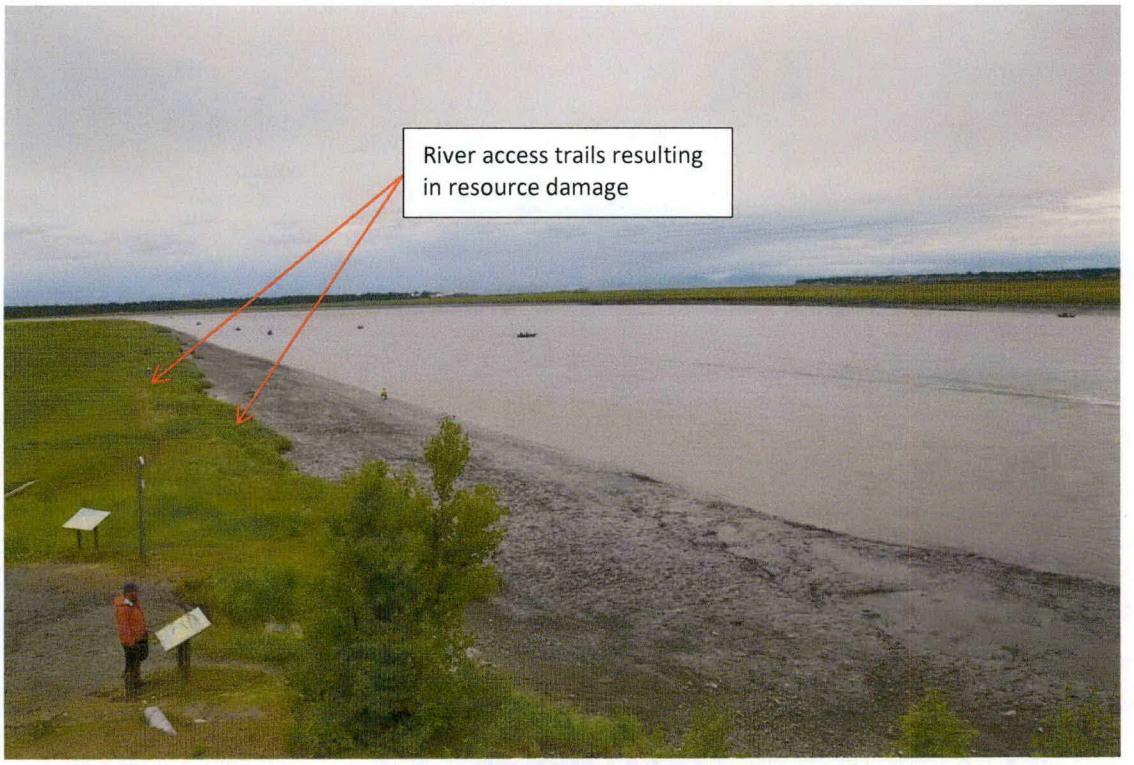


Figure 1 - Site Conditions with Evident Resource Damage (July 16, 2015)

Figure 2 - Access Trails Deteriorating Riparian Zone (July 27, 2015)

Figure 3 - Habitat Degradation Resulting from Unmanaged Access (July 27, 2015)

Figure 4 - Habitat Degradation Resulting from Unmanaged Access (July 27, 2015)

Figure 5 – Access Trails Deteriorating Riparian Zone (July 27, 2015)

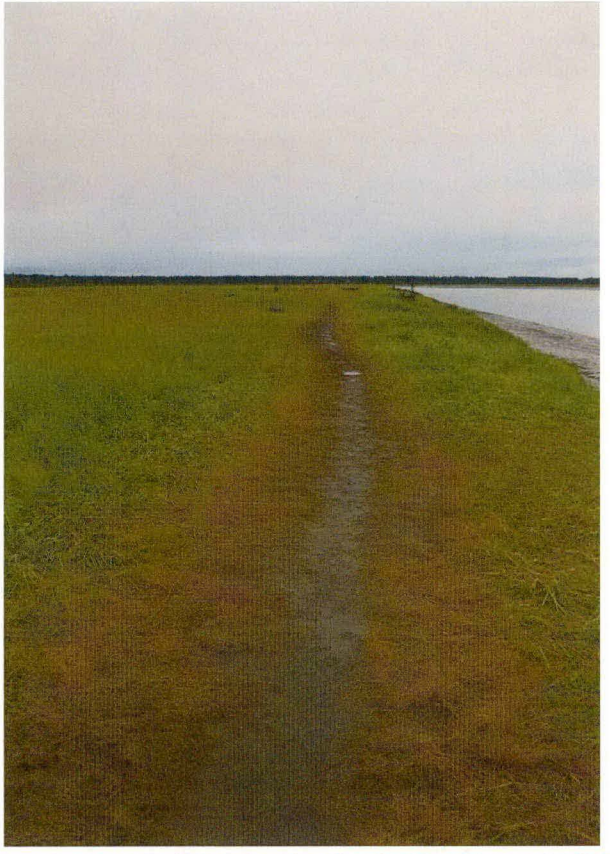


Figure 6 - Access Trail Deteriorating Riparian Zone (August 2, 2016)

Project Support:
This proposed project is consistent the objectives of the Exxon Valdez Oil Spill Restoration Plan to restore the environment, specifically, through habitat restoration and protection. Additionally, this project is in support of DNR-DPOR's mission to provide outdoor recreation opportunities and conserve and interpret natural, cultural, and historic resources for the use, enjoyment, and welfare of the people. This project is aligned with the Kenai River Comprehensive Management Plan and is supported by the following groups:

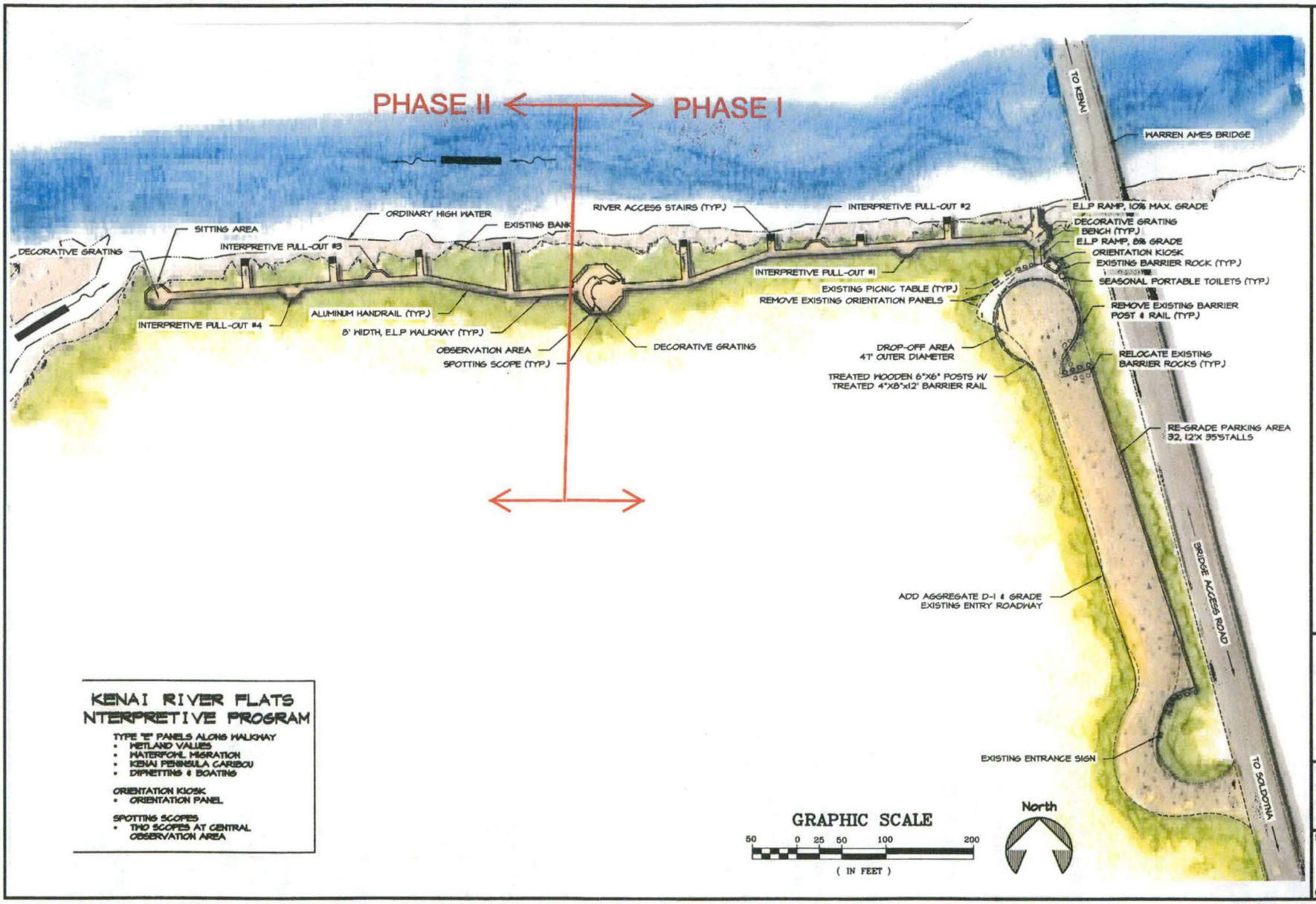
- Kenai River Special Management Area Advisory Board,
- Kenai River Sportfishing Association, and
- National Oceanic and Atmospheric Administration Fisheries Restoration Center.

This project qualifies and has the potential to receive funding from the Alaska Transportation Alternatives Program (ATAP) – a competitive, federal-aid grant program administered by the Alaska Department of Transportation and Public Facilities. DNR-DPOR plans to submit a project proposal in the next grant cycle, which is anticipated to occur in 2018. If successful, federal-aid funds could pay for 80% of the project cost, or $1,149,320. EVOS funds would then be used as the required 20% non-FHWA matching funds, or $287,330.

Estimated Project Cost: $1,436,650
Estimate Year: 2015
Estimate Type: Preliminary

Attachments:

1. Concept Site Plan
2. Letters of Support



STATE OF ALASKA DEPARTMENT OF NATURAL RESOURCES

CONCEPT OVERVIEW

KENAI RIVER FLATS KRSMA
RIVER BANK RESTORATION
PROJECT No. 7XXXX-X

PREPARED: AMR
DRAWN: AMR
REVIEWED: REM
DATE: 08/13/15

SHEET
OF 1 SHEETS

KENAI RIVER

Special Management Area

"Working together...for the river"

ADVISORY BOARD

October 13, 2015

Exxon Valdez Oil Spill Trustee Council
4210 University Drive
Anchorage, AK 99508-4626

Dear EVOS Trustee Council Members:

The Kenai River Special Management Area Advisory Board was recently informed that Alaska State Parks will be submitting five proposals to the EVOSTC for funding consideration. These five proposals are all located on the Kenai Peninsula along freshwater rivers and consist of protecting and restoring riparian habitat and providing infrastructure to accommodate public recreation.

Alaska State Parks has proposed the following projects for funding through the EVOSTC:

- Kenai River Flats Riverbank Protection
- Pipeline Crossing Riverbank Restoration – Kenai River
- Eagle Rock Riverbank Restoration – Kenai River
- Crooked Creek Riverbank Restoration – Kasilof River
- Anchor River Bank Restoration

Riparian vegetation provides important food, shelter, and shade which support juvenile salmon. Other benefits of healthy riparian habitat include influencing water temperatures, decreasing near shore stream velocities, and providing resting places for juvenile fish. In addition, healthy riparian systems also provide important habitat for wildlife. All three of the Kenai River projects will construct elevated light penetrating boardwalks which will help to support recreational use along the river.

The Kenai River Special Management Area Advisory Board fully supports these projects and urges the EVOSTC to fund these proposals. Thank you for considering these proposals.

Sincerely,

Ted Wellman
President

Kenai Area Office, PO Box 1247, Soldotna, AK 99669, 907-262-5581
Kenai Peninsula Borough, 144 N. Binkley, Soldotna, AK 99669 907-262-4441
Gilman River Center 514 Funny River Road, Soldotna, AK 99669, 907-260-4882
Alaska Division of Parks and Outdoor Recreation, Department of Natural Resources, in cooperation with the Kenai Peninsula Borough
KENAI RIVER CENTER

KENAI RIVER SPORTFISHING
ASSOCIATION

November 2, 2015

Exxon Valdez Oil Spill Trustee Council
4210 University Drive
Anchorage, AK 99508-4626

Dear EVOS Trustee Council Members:

Kenai River Sportfishing Association (KRSA) is a 501 c 3 non-profit fishery conservation organization. KRSA was notified that Alaska State Parks (ASP) is submitting five proposals for funding to EVOSTC, located on the Kenai Peninsula and include site work on the Anchor, Kasilof and Kenai Rivers. They seek to protect and restore riparian fish habitat and provide infrastructure for public recreational uses, primarily for angling. Specifically, the ASP proposals for funding through EVOSTC are:

- Anchor River Bank Restoration
- Crooked Creek Riverbank Restoration – Kasilof River
- Kenai River Flats Riverbank Protection
- Eagle Rock Riverbank Restoration – Kenai River
- Pipeline Crossing Riverbank Restoration – Kenai River

Riparian fish habitat provides protective rearing habitat for juvenile salmon, other fish, and also wildlife by providing food, shelter, and shade. Other benefits of healthy riparian fish habitat include moderating water temperatures and near shore stream velocities. All three of the Kenai River projects will construct elevated light penetrating boardwalks, which has been shown to provide public access to the anglers while maintaining the integrity of fish habitat. The Kasilof River – Crooked Creek project dovetails with the recent EVOSTC approval of a project to restore impaired water flows from a damaged culvert on Crooked Creek.

KRSA enthusiastically supports these five projects and urges the EVOSTC to fund these proposals. Thank you for time and attention in this matter.

Respectfully,

Ricky Gease

Ricky Gease, Executive Director
Kenai River Sportfishing Association

NOAA FISHERIES

Exxon Valdez Trustee Council

c/o Elise Hsieh

4210 University Drive

Anchorage, Alaska 99508-4626

Dear Exxon Valdez Trustee Council,

I would like to send this letter in support of the six habitat restoration projects proposed by . Alaska State. The restoration of streambanks and the installation of light-penetrating walkways will benefit the river habitat in the Kenai Peninsula by reducing the extensive damage to the banks which can reduce overhanging vegetation and increase turbidity in these system. Both of these effects are detrimental to salmon populations in the streams. The work proposed will enhance habitat outside of the direct area by allowing for cooler water temperatures due to shagging from vegetation and by directing human traffic thereby reducing the footprint of degradation. Work performed on EVOS parcels or in stream systems with other EVOS projects will add benefit to investments already made.

Sincerely ,

Erika Ammann
NOAA Restoration Center
222 West 7th Ave
Anchorage, AK
99513

ADNR-DPOR HABITAT RESTORATION AND PROTECTION
PROJECT 17170116

FY2018 2ND QUARTERLY PROJECT UPDATE
AUGUST 31, 2017

Location/Site:	KRSMA: Kenai River Flats Riverbank Protection, Phase I
Approved Budget:	$ 327,000.00
Amount Spent:	$ 0.00
Remaining Balance:	$ 327,000.00
Anticipated Completion Date:	December 31, 2020
Narrative: This scope of the project is on hold awaiting the request for project proposals from the Alaska Transportation Alternative Program (ATAP), which is anticipated to come out in summer of 2018.	

Location/Site:	KRSMA: Eagle Rock Riverbank Protection
Approved Budget:	$ 447,390.00
Amount Spent:	$ 0.00
Remaining Balance:	$ 447,390.00
Anticipated Completion Date:	December 31, 2019
Narrative: Project funds have been received and budget structures set up. Environmental work and data collection activities are commencing.	

Location/Site:	Crooked Creek SRS Riverbank Restoration
Approved Budget:	$ 486,031.00
Amount Spent:	$ 0.00
Remaining Balance:	$ 486,031.00
Anticipated Completion Date:	December 31, 2019
Narrative: Project funds have been received and budget structures set up. Environmental work and data collection activities are commencing.	

Location/Site:	KRSMA: Kenai River Ranch Riverbank Restoration
Approved Budget:	$ 181,158.00
Amount Spent:	$ 0.00
Remaining Balance:	$ 181,158.00
Anticipated Completion Date:	December 31, 2019
Narrative: Project funds have been received and budget structures set up. Environmental work and data collection activities are commencing.	

Location/Site:	KRSMA: Pipeline Crossing Riverbank Restoration
Approved Budget:	$ 307,871.00
Amount Spent:	$ 0.00
Remaining Balance:	$ 307,871.00
Anticipated Completion Date:	December 31, 2019
Narrative: Project funds have been received and budget structures set up. Environmental work and data collection activities are commencing.	

Location/Site:	Anchor River SRA Riverbank Protection
Approved Budget:	$ 464,994.00
Amount Spent:	$ 0.00
Remaining Balance:	$ 464,994.00
Anticipated Completion Date:	December 31, 2019
Narrative: Project funds have been received and budget structures set up. Environmental work and data collection activities are commencing.	

Meals Hill Protection Project
Prepared by Great Land Trust
August 25, 2017

Property Name:	Meals Hill, Port Valdez
Owner:	Port Valdez Company
Agency Sponsor:	Alaska Department of Natural Resources
Appraised Value:	To be determined upon completion of appraisal – Appraisal expected to be finalized fall 2017
Funding Request	To be determined upon completion of appraisal – Not to exceed $5,200,000
Acreage	184
Legal Description	Those portions of Tracts C & E, PORT VALDEZ SUBDIVISION, according to the official plat thereof, filed under Plat Number 77-1, Records of the Valdez Recording District, Third Judicial District, State of Alaska.

Overview:

This project encompasses the permanent protection of approximately 184 acres in the Port Valdez area adjacent to the Valdez Ferry Terminal in Prince William Sound. The Meals Hill property consists of two parcels that contain habitat ranked in the highest priority category in the 2014 Great Land Trust EVOS Habitat Land Prioritization. The parcels are also in close proximity to prior EVOSTC habitat protection projects and thus build on past EVOSTC efforts.

The parcels will be transferred to the State of Alaska, Department of Natural Resources. A conservation easement will be held by the U.S. Bureau of Land Management.

Injured services and species recovery and habitat protection is the EVOSTC's focus in the spill area. Acquisition of this property would contribute to EVOSTC area-wide goals including recreation uses and habitat protection for injured species. Injured species are dependent on the coastal, wetland, and upland habitats provided by these parcels. Protection of the parcels would conserve habitat for fish, shore birds, seabirds, migratory birds, and mammal species. The protection of Meals Hill will provide recreational opportunities by securing public access to a unique, locally accessible coastal property with existing trails for non-motorized recreation along the coast and within walking distance to the Ferry Terminal, Valdez Small Boat Harbor and downtown Valdez. Protection of the property will create public access for multiple recreational activities including hiking, biking, kayaking, bird and wildlife viewing, and berry picking.

Added Benefit to Past EVOS Trustee Council Actions:

In 1999, the EVOS Trustee Council approved funding to acquire surface title to approximately 142 acres (PWS1056 Blondeau parcel and City of Valdez parcel) at the mouth of Mineral Creek in Valdez approximately 0.3 miles from the Meal Hill parcels under consideration. The EVOS Trustee Council also previously approved funding to acquire 25 acres (in 1995) and 9.5 acres (in 2000) northeast of the Valdez Small Boat Harbor (Valdez Duck Flats PWS06, Hayward parcel PWS52) approximately 0.5 miles

from the Meals Hill parcels. In addition, oil spill restitution funds were used to construct the Shoup Bay trail which begins approximately 0.5 miles from the Meals Hill parcels (see map on page 5).

Property Description and Habitat:

Meals Hill is a prominent landscape feature in Port Valdez providing scenic open space, habitat and recreational opportunities near downtown Valdez. The parcel is adjacent to the Valdez Ferry Terminal, 0.3 miles from the Valdez Small Boat Harbor, and 2.5 miles north, directly across Port Valdez from the Valdez Marine Terminal at the end of the Trans Alaskan Pipeline System.

The property is a unique coastal bedrock feature that stands above the city. The property contains undisturbed coastal rain forest, one mile of rocky coastline, and wetlands in the low-lying areas between the parallel ridges of the hill. The property is bordered on the north by residential and industrial development along Egan Avenue, to the east by Hazelet Avenue and the Civic Center, to the South by Port Valdez/ Prince William Sound, and to the west by primarily undeveloped land owned by the University of Alaska, adjacent to Mineral Creek.

The Meals Hill property contains two parcels totaling 184 acres. There is an existing gravel road leading to the overlook at the summit of the hill. There is a private inholding with a residence with a bed and breakfast business located within the exterior boundaries of the Meals Hill parcels that is not part of the sale.

Protection Benefits:

The Meals Hill parcels provide one mile of forested coastline adjacent to subtidal communities, which are an EVOS-affected resource, with continuous kelp beds along the entire one mile stretch. This habitat contributes shelter and food for EVOS-affected species including nearshore fishes, birds, and marine mammals. The marine waters bordering the parcels also provide habitat for five species of pacific salmon including the EVOS-affected resources of pink and sockeye salmon, which spawn in the adjacent Mineral Creek drainage. The property also contains unaltered coastal rainforest, wetlands, and bird nesting habitat unique to the area of Port Valdez proximal to downtown Valdez. The USFWS National Wetlands Inventory maps the Meals Hill parcels as containing 9.45 acres of freshwater emergent wetlands and approximately one mile of coastline adjacent to the estuarine and deepwater wetlands of Port Valdez. These nationally declining wetlands include the continuous kelp beds which provide important habitat to EVOS injured species.

Protection of these parcels would provide new opportunities for tourism and recreation in Valdez, both of which are also EVOS-affected services. The protection of the Meals Hill parcels will provide access to tourism and recreational opportunities by making public an easily-accessible coastal property with existing trails for non-motorized recreation along the coast adjacent to and within walking distance from the Valdez Ferry Terminal, Civic Center Overlook Trail, and coastal walkway to the Valdez Small Boat Harbor. Trails on the parcel would also be able to link with the Mineral Creek Trail, Shoup Bay Trail, and Dock Point Trail. Recreational uses would include hiking, skiing, mountain biking, kayaking, bird and wildlife viewing, and berry picking.

Potential Threats:

Conservation of these parcels would eliminate the threat of future habitat fragmentation, degradation, or development of this prime coastal habitat. Adding to the benefits of the Trustee Council's previously protected adjacent parcels, conserving these parcels of land would reduce habitat fragmentation and thus remove barriers to species mobility. Species' ability to freely move across areas ensures a greater rate of reproductive success, greater access to food, and more opportunity to establish territory in higher-quality habitat. Conserving contiguous tracts of lands also protects pathways between resources. Ample access to resources reduces species stress and makes them less susceptible to disease and starvation.

The Valdez City Council has been briefed on this potential EVOS habitat acquisition project and discussed the many merits of conserving Meals Hill for habitat, recreation, tourism, and community benefit.

Proposed Management:

Alaska Department of Natural Resources.

Funding Request:

To be determined upon completion of appraisal – Not to exceed $5,200,000

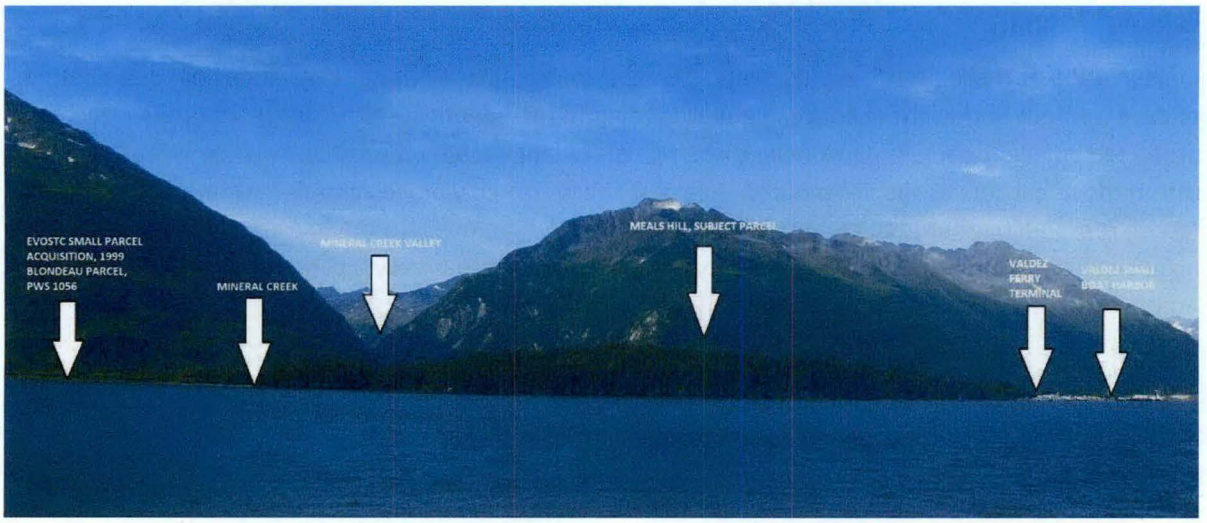


Photo: Meals Hill and surrounding land as viewed from the Alaska Marine Highway ferry, Aurora, approaching the Ferry Terminal in Port Valdez.

Photo: Meals Hill property contains one mile of coastline adjacent to continuous kelp beds.

Photo: Meals Hill showing coastline, coastal forest, gravel road to viewpoint and proximity to Valdez.

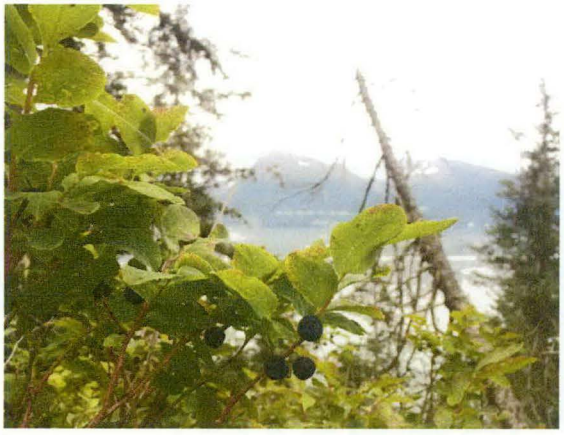


Photo: Coastal rain forests on the subject property across Port Valdez from the Valdez Marine Terminal at the end of the Trans Alaskan Pipeline System.

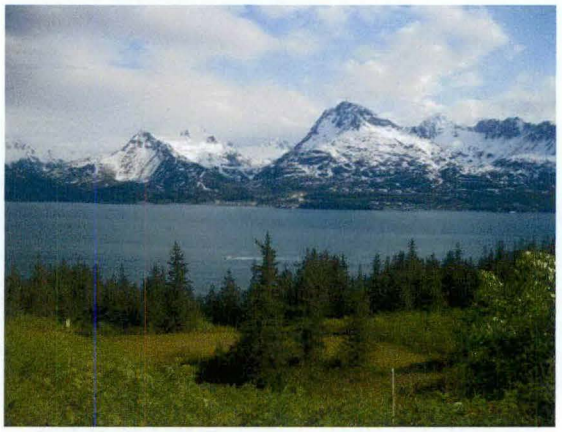
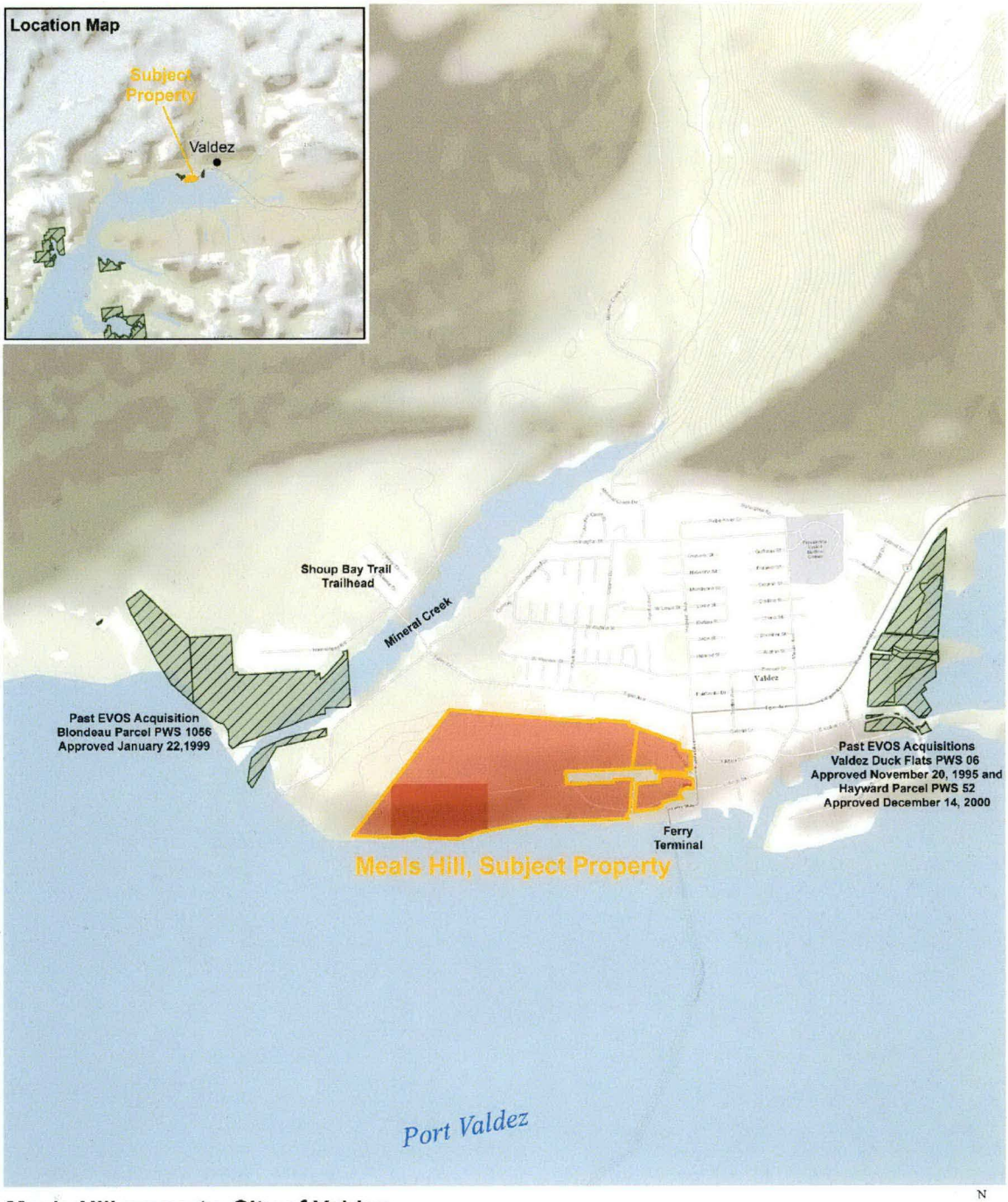


Photo: View from top of Meals Hill across Port Valdez to the Valdez Marine Terminal at the end of the Trans Alaskan Pipeline System.


Location Map
Subject Property
Valdez
Shoup Bay Trail Trailhead
Mineral Creek
Past EVOS Acquisition
Blondeau Parcel PWS 1056
Approved January 22,1999
Past EVOS Acquisitions
Valdez Duck Flats PWS 06
Approved November 20, 1995 and
Hayward Parcel PWS 52
Approved December 14, 2000
Ferry Terminal
Meals Hill, Subject Property
Port Valdez
Meals Hill property, City of Valdez
Past EVOS Action
EVOS Habitat Scoring
Low
High
0
0.5
1
Miles
N
Great Land Trust
EVOS Habitat Prioritization

United States Senate

COMMITTEE ON
ENERGY AND NATURAL RESOURCES

WASHINGTON, DC 20510–6150

WWW.ENERGY.SENATE.GOV

October 20, 2017

Exxon Valdez Oil Spill Trustees Council
c/o Ms. Elise Hsieh, Executive Director
4230 University Drive, Suite 220 (Grace Hall)
Anchorage, Alaska 99508-4650

Dear Trustees:

I am writing to request that the Exxon Valdez Oil Spill Trustees Council initiate a link-to-injury analysis, the first step in deciding whether the Council should properly commit trust fund habitat money to negotiate for and acquire the last of the coal leases at the Bering River coal field, located to the east of Cordova on the eastern edge of Prince William Sound.

The potential impacts on fisheries and wildlife from development of the 73,000-acre coal field has long been the subject of debate among Prince William Sound residents. The acquisition earlier this year of the developmental rights to 85 percent of the coal lands in the area by The Nature Conservancy and the New Forests/Forests Carbon Partners on environmental grounds makes it timely for the Council to consider the acquisition of the remaining 11,000 acres up the Bering-Martin Rivers that would drain into the Copper River Delta, potentially impacting the Sound's fishery habitat.

The remaining leases, owned by the Korea Alaska Development Co. (KADCO), certainly could impact many of the hundreds of thousands of acres that the council has already acquired for surface habitat protection. That is because the Gulf of Alaska Gyre moves water from the mouths of the Bering, Copper, and Martin Rivers directly into Prince William Sound's Orca Inlet, Hinchinbrook Entrance and toward the coastline of Montague Island – all within the boundaries of the EVOS settlement program.

I request that the Council undertake the formal assessment needed to justify the expenditure of oil spill settlement funds and perhaps consider the acquisition of the coal leases, if the acquisition can come at a price that does not deplete the council's necessary funding for key long-term monitoring, research and remediation efforts. Such a review will simply inform the Council of the merits of acquiring the lands versus use of the existing settlements funds for other research and habitat proposals. Thank you for your consideration of the request.

Sincerely,

Lisa Murkowski
US Senator