



**FINAL Work Plan**  
Issued October 15, 2010



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**FISCAL YEAR 2010**

**DRAFT WORK PLAN**

**October 15, 2010**

Prepared by:  
*Exxon Valdez* Oil Spill Trustee Council

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## *Notice*

The abstract of each proposal was written by the authors of the proposals to describe their projects. To the extent that the abstracts express opinions about the status of injured resources they do not represent the views of the Executive Director or other staff of the *Exxon Valdez* Oil Spill Trustee Council, nor do they reflect policies or positions of the Trustee Council.

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# FY10 Proposal Funding Recommendations and Decisions

<b>Project Number</b>	<b>Principal Investigator</b>	<b>Project Title (abbr.)</b>	<b>Total Requested</b>	<b>FY10 Approved</b>	<b>Total Approved</b>	<b>Science Coord.</b>	<b>Rest. Specialist</b>	<b>PAC</b>	<b>Executive Director</b>	<b>Trustee Council</b>
10100111	Ammann	Community-Based Habitat Restoration	\$2,737,153.08	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100808	Ballachey	Nearshore synthesis: Modeling Amendment	\$15,900.00	\$15,914.00	\$15,914.00	Not Reviewed	Not Reviewed	Not Reviewed	Not Reviewed	<b>Fund</b>
10100132-G	Bishop	PWS Herring Survey: Top-Down Regulation by Predatory Fish	\$678,900.00	\$185,500.00	\$678,900.00	Fund	Fund	Fund Reduced	Fund	<b>Fund</b>
10100114	Bochenek	Compilation of EVOS and Regional Hydrocarbon Data and Reports	\$233,300.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100750	Bodkin	Evaluation of Recovery and Restoration of Injured Nearshore Resources	\$601,578.60	\$187,129.00	\$622,288.60	Fund	Fund	Fund	Priority Fund	<b>Fund</b>
10100750-A	Bodkin	Nearshore Synthesis - Knight Island Sampling Amendment	\$20,700.00	\$20,710.00	\$20,710.00	Not Reviewed	Not Reviewed	Not Reviewed	Not Reviewed	<b>Fund</b>
10100118	Boswell	Using Chemical Tracers to Define Regional-Scale Nursery Habitat	\$49,200.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
070836-B	Boufadel	Bioremediation Technologies - FY10 Field Work	\$81,030.00	\$0.00	\$0.00	Not Reviewed	Not Reviewed	Not Reviewed	Not Reviewed	<b>Fund</b>
10100132-F	Brown	PWS Herring Survey: Herring, Predator, and Competitor Density	\$501,252.80	\$160,140.60	\$501,252.80	Fund Reduced	Fund	Fund Reduced	Fund	<b>Fund</b>
10100624	Bychkov	Measuring Interannual Variability in the Herring's Forage Base	\$205,600.00	\$61,900.00	\$205,600.00	Fund	Fund	Fund	Fund	<b>Fund</b>
10100119	Campbell	Carrying Capacity Supplementation for Herring Rest	\$36,600.00	\$0.00	\$0.00	Fund	Fund	Fund	Could Wait	<b>Do Not Fund</b>
10100132-A	Campbell	PWS Herring Survey: Plankton and Oceanographic Observations	\$663,300.00	\$201,500.00	\$663,300.00	Fund	Fund	Fund Reduced	Fund	<b>Fund</b>
10100290	Carls	The Exxon Valdez Trustee Hydrocarbon Database	\$37,200.00	\$9,300.00	\$37,200.00	Fund	Fund	Fund	Fund	<b>Fund</b>
10100123	Collins	Aerial Surveys and Herring Egg Relocation Feasibility	\$154,671.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100125	Cox	Importance of Structured Near Shore Habitats	\$570,100.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100100	EVOS Administration	EVOS Administration	\$2,418,394.00	\$2,418,394.00	\$2,418,394.00	Not Reviewed	Not Reviewed	Not Reviewed	Fund	<b>Fund</b>
10100132-E	Gay	PWS Herring Survey: Nursery Habitats of Juvenile Pacific Herring	\$353,000.00	\$88,400.00	\$353,000.00	Fund	Fund	Fund Reduced	Fund	<b>Fund</b>
10100120	Guyon	Genetic Stock Structure of Herring	\$337,137.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100132-D	Heintz	PWS Herring Survey: Predictors of Winter Performance	\$306,600.00	\$99,000.00	\$306,600.00	Do Not Fund	Fund	Fund Reduced	Do Not Fund	<b>Fund</b>
10100132-I	Hershberger	PWS Herring Survey: Herring Disease Program (HDP)	\$975,200.00	\$81,800.00	\$975,200.00	Fund	Fund	Fund Reduced	Priority Fund	<b>Fund</b>
10100839	Hollmen	Evaluating Injury to Harlequin Ducks	\$250,700.00	\$218,300.00	\$250,700.00	Not Reviewed	Not Reviewed	Not Reviewed	Priority Fund	<b>Fund</b>

<b>Project Number</b>	<b>Principal Investigator</b>	<b>Project Title (abbr.)</b>	<b>Total Requested</b>	<b>FY10 Approved</b>	<b>Total Approved</b>	<b>Science Coord.</b>	<b>Rest. Specialist</b>	<b>PAC</b>	<b>Executive Director</b>	<b>Trustee Council</b>
10100751	Irons	Prince William Sound Marine Bird Surveys, Synthesis and Restoration	\$293,739.70	\$254,499.70	\$293,739.70	Fund	Fund	Fund	Fund	<b>Fund</b>
10100810	Kiefer	An Ecosystem Model of Prince William Sound Herring	\$228,050.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100132-C	Kline	PWS Herring Survey: Pacific Herring Energetic Recruitment Factors	\$998,600.00	\$258,700.00	\$998,600.00	Fund	Fund	Fund Reduced	Fund	<b>Fund</b>
10100811	Kline	Pacific Herring Larval Recruitment into PWS Nursery Bays	\$1,457,400.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100854	Konar	Recovery of Shallow Subtidal Communities	\$124,800.00	\$0.00	\$0.00	Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100132-H	Kuletz	PWS Herring Survey: Seasonal & Interannual Trends in Seabird Predation	\$564,900.00	\$147,200.00	\$564,900.00	Do Not Fund	Fund	Fund Reduced	Do Not Fund	<b>Fund</b>
10100574	Lees	Re-Assessment of Bivalve Recovery	\$264,600.00	\$133,600.00	\$261,600.00	Fund	Fund	Fund Contingent	Could Wait	<b>Fund</b>
10100742	Matkin	Killer Whales in Prince William Sound/Kenai Fjords	\$390,394.50	\$132,309.70	\$390,394.50	Fund	Fund	Fund	Priority Fund	<b>Fund</b>
10100130	Moffitt	Population Structure of Pacific Herring	\$134,400.00	\$0.00	\$0.00	Modify	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100822	Moffitt	Herring Ecosystem Data Portal	\$591,000.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100122	Moran	Impact of Humpback Whale Predation	\$283,600.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100112	Payne	Evaluating Harbor Contaminants	\$618,000.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100116	Payne	Remediation Monitoring using Microbial DNA Profiles	\$565,200.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100132	Pegau	PWS Herring Survey: Comm. Involvem., Outreach, Logistics, & Synthesis	\$1,180,400.00	\$343,100.00	\$1,180,400.00	Fund	Fund	Fund Reduced	Fund	<b>Fund</b>
10100128	Quinn	Historical Humpback Whale Abundance	\$163,700.00	\$94,200.00	\$163,700.00	Fund	Fund	Fund	Could Wait	<b>Fund</b>
10100804	Rice	Significance of Whale Predation On Natural Mortality Rate of Pacific Herring	\$69,100.00	\$69,100.00	\$69,100.00	Fund	Fund	Fund	Fund	<b>Fund</b>
10100759	Rosenberg	Harlequin Duck Population Dynamics	\$711,700.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100165	Seeb	High Density DNA Sequencing	\$997,100.00	\$0.00	\$0.00	Fund Reduced	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
10100165-A	Seeb	Pilot Project - High Density DNA Sequencing	\$71,300.00	\$71,300.00	\$71,300.00	Not Reviewed	Could Wait	Not Reviewed	Could Wait	<b>Fund</b>
10100129	Seitz	Ecology and Migratory Movements of Pacific Herring	\$752,300.00	\$0.00	\$0.00	Fund	Fund	Do Not Fund	Could Wait	<b>Do Not Fund</b>
10100829	Shigenaka	Population Status of Littleneck Clams	\$346,600.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Fund Contingent	Do Not Fund	<b>Do Not Fund</b>
10100132-B	Thorne	PWS Herring Survey: Assessment of Juvenile Herring Abundance	\$596,727.00	\$170,200.00	\$596,700.00	Fund	Fund	Fund Reduced	Fund	<b>Fund</b>

<b>Project Number</b>	<b>Principal Investigator</b>	<b>Project Title (abbr.)</b>	<b>Total Requested</b>	<b>FY10 Approved</b>	<b>Total Approved</b>	<b>Science Coord.</b>	<b>Rest. Specialist</b>	<b>PAC</b>	<b>Executive Director</b>	<b>Trustee Council</b>
10100806	Vollenweider	Are Herring Energetics Limiting. Part III	\$60,700.00	\$60,700.00	\$60,700.00	Fund	Fund	Fund	Fund	<b>Fund</b>
10100340	Weingartner	Long-Term Monitoring of the Alaska Coastal Current	\$413,800.00	\$141,500.00	\$413,800.00	Fund	Fund	Fund	Priority Fund	<b>Fund</b>
10100124	Zwollo	Effects of Marine Pollution on Pacific Herring Immunity	\$307,000.00	\$0.00	\$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	<b>Do Not Fund</b>
<b>Total Funds Requested and Approved</b>			<b>\$23,222,976.68</b>	<b>\$5,385,561.00</b>	<b>\$11,875,157.60</b>					

**Total Number of Proposals Received in FY10: 46**

**Total Number of New Projects Funded in FY10: 26**

## Continuing Projects in FY10

<b>Project #</b>	<b>Principal Investigator</b>	<b>Project Title (abbr.)</b>	<b>FY10 Funding</b>	<b>First Year Funded</b>
070819	Hershberger	PWS Herring Disease Program	\$272,800.00	FY07
<b>FY10 Continuing Project Funding Total</b>			<b>\$272,800.00</b>	

# Descriptions of New and Continuing Projects in FY10

**Project Number:** 070819  
**Project Title:** Prince William Sound Herring Disease Program  
**Principal Investigator:** Paul Hershberger  
**Affiliation:** NOAA  
**Co-PIs/Personnel:** Diane Elliott, Eveline Emmenegger, John Hansen, Richard Kocan, Gael Kurath, Scott Lapatra,  
**Disbursing Agency:** USGS  
**Project Location:** Prince William Sound  
**Project Type:** Continuing

## Funding Approved by Fiscal Year:

<b>FY07:</b> \$246,500.00	<b>FY08:</b> \$257,100.00	<b>FY09:</b> \$258,600.00
<b>FY10:</b> \$272,800.00	<b>FY11:</b> \$0.00	<b>FY12:</b> \$0.00

**Total Funding Approved:** \$1,035,000.00

## Abstract:

A leading hypothesis accounting for the decline and failed recovery of the herring population in Prince William Sound involves epizootic mortality resulting from infectious and parasitic diseases. Ongoing and past surveillance of herring diseases in PWS, initiated by Dr. Gary Marty and continued by ADF&G through the herring disease index, is extremely valuable and necessary to document changes in disease prevalence, but field surveys are unable to unequivocally demonstrate epidemiological relationships that modulate disease cycles. This proposed multi-year Herring Disease Program (HDP) consists of three components intended to provide predictive metrics that forecast future disease epidemics and offer empirical relationships useful in developing adaptive management policies to mitigate the effects of epizootic and chronic diseases. The first component involves laboratory validation of the ongoing PWS herring disease index. Long-term continuation of the herring disease index, paired with laboratory validation, is necessary to confirm the efficacy of future adaptive disease management strategies. The second component involves empirical studies intended to determine the basic epidemiological relationships between environmental and biological factors influencing infection / disease prevalence. The final component involves development of immunological and molecular tools that will be useful in predicting the potential for future disease epidemics. Combined, this three-tiered approach will provide the basic epidemiological information necessary to develop and validate adaptive management techniques intended to mitigate the effects of future herring disease outbreaks in PWS.

## Science Panel Comments:

Disease is an important consideration in the development of a comprehensive herring restoration program, and this is the only project that proposes to take an in-depth look at disease factors. The PIs are experts in the field and qualified to conduct the work. The panel recommends removing the immune gene expression objective, which is not well conceived or detailed in the proposal. Also, the PI should expedite the development of lab methods, so they can be used as tools to assess disease status in the field while captive work continues. A field component should also be added in Year 2 with concentration on Sitka (healthy stock) population for field validation.

**Science Panel Recommendation:** Fund

## Science Coordinator Comments:

Concur with the Science Panel. No other disease proposals were submitted to the Trustees, and disease plays an



important role in the current state of PWS herring. However, disease is not fully understood in the PWS herring population. Understanding disease is vital to any direct intervention activity, so that the spread and expansion of disease problems can be prevented.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Not Available

**Public Advisory Committee Recommendation:** Fund

**Executive Director Comments:**

Concur with Science Panel.

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100808  
**Project Title:** Nearshore synthesis: Sea otters and sea ducks - Modeling Amendment  
**Principal Investigator:** Brenda Ballachey  
**Affiliation:** USGS-Alaska Science Center  
**Co-PIs/Personnel:** Daniel Monson  
**Disbursing Agency:** USGS  
**Project Location:** Prince William Sound  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$15,914.00	<b>FY11:</b> \$0.00	<b>FY12:</b> \$0.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$15,914.00

**Abstract:**

This is an amendment to project 070808-090808, Sea otter status and nearshore synthesis, to update the sea otter population model with four more years of data. Population models have been utilized for sea otters to evaluate causes underlying a lack of recovery of populations in western Prince William Sound. Data for the models include ages at death (based on recovery of otter carcasses), ages of live animals (based on captured otters), and abundance estimates from aerial surveys. Initial modeling efforts used age-at-death data collected from 1976-1998; later efforts have involved more complex models and have included data sets collected through 2005. Overall, results suggest continued depression of survival rates through 2005, relative to prespill survival. We now have 4 more years of data, and have noted an increase in sea otter abundance at northern Knight Island since 2007. We propose to update the models with the 2006-2009 data, to determine if sea otter survival rates are returning to prespill patterns, and to elucidate the factors underlying the recently observed increase in otter numbers

**Science Panel Comments:**

Not Applicable

**Science Panel Recommendation:** Not Reviewed

**Science Coordinator Comments:**

Not Applicable

**Science Coordinator Recommendation:** Not Reviewed

**Public Advisory Committee Comments:**

Not Applicable

**Public Advisory Committee Recommendation:** Not Reviewed

**Executive Director Comments:**

Not Applicable

**Executive Director Recommendation:** Not Reviewed

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100132-G  
**Project Title:** PWS Herring Survey: Top-Down Regulation by Predatory Fish on Juvenile Herring  
**Principal Investigator:** Mary Anne Bishop  
**Affiliation:** Prince William Sound Science Center  
**Co-PIs/Personnel:** Sean Powers  
**Disbursing Agency:** NOAA  
**Project Location:** Prince William Sound  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$185,500.00	<b>FY11:</b> \$183,300.00	<b>FY12:</b> \$193,400.00
<b>FY13:</b> \$116,700.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$678,900.00

**Abstract:**

Based on population trends, the Prince William Sound (PWS) Pacific herring population does not show signs of recovering. Predation pressure on juvenile herring has been cited as an important factor in preventing recovery. Juvenile herring are heavily preyed upon by multiple species of fish, including rockfish, a species group injured by the Exxon Valdez Oil spill with unknown recovery status. This proposal is for a four-year study to investigate fish predation on the 0-age class herring over winter, a critical bottleneck for recruitment. We will examine the spatial and temporal abundance of fish predators in and around juvenile herring schools, as well as the physical and biological characteristics of the herring schools on which they feed. We will also conduct laboratory experiments to determine fish predators' daily rations and prey preferences. Our project is a component of the PWS Herring Survey program and relies on predator surveys being performed on integrated November and March cruises. Our models will provide estimates of juvenile herring consumption by the most important fish predators. Ultimately, this study will improve understanding of the role of fish predation on herring recruitment, will provide protocols and recommendations for long-term fish predator monitoring and management, and will help to identify candidate sites for herring supplementation efforts.

**Science Panel Comments:**

Predation has been identified as a significant constraint to the recovery of herring in PWS. The Trustees have recently funded two projects investigating the impact of seabird and whale predation on herring. This study will provide a more complete picture of the role predation plays in the herring lifecycle by determining the influence of fish predators.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

The effects of predatory fish on herring have not been studied even though it has been identified as a potential limiting factor for the restoration of herring. The data collected in this project will further our understanding of the impact of this type of predation and will give a deeper understanding of herring's lack of recovery.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Possible reduction as a function of the recommended overall 10% decrease of the 10100132 PWS Herring Survey - see 10100132.

**Public Advisory Committee Recommendation:** Fund Reduced

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100750  
**Project Title:** Monitoring for Evaluation of Recovery and Restoration of Injured Nearshore Resources  
**Principal Investigator:** James Bodkin  
**Affiliation:** US Geological Survey  
**Co-PIs/Personnel:** Tom Dean  
**Disbursing Agency:** USGS  
**Project Location:** Western Prince William Sound  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$187,129.00	<b>FY11:</b> \$166,419.00	<b>FY12:</b> \$165,329.00
<b>FY13:</b> \$103,411.60	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$622,288.60

**Abstract:**

The proposed project is designed to assist in the evaluation of recovery and restoration of injured resources in Prince William Sound. The primary objective is to initiate or continue recovery and restoration monitoring in the nearshore in Prince William Sound following the plan developed in Restoration Project 050750 and tested in Restoration Project 070750. The goal of this program is to evaluate the current status of EVOS injured resources and services (recreational, subsistence, and passive use), to determine when populations may be considered recovered, and to foster recovery of those resources by identifying and recommending actions in response to factors limiting recovery. The National Park Service and USGS began implementation of a similar nearshore monitoring plan outside of Prince William Sound (i.e., along the Katmai, Kenai Fjords, and Lake Clark National Park coasts, including both oiled and unoled sites) in 2006. This program is collecting information similar to the data sets that have been used to assess recovery of injured resources in Prince William Sound (e.g., population abundance and survival of sea otters, population abundance of harlequin ducks and other nearshore birds, abundance estimates for mussels, clams, and other intertidal organisms). Contrasts among trends in injured resources in and outside Prince William Sound, including both oiled and unoled areas will provide the primary means of resource evaluation. Funds for conducting some of these studies in Prince William Sound (e.g., bird and mammal surveys, D. Irons USFWS) are being sought by other proposals submitted to the Trustee Council and are not addressed herein. Our purpose is to implement a nearshore monitoring program in Western Prince William Sound related to EVOS injured resources and to make it comparable to the program being carried out by the National Park Service in the Gulf of Alaska outside of Prince William Sound. This proposed nearshore sampling in Prince William Sound, in conjunction with nearshore sampling and data management supported by NPS and USGS will provide the foundation of a comprehensive restoration monitoring program for the entire oil spill area.

**Science Panel Comments:**

This proposal provides a logical next step in development of a program to determine long-term health of the intertidal community and associated resources that were clearly impacted by the spill. It specifically addresses recovery status of injured intertidal communities for which little current information is available. The proposal builds on work funded by other agencies to provide an important gulf-wide perspective.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Not Available

**Public Advisory Committee Recommendation:** Fund

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Priority Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100750-A  
**Project Title:** Nearshore Synthesis - Knight Island Sampling Amendment  
**Principal Investigator:** James Bodkin  
**Affiliation:** Not Available  
**Co-PIs/Personnel:** Tom Dean  
**Disbursing Agency:** USGS  
**Project Location:** Northern Knight Island  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$20,710.00	<b>FY11:</b> \$0.00	<b>FY12:</b> \$0.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$20,710.00

**Abstract:**

Under EVOS project 10100750 we will be providing an estimate of the abundance of sea otters in Western Prince William Sound that will be used to track the process of sea otter recovery. In this amendment, we are proposing to add funding to support replicate surveys of sea otters at Northern Knight Island, where recovery of sea otters has been delayed. The estimate of abundance at Knight Island will be used to track the process of recovery where spill-related effects and delayed recovery of sea otters was most evident.

**Science Panel Comments:**

Not Applicable

**Science Panel Recommendation:** Not Reviewed

**Science Coordinator Comments:**

Not Applicable

**Science Coordinator Recommendation:** Not Reviewed

**Public Advisory Committee Comments:**

Not Applicable

**Public Advisory Committee Recommendation:** Not Reviewed

**Executive Director Comments:**

Not Applicable

**Executive Director Recommendation:** Not Reviewed



**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 070836-B  
**Project Title:** Bioremediation Technologies - FY10 Field Work  
**Principal Investigator:** Michel Boufadel  
**Affiliation:** Temple University  
**Co-PIs/Personnel:** None  
**Disbursing Agency:** NOAA  
**Project Location:** Prince William Sound  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$0.00	<b>FY11:</b> \$0.00	<b>FY12:</b> \$0.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$0.00

**Abstract:**

This proposed additional work will help address two important questions raised by the field work done in 2009. First, there is some question about whether the beaches had been restored to their normal, undisturbed state at the time the 2009 field work was conducted. The lithium tracer investigations conducted in 2009 occurred approximately two months after the excavation and refilling of pits on the beaches in which the delivery equipment was and monitoring wells were installed. Information at that time had led us to conclude that the beaches had resettled to their normal state within two months, and we began delivery and measurement of the tracer thereafter. Using the same protocols employed in 2009 with the equipment installed in 2009, which will have been in place for over a year, would definitively address this question. If the results obtained in 2010 are substantially the same as those obtained in 2009, this would confirm the 2009 data on beach characteristics (including the rate and distance of travel of chemicals through the beach strata) and would add credence to the possibility of delivering bioremediation chemicals to the sequestered lingering oil using this type of equipment. Conversely, if results in 2010 show substantially reduced travel of the lithium tracer through the beach strata, that might suggest that this technology would not be effective for delivery of remediation chemicals to sequestered lingering oil. Any differences between the 2010 data and the 2009 data would be important because we expect that bioremediation using this kind of technology would take place over a matter of months (rather than weeks), possibly in several successive field seasons, post-installation of the delivery systems.

**Science Panel Comments:**

Not Applicable

**Science Panel Recommendation:** Not Reviewed

**Science Coordinator Comments:**

Not Applicable

**Science Coordinator Recommendation:** Not Reviewed

**Public Advisory Committee Comments:**

Not Applicable

**Public Advisory Committee Recommendation:** Not Reviewed

**Executive Director Comments:**

Not Applicable

**Executive Director Recommendation:** Not Reviewed

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100132-F

**Project Title:** PWS Herring Survey: Sound Wide Juvenile Herring, Predator, and Competitor Density via Aerial Surveys, submitted under the BAA AB133F-09-RP-0059

**Principal Investigator:** Evelyn Brown

**Affiliation:** Flying Fish Ltd.

**Co-PIs/Personnel:** None

**Disbursing Agency:** NOAA

**Project Location:** PWS

**Project Type:** New

**Funding Approved by Fiscal Year:**

**FY10:** \$160,140.60

**FY11:** \$153,055.60

**FY12:** \$153,055.60

**FY13:** \$35,001.00

**FY14:** \$0.00

**FY15:** \$0.00

**Total Funding Approved:** \$501,252.80

**Abstract:**

As a component of the integrated PWS Herring Survey (Pegau, P.I.), this project provides 1) a sound-wide, spatially-explicit map of juvenile herring densities, 2) synoptic distributions of herring predator and competitors, and 3) builds on 5 years of previous PWS surveys. June-August surveys map age 1 overwinter survivorship, the timing, spatial extent, and density of age 0 recruiting to nursery habitat, summer mortality of age 1 herring, as well as associated changes in predator/competitor densities. Validation sampling will be provided by a shared vessel with the PWS Herring Survey monthly zooplankton cruises (Campbell, P.I.). Combined with data from other projects within and outside of the PWS Herring Survey, this project's data provides 1) inputs, outputs, and validation for overwinter survival and density-dependent models of predation, growth and disease, 2) an initial estimate of age 2 immature herring recruitment, and 3) spatial information needed to plan, initiate, and evaluate intervention actions.

**Science Panel Comments:**

The objectives, while good, are probably not achievable with the proposed level of effort suggested. Consequently the results could fall short of the objectives. Regardless some of the results could be very useful, even with inherent limitations. The main technical issues noted by the panel concern species identification from the air: it is not sufficient that the observer is convinced of the species identity – there must be a validation process that is transparent and convincing. Some form of ground-truthing is required. The Science panel also wondered about limitation of quantitative estimates of fish schools and why there was no explicit reference to analysis of photographic records. Although the Science panel was highly skeptical of many of the claims made in the proposal it recognized that interest and dedication of the researchers, and acknowledges that areal work could provide a valuable support for the herring Survey team. Therefore the recommendation was to fund the project for one year and re-evaluate the proposal before further support.

**Science Panel Recommendation:** Fund Reduced

**Science Coordinator Comments:**

While I concur with several of the science panel's comments on this project, I do believe that this work will provide valuable data for the Council's herring restoration efforts. The researcher is experienced in this type of data collection and will be coordinating closely with the other members of the PWS Herring Survey team to ground-truth the aerial observations.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Possible reduction as a function of the recommended overall 10% decrease of the 10100132 PWS Herring Survey - see 10100132.

**Public Advisory Committee Recommendation:** Fund Reduced

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100624

**Project Title:** Measuring Interannual Variability in the Herring's Forage Base from the GOA - Submitted Under the BAA

**Principal Investigator:** Alexander Bychkov

**Affiliation:** PICES

**Co-PIs/Personnel:** Sonia Batten

**Disbursing Agency:** NOAA

**Project Location:** Shelf waters SW of PWS, Cook Inlet, northern GOA

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$61,900.00	<b>FY11:</b> \$63,600.00	<b>FY12:</b> \$65,100.00
<b>FY13:</b> \$15,000.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$205,600.00

**Abstract:**

Herring from Prince William Sound feed on zooplankton, some originating within the Sound and some from the Gulf of Alaska (GOA) introduced to PWS via a variety of processes. Additionally, adult herring almost certainly forage outside of the Sound, feeding on zooplankton over the wider Alaskan shelf. Understanding the sources of variability in the herring forage base is essential to efforts to understand the herring recovery process and to address basic resource management questions. Direct measurements inside PWS do not explain how the interannual variation in ocean food sources creates interannual variability in PWS zooplankton, nor when changes in ocean zooplankton are to be seen inside PWS. A ten-year time series of seasonal zooplankton data from the Alaskan shelf and northern oceanic GOA has been maintained through support from a variety of agencies including the EVOS TC. The Continuous Plankton Recorder (CPR) survey is a cost-effective, ship-of-opportunity based sampling program that includes community involvement and has a proven track record. The existing time series shows considerable interannual variation in GOA zooplankton abundance and is essential baseline data to underpin herring restoration efforts. EVOS TC support is now requested to maintain the sampling in this region at the current resolution while we examine the linkages between PWS and GOA zooplankton.

**Science Panel Comments:**

This project provides the only long-term record of plankton abundance and species composition important to understanding the inter-annual variation in herring food from the Gulf of Alaska. This information is necessary to understand herring mortality and long-term trends in herring abundance. The proposers are global leaders in the field and have successfully maintained a time series of such information for a decade using a consortium of funders, including the EVOSTC. The approach using vessels of opportunity and continuous plankton recorders has provided information of the highest quality for the lowest costs for over 50 years. This is the longest plankton time series in the Pacific.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Not Available

**Public Advisory Committee Recommendation:** Fund

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100132-A

**Project Title:** PWS Herring Survey: Plankton and Oceanographic Observations, Submitted Under the BAA

**Principal Investigator:** Robert Campbell

**Affiliation:** Prince William Sound Science Center

**Co-PIs/Personnel:** None

**Disbursing Agency:** NOAA

**Project Location:** Prince William Sound

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$201,500.00	<b>FY11:</b> \$197,300.00	<b>FY12:</b> \$200,100.00
<b>FY13:</b> \$64,400.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$663,300.00

**Abstract:**

Herring stocks collapsed in the years following the Exxon Valdez Oil Spill. The cause of the collapse remains highly controversial, and several empirical and theoretical studies have implicated different factors, including the spill, disease outbreaks, fishing activity, and ecosystem productivity. Herring stocks have not rebounded since the collapse in the early 90's and show no signs of recovery; similarly controversial, varied, and not necessarily mutually exclusive. The work described in this proposal is part of several collaborative proposals to survey herring in PWS, and seeks to monitor the environmental and food climate experienced by herring in order to address the hypothesis that carrying capacity can be limiting the recovery of herring. Observations of environmental conditions and plankton abundance over time will be integrated with observations of herring distributions and energetics, in order to assess how the food climate in Prince William Sound may structure herring populations in space and time.

**Science Panel Comments:**

The science panel endorsed this project because it addressed fundamental issues related to the role of food availability and the decline or lack of recovery of herring. Food limitation over the winter is seen to be a credible explanation as a factor affecting the survival of age 0+ herring over the winter. This project will address a basic part of the hypothesis. The work also could have implications for factors affecting other species, including competitors and predators of herring. The reviews were positive and the PI appears to be productive. Also the proposal is connected and coordinated with other concurrent projects in the herring survey.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Possible reduction as a function of the recommended overall 10% decrease of the 10100132 PWS Herring Survey - see 10100132.



**Public Advisory Committee Recommendation:** Fund Reduced

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100290  
**Project Title:** The Exxon Valdez Trustee Hydrocarbon Database  
**Principal Investigator:** Mark Carls  
**Affiliation:** NOAA/NMFS Auke Bay Laboratory  
**Co-PIs/Personnel:** Marie Larsen  
**Disbursing Agency:** NOAA  
**Project Location:** Auke Bay Laboratories – TSMRI, Juneau, AK  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$9,300.00	<b>FY11:</b> \$9,300.00	<b>FY12:</b> \$9,300.00
<b>FY13:</b> \$9,300.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$37,200.00

**Abstract:**

This is an on-going service project that provides data and sample archiving services for all samples collected for hydrocarbon analysis in support of Exxon Valdez Oil Spill Trustee Council projects. These data represent samples collected since the oil spill in 1989 to the present and include National Resource Damage Assessment (NRDA) studies (environmental and laboratory) and Restoration and Recovery data. This project serves as an archive for chemical analyses and sample data and storage of physical samples that have not been analyzed and provides copies of the ACCESS database to interested parties. The project also responds to several Freedom of Information Act (FOIA) requests each year for information associated with these data. Interpretative services for these data are available.

**Science Panel Comments:**

This proposal provides ongoing support for maintaining, updating, and serving hydrocarbon data that are critical to future evaluations of recovery and restoration.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Not Available

**Public Advisory Committee Recommendation:** Fund

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100100  
**Project Title:** EVOS Administration  
**Principal Investigator:** EVOS Administration  
**Affiliation:** EVOSTC  
**Co-PIs/Personnel:** None  
**Disbursing Agency:** ADFG  
**Project Location:** Trustee Council Office  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$2,418,394.00	<b>FY11:</b> \$0.00	<b>FY12:</b> \$0.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$2,418,394.00

**Abstract:**

The FY10 program components are:

- Administration Management
- Data Management
- Science Management
- Public Information & Outreach
- Public Advisory Committee (PAC)
- Habitat Protection Program
- Trustee Council Member Direct Expenses
- Program Support/Project Management by Agencies
- Alaska Resources Library & Information Services

Various aspects of the components are undertaken by Trustee Council agencies providing program development and administrative support.

Although funding for liaisons, project managers, and other support staff is included in the Program Support and Project Management component, the final budget for this component cannot be accurately determined until the Trustee Council takes action on the FY 10 Work Plan. Upon adoption of the FY 10 Work Plan, additional project management funds for each agency will be requested in proportion to the number and complexity of funded projects assigned to each agency for management. At that time the budget will be revised to reflect this additional expense.

**Science Panel Comments:**

Not Applicable

**Science Panel Recommendation:** Not Reviewed

**Science Coordinator Comments:**

Not Applicable

**Science Coordinator Recommendation:** Not Reviewed

**Public Advisory Committee Comments:**

Not Applicable

**Public Advisory Committee Recommendation:** Not Reviewed

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100132-E

**Project Title:** PWS Herring Survey: Physical Oceanographic Characteristics of Nursery Habitats of Juvenile Pacific Herring, submitted under the BAA AB133F-09-RP-0059

**Principal Investigator:** Shelton Gay

**Affiliation:** Prince William Sound Science Center

**Co-PIs/Personnel:** None

**Disbursing Agency:** NOAA

**Project Location:** Prince William Sound, Alaska

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$88,400.00	<b>FY11:</b> \$83,100.00	<b>FY12:</b> \$90,000.00
<b>FY13:</b> \$91,500.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$353,000.00

**Abstract:**

The objectives of this research are to build upon a physical oceanographic data base started during the SEA project and continued under a recent EVOS funded project: Physical Oceanographic Factors Affecting Productivity in Juvenile Pacific Herring Nursery Habitats. The rationale of this project is based upon past research of juvenile Pacific herring in PWS, which has shown that recruitment is highly influenced by conditions within nursery sites affecting survival within the first year. Important among these conditions is the pre-winter condition of juvenile (age-0) herring and the effects of water temperatures on metabolism and hence over-winter survival. Past studies of the physical oceanography of nursery fjords has indicated that each site has a unique set of hydrographic conditions that are influenced by both local processes and water exchange between the GOA and PWS. These factors vary significantly depending on geographic location, basin morphometry, watershed topography and proximity to tidewater glacial fjords. The proposed study will continue monitoring the physical properties within the four SEA nursery fjords and additional sites as determined by future herring surveys, and collect time-series data on temperature, salinity and fluorescence to determine the variation among nurseries in factors such as ocean climate, stratification, mixing, phytoplankton biomass, and energy constraints imposed on juvenile herring by seasonal changes in water temperatures. The data will also assist in evaluating potential sites for future supplementation efforts in restoring the herring population.

**Science Panel Comments:**

This project will continue to make key hydrographic and circulation measurements in PWS. Such measurements are critical to other studies, like that of Kline, and to constructing a synthetic population model for herring.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Possible reduction as a function of the recommended overall 10% decrease of the 10100132 PWS Herring Survey -

see 10100132.

**Public Advisory Committee Recommendation:** Fund Reduced

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100132-D

**Project Title:** PWS Herring Survey: Value of Growth and Energy Storage as Predictors of Winter Performance in YOY Herring from PWS

**Principal Investigator:** Ronald Heintz

**Affiliation:** NOAA/NMFS Auke Bay Laboratory

**Co-PIs/Personnel:** JJ Vollenweider

**Disbursing Agency:** NOAA

**Project Location:** Eaglek, Simpson, Whale and Zaikof and other bays

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$99,000.00	<b>FY11:</b> \$99,000.00	<b>FY12:</b> \$99,000.00
<b>FY13:</b> \$9,600.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$306,600.00

**Abstract:**

This proposal examines the reliability of fall growth rates as an indicator of over-winter performance among YOY herring in Prince William Sound. The Trustee Integrated Herring Restoration Program cites the need for identifying parameters that reliably indicate condition. Parameters such as size or energy density can provide misleading results. While size is a good predictor of over-winter survival in a given year, there is no critical size that predicts survival across years. Similarly, changes in energy density may not reflect the severity of winter. We propose that fall growth rate predicts performance because herring acquire the bulk of their lipid in fall. Individuals experiencing high growth in fall are likely to obtain disproportionately large energy reserves. We propose using models relating RNA/DNA ratios to growth obtained under another Trustee study to estimate growth in field specimens collected during the survey period. In addition we will examine how energy is partitioned between structural and storage compartments. Combining these data with those of other projects being proposed under the PWS Herring Survey will allow us to test the hypothesis that growth in fall is the most consistent indicator of over winter survival because fall growth provides for the greatest provisions of stored energy.

**Science Panel Comments:**

The science panel noted concern that ongoing work by the PI should be brought to completion before starting a new project. Further there was concern that the proposed sample size was too small and not random enough to provide convincing results.

**Science Panel Recommendation:** Do Not Fund

**Science Coordinator Comments:**

This project will provide information that will be important in understanding over winter performance of young of the year herring in PWS.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Possible reduction as a function of the recommended overall 10% decrease of the 10100132 PWS Herring Survey - see 10100132.



**Public Advisory Committee Recommendation:** Fund Reduced

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Do Not Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100132-I

**Project Title:** PWS Herring Survey: Herring Disease Program (HDP)

**Principal Investigator:** Paul Hershberger

**Affiliation:** US Geological Survey

**Co-PIs/Personnel:** Maureen Purcell, Jim Winton

**Disbursing Agency:** USGS

**Project Location:** Prince William Sound, Sitka Sound, Puget Sound, USGS - Marrowstone Marine Field Station

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$81,800.00	<b>FY11:</b> \$284,100.00	<b>FY12:</b> \$295,800.00
<b>FY13:</b> \$313,500.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$975,200.00

**Abstract:**

The Herring Disease Program (HDP) is part of a larger integrated effort, the PWS herring survey: Community Involvement, Outreach, Logistics, and Synthesis submitted under the BAA (outlined in a separated proposal by Dr. Scott Pegau), that is intended to identify juvenile rearing bays, measure factors limiting the success of juvenile herring, and provide recommendations for spatial and temporal coverage of future monitoring efforts. Within this integrated effort, the HDP is intended to evaluate the impact of infectious and parasitic diseases on the failed recovery of the PWS herring population by placing special emphasis on disease processes affecting juvenile cohorts. The framework for the 2010 - 2013 HDP involves a combination of field surveillance efforts and laboratory-based empirical disease process studies. Field surveillance efforts will provide continued and expanded infection and disease prevalence data for herring populations in Prince William Sound (PWS), Sitka Sound, and Puget Sound. Additionally, samples from field surveillance efforts will be processed using newly-developed disease forecasting tools to provide annual risk assessments that quantify the potential for future disease epizootics. Empirical disease process studies will provide an understanding of cause and effect epidemiological relationships between the host, pathogen, and environment; understanding of these relationships represents a first step towards developing additional disease forecasting tools. Specific emphasis will be placed on refining our understanding disease processes specific to viral hemorrhagic septicemia (VHS) and ichthyophoniiasis, two primary diseases of herring in PWS.

**Science Panel Comments:**

This proposal describes continuation of herring disease monitoring and research into its role in combination with other interacting stressors in suppressing herring recovery in PWS. This is done in coordination with the broader Herring Survey program proposed by Scott Pegau. Although a continuation of an ongoing project, this proposal clearly identifies a set of new objectives that are appropriate and compelling. Specifically, the laboratory experiments evaluating the cause-effect epidemiology of how host, parasite, and environmental factors interact to dictate disease impacts is especially promising. The survey work also focuses on disease effects on YOY herring in ways that may lead to much improved understanding of disease impacts on herring because of the complex role of historical exposure and immunity in determining impacts later in the life history. Hershberger and colleagues have been exceptionally productive in their past EVOS work. Although this project is expensive over its 4 years, the costs are appropriate for the type of research required, involving sophisticated lab assessments of multiple diseases.

The Science Panel recommends FUND – even if the entire Herring Survey is not funded or slow to be funded because this project can stand on its own merits (although needs field ship platforms for collections of herring).

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Possible reduction as a function of the recommended overall 10% decrease of the 10100132 PWS Herring Survey - see 10100132.

**Public Advisory Committee Recommendation:** Fund Reduced

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Priority Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100839  
**Project Title:** Evaluating Injury to Harlequin Ducks  
**Principal Investigator:** Tuula Hollmen  
**Affiliation:** Alaska SeaLife Center  
**Co-PIs/Personnel:** Kathrine Springman  
**Disbursing Agency:** ADFG  
**Project Location:** Prince William Sound  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$218,300.00	<b>FY11:</b> \$32,400.00	<b>FY12:</b> \$0.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$250,700.00

**Abstract:**

Evaluation of harlequin duck (*Histrionicus histrionicus*) population trends, survival measures, and biomarker indicators of exposure suggests that the species is recovering, but has not fully recovered from the effects of the 1989 Exxon Valdez oil spill (EVOS) in the Prince William Sound (PWS). In areas oiled by the EVOS, elevated cytochrome P4501A biomarker induction has been observed in harlequin ducks as recently as March 2007, providing evidence of continued exposure. The magnitude of injury and its implications for populations of harlequin ducks caused by chronic oil exposure and long-term induction of central enzymatic processes is unknown. This study applies a panel of in vitro harlequin duck and surrogate cell line bioassays for a species-specific toxicological assessment of site-specific hydrocarbons from PWS. A combination of bioassays that measure direct effects on cell viability and DNA damage provide a new method to assess and quantify injury. Also, a battery of laboratory bioassays provides a method to link P4501A biomarker induction with other measures of cellular injury, and a comprehensive assessment of potential short- and long-term toxicity.

**Science Panel Comments:**

Not Applicable

**Science Panel Recommendation:** Not Reviewed

**Science Coordinator Comments:**

Not Applicable

**Science Coordinator Recommendation:** Not Reviewed

**Public Advisory Committee Comments:**

Not Applicable

**Public Advisory Committee Recommendation:** Not Reviewed

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Priority Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100751

**Project Title:** Prince William Sound Marine Bird Surveys, Synthesis and Restoration

**Principal Investigator:** David Irons

**Affiliation:** U.S. Fish and Wildlife Service

**Co-PIs/Personnel:** Kathy Kuletz

**Disbursing Agency:** USFWS

**Project Location:** Prince William Sound

**Project Type:** New

**Funding Approved by Fiscal Year:**

**FY10:** \$254,499.70                      **FY11:** \$39,240.00                      **FY12:** \$0.00

**FY13:** \$0.00                      **FY14:** \$0.00                      **FY15:** \$0.00

**Total Funding Approved:** \$293,739.70

**Abstract:**

We propose to conduct small boat surveys to monitor abundance of marine birds in Prince William Sound, Alaska, during March and July 2010. Ten previous surveys have monitored population trends for marine birds and mammals in Prince William Sound after the Exxon Valdez oil spill. We will use data collected in 2010 to examine trends from summer and from winter 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 2007 in the oiled area indicated that common loons (*Gavia immer*), and cormorants (*Phalacrocorax* spp) are increasing. Numbers of all other injured species are either not changing or are declining in the oiled area. Populations of harlequin ducks (*Histrionicus histrionicus*), black oystercatchers (*Haematopus bachmani*), Kittlitz's Murrelets (*Brachyramphus brevirostris*), and common murrelets (*Uria aalga*) are showing no trend in the oiled area; 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. A survey in 2010 would also benefit the ongoing Pigeon Guillemot Restoration Research Project by providing a Sound-wide pigeon guillemot population trend estimate through 2010, facilitating a comparison to the population trend on Naked Island.

**Science Panel Comments:**

The proposal is to continue one of the most valuable studies on long-term trends of marine populations in Prince William Sound. It includes multiple populations of sea birds as well as sea otters. The proposed work is a straightforward continuation of a well-proven and valuable survey method. Previous surveys have recently been conducted at about 3 year intervals. The P.I.s have used sophisticated statistical approaches to analyzing the data in various parts of PWS and reported their work in the scientific literature periodically. The project is cost-effective for the spatial and species extent for which data will be obtained.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Not Available

**Public Advisory Committee Recommendation:** Fund

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100132-C  
**Project Title:** PWS Herring Survey: Pacific Herring Energetic Recruitment Factors  
**Principal Investigator:** Thomas Kline  
**Affiliation:** Prince William Sound Science Center  
**Co-PIs/Personnel:** None  
**Disbursing Agency:** NOAA  
**Project Location:** Prince William Sound  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$258,700.00	<b>FY11:</b> \$256,600.00	<b>FY12:</b> \$265,000.00
<b>FY13:</b> \$218,300.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$998,600.00

**Abstract:**

This project is one component of the greater integrated study titled PWS herring survey: Community Involvement, Outreach, Logistics, and Synthesis (Pegau, P.I.). This proposed effort seeks to improve understanding of habitat utilization by juvenile herring, especially age 0, and to help identify candidate sites that could be potentially used for supplementation efforts. This particular proposal builds on 15 years of experience in assessment of juvenile herring in PWS using isotope and energetic techniques. We propose to measure energy levels of juvenile herring and other fishes in 8 juvenile herring nursery areas. Four of these areas, Simpson Bay, Eaglek Bay, Whale Bay and Zaikof Bay, were the focus of earlier investigation by the Sound Ecosystem Assessment (SEA) program in 1995-96 as well as a current Council-funded "PWS Herring Forage Contingency" project. Four additional sites will be selected based on historical data and community input and the 'blitz' sampling program. We propose to conduct surveys three times per year, pre- and post-winter and summer, for three years (including a planning year). The pre- and post-winter series will complement other studies that propose to examine overwinter change in energetics. The pre- and post-winter periods have been examined for the past three years. The summer period will provide a link between a more dispersed age 0 herring distribution following larvae drift and the subsequent overwintering locations. The fourth year of the project will focus on data analysis, synthesis and reporting.

**Science Panel Comments:**

The science panel recognized that although highly specialized, past work has made a substantial contribution to the scientific literature on herring in PWS and elsewhere. The reviews were positive and the only negative comment concerned the high costs of sample analysis. Now there is increasing recognition that herring research in PWS must be coordinated with other projects, both conceptually and operationally. The Science panel would have preferred to see how this proposal would be connected and integrated with other concurrent work.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund



**Public Advisory Committee Comments:**

Possible reduction as a function of the recommended overall 10% decrease of the 10100132 PWS Herring Survey - see 10100132.

**Public Advisory Committee Recommendation:** Fund Reduced

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100132-H

**Project Title:** PWS Herring Survey: Seasonal & Interannual Trends in Seabird Predation on Juvenile Herring

**Principal Investigator:** Katherine Kuletz

**Affiliation:** US Fish & Wildlife Service

**Co-PIs/Personnel:** Mary Anne Bishop

**Disbursing Agency:** USFWS

**Project Location:** Prince William Sound

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$147,200.00	<b>FY11:</b> \$163,900.00	<b>FY12:</b> \$150,900.00
<b>FY13:</b> \$102,900.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$564,900.00

**Abstract:**

Predation pressure on juvenile Pacific herring has been identified by the 2008 Integrated Herring Restoration Plan as one of five potential factors limiting recovery of Prince William Sound herring. Juvenile herring are heavily preyed upon by multiple species of seabirds, including six species initially injured by the Exxon Valdez oil spill and three species that have not yet recovered (Marbled Murrelet, Kittlitz's Murrelet and Pigeon Guillemot). This study will investigate the spatial and temporal abundance of seabird predators in and around juvenile herring schools during three time periods: August, November and March. We will also examine the physical and biological characteristics of the fish schools seabirds feed on. Our project is a component of the integrated, multi-project PWS Herring Survey program and relies on seabird surveys being performed on vessels associated with hydroacoustic juvenile herring surveys. Our bioenergetic models will provide estimates of juvenile herring consumption by the most important seabird predators, including inter- and intra-annual variability in consumption rates. This study will improve understanding of the role of seabird predation on herring recruitment and will help to identify candidate sites for herring supplementation efforts.

**Science Panel Comments:**

This study will investigate the spatial and temporal abundance of seabirds around juvenile herring schools during three time periods: August, November and March. It will also examine the physical and biological characteristics of the herring schools on which seabirds feed. This is a fairly well conceived and systematic approach to evaluating one source of predation pressure on Pacific herring. However, the project is strongly oriented towards herring as a source of nutrition for seabirds rather than as predators of herring. The most important objective of this study should be to quantify the amount of juvenile herring consumed by sea birds rather than the importance of herring to the diet of sea birds. Sea birds are likely important predators on juvenile herring, but it should not take 3 or 4 years to make a rough estimate of how important seabirds are as juvenile herring predators relative to other predators, i.e. marine mammals. A first order estimate might even be reasonably done with the data at hand.

**Science Panel Recommendation:** Do Not Fund

**Science Coordinator Comments:**

While I agree with some of the science panel's concerns, only five surveys have been completed to date and more data will be needed to make an educated estimate of the effect of seabird predation on herring. The addition of night surveys will allow the team to relate seabird densities concurrent with Dr. Richard Thorne's nighttime herring hydroacoustic surveys.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Possible reduction as a function of the recommended overall 10% decrease of the 10100132 PWS Herring Survey - see 10100132.

**Public Advisory Committee Recommendation:** Fund Reduced

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Do Not Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100574

**Project Title:** Re-Assessment of Bivalve Recovery on Treated Mixed-Soft Beaches in Prince William Sound

**Principal Investigator:** Dennis Lees

**Affiliation:** Littoral Ecological & Environmental Services

**Co-PIs/Personnel:** None

**Disbursing Agency:** NOAA

**Project Location:** Prince William Sound, from Eleanor Island south to Latouche Island

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$133,600.00	<b>FY11:</b> \$95,400.00	<b>FY12:</b> \$32,600.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$261,600.00

**Abstract:**

Studies from 1989 through 1997 suggested that bivalve assemblages on beaches in Prince William Sound (PWS) treated with high-pressure hot-water washing remain damaged. An EVOS-funded study in 2002 confirmed this hypothesis; hardshell clams were only one-third as abundant at washed sites as at unwashed sites. Considering the importance of hardshell clams to sea otters, other nearshore predators, and humans, this finding is important.

Using information from 1989, we constructed a preliminary recovery trajectory. This model predicts that clam assemblages at washed sites in PWS will require more than five decades to recover. Subsequently, a less extensive study of clam assemblages in PWS and research in other areas suggest that hardshell clams may be experiencing recruitment failures throughout the Pacific Northwest. By re-evaluating the status of clam populations at 40 sites sampled in 2002, this project will provide insights into: 1) the recovery trajectory for PWS clam assemblages by adding a third point for abundance at washed sites; and 2) the generality of the hypothesis that hardshell clams are experiencing recruitment failures throughout the Pacific Northwest.

**Science Panel Comments:**

This proposal was responsive to the guidance of the science panel and trustee council staff. The addition of FitzGerald provides a geomorphologist of obvious experience with a sufficient level of effort in each year to have a good chance of developing a viable means of quantifying this difficult concept of armoring. I consider the increase of 23% in the budget to be appropriately defended and necessary. This proposal is now appropriate for funding and important because it will address an injured resource (Clams), update its recovery status, and develop geomorphological methods of measuring armoring.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel's recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

The PAC recommends this project for funding if the PI satisfactorily collaborates with Project 10100829 (Shigenaka) and if their combined effort does not exceed \$150,000 in FY10.

**Public Advisory Committee Recommendation:** Fund Contingent

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Could Wait

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100742

**Project Title:** Monitoring, Tagging, Feeding Studies, and Restoration of Killer Whales in Prince William Sound/Kenai Fjords 2010-2012 Submitted under the BAA

**Principal Investigator:** Craig Matkin

**Affiliation:** North Gulf Oceanic Society

**Co-PIs/Personnel:** None

**Disbursing Agency:** NOAA

**Project Location:** Prince William Sound/ Kenai Fjords

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$132,309.70	<b>FY11:</b> \$132,309.70	<b>FY12:</b> \$125,775.10
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$390,394.50

**Abstract:**

The proposed project is a continuation of the monitoring of AB pod and the AT1 population killer whale populations in Prince William Sound. These groups of whales suffered serious losses at the time of the spill and have not recovered at projected rates. The project also extends the scope of the basic monitoring to include an innovative satellite tagging program to examine habitat preference and incorporates a more extensive examination of feeding habits using observational and chemical techniques. The project will delineate important habitat and variations in pod specific movements and feeding behavior within a temporal and geographic framework. Results will allow us to more closely examine the potential for restoration. The project will more clearly delineate the role of killer whales, both fish eating and mammal eating in the nearshore ecosystem and possible effects on the restoration recovery of harbor seals and sea otters. Community based initiatives, educational programs, and programs for tour boat operators will continue to be integrated into the work to help foster restoration by improving public understanding and reducing harassment of the whales.

**Science Panel Comments:**

This proposal continues the monitoring of killer whales in PWS, focusing on the injured resident AB pod and the transient AT1 population. New tagging technologies and expanded temporal sampling into the winter help expand the understanding of recovery processes that will emerge from this work. Matkin's past performance on EVOS studies has been excellent and public and scientific interest is still intense. The top apex consumer of the entire coastal ecosystem can have dramatic impacts on the entire ecosystem so this study is central to a system-wide understanding of its status.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Not Available

**Public Advisory Committee Recommendation:** Fund

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Priority Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100132

**Project Title:** PWS Herring Survey: Community Involvement, Outreach, Logistics, and Synthesis, Submitted Under the BAA

**Principal Investigator:** William Pegau

**Affiliation:** Prince William Sound Science Center

**Co-PIs/Personnel:** None

**Disbursing Agency:** NOAA

**Project Location:** Prince William Sound

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$343,100.00	<b>FY11:</b> \$385,600.00	<b>FY12:</b> \$354,300.00
<b>FY13:</b> \$97,400.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$1,180,400.00

**Abstract:**

This proposal contains the overview of a coordinated set of ten proposals from multiple organizations that are designed to address the Herring Surveys section of the Invitation for Proposals. It describes how individual components are being integrated to provide information needed to make informed decisions on herring restoration.

The objectives of the integrated herring survey program are:

- 1) Identify juvenile herring rearing bays for use in restoration planning.
- 2) Measure factors that may limit the success of herring recruitment including factors of oceanographic conditions, food availability, disease, overwinter energetics of juvenile herring, and predation.
- 3) Provide protocols and recommendations for spatial and temporal coverage of monitoring projects for potential inclusion in the core herring restoration effort.

This proposal describes the community involvement and outreach efforts, the integration of programs, sharing of logistics, and the responsibility for developing the final synthesized report.

**Science Panel Comments:**

Not Available

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

This proposal will serve as the unifying point for the entire PWS Herring Survey team and will provide appropriate outreach to the spill-affected communities. Dr. Pegau will be responsible for synthesizing the nine scientific research projects completed as part of the herring survey, which will be critical in understanding the state of herring in the Sound and assisting the Council in determining next steps for herring restoration.

**Science Coordinator Recommendation:** Fund



**Public Advisory Committee Comments:**

The PAC recommended an overall 10% decrease in funding on the entire suite of 10100132 PWS Herring Survey proposals. This decrease would be determined by the team leader/synthesizer for this effort.

**Public Advisory Committee Recommendation:** Fund Reduced

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100128

**Project Title:** Historical Humpback Whale Abundance in Prince William Sound in Relation to Pacific Herring Dynamics

**Principal Investigator:** Terrance Quinn

**Affiliation:** University of Alaska Fairbanks

**Co-PIs/Personnel:** John Moran, Jan Straley, Olga Von Ziegesar-Matkin

**Disbursing Agency:** ADFG

**Project Location:** Prince William Sound

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$94,200.00	<b>FY11:</b> \$69,500.00	<b>FY12:</b> \$0.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$163,700.00

**Abstract:**

The principal objective of this study is to analyze historical data on humpback whales to develop time series of abundance for humpback whales in Prince William Sound. This historical data is currently inaccessible, and has never been analyzed. Annual high-quality surveys used photoidentification, so that numbers were counted accurately. In this proposal, a relative index will be calculated from sightings and sampling effort. Mark-recapture models will be developed from sighting histories. These data will be used in an age-structured assessment model of Pacific herring to estimate the historical effect of whale predation on herring, leading to Suzie Teerlink's Master's thesis and three journal articles. This project is an offshoot from Project 090804, Rice's Significance of Whale Predation on Natural Mortality Rates of Pacific Herring in PWS, and will give a 30 year perspective to the findings of that project. This study develops a historical perspective to provide a better framework for understanding herring recovery. No field work is required for this data salvage project.

**Science Panel Comments:**

This project is an outgrowth of the Rice study over the past 2-3 years on the role of whale predation on herring. This study is exciting, novel, and important to the critical goal of evaluating the temporally changing role of humpback whale feeding on herring and its potential to suppress herring recovery. The PI joins with a co-PI from the Eye of the Whale Society to mine 30 years of past photo surveys of humpback whales in PWS to determine how whale abundance in the sound have changed during this periods. Overall, the north Pacific population of humpbacks has grown at about 6-7% annually during this period of international collaboration on whale conservation. How closely whale numbers in PWS follow the regional trend can be determined from the careful records from Eye of the Whale because each whale has individual markings and all sighting were photographically documented. This permits clever use of mark-recapture methods developed from small mammal trapping to be applied to the whale re-sighting data to estimate population numbers. The surveys done over the 30-year period by the society involved careful repetition of methods and terrific documentation, allowing corrections for changing survey effort. Once this project completes the annual estimation of whale abundances in PWS, it will then combine those numbers with feeding rate information from the Rice study just ending to construct a population dynamics model for Pacific herring to evaluate the potential role of growing humpback numbers on herring dynamics and recovery potential. The Science Panel considers this a necessary part of the herring monitoring program and an important contribution to developing herring recovery strategies.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Not Available

**Public Advisory Committee Recommendation:** Fund

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Could Wait

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100804

**Project Title:** Significance of Whale Predation On Natural Mortality Rate of Pacific Herring in Prince William Sound - Close Out

**Principal Investigator:** Stanley Rice

**Affiliation:** NOAA/NMFS Auke Bay Laboratory

**Co-PIs/Personnel:** Ron Heintz, Kate McLaughlin, John Moran, Terry Quinn, Jan Straley

**Disbursing Agency:** NOAA

**Project Location:** Prince William Sound, Sitka Sound, and southern Lynn Canal

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$69,100.00	<b>FY11:</b> \$0.00	<b>FY12:</b> \$0.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$69,100.00

**Abstract:**

Pacific herring (*Clupea pallasii*) in Prince William Sound (PWS) have been classified as "not-recovered" by the Exxon Valdez Oil Spill Trustee Council. Predation by marine mammals has been cited as a factor in the failure of this population to rebound. We will assess the significance of humpback whale predation on herring in PWS, particularly in winter. Specifically we will estimate the number of whales foraging in winter, determine when and if there is a prey switch to herring, and how long whales focus on herring as prey. Year one was funded, small in scale with an intense monitoring strategy; year 2 would expand the scale up in area significantly. Year 3 will verify the impact on herring of the high numbers of humpback whales we observed in PWS during year 2. These data will be combined in a bioenergetic model to determine numbers of herring consumed (and energy content consumed). Lastly, the estimated numbers of herring consumed would be included in an age-structured model so that the significance of whale predation on herring recovery can be evaluated. Year 4 (2010) will close out the project with the completion of analysis, reports, and manuscripts.

**Science Panel Comments:**

This proposal seeks close-out funding for its final year, as planned. The proposal gives hints of how the project has progressed to date, sufficient information along with what additionally is provided by the Quinn follow-up synthetic modeling proposal, to imply that the study is on track and has produced novel insights of true significance to understanding why herring have been unable to recover in PWS. Specifically, humpback whales are known to be seasonal residents in PWS during summer. What the field portion of this study has revealed is the presence of large numbers of humpbacks during winter also, feeding in locations where more tightly schooled herring make them efficient targets. The estimated predation rate by humpbacks on herring appears to be about equal to what the fishery historically removed. Thus, the importance of this project to quantify the role of whale predation has only grown as the data have come in. The PI has a superb track record with EVOS projects.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Not Available

**Public Advisory Committee Recommendation:** Fund

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100165-A  
**Project Title:** Pilot Project - High Density DNA Sequencing  
**Principal Investigator:** James Seeb  
**Affiliation:** University of Washington  
**Co-PIs/Personnel:** Lorenz Hauser, Lisa Seeb, Bill Templin  
**Disbursing Agency:** ADFG  
**Project Location:** Prince William Sound  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$71,300.00	<b>FY11:</b> \$0.00	<b>FY12:</b> \$0.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$71,300.00

**Abstract:**

This is a demonstration project to document the value and low risk of the high density sequencing approach for population genetics study. We propose to sequence the transcribed genome of a single reference individual, report the sequence that will include SNPs in many thousands of genes, and annotate those genes that belong to gene families known to respond to oil exposure and disease.

**Science Panel Comments:**

Not Applicable

**Science Panel Recommendation:** Not Reviewed

**Science Coordinator Comments:**

Not Available

**Science Coordinator Recommendation:** Could Wait

**Public Advisory Committee Comments:**

Not Applicable

**Public Advisory Committee Recommendation:** Not Reviewed

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Could Wait

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100132-B

**Project Title:** PWS Herring Survey: Assessment of Juvenile Herring Abundance and Habitat Utilization, Submitted Under the BAA

**Principal Investigator:** Richard Thorne

**Affiliation:** Prince William Sound Science Center

**Co-PIs/Personnel:** None

**Disbursing Agency:** NOAA

**Project Location:** Prince William Sound

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$170,200.00	<b>FY11:</b> \$196,700.00	<b>FY12:</b> \$173,600.00
<b>FY13:</b> \$56,200.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$596,700.00

**Abstract:**

The objectives of the proposed effort are to improve understanding of habitat utilization by juvenile herring, especially age 0, and to help identify candidate sites that could be potentially used for supplementation efforts. The proposal builds on three years of experience in assessment of juvenile herring in PWS using hydroacoustic techniques. We proposed to measure juvenile herring and other fish abundance in several potential juvenile herring nursery areas. Four of these areas, Simpson Bay, Eaglek Bay, Whale Bay and Zaikof Bay, were the focus of earlier investigation by the SEA program in 1995-96 as well as a current Council-funded project, "Trends in adult and juvenile herring distribution and abundance in Prince William Sound". Additional sites will be selected based on historical data and community input. We propose to conduct surveys three times per year: pre- and post-winter and summer. The pre- and post-winter series will complement other studies that propose to examine overwinter mortality, including energetics. The pre- and post-winter periods have been examined for the past three years. The summer period will provide a link between a more dispersed age 0 herring distribution following larvae drift and the subsequent overwintering locations. In addition, a 4-day survey of adult herring will be conducted in conjunction with the post-winter juvenile survey. This project will provide essential data on the distribution and abundance of juvenile herring and their competitors and predators. It will also assist development of a "Core Data Collection" program. The project is one part of a collaborative program for PWS herring surveys coordinated through the Prince William Sound Science Center.

**Science Panel Comments:**

This proposal represents a continuation of basic acoustic survey work for herring in PWS. The reviews were positive with the only concern mentioned was that the work had developed into a monitoring exercise and not a test of hypotheses. Indeed, past work has provided support for ADFG assessment work, but there also are a number of peer-reviewed scientific papers that have developed from this work. The Science panel noted that this proposal supports several other projects in the herring survey Team proposal. The Science panel also recognized the cooperative work with the ADFG and the solid publication record from previous work.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund



**Public Advisory Committee Comments:**

Possible reduction as a function of the recommended overall 10% decrease of the 10100132 PWS Herring Survey - see 10100132.

**Public Advisory Committee Recommendation:** Fund Reduced

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100806

**Project Title:** Are Herring Energetics Limiting. Part III. Disease Challenges (Close-out)

**Principal Investigator:** Johanna Vollenweider

**Affiliation:** NOAA/NMFS Auke Bay Laboratory

**Co-PIs/Personnel:** Ron Heintz, Paul Hershberger, Jeep Rice

**Disbursing Agency:** NOAA

**Project Location:** NOAA Fisheries, Auke Bay Laboratories, Juneau Alaska (Chemical analysis of samples)

**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$60,700.00	<b>FY11:</b> \$0.00	<b>FY12:</b> \$0.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$60,700.00

**Abstract:**

Pacific herring (*Clupea pallasii*) in PWS have not rebounded following the population crash in 1993. We propose to determine if energy availability is limiting production of PWS herring. We made field collections of Pacific herring over the course of 3 winters to examine two energetic mechanisms that could potentially inhibit herring recruitment in PWS: 1) overwinter mortality of juveniles, and 2) low reproductive energy investments by adults. These processes were compared among thriving (Sitka Sound) and depressed (Lynn Canal) herring stocks to evaluate PWS collections. Field observations were supplemented with laboratory trials in year 2 to measure how metabolic rates and other bioenergetic parameters vary with temperature, thus calibrating the field observations from various habitats. Initial results indicate that PWS herring lose energy at a higher rate over winter than populations in southeast Alaska. High rates of energy utilization may be a factor of increasing predation rates (project 080804) or elevated prevalence of disease (project 080819). In year 3, laboratory trials with disease challenges are underway at Marrowstone Marine Field Station, which will determine if exposure to *Ichthyophonus* increases metabolic costs and if fish in poor nutritional condition are more susceptible to *Ichthyophonus*. Together, these data sets will illustrate how potential energetic bottlenecks may be limiting PWS herring and how disease impacts energy costs.

In this proposal, we request funding for a 4th year (FY10) to close-out the herring energetics project. With the exception of the laboratory component of the project, all other aspects of the project are on schedule. During the first lab trial, we encountered mortality rates higher than anticipated and subsequently reran the trial, setting us behind schedule by several months. We expect the laboratory trials to be complete by the end of September, in which case chemical analysis of the laboratory-collected samples will roll-over into FY10. The requested FY10 funding is to pay for the chemical analysis of those samples, for completion of analysis, writing reports and manuscripts, and for travel to present the integrated results of this 3-year study.

**Science Panel Comments:**

This proposal represents a close-out to complete analyses and write up final reports and manuscripts on the previously conducted field and laboratory research. From all indications, the previous work has been conducted successfully and milestones have been met. The study was well justified and no issue emerges to suggest that the study should not be completed as planned.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Not Available

**Public Advisory Committee Recommendation:** Fund

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund

**Project Number:** 10100340  
**Project Title:** Long-Term Monitoring of the Alaska Coastal Current  
**Principal Investigator:** Thomas Weingartner  
**Affiliation:** University of Alaska Fairbanks  
**Co-PIs/Personnel:** None  
**Disbursing Agency:** ADFG  
**Project Location:** Gulf of Alaska  
**Project Type:** New

**Funding Approved by Fiscal Year:**

<b>FY10:</b> \$141,500.00	<b>FY11:</b> \$138,700.00	<b>FY12:</b> \$133,600.00
<b>FY13:</b> \$0.00	<b>FY14:</b> \$0.00	<b>FY15:</b> \$0.00

**Total Funding Approved:** \$413,800.00

**Abstract:**

This program continues a 39-year time series of temperature and salinity measurements at hydrographic station GAK 1. The data set, which began in 1970, now consists of monthly CTDs and a mooring with 6 - 7 temperature/conductivity recorders throughout the water column, a fluorometer and nitrate sensor at 20 m depth and a nitrate sensor at 150 m depth. The project monitors five important Alaska Coastal Current ecosystem parameters and to quantify and understand interannual and longer period variability in:

- 1.~Temperature and salinity throughout the 250 m deep water column,
- 2.~Near surface stratification,
- 3.~Near and subsurface nitrate supply on the inner shelf,
- 4.~Fluorescence as an index of phytoplankton biomass, and
- 5.~Atmosphere-ocean heat fluxes.

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

**Science Panel Comments:**

The proposal was extremely well written and clearly outlined the historical importance of the GAK1 line that has provided basic oceanographic observations (temperature and salinity) for three decades. In addition, the proposal clearly states how these data are critical to restoration. The proposal seeks continued funding for the GAK1 line and includes funds for addition of nitrate and fluorescence sensors at that site. The continued funding of GAK1 is critical to understanding the oceanographic environment, its influence on biological resources over time, recovery of injured resources, and potential restoration activities. No specific changes to the project were recommended, although access to more recent data through the website would be helpful. Currently only summaries of data obtained after 2006 are available. A more synthetic analysis of current GAK1 data and those obtained from elsewhere (e.g. as part of herring or nearshore projects) would also be welcomed in future proposals.

**Science Panel Recommendation:** Fund

**Science Coordinator Comments:**

I concur with the science panel recommendation.

**Science Coordinator Recommendation:** Fund

**Public Advisory Committee Comments:**

Not Available

**Public Advisory Committee Recommendation:** Fund

**Executive Director Comments:**

Not Available

**Executive Director Recommendation:** Priority Fund

**Trustee Council Comments:**

Not Available

**Trustee Council Decision:** Fund