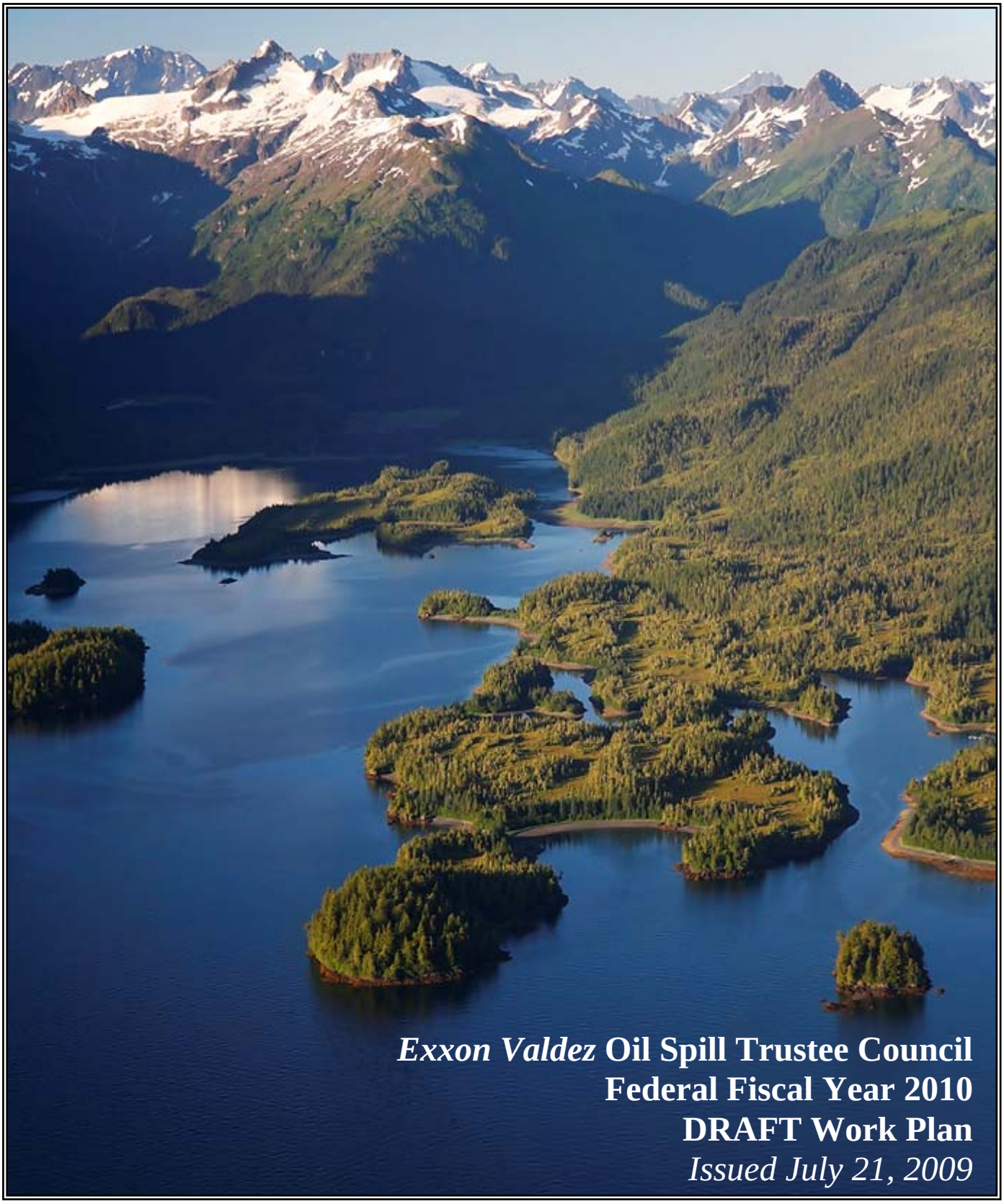

Exxon Valdez Oil Spill Trustee Council
Federal Fiscal Year 2010
DRAFT Work Plan

Issued July 21, 2009

Exxon Valdez Oil Spill Trustee Council
441 W. 5th Avenue, Suite 500
Anchorage, AK 99501
Tel: 907-278-8012 Fax: 907-276-7178
www.evostc.state.ak.us

FEDERAL FISCAL YEAR 2010

DRAFT WORK PLAN

July 21, 2009

Prepared by:
Exxon Valdez Oil Spill Trustee Council

DENBY LLOYD
Commissioner
Alaska Dept. of Fish and Game

DANIEL SULLIVAN
Acting Attorney General
Alaska Department of Law

LARRY HARTIG
Commissioner
Alaska Dept. of Environmental Conservation

JIM BALSIGER
Director, Alaska Region
National Marine Fisheries Service

JOE MEADE
Supervisor
Chugach National Forest
US Department of Agriculture

KIM ELTON
Director of Alaska Affairs
US Department of the Interior

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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PLEASE COMMENT

You can help the Trustee Council by reviewing this draft work plan and letting us know your priorities for Fiscal Year 2010. You can comment by:

Mail:	Exxon Valdez Oil Spill Trustee Council 441 W. 5th Avenue, Suite 500 Anchorage, AK 99501 Attn: Draft Fiscal Year 2010 Work Plan
Telephone:	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:	dfg.evos.restoration@alaska.gov

Continuing Projects in FY10

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

FY10 Proposal Funding Recommendations

Project Number	Principal Investigator	Project Title (abbr.)	Total Requested	FY10 Requested	Total Approved	Science Panel	Science Coord.	PAC	Executive Director	Trustee Council
10100111	Ammann	Community-Based Habitat Restoration	$3,000,000.00	$1,000,000.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100132-G	Bishop	PWS Herring Survey: Top-Down Regulation by Predatory Fish	$678,900.00	$185,500.00	$0.00	Fund	Fund	Fund Reduced	Fund	**Pending**
10100114	Bochenek	Compilation of EVOS and Regional Hydrocarbon Data and Reports	$233,300.00	$140,200.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100808	Bodkin	Evaluation of Recovery and Restoration of Injured Nearshore Resources	$601,500.00	$166,400.00	$0.00	Fund	Fund	Fund	Priority Fund	**Pending**
10100118	Boswell	Using Chemical Tracers to Define Regional-Scale Nursery Habitat	$49,200.00	$49,200.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100132-F	Brown	PWS Herring Survey: Herring, Predator, and Competitor Density	$501,254.00	$160,141.00	$0.00	Fund Reduced	Fund	Fund Reduced	Fund	**Pending**
10100624	Bychkov	Measuring Interannual Variability in the Herring's Forage Base	$205,600.00	$61,900.00	$0.00	Fund	Fund	Fund	Fund	**Pending**
10100119	Campbell	Carrying Capacity Supplementation for Herring Rest	$36,600.00	$36,600.00	$0.00	Fund	Fund	Fund	Could Wait	**Pending**
10100132-A	Campbell	PWS Herring Survey: Plankton and Oceanographic Observations	$663,300.00	$201,500.00	$0.00	Fund	Fund	Fund Reduced	Fund	**Pending**
10100290	Carls	The Exxon Valdez Trustee Hydrocarbon Database	$37,200.00	$9,300.00	$0.00	Fund	Fund	Fund	Fund	**Pending**
10100123	Collins	Aerial Surveys and Herring Egg Relocation Feasibility	$154,671.00	$60,168.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100125	Cox	Importance of Structured Near Shore Habitats	$570,100.00	$203,100.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100100	EVOS Administration	EVOS Administration	$2,224,091.00	$2,224,091.00	$0.00	Not Reviewed	Not Reviewed	Not Reviewed	Fund	**Pending**
10100132-E	Gay	PWS Herring Survey: Nursery Habitats of Juvenile Pacific Herring	$353,000.00	$88,400.00	$0.00	Fund	Fund	Fund Reduced	Fund	**Pending**
10100120	Guyon	Genetic Stock Structure of Herring	$337,137.00	$86,219.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100066	Haakanson	Alutiiq Museum & Archaeological Repository Expansion	$500,000.00	$500,000.00	$0.00	Not Reviewed	Not Reviewed	Do Not Fund	Pending	**Pending**
10100132-D	Heintz	PWS Herring Survey: Predictors of Winter Performance	$306,600.00	$99,000.00	$0.00	Do Not Fund	Fund	Fund Reduced	Do Not Fund	**Pending**
10100132-I	Hershberger	PWS Herring Survey: Herring Disease Program (HDP)	$975,200.00	$81,800.00	$0.00	Fund	Fund	Fund Reduced	Priority Fund	**Pending**
10100839	Hollmen	Evaluating Injury to Harlequin Ducks	$250,700.00	$218,300.00	$0.00	Not Reviewed	Not Reviewed	Not Reviewed	Priority Fund	**Pending**
10100751	Irons	Prince William Sound Marine Bird Surveys, Synthesis and Restoration	$293,740.00	$254,500.00	$0.00	Fund	Fund	Fund	Fund	**Pending**
10100810	Kiefer	An Ecosystem Model of Prince William Sound Herring	$228,050.00	$193,520.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**

Project Number	Principal Investigator	Project Title (abbr.)	Total Requested	FY10 Requested	Total Approved	Science Panel	Science Coord.	PAC	Executive Director	Trustee Council
10100132-C	Kline	PWS Herring Survey: Pacific Herring Energetic Recruitment Factors	$998,600.00	$258,700.00	$0.00	Fund	Fund	Fund Reduced	Fund	**Pending**
10100811	Kline	Pacific Herring Larval Recruitment into PWS Nursery Bays	$1,457,400.00	$497,600.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100854	Konar	Recovery of Shallow Subtidal Communities	$124,800.00	$109,800.00	$0.00	Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100132-H	Kuletz	PWS Herring Survey: Seasonal & Interannual Trends in Seabird Predation	$564,900.00	$147,200.00	$0.00	Do Not Fund	Fund	Fund Reduced	Do Not Fund	**Pending**
10100574	Lees	Re-Assessment of Bivalve Recovery	$264,600.00	$136,600.00	$0.00	Fund	Fund	Fund Contingent	Could Wait	**Pending**
10100742	Matkin	Killer Whales in Prince William Sound/Kenai Fjords	$390,393.00	$132,309.00	$0.00	Fund	Fund	Fund	Priority Fund	**Pending**
10100130	Moffitt	Population Structure of Pacific Herring	$134,400.00	$63,900.00	$0.00	Modify	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100822	Moffitt	Herring Ecosystem Data Portal	$591,000.00	$248,200.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100122	Moran	Impact of Humpback Whale Predation	$283,600.00	$176,800.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100112	Payne	Evaluating Harbor Contaminants	$618,000.00	$550,700.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100116	Payne	Remediation Monitoring using Microbial DNA Profiles	$565,200.00	$493,300.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100132	Pegau	PWS Herring Survey: Comm. Involvem., Outreach, Logistics, & Synthesis	$1,180,400.00	$343,100.00	$0.00	Fund	Fund	Fund Reduced	Fund	**Pending**
10100128	Quinn	Historical Humpback Whale Abundance	$163,700.00	$94,200.00	$0.00	Fund	Fund	Fund	Could Wait	**Pending**
10100804	Rice	Significance of Whale Predation On Natural Mortality Rate of Pacific Herring	$69,100.00	$69,100.00	$0.00	Fund	Fund	Fund	Fund	**Pending**
10100759	Rosenberg	Harlequin Duck Population Dynamics	$711,700.00	$211,700.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100165	Seeb	High Density DNA Sequencing	$997,100.00	$379,700.00	$0.00	Fund Reduced	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
10100165-A	Seeb	Pilot Project - High Density DNA Sequencing	$71,300.00	$71,300.00	$0.00	Not Reviewed	Could Wait	Not Reviewed	Could Wait	**Pending**
10100129	Seitz	Ecology and Migratory Movements of Pacific Herring	$752,300.00	$444,200.00	$0.00	Fund	Fund	Do Not Fund	Could Wait	**Pending**
10100829	Shigenaka	Population Status of Littleneck Clams	$346,600.00	$229,300.00	$0.00	Do Not Fund	Do Not Fund	Fund Contingent	Do Not Fund	**Pending**
10100132-B	Thorne	PWS Herring Survey: Assessment of Juvenile Herring Abundance	$596,727.00	$170,214.00	$0.00	Fund	Fund	Fund Reduced	Fund	**Pending**
10100806	Vollenweider	Are Herring Energetics Limiting. Part III	$60,700.00	$60,700.00	$0.00	Fund	Fund	Fund	Fund	**Pending**
10100340	Weingartner	Long-Term Monitoring of the Alaska Coastal Current	$413,800.00	$141,500.00	$0.00	Fund	Fund	Fund	Priority Fund	**Pending**

Project Number	Principal Investigator	Project Title (abbr.)	Total Requested	FY10 Requested	Total Approved	Science Panel	Science Coord.	PAC	Executive Director	Trustee Council
10100124	Zwollo	Effects of Marine Pollution on Pacific Herring Immunity	$307,000.00	$123,600.00	$0.00	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund	**Pending**
Total Funds Requested and Approved			**$23,863,463.00**	**$11,173,562.00**	**$0.00**					

Descriptions of New FY10 Proposals

Project Number: **10100111**

Project Title: **Community-Based Habitat Restoration**

Principal Investigator: Erika Ammann

Affiliation: NOAA Fisheries

Co-PIs/Personnel: Jennifer Steger, Krystyna Wolniakowski

Project Location: PWS

Funding Requested by Fiscal Year:

FY10:	$1,000,000.00	**FY11:**	$1,000,000.00	**FY12:**	$1,000,000.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $3,000,000.00

Abstract:

The NOAA Restoration Center (RC) enhances living marine resources by restoring fisheries habitat. The RC is the focal point for marine and estuarine habitat restoration within NOAA. Through the Restoration Center the Community-based habitat restoration program operates. In this program ecologically sound restoration is performed that includes an element of community engagement and education. In partnership with engineers, hydrologists and scientists; community members take part in restoration and become stewards of the habitat protecting the restoration investment as well as working to prevent further degradation. The NOAA Restoration Center has been working in Alaska for the past 10 years. During this time we have completed over 63 restoration projects, restoring 4,900 acres of productive habitat with the help of 3,900 volunteers donating over 46,000 hours to perform this work. We have managed over 2 million in NOAA funds and leveraged over $2 million in non federal funding. The National Fish and Wildlife Foundation (NFWF), a partner with NOAA in Alaska and nationally, was established and authorized by Congress in 1984 to develop public-private partnerships and leverage federal funds with non-federal contributions to increase funding available for conservation projects. NFWF has been a grantmaker in Alaska since 1986 and has funded more than 200 projects leveraging $16,300,000 in federal funds, with $4,500 of private donations to NFWF, and matched with $23,750,000 from grantees.

Science Panel Comments:

This proposal requested substantial pass-through funds for re-granting to community-based restoration projects. A high percentage (20%) of the $1 million was requested for the administration of the grant program. The level of detail was insufficient to determine that the projects that would be funded would have sufficient scientific merit or fulfill EVOS restoration goals and objectives. The programs that the P.I.s are associated with, however, appear to have good track records for tangible habitat restoration projects with some degree of community involvement so the Trustee Council should consider a pilot project in the future. The pilot project should include adequate funding for oversight of project selection by EVOS staff and a sub-group of the Science and Restoration Panel and a more reasonable percentage for administrative costs.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

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

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$185,500.00	**FY11:**	$183,300.00	**FY12:**	$193,400.00
FY13:	$116,700.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $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 predated 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: Pending

Project Number: **10100114**

Project Title: **Compilation of EVOS and Regional Hydrocarbon Data and Reports Submitted Under BAA #AB133F-09-RP-0059**

Principal Investigator: Robert Bochenek

Affiliation: Axiom Consulting & Design

Co-PIs/Personnel: Bill Driskell, Jim Payne

Project Location: Oil Spill Affected Area

Funding Requested by Fiscal Year:

FY10:	$140,200.00	**FY11:**	$93,100.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $233,300.00

Abstract:

Large quantities of hydrocarbon, chemical, contaminant, and substrate data have been collected over the years in the Exxon Valdez Oil Spill affected area, and although some of these data (e.g., EVTHD) have been compiled into a database, access to these data lacks a coherent data framework. As a result, rapid access and analyses, particularly via web-based data distribution and visualization, are not possible. The user must be very technically adept to find and pull together a desired data subset of interest. We propose assembling a collection of relevant hydrocarbon data sets into a common data structure and presenting them online for facile visualization and retrieval. Furthermore, we propose to link any retrieved data to both the original metadata and a retrievable form of the original report. By implementing existing data management standards for these growing geospatial data sets, we will create an open, accessible product to visualize, filter, and retrieve data supplemented with its context, sampling details, and original investigator's interpretation.

Science Panel Comments:

This project has been ongoing for three years and the Science Panel feels that the database should now be independently peer reviewed prior to any additional funding.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendations.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:

Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **10100808**

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

Project Location: Western Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$166,400.00	**FY11:**	$166,400.00	**FY12:**	$165,300.00
FY13:	$103,400.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $601,500.00

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 unoiled 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 unoiled 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: Pending

Project Number: **10100118**

Project Title: **Using Chemical Tracers to Define Regional-Scale Nursery Habitat Use: A Pilot Study for Pacific Herring**

Principal Investigator: Kevin Boswell

Affiliation: Coastal Fisheries Institute

Co-PIs/Personnel: JJ Vollenweider

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10: $49,200.00	**FY11:** $0.00	**FY12:** $0.00
FY13: $0.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $49,200.00

Abstract:

The purpose of this proposal is to identify regionally-unique otolith chemical signatures in juvenile herring to ultimately estimate relative contribution to the adult population in Prince William Sound (PWS). Juveniles will be collected among ten spatially distinct nursery habitats during FY10 through collaboration with researchers and other on-going projects. Chemical analyses of otoliths will include both trace elements and stable isotope concentrations on juvenile herring using state of the art analytical techniques. The proposed work will serve as a pilot study in attempt to successfully discriminate among herring nurseries using natural chemical tracers. Upon successful discrimination, we aim to assess the relative contribution of specific nurseries to the adult herring population within PWS using otolith chemistry. This work will provide resolution on the relative importance of regional nursery areas within PWS and provide information to address future management and supplementation efforts for this highly important population.

Science Panel Comments:

The Science Panel felt that the goal of this project, i.e., to determine which larval rearing Bays contribute the most to the adult population, to be of fundamental importance to the Integrated Herring Program. As we do not have the results yet from a previously funded study (P.I.s Bickford and Norcross) with similar goals, it is difficult to fund this proposal until we see what has been learned from the earlier efforts with similar objectives.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:

Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

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

Project Location: PWS

Funding Requested by Fiscal Year:

FY10:	$160,141.00	**FY11:**	$153,056.00	**FY12:**	$153,056.00
FY13:	$35,001.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $501,254.00

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: Pending

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

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

Funding Requested by Fiscal Year:

FY10:	$61,900.00	**FY11:**	$63,600.00	**FY12:**	$65,100.00
FY13:	$15,000.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $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: Pending

Project Number: **10100119**

Project Title: **Assessment of the Feasibility of Carrying Capacity Supplementation for Herring Restoration in Prince William Sound, Submitted Under the BAA**

Principal Investigator: Robert Campbell

Affiliation: Prince William Sound Science Center

Co-PIs/Personnel: None

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10: $36,600.00	**FY11:** $0.00	**FY12:** $0.00
FY13: $0.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $36,600.00

Abstract:

Herring stocks collapsed in the years following the Exxon Valdez Oil Spill and have not recovered in the intervening years; they are currently considered in "unrecovered" status by the EVOS Trustee Council. The Trustee Council has supported the development of an Integrated Herring Restoration Plan which has been in progress since 2006. The current draft plan outlines a number of restoration objectives, including the supplementation of carrying capacity by feeding or nutrient additions. This proposal seeks to undertake a cost and feasibility analysis of that restoration option, and will consider the amount of food or nutrients required, associated costs, regulatory implications, and potential impacts and benefits to both the herring population and the PWS ecosystem.

Science Panel Comments:

This project is a cost-effective desk exercise that will provide needed information on the possibility of a specific herring restoration option: the potential addition of food for YOY herring to specific areas of Prince William where they overwinter. This restoration option was only identified as a potential option in the IHRP and has not been examined beyond the ‘conceptual stage’. The Science Panel agreed that this work will help to frame the questions for the PWS Herring Survey package.

Science Panel Recommendation: Fund

Science Coordinator Comments:

I concur with the science panel recommendation. This project will assist the Trustee Council in their review of the restoration options that were provided in the Integrated Herring Restoration Program document.

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: Pending

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

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$201,500.00	**FY11:**	$197,300.00	**FY12:**	$200,100.00
FY13:	$64,400.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $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: Pending

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

Project Location: Auke Bay Laboratories – TSMRI, Juneau, AK

Funding Requested by Fiscal Year:

FY10: $9,300.00	**FY11:** $9,300.00	**FY12:** $9,300.00
FY13: $9,300.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $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: Pending

Project Number: **10100123**

Project Title: **Aerial Surveys and Herring Egg Relocation Feasibility**

Principal Investigator: Michael Collins

Affiliation: Upper Edge

Co-PIs/Personnel: None

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$60,168.00	**FY11:**	$94,503.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $154,671.00

Abstract:

This proposal contains two parts.

1. Aerial surveys of herring stocks in April of each year for the purpose of monitoring and tracking the existing biomass o mature herring in Prince William Sound.

2. A feasibility study for a fertile herring egg relocation program using a low impact method to move and incubate eggs and rear herring in their natural habitat.

Science Panel Comments:

This project was presented by an interested member of the local community. The Panel did not endorse the part of the proposal related to the feasibility of egg relocation (it has been done elsewhere). Instead the Science panel recommended that this proposal should be linked to the work proposed by the PWS Herring Survey team.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation. I would strongly encourage the PI to offer his services to the other projects that may be funded as part of this workplan.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:

Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **10100125**

Project Title: **Importance of Structured Near Shore Habitats for Age-0 Herring (Clupea Pallasi) in Prince William Sound, Alaska**

Principal Investigator: Marlin Cox

Affiliation: NOAA/NMFS Auke Bay Laboratory

Co-PIs/Personnel: Mary Anne Bishop, Kevin Boswell, Ron Heintz

Project Location: Simpson and St. Matthews Bays, Prince WIlliam Sound

Funding Requested by Fiscal Year:

FY10: $203,100.00	**FY11:** $246,300.00	**FY12:** $120,700.00
FY13: $0.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $570,100.00

Abstract:

There are few data describing the life history of post-settled herring in structured settling habitats before they enter pelagic habitats at the heads of bays in the fall. Earlier studies (SEA) focused primarily on age-0 starting in the fall, and did not measure energetics, survival success, and habitat requirements from the first settling out stages (beginning in July). This study will examine age-0 Juveniles starting in July, correlate their numbers and condition with habitat use, and challenges (growth, predation) during the summer months, as a prelude to the bay studies in Fall/Winter/Spring. We hypothesize that the near-shore offers age-0 herring cover from predators and warm water temperatures to maximize growth. The project proposed here will examine this hypothesis by comparing the growth, condition and predation risk of age-0 herring collected in near-shore and pelagic habitats between July and mid-September. It will thereby fill in the missing details of herring life history during this critical period, and will complement the late fall/winter survival studies of the bay monitoring study.

Science Panel Comments:

The proposal examines the smaller scale (largely within bay) spatial and temporal distribution of young of year (YOY) herring and tests the hypothesis that YOY herring utilize nearshore vegetated habitats as a refuge from predation during the day. The proposed design will examine abundance of YOY herring in 2 bays, over three months, in inshore (<6m) and offshore habitats, during the day and in the night. They also propose to examine condition of YOY herring, abundance of potential avian and fish predators, gut contents of fish predators, and temperature. The proposal largely failed to provide information on the size of sampling units and extent of replication in the sampling. The panel expressed concern that without extensive replication it is unlikely that the hypothesis could be tested with reasonable power given that estimates of both fish and bird abundances are notoriously variable. Also, the panel expressed concern regarding some of the proposed sampling methods. The use of sonar may not provide reasonable estimates of fish abundance in heavily vegetated habitats and the use of RNA:DNA may not be the most efficient way to assess growth. Also, the panel found overlap between this and other proposed projects (many of which included PIs for this project). As result, the panel does not recommend funding of this project. However, the PIs are encouraged to further explore the use of state of the art multi-beam bioacoustics in examining the relative abundance of herring and other forage fish, and perhaps “crosswalking” estimates made using older single beam and multi-beam technologies. The panel would also endorse the concept of simultaneous examination of the distribution and abundance of YOY herring and their predators, but only after more careful consideration of existing data and a refinement of the sampling design.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **10100100**

Project Title: **EVOS Administration**

Principal Investigator: EVOS Administration

Affiliation: EVOSTC

Co-PIs/Personnel: None

Project Location: Trustee Council Office

Funding Requested by Fiscal Year:

FY10:	$2,224,091.00	**FY11:**	$0.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $2,224,091.00

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: Pending

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

Project Location: Prince Willam Sound, Alaska

Funding Requested by Fiscal Year:

FY10:	$88,400.00	**FY11:**	$83,100.00	**FY12:**	$90,000.00
FY13:	$91,500.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $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: Pending

Project Number: **10100120**

Project Title: **Genetic Stock Structure of Herring in Prince William Sound**

Principal Investigator: Jeffrey Guyon

Affiliation: NOAA/NMFS Auke Bay Laboratory

Co-PIs/Personnel: Sharon Wildes

Project Location: Montague Island (or western PWS) and St. Matthews Bay (or eastern PWS)

Funding Requested by Fiscal Year:

FY10:	$86,219.00	**FY11:**	$141,264.00	**FY12:**	$109,654.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $337,137.00

Abstract:

The purpose of this proposal is to determine the genetic stock structure of Pacific herring in Prince William Sound using available microsatellite markers. Samples will be collected and their genetic characteristics compared between locations, spawning times and years. In addition, year classes within spawning stocks will also be analyzed for genetic differences. Herring will be collected from two geographically disparate locations within Prince William Sound, one from the east and one from the west. Each location will be extensively sampled such that at least 200 samples from each group (for a specific location, year, spawn time, and age class) will be available for analysis. As a control, a small group of 200 Pacific herring will also be collected from Lynn Canal. Lynn Canal herring are (1) easily accessible from Auke Bay Laboratories, (2) of high priority to the National Marine Fisheries Service and the Alaska Department of Fish and Game, and (3) have been part of our herring program for the last 2 years. DNA will be isolated from each collection of 200 herring and the samples genotyped using a group of microsatellite markers, many of which have already been standardized in our laboratory for Pacific herring (Wildes et al., in process of submission). To date, over 40 herring microsatellite markers have been described and each loci contains multiple alleles making them ideal genetic markers for analyzing migratory fish like herring with limited stock structure. Resulting genotypes will be compared to determine the genetic uniqueness of each collection using standard analyses (FST and G-test). Principle component analyses will be performed to illustrate stock separations. Chord distances will be calculated and a phlyogenetic tree constructed to illustrate genetic relationships. Finally, genetic results will be summarized to communicate their biological significance, as well as their significance to management and restoration.

Science Panel Comments:

This proposal proposes to use neutral microsatellite markers in an attempt to distinguish the PWS herring population structure. There is little evidence from the investigators or from other studies that the microsatellites will discriminate the fine stock structure (if there even is one) of PWS herring. The investigators refer to a manuscript that is submitted suggesting that Lynn Canal herring can be distinguished from Gulf of Alaska herring. However, preliminary data would be needed to first show that PWS herring can be distinguished from other stocks before this proposal could be funded. The proposal is very poorly written and alone this would merit a no fund recommendation, as pointed out by peer reviews. The budget is substantial and failed to account for $40,000 of critical supplies to conduct the research.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **10100066**

Project Title: **Alutiiq Museum & Archaeological Repository Expansion**

Principal Investigator: Sven Haakanson

Affiliation: Alutiiq Museum

Co-PIs/Personnel: None

Project Location: Alutiiq Museum, Kodiak

Funding Requested by Fiscal Year:

FY10:	$500,000.00	**FY11:**	$0.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $500,000.00

Abstract:
Not Available

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 Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Pending

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

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

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

Funding Requested by Fiscal Year:

FY10: $99,000.00	**FY11:** $99,000.00	**FY12:** $99,000.00
FY13: $9,600.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $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: Pending

Project Number: **10100132-I**

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

Principal Investigator: Paul Hershberger

Affiliation: US Geological Survey

Co-PIs/Personnel: Jim Winton

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

Funding Requested by Fiscal Year:

FY10: $81,800.00	**FY11:** $284,100.00	**FY12:** $295,800.00
FY13: $313,500.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $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 ichthyophoniasis, 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. Herschberger 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: Pending

Project Number: **10100839**

Project Title: **Evaluating Injury to Harlequin Ducks**

Principal Investigator: Tuula Hollmen

Affiliation: Alaska SeaLife Center

Co-PIs/Personnel: Kathrine Springman

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$218,300.00	**FY11:**	$32,400.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $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: Pending

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

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$254,500.00	**FY11:**	$39,240.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $293,740.00

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 murres (Uria aalgae) 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: Pending

Project Number: **10100810**

Project Title: **An Ecosystem Model of Prince William Sound Herring**

Principal Investigator: Dale Kiefer

Affiliation: University of Southern California

Co-PIs/Personnel: Vince Patrick

Project Location: Prince William Sound and Gulf of Alaska

Funding Requested by Fiscal Year:

FY10:	$193,520.00	**FY11:**	$34,530.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $228,050.00

Abstract:

During the first two years of our project to develop an information system for Prince William Sound herring, we have completed both a one dimensional model of the population dynamics during the herring's life cycle and a database that stores all information necessary to develop the model. The simulation model that we have developed provides very good predictions of the time series of the adult herring population and juvenile recruitment that are found in Fish and Game's Age Structured Analysis for both Prince William Sound and Sitka Sound. The model has helped reveal that variations in adult and juvenile populations are driven by both external, climatic factors and internal factors that are due to biological interactions of specific age classes of the herring. Specifically dramatic increases in juvenile survival within Sitka Sound were setoff by the 1976 regime shift in the Gulf of Alaska. The pattern in population dynamics that was initiated by this event continued until 1992-93 when El Nino "catalyzed" changes in the annual recruitment cycle of both Prince William and Sitka Sounds. These changes in juvenile survival reflect "internal dynamics" since they appear to be caused by the competition for food among the juvenile cohorts of differing ages. We have derived a phenomenological routine to describe the dynamics created by "cohort dominance" and incorporated into our model. When calibrated to the ASA time series of the two regions, the model tracks annual changes in adult stocks and recruitment closely, accounting for over 90% of the variability in the size of the adult stocks. We feel that this model provides not only new insight into the factors controlling the herring population in Prince William Sound but also a solid foundation for further discoveries.

We request an additional year of support to further develop the information system and to place it in the hands of those scientists and managers who will continue work under EVOS's Integrated Herring Restoration Program. During this additional year, we will advance the model by replacing the phenomenological description of juvenile dynamics with one based upon ecological principles and add a routine describing the epizootic influence of VHS upon the herring population. We will also modify the information system as needed to serve as an integration and analysis tool for the new 2010 projects that deal with tracking, genetic structure, feasibility, and the juvenile survey. This task will include workshops in which we will meet with participants, train them to use the information system, discuss the population dynamics model and how it will help to guide the design and ultimate interpretation of their field or laboratory work. Finally, we will run sensitivity analyses to determine which process in the herring's life cycle provides the most "leverage" for achieving an increase in the size of the population and run simulations to determine which intervention offers the most promise and what scale of operations will be required.

Science Panel Comments:

The proposal seeks funding to expand previously funded work on modeling of herring population dynamics. The past work sought to develop a spatially explicit, stage-based population model for herring. While the proposal provides an overview of the past work, details of the modeling effort have not been provided. The work might provide a tool helpful in describing herring population trends and guiding research and restoration activities. However, given the lack of a clear presentation of past work, and the cost of the project, we do not recommend funding at this time. We encourage the PIs to complete the currently funded program, provide a final report for that project that clearly states the accomplishments

to date. Future proposals should be more clearly coordinated with other herring projects and should provide assurances that the model will be utilized by researchers tracking herring populations and in making decisions regarding potential restoration activities.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:

Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:

Not Available

Trustee Council Decision: Pending

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

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$258,700.00	**FY11:**	$256,600.00	**FY12:**	$265,000.00
FY13:	$218,300.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $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: Pending

Project Number: **10100811**

Project Title: **Pacific Herring Larval Recruitment into PWS Nursery Bays**

Principal Investigator: Thomas Kline

Affiliation: Prince William Sound Science Center

Co-PIs/Personnel: Rob Campbell

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$497,600.00	**FY11:**	$385,500.00	**FY12:**	$395,000.00
FY13:	$179,300.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $1,457,400.00

Abstract:

The objectives of the proposed effort are to improve understanding of recruitment (referred to as seeding) of herring larvae into juvenile rearing habitat, and to help identify candidate sites that could be potentially used for supplementation efforts. The proposal builds on recent experience in sampling larval herring in PWS. We propose to measure densities of larval herring in 8 potential juvenile herring nursery areas. Each bay will be sampled four times within a 70-day period to assess timing as well as occurrence of seeding. This will enable testing of alternate hypotheses relevant to the seeding process. We will also generate data that will enable testing whether herring larvae are an important food source for juvenile salmon to test the hypothesis that salmon predation on larvae is preventing herring population recovery. 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 project, "PWS Herring Forage Contingency". Four additional sites will be selected based on historical data and community input and the 'blitz' sampling program. The fourth year of the project will focus on data analysis, synthesis and reporting.

Science Panel Comments:

This was a very complex proposal, which appeared to be an add-on to the proposers' Herring Survey projects. It aimed to unravel three hypotheses about herring "seeding" to the 0+ year class, based largely on stable isotope analysis of herring and juvenile salmon in PWS. The budget was among the largest proposed, and it was not clear the extent to which the sampling required overlapped with other sampling planned for other projects. The reviewer questioned whether the technology proposed had adequate resolution to actually test the hypotheses. The questions raised were important, but there was consensus that the approaches need clarification and that they would be better defined once the Survey projects were underway.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **10100854**

Project Title: **Recovery of Shallow Subtidal Communities 20 Years After the Exxon Valdez Oil Spill**

Principal Investigator: Brenda Konar

Affiliation: University of Alaska Fairbanks

Co-PIs/Personnel: Katrin Iken

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$109,800.00	**FY11:**	$15,000.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $124,800.00

Abstract:

Impacts of the Exxon Valdez oil spill on nearshore subtidal habitats have been examined over the years, however the recovery and current status of these communities still remains unknown. The purpose of this proposal is to provide comprehensive information on the status of the recovery of three essential shallow subtidal habitat types (soft-sediment eelgrass beds, coarse textured substrates, and rocky substrate kelp beds) in Prince William Sound. The expected outcome of the proposed work is information that will allow classification of the various subtidal habitats as either recovered or not recovered. This proposal will accomplish its goal by surveying and comparing multiple historically oiled and non-oiled reference sites for various targeted parameters on multiple fish, invertebrate, and algal species.

Science Panel Comments:

The proposal seeks to re-examine the status of recovery of subtidal communities in Prince William Sound. The proposal is clearly written and the study design should provide a reasonable assessment of recovery status of subtidal resources. The panel expressed some concern regarding the likelihood of detecting continued injury in the subtidal given the lack of evidence for continued presence of subtidal oil. However, the proposal addresses an explicit concern of the Trustees (evaluation of resources still on the injured resource list) and is likely to provide information that will be of value in assessing potential adverse impacts of future remediation of oil in intertidal sediments. The PIs are clear leaders in their field and their involvement in future restoration and monitoring activities that are beyond the scope of the current project are encouraged.

Science Panel Recommendation: Fund

Science Coordinator Comments:

While I appreciate the cost-effectiveness of this project and the qualifications of the PI's involved, I am hesitant that any information of use to the restoration of resources or services in PWS will be provided in a single field season.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

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

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$147,200.00	**FY11:**	$163,900.00	**FY12:**	$150,900.00
FY13:	$102,900.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $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 predated 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: Pending

Project Number: **10100574**

Project Title: **Re-Assessment of Bivalve Recovery on Treated Mixed-Soft Beaches in Prince William Sound – Submitted Under the BAA AB133F-09-RP-0059**

Principal Investigator: Dennis Lees

Affiliation: Littoral Ecological & Environmental Services

Co-PIs/Personnel: None

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

Funding Requested by Fiscal Year:

FY10:	$136,600.00	**FY11:**	$95,400.00	**FY12:**	$32,600.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $264,600.00

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: Pending

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

Project Location: Prince William Sound/ Kenai Fjords

Funding Requested by Fiscal Year:

FY10: $132,309.00	**FY11:** $132,309.00	**FY12:** $125,775.00
FY13: $0.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $390,393.00

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: Pending

Project Number: **10100130**

Project Title: **Sampling for High Density DNA Sequencing to Detect Population Structure of Pacific Herring.**

Principal Investigator: Steven Moffitt

Affiliation: Alaska Department of Fish & Game

Co-PIs/Personnel: None

Project Location: Prince William Sound, Kodiak, Sitka, and Togiak

Funding Requested by Fiscal Year:

FY10:	$63,900.00	**FY11:**	$70,500.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $134,400.00

Abstract:

Pacific herring in Prince William Sound is one of only two resources still classified as 'not recovered'. The recovery of PWS herring depends crucially on levels of connectivity within PWS and with the Alaskan coast, determining the relative importance of immigration and recruitment in the recovery process. This project will collect herring and process for data and tissues required to investigate the genetic structure of Pacific herring in discrete spawning waves and age classes in three spatially and temporally isolated locations in PWS, within the context of Kodiak, Togiak, and SE Alaska outgroups.

Science Panel Comments:

This project is collecting samples for the Seeb (High Density DNA Sequencing) proposal. It is recommended that this proposal be merged with the Seeb proposal into one document.

Science Panel Recommendation: Modify

Science Coordinator Comments:

This project would be collecting and processing samples for another proposed project (Seeb). As I do not recommend funding the Seeb proposal at this time, I would also not recommend funding for this proposal.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:

Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:

Not Available

Trustee Council Decision: Pending

Project Number: **10100822**

Project Title: **Herring Ecosystem Data Portal**

Principal Investigator: Steven Moffitt

Affiliation: Alaska Department of Fish & Game

Co-PIs/Personnel: Rob Bochenek, Ted Otis, Scott Pegau, Mark Witteveen

Project Location: Prince William Sound, Lower Cook Inlet, Kodiak Island

Funding Requested by Fiscal Year:

FY10:	$248,200.00	**FY11:**	$216,800.00	**FY12:**	$114,600.00
FY13:	$11,400.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $591,000.00

Abstract:

This project will synthesize and enter data, metadata, and electronic resources into a web portal. The portal will provide access to information, data, and GIS visualizations. This project was conceived at an EVOS workshop in April 2006 tasked with identifying PWS herring data gaps and developing restoration and research projects to help herring recovery. Participants indicated that knowledge of spatial and temporal aspects of herring related data sets, e.g., herring spawn, lingering oil, predators, oceanographic conditions and shore zone habitat was necessary to understand how restoration activities might affect herring abundance. Many herring data sets not easily accessible to restoration researchers and managers have been made available through the actions of this project in FY07 - FY09. The proposed project expands the geographic scope to include ADF&G datasets in Lower Cook Inlet and Kodiak regions. Additional data for PWS will be acquired from the Prince William Sound Science Center.

Science Panel Comments:

Peer reviews were generally positive and appreciate need for data system. However, peer reviews and the Science Panel are concerned on data quality and metadata incorporated into system. Beautiful visualizations do not mean data have gone through appropriate QA/QC. Investigators need to complete and deliver the product they have received significant funding for the past three years for peer review before new funding should be considered.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:

Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **10100122**

Project Title: **Impact of Humpback Whale Predation on Young of the Year Pacific Herring in Prince William Sound**

Principal Investigator: John Moran

Affiliation: NOAA/NMFS Auke Bay Laboratory

Co-PIs/Personnel: Kevin Boswell, Jan Straley

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10: $176,800.00	**FY11:** $106,800.00	**FY12:** $0.00
FY13: $0.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $283,600.00

Abstract:

The significance of humpback whale predation on juvenile recruitment is unknown. EVOSTC project PJ090804 identified humpback whales as important predators on Pacific herring during the fall through winter. The number of whales, and the significance to standing biomass was significant, suggesting that predation on recruitment life stages (Age-0 and Age-1) may be as significant or more. This proposal will attempt to sort out the significance of whale predation on age-0 and age-1 herring, and consequently this information will be relative to the core monitoring program focused on juvenile recruitment as well as possible use in evolving supplementation strategies in the future. Methods consist of two surveys, summer and late fall, using 1) direct observations of foraging whales 2) quantifying the prey field available to foraging humpback whales using active imaging sonar (DIDSON) and traditional acoustics and 3) determining depths and whale foraging patterns using bioacoustic tags, during the day and night.

Science Panel Comments:

This project would make valuable observations on the feeding habits of humpback whales on schools of juvenile herring in summer and winter and as well as at night and during the day. The actual behavior will be interpreted from Sonar work close to the fish schools. In addition suction cup tags would be put on the whales to record their movements and orientation close to the juvenile herring schools. All this will be valuable information, but to estimate the predation rate of whales on juvenile herring one needs several pieces of information that this proposal either does not mention or mentions only in passing. Specifically, how does one estimate the number of humpback whales that are feeding on juvenile schools in different time periods? And, how does one estimate the proportion of herring in the diet for whales in different situations? Presumably, when one studies whales close to herring schools, they are feeding mainly on the schools and that can be documented in some detail. But, what about whales elsewhere? It is unclear how this proposal links to the other whale predation work that has been ongoing for the past three years and how the data would help resolve the “take” of juvenile herring by humpback whales.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

This proposal appears to relate to humpback predation on herring project that is ongoing but it is unclear how this work relates to or adds to that work.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **10100112**

Project Title: **Evaluating Harbor Contaminants**

Principal Investigator: James Payne

Affiliation: Payne Environmental Consultants, Inc.

Co-PIs/Personnel: Bill Driskell

Project Location: Harbors throughout EVOS affected region from Valdez to Kodiak

Funding Requested by Fiscal Year:

FY10:	$550,700.00	**FY11:**	$67,300.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $618,000.00

Abstract:

Given that community harbors tend to have constrained circulation and are exposed to numerous terrestrial- and marine-derived contaminants, they also tend to be depositional sites for pollutants (not just oil). This project will address the need for reduction of coastal marine pollution affecting EVOS-injured resources and services in these areas, but in order to effectively design such projects, we first need to know what contaminants need to be contained. We propose an initial assessment by sampling mussels (Mytilus trossulus) and sediments, both inside and nearby regional harbors, to better understand the bioavailability, types, and magnitudes of pollutants requiring management action. Samples would be screened for the full suite of analytes reported by NOAA's National Status & Trends Mussel Watch program plus a few additional compounds (e.g., S/T biomarkers) that are helpful in identifying hydrocarbon sources, and perhaps the recently targeted group of polybrominated diphenyl ether flame-retardants.

Science Panel Comments:

This project would have analyzed a suite of contaminants from eight harbors around Alaska. However, once those analyses were done, it was not stated how/if these results would be applied to restoration.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:

Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **10100116**

Project Title: **Remediation Monitoring using Microbial DNA Profiles**

Principal Investigator: James Payne

Affiliation: Payne Environmental Consultants, Inc.

Co-PIs/Personnel: David Crowley, Bill Driskell

Project Location: EVOS Trustee trial remediation sites on Eleanor and Smith Islands

Funding Requested by Fiscal Year:

FY10:	$493,300.00	**FY11:**	$71,900.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $565,200.00

Abstract:

In 2010, EVOS Trustees are expected to begin developing remediation methods to remove lingering subsurface oil deposits in Prince William Sound beaches. The trials aim to accelerate oil degradation by enhancing the microbial-driven processes, more specifically by shifting them from anaerobic to aerobic conditions. During the trials, feedback information will be limited to measurements of dissolved oxygen, after which success of the treatment will be judged by examination of the before-, during- and after-treatment hydrocarbon signatures. As a means to provide real-time information for better monitoring the remediation process, we propose to evaluate the status of the microbial communities and their degradation activity with rapid DNA assays that can be used to assess the efficacy of the treatments for shifting the degrader community to aerobic conditions. Additional monitoring will include analysis of microbial community structures that are associated with differing stages of oil degradation. Lastly, a modeling effort is suggested for enabling the interpretation of biological data into decision support tools that can assist with optimization of the remediation process.

Science Panel Comments:

Much of the work proposed is basic research; adapting microbial techniques perfected in terrestrial systems to marine sediments. It is unclear how sensitive these tests will be once they are perfected, i.e., what concentrations of oil will cause changes in bacterial community structure. Also, the authors imply that they will work with another Trustee Council funded project (Boufadel) but it is not clear from the proposal how their work will be integrated. Finally, the project is expensive with a substantial proportion going to consultant contracts. The Science Panel did not believe this was a cost-effective project.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

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

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$343,100.00	**FY11:**	$385,600.00	**FY12:**	$354,300.00
FY13:	$97,400.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $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 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-effected 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: Pending

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

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$94,200.00	**FY11:**	$69,500.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $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: Pending

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

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

Funding Requested by Fiscal Year:

FY10: $69,100.00	**FY11:** $0.00	**FY12:** $0.00
FY13: $0.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $69,100.00

Abstract:

Pacific herring (Clupea pallasi) 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: Pending

Project Number: **10100759**

Project Title: **Harlequin Duck Population Dynamics in PWS: Measuring Recovery**

Principal Investigator: Daniel Rosenberg

Affiliation: Alaska Department of Fish & Game

Co-PIs/Personnel: None

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$211,700.00	**FY11:**	$212,000.00	**FY12:**	$217,500.00
FY13:	$70,500.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $711,700.00

Abstract:

This project will monitor the recovery of harlequin ducks and is directly linked to recovery objectives in the EVOS Restoration Plan. Harlequin ducks occur year-round in intertidal zones of PWS and they have not fully recovered from the effects of 1989 Exxon Valdez Oil Spill. The current status of harlequin duck populations in oiled areas of PWS is a result of the initial impacts from the spill, continued exposure to lingering oil, other environmental stressors, and intrinsic demographic factors. Initial high losses of adults, especially females, coupled with many years of chronic oil exposure may result in a long recovery period. Population monitoring provides the most direct approach to assess recovery because it measures changes in abundance and composition. Demographic studies have focused on post-spill comparisons of oiled and unoiled areas of PWS due to the lack of pre-spill data. Demographic studies have been designed to compare population level effects at spill-wide and smaller but still broad regional spatial scales but were not intended to assess demographic changes based on oiling history at much smaller spatial scales (i.e. individual shoreline segments or bays). However, Cytochrome P450 1A induction studies have documented exposure to EVO at these much smaller spatial scales. This biomarker has been correlated with lower female survival and is consistent with our demographic studies that until recently have identified a lower proportion of females in oiled areas. Broad scale demographic studies indicate slightly increasing or stable populations in oiled areas and not the decline in abundance expected if continued oil exposure reduces survival rates. This has generated interest in improving the ability of demographic studies to assess data at smaller spatial scales commensurate with the current status of lingering oil while still meeting current recovery objectives. The objectives of this study are to 1) improve our power to detect differences in trends at smaller spatial scales by improving our estimates of sampling variability for individual transects; 2) continue to monitor the recovery of harlequin ducks throughout oiled areas in PWS at different spatial scales 3) continue a long-term monitoring effort to track changes over time in oiled and unoiled areas to improve our knowledge of sea duck population dynamics in PWS; and 4) document sea duck population densities (including Barrow's goldeneyes) at those sites with lingering oil to prioritize sites for active remediation and establish pre-remediation baseline information to monitor remedial effectiveness.

Science Panel Comments:

The PI has a long track record of doing good work for the Trustee Council, and the Science Panel encourages the continuation of this relationship. However, data similar to that being proposed in this study has been collected over the past three years. The PI stated that the final design of this new study could not be finalized until the results of the previous three years were analyzed. The Science Panel recommends that the culmination of the 2007-2009 data be analyzed and reported: based upon these results a new survey design should be proposed to the Trustees in FY2011.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **10100165**

Project Title: **High Density DNA Sequencing to Detect Population Structure of Pacific Herring**

Principal Investigator: James Seeb

Affiliation: University of Washington

Co-PIs/Personnel: Lorenz Hauser, Lisa Seeb, Bill Templin

Project Location: Prince William Sound with outgroups from Kodiak, Togiak, Sitka

Funding Requested by Fiscal Year:

FY10:	$379,700.00	**FY11:**	$414,500.00	**FY12:**	$202,900.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $997,100.00

Abstract:

Pacific herring in Prince William Sound is one of only two resources still classified as 'not recovered'. The recovery of PWS herring depends crucially on levels of connectivity within PWS and with the Alaskan coast, determining the relative importance of immigration and recruitment in the recovery process. We propose to investigate the genetic structure of Pacific herring by analyzing discrete spawning waves and age classes in three spatially and temporally isolated locations in PWS, within the context of Kodiak, Togiak, and SE Alaska outgroups. In contrast to previous studies, we will use high-density sequencing to discover many 10,000s of single nucleotide polymorphisms (SNPs) in the expressed genome of Pacific herring. We will identify discriminatory SNPs using a 1536-SNP array that will specifically incorporate genes known to be under natural selection. Highly discriminatory SNPs will be assembled in an information-rich 96-SNP array for subsequent genetic monitoring of recovery efforts.

Science Panel Comments:

This proposal focuses on developing single nucleotide polymorphism (SNP) technology for determining population structure of Pacific herring along the Pacific coast. This state-of-the-art technology would provide the strongest evidence regarding stock structure of herring not only within PWS but also in the Pacific. Furthermore, since this approach identifies highly evolving proteins common to reproductive, immune, and physiologically adaptive processes, it also holds promise in identifying genes involved in disease susceptibility/resistance as well as “health” of the PWS population. This is a very expensive, high-risk proposal with potential for high pay off in several areas beyond population structure. It is recommended that sampling frequency be cut significantly with an appropriate budget reduction.

Science Panel Recommendation: Fund Reduced

Science Coordinator Comments:

While I agree with the science panel's comments regarding the potential success of this project, I feel that the high risk and high cost outweigh any potential benefits.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

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

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10: $71,300.00	**FY11:** $0.00	**FY12:** $0.00
FY13: $0.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $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: Pending

Project Number: **10100129**

Project Title: **Ecology and Migratory Movements of Pacific Herring in Prince William Sound Using Acoustic Tagging**

Principal Investigator: Andrew Seitz

Affiliation: University of Alaska Fairbanks

Co-PIs/Personnel: John Eiler, Brenda Norcross, Peter Winsor

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$444,200.00	**FY11:**	$164,000.00	**FY12:**	$144,100.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $752,300.00

Abstract:

Pacific herring was once abundant in Prince William Sound (PWS), but its population declined after the Exxon Valdez Oil Spill and has not recovered to pre-spill levels. This proposal seeks to fill gaps in our knowledge of the life history of herring in PWS by monitoring their migratory movements using acoustic tags. Filling these life history gaps will help identify factors preventing recovery of herring and may contribute to restoration strategies. We will: 1) conduct field trials with acoustic tags to quantify detection efficiencies of receivers in fixed positions, on moving boats and on autonomous gliders; 2) acoustically tag and release 200 wild Pacific herring in Port Gravina, PWS in both spring and fall of 2010 and monitor their migratory movements using fixed and mobile hydrophones and 3) analyze herring movement data to determine time spent within spawning areas, spawning site fidelity, and the timing of migratory movements.

Science Panel Comments:

This was a novel proposal from a highly qualified team to take advantage of an array of acoustic tracking equipment already in place in PWS as part of the Pacific Ocean Shelf Tracking (POST) project. Based on recent highly successful tests of herring tagging in Puget Sound, the team proposed to tag returning adult herring and to directly monitor their movements between bays inside PWS to answer questions about homing to natal bays and time spent in PWS. The existence of POST receivers outside PWS provides the possibility that additional information on larger scale herring migrations might be equally valuable, for example in understand the origins of GoA food identified by stable isotopes. It was pointed out that the POST system routinely provides answers that no one was expecting, so the project might provide new insights into the real problems with the herring stock. The project also proposes tests of two methods of capturing and holding herring for tag surgery that could provide useful experience for future culture operations. It was also suggested that tagging of salmon smolts from the hatcheries by the same team, might provide new information about their distribution, timing and interactions with herring in natal bays.

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: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Could Wait

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **10100829**

Project Title: **Population Status of Littleneck Clams (Protothaca Staminea)**

Principal Investigator: Gary Shigenaka

Affiliation: NOAA Office of Response & Restoration

Co-PIs/Personnel: Douglas Coats, Allan Fukuyama

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$229,300.00	**FY11:**	$117,300.00	**FY12:**	$0.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $346,600.00

Abstract:

As part of a 2007 EVOSTC study, NOAA/OR&R investigated the recovery status of the native littleneck clam (Protothaca staminea) in Prince William Sound (PWS). The results of that survey documented an unexpected decline in littleneck clam abundances across PWS that did not appear to have a direct link to current oiling conditions or past oiling and treatment histories. Other co-occurring bivalves did not show this pattern of decline. We later became aware of other clam surveys in Cook Inlet, British Columbia, Puget Sound, and Oregon that yielded similar abundance trend results.

While our 2007 project results did not indicate an obvious link to the Exxon Valdez spill or its cleanup, we cannot rule out subtle or indirect connections to those activities. The current recovery status of other resources like Pacific Herring or the transient AT1 orca pod suggest that indirect linkages may be important considerations in defining the forensics of recovery. Moreover, the question of how large-scale environmental changes affect our ability to discern and quantify oil spill recovery trends has important implications for PWS and the EVOSTC.

We propose to determine littleneck and butter clam status in 2010-2011 through a multi-component approach that will collect information in the field and provide interpretive context for the results. Study components will include: field collections of adult clams through quadrat excavations; core sampling for recent recruits; collection of additional samples and parameters to provide insight into potential causes for declines; expanded sampling at historically surveyed locations to increase comparative baseline data; incorporation of results from ongoing NOAA monitoring site in PWS; and interviews of PWS Native community residents to ascertain if and when subsistence harvesters noted unusual shifts in clam numbers during the post-spill period.

Science Panel Comments:

This proposal is based upon Shigenaka's observations of a regional decline by over 90% in littleneck clam abundances, independent of shoreline clean-up treatment. The proposal intends to test by sampling within a set of 12 historically sample sites (10 in western and 2 in eastern PWS) with differing oiling and clean-up histories whether the littleneck (Protothaca) clams have indeed suffered a regional crash. In addition, the proposal intends to test Lees's armoring hypothesis, but this component is flawed by failing to define armoring and to present a measure of it and failure to include shoreline geological expertise to provide professional expertise and credibility for this component. In addition, the proposal intends to make rudimentary pilot tests of hypotheses to explain the suggested regional crash, but the details of these tests of disease and water-column microbial exposure are absent and this portion of the study is not sufficiently rigorous. Shigenaka also intends to revisit the controversial paper that his group previously published that argued that convergence between oiled and unoiled systems is not required to demonstrate recovery as long as the difference between them remains constant ("Parallelism").

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

The PAC recommends this project for funding if the PI satisfactorily collaborates with Project 10100574 (Lees) 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: Do Not Fund

Trustee Council Comments:

Not Available

Trustee Council Decision: Pending

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

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$170,214.00	**FY11:**	$196,723.00	**FY12:**	$173,563.00
FY13:	$56,227.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $596,727.00

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: Pending

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

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

Funding Requested by Fiscal Year:

FY10: $60,700.00	**FY11:** $0.00	**FY12:** $0.00
FY13: $0.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Requested: $60,700.00

Abstract:

Pacific herring (Clupea pallasi) 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: Pending

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

Project Location: Gulf of Alaska

Funding Requested by Fiscal Year:

FY10:	$141,500.00	**FY11:**	$138,700.00	**FY12:**	$133,600.00
FY13:	$0.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $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: Pending

Project Number: **10100124**

Project Title: **Molecular Tools for Monitoring and Quantifying Effects of Marine Pollution on Pacific Herring Immunity**

Principal Investigator: Patty Zwollo

Affiliation: The College of William and Mary

Co-PIs/Personnel: Carey Bagdassarin, John Kennish, Chris Pallister

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY10:	$123,600.00	**FY11:**	$143,400.00	**FY12:**	$38,500.00
FY13:	$1,500.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Requested: $307,000.00

Abstract:

Marine pollution is detrimental to ecosystem vitality. Our proposed research focuses on the immunological health of Pacific herring (Clupea pallasii) in Prince William Sound. Lingering oil from the Exxon Valdez spill likely interferes with embryonic and early life stages of herring larvae, while adult fish appear to be more susceptible to disease. Marine plastic pollutants, specifically phthalates, likely have compounding cytotoxic effects on immune cells. We hypothesize that marine pollution adversely compromises both hematopoiesis and effectiveness of antibody responses in Pacific herring. We propose to investigate the frequency of B-cell populations in juvenile Pacific herring from PWS, using a combination of flow cytometry and chemical analyses. We have developed molecular biomarkers that allow single-cell analysis of fish immune tissues. We will monitor potential changes in B-cell developmental and activation states in fish ("B cell profiles") and determine if correlations exist between such profiles and intracellular levels of selected marine pollutants. Our results can be applied to any fish species, and hence will guide future analyses on other affected species

Science Panel Comments:

The PI's demonstrate unfamiliarity with previous studies funded by the Trustee Council, as well as other relevant literature that would impact their design. There are other methods that would be more productive and would require collaboration with others who have established disease-free stocks (e.g., Hershberger). Also, the PAH and other contaminants proposed for use in this study are found in very low concentrations in PWS and in lingering oil and would likely not give the immunological signals being searched for by the researchers.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Do Not Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending