Public Advisory Committee Comments:

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

Public Advisory Committee Recommendation: Fund Contingent

Executive Director Comments:

Not Available

Executive Director Recommendation: Could Wait

Trustee Council Comments:

Not Available

Trustee Council Decision: Fund

Project Number: **10100742**

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

Principal Investigator: Craig Matkin

Affiliation: North Gulf Oceanic Society

Co-PIs/Personnel: None

Disbursing Agency: NOAA

Project Location: Prince William Sound/ Kenai Fjords

Project Type: New

Funding Approved by Fiscal Year:

FY10: $132,309.70	**FY11:** $132,309.70	**FY12:** $125,775.10
FY13: $0.00	**FY14:** $0.00	**FY15:** $0.00

Total Funding Approved: $390,394.50

Abstract:

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

Science Panel Comments:

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

Science Panel Recommendation: Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Priority Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Fund

Project Number: **10100132**

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

Principal Investigator: William Pegau

Affiliation: Prince William Sound Science Center

Co-PIs/Personnel: None

Disbursing Agency: NOAA

Project Location: Prince William Sound

Project Type: New

Funding Approved by Fiscal Year:

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

Total Funding Approved: $1,180,400.00

Abstract:

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

The objectives of the integrated herring survey program are:
1)˜Identify juve nile rearing bays for use in restoration planning.
2)˜Measure facto rs 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 pro tocols 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: Fund

Project Number: **10100128**

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

Principal Investigator: Terrance Quinn

Affiliation: University of Alaska Fairbanks

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

Disbursing Agency: ADFG

Project Location: Prince William Sound

Project Type: New

Funding Approved by Fiscal Year:

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

Total Funding Approved: $163,700.00

Abstract:

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

Science Panel Comments:

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

Science Panel Recommendation: Fund

Science Coordinator Comments:
I concur with the science panel recommendation.

Science Coordinator Recommendation: Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Could Wait

Trustee Council Comments:
Not Available

Trustee Council Decision: Fund

Project Number: **10100804**

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

Principal Investigator: Stanley Rice

Affiliation: NOAA/NMFS Auke Bay Laboratory

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

Disbursing Agency: NOAA

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

Project Type: New

Funding Approved by Fiscal Year:

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

Total Funding Approved: $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: Fund

Project Number: **10100165-A**

Project Title: **Pilot Project - High Density DNA Sequencing**

Principal Investigator: James Seeb

Affiliation: University of Washington

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

Disbursing Agency: ADFG

Project Location: Prince William Sound

Project Type: New

Funding Approved by Fiscal Year:

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

Total Funding Approved: $71,300.00

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

Science Panel Comments:
Not Applicable

Science Panel Recommendation: Not Reviewed

Science Coordinator Comments:
Not Available

Science Coordinator Recommendation: Could Wait

Public Advisory Committee Comments:
Not Applicable

Public Advisory Committee Recommendation: Not Reviewed

Executive Director Comments:
Not Available

Executive Director Recommendation: Could Wait

Trustee Council Comments:
Not Available

Trustee Council Decision: Fund

Project Number: **10100132-B**

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

Principal Investigator: Richard Thorne

Affiliation: Prince William Sound Science Center

Co-PIs/Personnel: None

Disbursing Agency: NOAA

Project Location: Prince William Sound

Project Type: New

Funding Approved by Fiscal Year:

FY10:	$170,200.00	**FY11:**	$196,700.00	**FY12:**	$173,600.00
FY13:	$56,200.00	**FY14:**	$0.00	**FY15:**	$0.00

Total Funding Approved: $596,700.00

Abstract:

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

Science Panel Comments:

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

Science Panel Recommendation: Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Fund

Public Advisory Committee Comments:

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

Public Advisory Committee Recommendation: Fund Reduced

Executive Director Comments:

Not Available

Executive Director Recommendation: Fund

Trustee Council Comments:

Not Available

Trustee Council Decision: Fund

Project Number: **10100806**

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

Principal Investigator: Johanna Vollenweider

Affiliation: NOAA/NMFS Auke Bay Laboratory

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

Disbursing Agency: NOAA

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

Project Type: New

Funding Approved by Fiscal Year:

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

Total Funding Approved: $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: Fund

Project Number: **10100340**

Project Title: **Long-Term Monitoring of the Alaska Coastal Current**

Principal Investigator: Thomas Weingartner

Affiliation: University of Alaska Fairbanks

Co-PIs/Personnel: None

Disbursing Agency: ADFG

Project Location: Gulf of Alaska

Project Type: New

Funding Approved by Fiscal Year:

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

Total Funding Approved: $413,800.00

Abstract:

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

1.˜Temperatur e 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 a s an index of phytoplankton biomass, and
5.˜Atmosphere-oc ean heat fluxes.

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

Science Panel Comments:

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

Science Panel Recommendation: Fund

Science Coordinator Comments:

I concur with the science panel recommendation.

Science Coordinator Recommendation: Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Fund

Executive Director Comments:
Not Available

Executive Director Recommendation: Priority Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Fund