

11/17/06

Exxon Valdez Oil Spill Trustee Council
Meeting

November 14, 2006

Agenda

Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, AK 99501-2340 • 907 278 8012 • fax 907 276 7178



DRAFT AGENDA
EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
November 14, 2006 8:30 a.m.
Anchorage, Alaska

DRAFT 10/19/06

DRAFT

Trustee Council Members:

DAVID W. MÁRQUEZ
Attorney General
Alaska Department of Law

JAMES BALSIGER
Administrator, Alaska Region
National Marine Fisheries Service

KURT FREDRIKSSON
Commissioner
Alaska Department of
Environmental Conservation

DRUE PEARCE
Senior Advisor to the Secretary
for Alaskan Affairs
U.S. Department of the Interior

McKIE CAMPBELL
Commissioner
Alaska Department of Fish
and Game

JOE MEADE
Forest Supervisor
U.S. Department of Agriculture
Forest Service

Meeting in Anchorage, Trustee Council Office, 441 West 5th Avenue, Suite 500
Teleconference number: 800.315.6338 (contact EVOS for code)

_____ Federal Chair

1. Call to Order -- 8:30 a.m.
2. Consent Agenda
 - Approval of Agenda*
 - Approval of September 7, 2006 Trustee Council meeting notes*

Federal Trustees
U.S. Department of the Interior
U.S. Department of Agriculture
National Oceanic and Atmospheric Administration

State Trustees
Alaska Department of Fish and Game
Alaska Department of Environmental Conservation
Alaska Department of Law

3. Public Advisory Committee comments

4. Public comment (no reopener comments accepted) – 8:40 a.m. (3 minute per person)

5. Executive Director's Report Michael Baffrey, Executive Director

6. Update to Injured Resources and Services list* EVOS staff

Working lunch provided

7. FY 07 Work Plan* EVOS staff

Executive Session

8. Adjourn

* Indicates action items

Sept 7, 2006
Meeting Notes

Exxon Valdez Oil Spill Trustee Council

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TRUSTEE COUNCIL MEETING NOTES

Anchorage, Alaska

September 7, 2006

DRAFT - 10/17/06

DRAFT

Chaired by: David Márquez
Trustee Council Member

Trustee Council Members Present:

Joe Meade, USFS
Drue Pearce, DOI
Craig O'Connor, NMFS *

McKie Campbell, ADF&G
Larry Dietrick, ADEC **
• David Márquez, ADOL

- Chair
- * Craig O'Connor alternate for James Balsiger
- ** Larry Dietrick alternate for Kurt Fredriksson

The teleconferenced meeting convened at 11:05 a.m., September 7, 2006 in Anchorage at the EVOS Conference Room.

1. Approval of the Agenda

APPROVED MOTION: Amend the September 7 agenda adding discussion of six previously awarded (multi-year) projects after item 8 (monitoring projects)

Motion by O'Connor, second by Dietrick

APPROVED MOTION: Amend the agenda to convene an executive session immediately after the close of public comment to discuss matters of litigation and personnel

Motion by O'Connor, second by Dietrick

APPROVED MOTION: Motion to approve the agenda as amended

Motion by O'Connor, second by Dietrick

2. Approval of July 28, 2006 meeting notes

APPROVED MOTION: Approval of the July 28, 2006 Trustee Council meeting notes

Motion by O'Connor, second by Dietrick

Public Advisory Committee (PAC) comments were offered by: Stacy Studebaker - Co-chair, Mead Treadwell, RJ Kopchak, and Ed Zeine

Public comment period began at 11:15 a.m.

Three public comments were received from Ross Mullins, Ken Adams and Vince Patrick.

Public comment closed at 11:30 a.m.

3. Executive Session

APPROVED MOTION: Motion to go into executive session to address legal and personnel matters

Motion by O'Connor, second by Dietrick

Off the record: 11:32 a.m.

On the record: 12:20 p.m.

4. Herring Restoration Plan

APPROVED MOTION: Motion to approve pursuing the herring restoration planning efforts using the \$75,000 approved at the May 23, 2006 Trustee Council meeting to cover the costs of EVOS staff preparing a preliminary draft Herring

Restoration Plan. Noted herring experts will assist in developing and guiding the planning document. The Draft Plan will be presented at public meetings in the winter of 2006 and 2007 in the affected communities of Cordova, Chenega, Tatitlek, Kodiak and Anchorage. Public input will be solicited and incorporated into the document before it is finalized.

Motion by O'Connor, second by Meade

5. Public Advisory Committee selection

APPROVED MOTION: Motion for approval of members who have been recommended as nominees for appointment by the Secretary of the Interior to the October 2006-September 2008 term of the Public Advisory Committee: Aquaculture and Mariculture – Gary Fandrei, Commercial Fishing – RJ Kopchak, Commercial Tourism – Ron Peck, Conservation and Environmental – Pat Lavin, Local Government – Ed Zeine, Marine Transportation – Torie Baker, Native Landowner – Larry Evanoff, Public at Large – Jason Brune and Vern McCorkle, Recreation Users – Stacy Studebaker, Regional Monitoring – Steve Lewis, Science/Technical – Martin Robards, Sport Hunting & Fishing – Kurt Eilo, Subsistence – Martha Vlasoff, Tribal Government – Mark King

Motion by O'Connor, second by Meade

6. Administrative Budget 070100

APPROVED MOTION: Motion to approve FY 2007 Annual Program Development & Implementation Budget for Fiscal Year 2007 in the amount of \$2,062,447, as submitted by the Executive Director and Administrative Manager. The Trustee Council

approved the FY 07 Annual Program Development and Implementation budget for fiscal year 2007 as presented in the 16 page draft dated August 23, 2006. The total budget is to be funded in the amount of \$2,062,447 with Exxon Valdez oil spill investment funds (funding source). Immediately upon the National Oceanic and Atmospheric Administration's affirmative determination for the one year extension and modified scope for the NOS grant number NAO3NOS4730188, the total grant's lapsed forward amount will be applied to the science management budget for herring restoration activities for FY 07 and the funding amount supplemented by the NOS grant will be returned to the investment fund. The Trustee Council will agree to consider a revised budget for the program support and project component following the adoption of the FY 07 work plan; and any other revisions as may be appropriate after review by the liaisons.

Motion by O'Connor, second by Pearce

7. Amendment to Monitoring Projects

APPROVED MOTION: Motion to approve interim funding for the following FY-04 monitoring projects: 040340 – Weingartner – Long-term monitoring of the Alaska Coastal Current \$16,238 to ADFG; 040624 – Batten – Acquisition & Application of CPR Data in the Gulf of Alaska \$33,800 to NOAA; 040699 – Cokelet – Biophysical Observation Aboard AMHS \$36,475 – [15% (\$5,936) to ADFG & 85% (\$30,639) to NOAA]. Interim funding is authorized in the amount of \$86,513. This interim funding is to ensure continued monitoring activities between FY-06 and the pending funding approval of the FY-07 Invitation. Interim funding is authorized at ¼ of

the FY-06 authorization amount and is contingent upon the satisfactory receipt of project annual reports and progress.

Motion by O'Connor, second by Meade

8. FY 05-FY 07 Continuing Projects

APPROVED MOTION: Motion to approve funding for the FY 05 – FY 07 continuing projects: PJ 050742 – Matkin – Monitoring of Killer Whales \$23,800 to NOAA; PJ 050743 – Baird – Connecting Coastwalk: Linking Shoreline Mapping \$11,900 to ADFG; PJ 050749 – Hoover-Miller – Harbor Seal Monitoring in South Kenai Fjords \$82,300 to ADFG; PJ 050763 – Short and Long-term Monitoring of Anthropogenic Hydrocarbons \$58,900 to NOAA; PJ 050765 – Willette – Management Applications: Kenai Salmon Runs \$67,000 to ADFG; PJ 050769 – Otis – Temporal Stability of Fatty Acids \$16,100 to ADFG & \$9,000 to NOAA. FY 07 funding is authorized in the total amount of \$269,000 (\$177,300 to ADFG & \$91,700 to NOAA) and is contingent upon the satisfactory receipt of annual reports and progress.

Motion by O'Connor, second by Pearce

9. Corr Parcel

APPROVED MOTION: Motion to approve Resolution 06-16 regarding the Trustee Council approval for funding \$1,000,000 for the purchase of the Corr Parcel and to proceed to closing.

Motion O'Connor, second by Pearce

PRESENTATION: Carrie Holba, Alaska Resources Library and Information Services (ARLIS) and Cherri Womac, Exxon Valdez Oil Spill Trustee Council,

were presented with Letters of Recognition signed by the Trustee Council for their tireless efforts and long-term assistance to the Trustee Council.

Meeting adjourned at 1:48 p.m.

Motion O'Connor, second by Dietrick

Nov 2, 2006 PAC
Meeting Summary

Meeting Summary

A. GROUP: *Exxon Valdez* Oil Spill (EVOS) Public Advisory Committee (PAC)

B. DATE/TIME: November 2, 2006

C. LOCATION: Anchorage, Alaska

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

<u>Name</u>	<u>Principal Interest</u>
Torie Baker	Marine Transportation
Jason Brune	Public-at-Large
Kurt Eilo	Sport Hunting/Fishing
Larry Evanoff	Native Landowners
Gary Fandrei	Aquaculture/Mariculture
Mark King	Tribal Government
Pat Lavin	Conservation/Environmental
Steve Lewis	Regional Monitoring
RJ Kopchak	Commercial Fishing
Vern McCorkle	Public-at-Large
Martin Robards	Science/Technical
Stacy Studebaker	Recreation Users
Martha Vlasoff	Subsistence Users
Ed Zeine	Local Government

E. NOT REPRESENTED:

<u>Name</u>	<u>Principal Interest</u>
Ron Peck	Commercial Tourism

F. OTHER PARTICIPANTS:

<u>Name</u>	<u>Organization</u>
Michael Baffrey	Executive Director, Trustee Council
Barbara Hannah	Trustee Council Staff
Doug Mutter	Designated Federal Officer, Dept. of the Interior
Michael Schlei	Trustee Council Staff
Kim Trust	Trustee Council Staff
Cherri Womac	Trustee Council Staff
Shane St Clair	Trustee Council Staff
Barat LaPorte	Patton Boggs
Jenifer Kohout	U.S. Fish and Wildlife Service
Dede Bohn	U.S. Geological Survey
Ken Adams (T)	Cordova
Ross Mullins (T)	Cordova
Diann Hursch (T)	Valdez
Bruce Cain	Native Village of Eyak

Sheryl Salaski	Teacher from Chugach School District
Wayne Shen	Student from Whittier
James Angaiak	Student from Chenega
Ian Angaiak	Student from Chenega Bay
Walker Sexton	Student from Whittier
Brian Nelson	Student from Whittier
Gwen Vlasoff	Student from Tatitlek
Dylan Geffe	Student from Tatitlek
Kelsey Smith	Student from McCarthy
Tessa Bay	Student from McCarthy
Tiffany Maurice-Canon	Student from Anchorage
Richard Maurice-Canon	Student from Anchorage
Brenda Coffman	Chaperone from Valdez

G. SUMMARY:

At 8:35 a.m. Cherri Womac briefed the group on travel reimbursement procedures and the January 21-24, 2007, Alaska Marine Science Symposium in Anchorage.

Doug Mutter opened the meeting with the roll call (a quorum was present). New PAC officers were elected: Stacy Studebaker was elected as the PAC Chair and Pat Lavin was elected as the PAC Vice-Chair.

Studebaker welcomed new PAC members and asked for introductions around the room. The agenda was approved, as amended.

Public comments were delivered:

Ken Adams of Cordova said that the herring work plan was really a list of projects. He thinks the Trustee Council has a secret plan to close out the restoration program and give the remaining money to State agencies. He urged support of continuing the reserve fund and continuing research and monitoring work. He supports the intervention proposal to provide physical aid to herring.

Ross Mullins of Cordova said the current herring draft plan sets up for failure. The herring intervention proposal will work, he said, and proposal reviewer comments were not correct. There are many studies of herring worldwide, what is now needed is physical intervention.

Diann Hursch of Valdez commented on the effects of EVOS response chemicals on spill workers. She said that toxics dropped in Prince William Sound have caused illness in workers similar to that of Gulf war veterans, and could affect herring. She named three workers and said she would email information to the EVOS office. She asked that worker health issues be examined.

Students Wayne Shen and James Angaiak commented on their experiences with the Youth Area Watch program. They gained hands-on experience with expert mentors, which helped them to understand science and marine life and enabled them to teach

others. They believe this is a positive program for the communities.

Torie Baker explained the process for decision making within the PAC and that the range of opinions was valuable information for the Trustee Council. She said PAC members do not have to agree on everything. Kurt Eilo asked if resolutions were the method for getting points to the Trustee Council. Studebaker said yes and also by getting points of view into the meeting summary. Pat Lavin said that sometimes they gauge the "will of the PAC" rather than do formal resolutions. Vern McCorkle noted that the PAC should strive for common ground as much as possible. Baker stated that the Chair's report to the Trustee Council at their meetings should reflect the breadth of the PAC discussion. Jason Brune said he thought PAC members should do more that offer personal opinion, but should also discuss the views of interests they represent.

Michael Baffrey gave the Executive Director's report. He has been visiting communities in the spill area and will continue to do so to obtain input on restoration activities. He wants to be more interactive with the communities. Steve Lewis asked that the communities of Seldovia, Port Graham, Nanwalek, and Seward be included in Baffrey's visits. Baffrey said the Trustee Council meeting on November 14 will be a key meeting, with decisions on the updated Injured Resources and Services list and the 2007 Work Plan.

Baffrey said that herring restoration planning as a follow-up to the April herring workshop will start in earnest after the November 14 meeting. A committee is being formed to develop a draft restoration plan, which will be reviewed by the communities and others. Some of the herring proposals under current review have been determined as needed no matter what form the plan takes, and so should be funded. Decisions on other proposals should await formulation of the plan. Studebaker asked if a six-month timeline for herring could be put together.

Baffrey reviewed the update to the list of injured resources and services. He noted that the list was previously been updated in 1996, 1999, and 2002. The proposed changes to be decided by the Trustee Council are as follow. Splitting the killer whale AB pod and Transient pod into two items. Moving common loons, cormorants, and Dolly Varden into recovered status. Adding to the recovering status: black oystercatchers, harbor seals, and harlequin ducks. Adding to the non-recovering status: killer whale AT1 (transient) pod. Adding to the recovery unknown status: marbled murrelets. Kim Trust said that the basis for these changes come from the results of recent studies and the Integral synthesis report. There are some differences in what is recommended from that in the Integral report, but that is just one source of information. The group asked questions and discussed the basis for making these changes. Trust said it was clear that some of the recovery objectives needed revising, as the end results were not clear. RJ Kopchak suggested that commercial fishing be divided into the various fisheries of the area, since some are doing fine and others are nonexistent. Baker also suggested dividing tourism and recreation into two services for evaluation. Martha Vlasoff suggested doing a division of subsistence uses, based on species harvested.

It was moved by Eilo, second by Brune, that **the PAC endorses Trustee Council use of the October 25, 2006, Update to Injured Resources and Services list and recommends that the list be updated annually.** After discussion and an amendment, this resolution was passed unanimously.

Pat Lavin said he is not sure everyone agrees with all the updates, such as cormorants and harlequin ducks. The references to funding decisions were removed from the resolution.

McCorkle asked if all had read the document, because it makes broad statements about passive uses.

It was moved by Fandrei, second by Brune, that **the PAC recommends the EVOS staff, Science Panel, and PAC assess changes to the recovery objectives to injured resources and services.** Passed unanimously.

The group discussed the October 27, 2006, letter from the State Trustees to the "Oiled Mayors." Kopchak said that the public process was being violated, that this did not provide open access to be able to respond to the suggested priorities, and that while it may be appropriate for the "Oiled Mayors" to collaborate, this was not an appropriate way for making spending decisions and that some proposed projects appeared to be outside the scope of the settlement. McCorkle said there was not a mandate for any of the projects on the list, there was no public process or legal review—these will fall out. Baker noted that legal constraints prevent funding of just any old thing. Baffrey noted that the Trustee Council can spend all the money if they unanimously agree to do so. Studebaker said she was outraged but not surprised and that this was short-sighted, risking a golden opportunity to accomplish things that normally don't get funded. She encouraged sending a strong message to the Trustee Council and for PAC members to attend the November 14 Trustee Council meeting and voice their opinions.

The group asked how funds were transferred for expenditures and if the court had a say in the manner which monies were spent. Barbara Hannah responded that a Trustee Council request to expend money goes to the State and Federal attorneys, who do a court notice of the expenditure. Public comments come at the time of Trustee Council meetings. Kopchak asked that PAC members send email messages to the Trustee Council voicing their views (please cc PAC members and Baffrey). No one could answer how the Federal Trustees viewed this matter.

Studebaker asked what the PAC members thought of the letter and the approach the State was using. **The sense of PAC member's reaction to the letter from the State Trustees to the Oiled Mayors was mostly outrage at this circumvention of the proposal review process.**

Kopchak moved, second by Baker, **the attached resolution (2006-02 EVOS Restoration Fund),** which was passed unanimously.

Baffrey said he asked the Science Panel to review the pre-proposal ideas they had received, and make a recommendation as to whether a full proposal should be requested. He identified the Science Panel as: Leslie Holland-Bartels, Gary Cherr, Steve Braund, Ron O'Dor, Tom Dean, Bob Spies, and Pete Peterson. Eilo said he concurred with the Science Panel recommendations on pre-proposals, noting they tracked with injured resources. The group said they had not seen the pre-proposals and just got the list.

Eilo moved, second by Lavin, that the PAC, given limited access to pre-proposal information, supports staff and Science Panel recommendations to request full proposals from Dasher, Ballachey, Irons, and Springman; but that there be no funding committed until the full proposal had gone through the proposal review process. After discussion, the motion was withdrawn.

Fandrei moved, second by Robards, that **the PAC recommends that if the Trustee Council is going to entertain pre-proposals now or in the future, that a review process that includes the public be developed by the EVOS staff and put into place.** Passed unanimously.

Kopchak moved, second by Eilo, that the PAC has reviewed the list of proposals and agreed that most of the pre-proposals are not appropriate for EVOS funding, except for the four pre-proposals recommended for further development by the Science Panel. After discussion about the lack of information about the pre-proposals, the motion was unanimously defeated.

Trust presented the draft 2007 Work Plan, parts 1 and 2. The invitation was distributed in June and proposals received in August. An anonymous peer review was conducted and the Science Panel reviewed each proposal. The proposals are going before the Trustee Council at their November 14 meeting. Trust said she would like to obtain the PAC recommendations at this time. She distributed colored charts (attached) showing the functional and geographic relationships of the herring proposals. The focus is on year 2007 funding, but they considered multi-year proposals (however, they will need to be reviewed annually for continued funding). Costs for all of the proposals received are: 2007 herring: \$5.2 million, multi-year herring: \$14.1 million, 2007 non-herring: \$3.4 million, and multi-year non-herring: \$7.8 million. There was no cap placed on funding for this work plan, so all the reserve funds could be available, not just the interest earnings from the fund. Baffrey said that if they were to fund projects with just the fund's interest, as in the past, the total available would be about \$4.8 million, and after taking out administrative costs the amount available for projects would be around \$2.8 million.

After discussion, **the sense of the PAC is that project work should stay within the budget means (not taking from the reserve principal) unless a particularly good project or opportunity arises that justifies spending some of the principal.**

Trust summarized each proposal and the group asked questions and discussed their merits. Lewis moved, second by Kopchak, to make **the following PAC recommendations for funding of proposals for the 2007 Work Plan** (passed unanimously):

Draft 2007 Work Plan Part 1: Pacific Herring (October 2, 2006)

Work Plan Proposal PAC Recommendation

Adams	No
Allee/Norcross	No
Batten	Yes
Bickford	No
Bickford/Norcross	Yes
Bishop	No
Castellini/Norcross	No
Cokelet	No
Crawford	No
Gay	Yes
Herschberger	Yes
Keifer	No
Kline	Yes
Lindeberg	Yes
Linley	No
Meuret-Woody	Yes
Moffitt	Yes
Mullins/Patrick	No

Otis/Bickford	Yes
Rice	No
Thorne	Yes
Thorne/Crawford	No
Thorne/Fried	No
Vollenweider	Yes
Wang	No
Weingartner	Yes
Wright	No

Draft 2007 Work Plan Part 2: Injured Resources and Services (October 27, 2006)

Work Plan Proposals PAC Recommendation

Ballachey	Yes
Bodkin/Dean	Yes
Brown-Schwalenberg	No
Carls/Rice	No
Esler	Yes
Finney/Honnold	No
Goldman	No
Irons (as modified)	Yes
Jack	No
Lauenstein	Yes
Lohmann	No
Matkin	Yes
Nelson/Short	Yes
Pawlowski	No
Rosenberg	Yes
Rosenberg/Springman	No
Salasky	No
Schneider	No
Shigenaka (as modified)	Yes

Total estimated costs for the "yes" proposals (above) is around \$2.9 million. PAC comments on the proposals included the following.

Kopchak stated that a herring restoration plan was needed to guide projects so as to make the best use of available funding, therefore, some of the projects he supports should not be funded until the plan has been put into place.

McCorkle said that baseline data collection, such as in the shorezone mapping project, was vital information that needs to be obtained.

Baker said that having stipulations from the Science Director and/or Science Panel on projects, such as Moffitt's, was important.

Kopchak said that projects with geographic components should be geared to provide GIS data sets. He also said that Principal Investigators (PI) who had outstanding overdue reports should

not be funded until satisfactory reports were submitted. He went on to say that modeling projects needed to be nested with other modeling efforts in the Gulf of Alaska region. Trust noted that the Science Panel suggested creating a modeling committee to coordinate efforts.

Studebaker said she favored inclusion of an education component in some projects. Lavin noted his strong support for community involvement in projects, stating that the PAC had in the past made such recommendations to the Trustee Council. He thinks projects must include a community involvement component, or explain why it would not be feasible or beneficial to do so, in order to be funded. Studebaker said that criteria to include this information needed to be included in the invitation for proposals.

Lewis said he endorses regional, long-term data collection efforts that include Cook Inlet. Lavin suggested that proposers of projects that provide substantial benefit to the broader scientific community beyond the Trustee Council, such as Batten and Weingartner for example, should seek funding from other sources in addition to the Trustee Council.

The group discussed the herring intervention proposals and allowed Ross Mullins, a PI, to present additional information on his proposal. The group believed the restoration plan for herring needed to come before funding this type of project, but they hoped that local PIs would be able to stay involved.

The group discussed the Youth Area Watch proposals, stating their support for environmental education but wondering if this was most efficient way to spend limited dollars. Other communities should be involved and the overhead costs look high. McCorkle noted that efforts in smaller communities would reach fewer students and cost more, but that it was still important to reach them. Perhaps an education summit meeting is needed to help plan a coordinated effort and open the process up for more competitive proposals.

Possible topics for the next PAC meeting, in conjunction with the Marine Symposium in January, include: 2008 invitation for proposals, education summit, long-range planning, and orientation for new members. Studebaker said she would like PAC member input on the agenda.

Studebaker asked for, and received, the following PAC member comments.

Lewis: distributed a Prince William Sound Regional Citizens' Advisory Council letter supporting the Cokelet project proposal. He said he heard a rumor of a proposal for herring fishing permit buy-backs, that this should be discussed, if viable.

Robards: said the PAC needs to discuss a vision for the PAC and the EVOS program, he thinks we had a good result today.

Zeine: said he is glad that Stacy is the chairperson, and even if we ruffled some feathers in our own communities today, we were doing what needed to be done. Welcome to new members.

Fandrei: said thanks to the staff who did a great job.

Vlasoff: said she is happy to be here and thanks to the staff.

Baker: noted she is still concerned with community involvement and the need to keep people

involved, we are coming around the corner on herring, but she is worried about the future—thanks to RJ and his work with Baffrey on herring.

King: said he was impressed with the presentation on proposals by Kim Trust, she is very knowledgeable—he is glad to be involved.

Evanoff: said he is looking forward to discussing education and perhaps lowering the age of students involved.

Kopchak: said he does not think the herring buy-back will go anywhere, but believes that herring planning is moving in the right direction. Welcome to the new PAC members.

Studebaker: gave the PAC her thanks for getting all the work done today. She is committed to community involvement and environmental education—hopefully something can be designed by January. She said that PAC members are invited to contact her any time.

The meeting adjourned at 5:55 p.m.

H. FOLLOW-UP:

1. Baffrey will prepare a six-month timeline for the herring restoration planning work.
2. Studebaker will provide a PAC report at the November 14, 2006 Trustee Council meeting.
3. PAC members are encouraged to participate in the PAC/Trustee Council dialog at the November 14 Trustee Council meeting.

I. NEXT MEETINGS:

- Trustee Council meeting November 14 in Anchorage
- PAC Meeting January 25, 2007, in conjunction with the 2007 Alaska Marine Science Symposium in Anchorage

J. ATTACHMENTS:

1. PAC Resolution 2006-02 on the EVOS Restoration Fund
2. Color charts of herring proposal relationships and geographic extent

K. CERTIFICATION:

PAC Chairperson

Date

Resolution 2006-02
Exxon Valdez Oil Spill Restoration Fund
Public Advisory Committee
November 2, 2006

Whereas; the chartering documents of the Exxon Valdez Oil Spill (EVOS) Trustee Council require public participation in all phases of the administration of the Restoration fund; and

Whereas; the memorandum of agreement and consent decree establishing the federal and state co-trustees of the fund provides that ***“the trustees shall agree to an organizational structure for decision making under this MOA and shall establish procedures providing for meaningful public participation in the injury assessment and restoration process;”*** and

Whereas; the restoration plan echoes this requirement by declaring that, ***“restoration must include meaningful public participation at all levels-planning, project design, implementation and review;”*** and

Whereas; the Secretary of the Interior of the United States has appointed Alaska Citizens from spill impacted areas to the EVOS Trustee Council's Public Advisory Committee (PAC), which was created to provide a mechanism for meaningful public participation in the restoration planning, project design, implementation and review; and

Whereas; The PAC were not included in efforts by state trustees to modify, change, and amend this court mandated process; and

Whereas; This violation of process is manifested in the projects list attached to the “Oiled Mayor” correspondence, which includes over \$49.7 million in projects that are proposed for trustee review, although the PAC had no meaningful opportunity to participate at any level of planning, project design, implementation and review.

Now therefore be it resolved; That the Public Advisory Committee to the EVOS Trustee Council respectfully requests that the EVOSTC not fund any projects that do not meet the mandates of the consent decree establishing the PAC, and mandating the PAC's participation in the restoration planning, project design, implementation and review; and

Be it further resolved; That the Public Advisory Committee requests that the EVOS Trustee Council conduct review and deliberations on future solicitation efforts in open session with ample opportunity for public, Science Panel and Public Advisory Committee comment; and

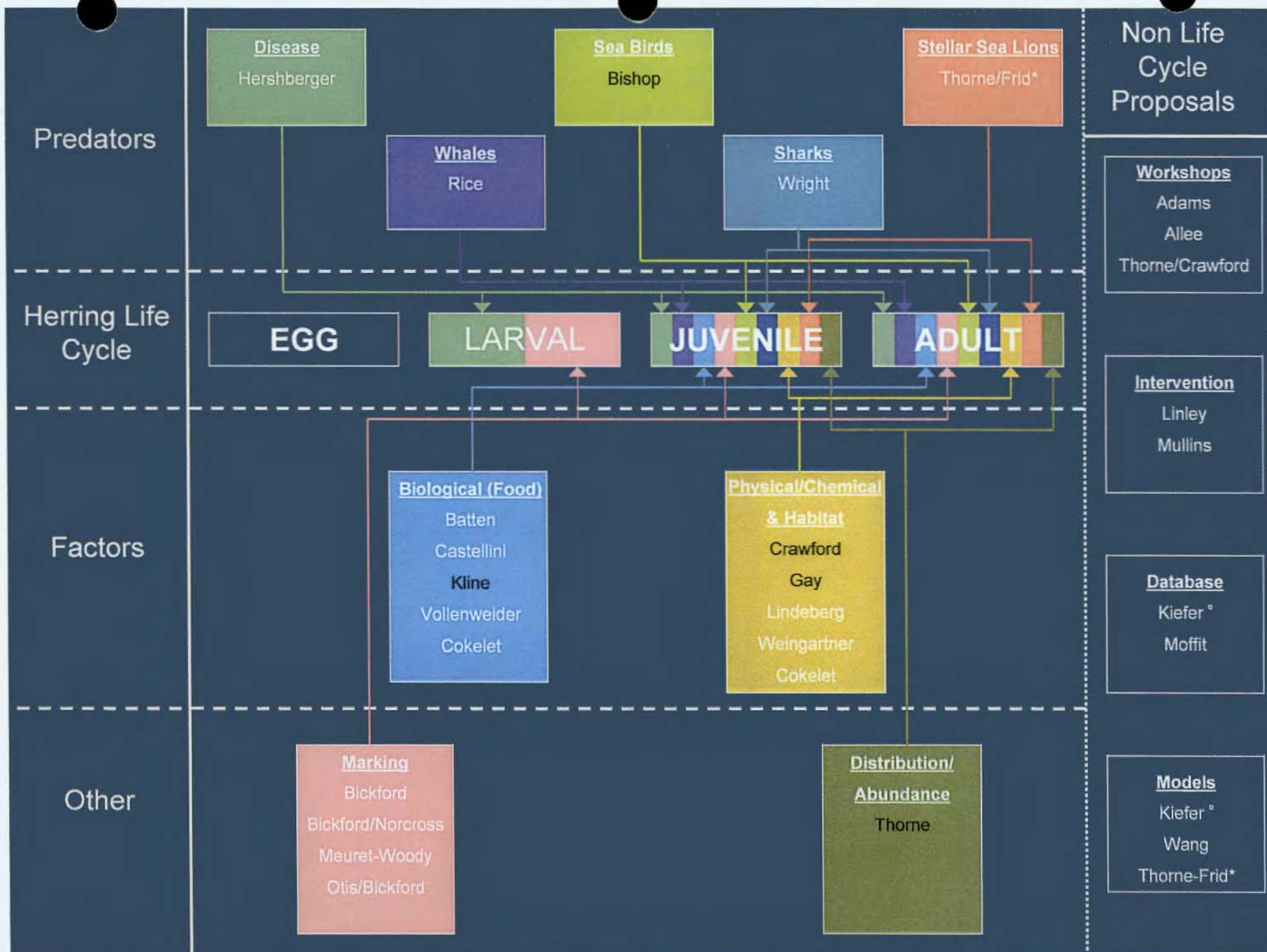
Be it further resolved; this resolution is not a reflection of the merit of the projects proposed, but is a reflection of our extreme dissatisfaction with the violation of the trust relationship between the Public Advisory Committee and the EVOSTC.

This resolution was presented at a regularly scheduled meeting of the EVOS Trustee Council Public Advisory Committee with a quorum established, and was,

Approved and adopted this 2nd day of November, 2006.

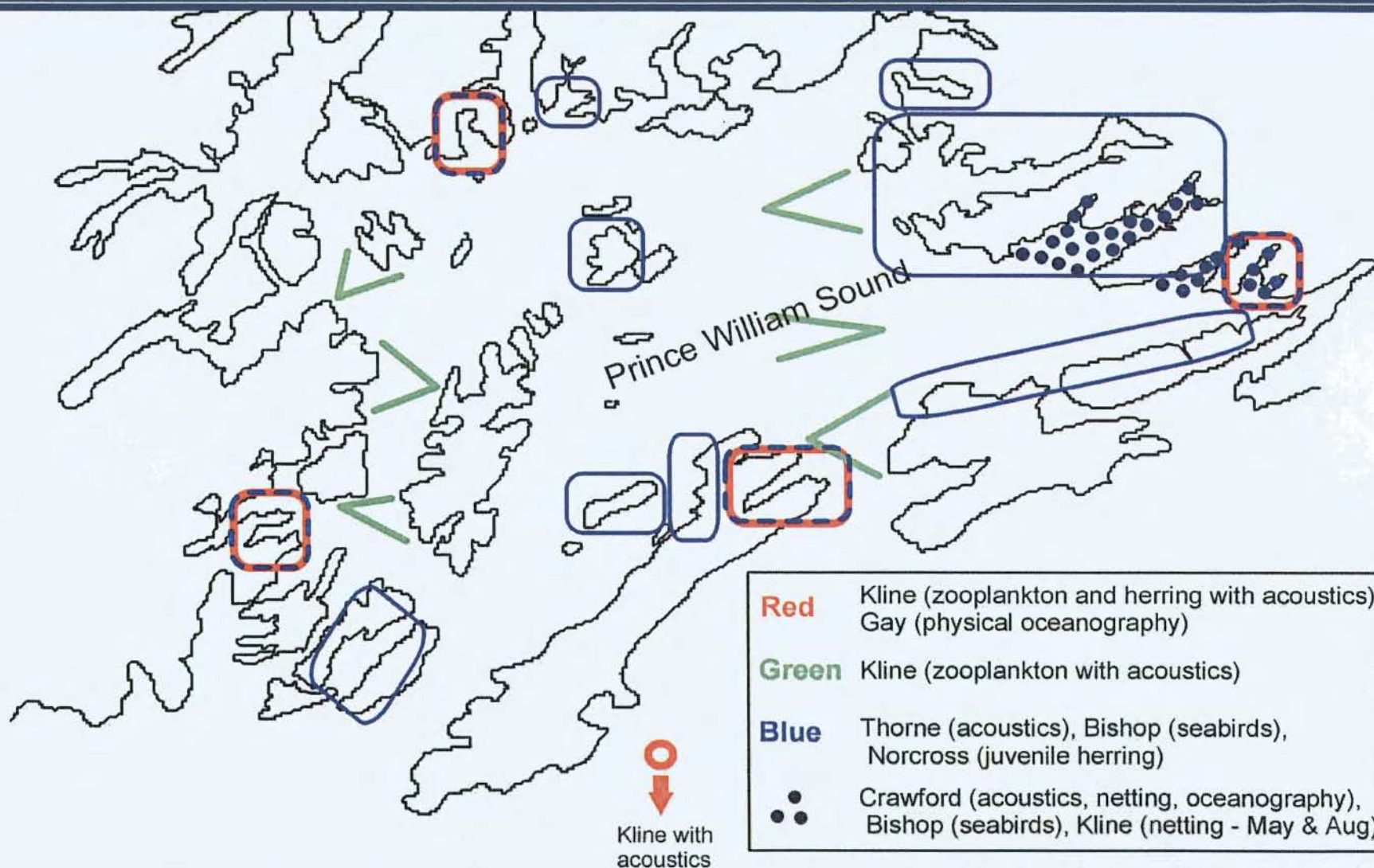
Chairperson, EVOS Trustee Council PAC

Date



PWS Science Center Proposals

Spatial Coverage



BACK TO DIAGRAM

Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, Alaska 99501-2340 • 907/278-8012 • fax 907/276-7178



MEMORANDUM

TO: Exxon Valdez Oil Spill Trustee Council

THRU: Michael Baffrey *Michael Baffrey*
Executive Director

FROM: Barbara Hannah *Barbara Hannah*
Administrative Manager

DATE: October 17, 2006

SUBJECT: GeFonsi & NRDA&R Status Reports – September 30, 2006

Please find attached the following Alaska Department of Revenue, Treasury Division Report for the GeFonsi Exxon Valdez Settlement Fund and the USDOJ Natural Resource Damage Assessment & Restoration Report for the Exxon Valdez Criminal & Civil Restorations Funds for the reporting period of September 2006.

Attachment A – GeFonsi Account Activity

- Graph Comparisons of Interest Income Earnings Distributed & Undistributed and Monthly Fund Balances for this fiscal year through September 30th.
- State of Alaska, Dept of Revenue, Treasury Division, Monthly Reports of Daily GeFonsi Account Activity for the Exxon Valdez Settlement Fund for the reporting period of September 2006.

Attachment B – Project X001 Exxon Valdez Criminal Settlement Restoration Fund

- Graph Comparisons of Interest & Discount Earnings Applied & Unapplied and Monthly Fund Balances for this fiscal year through September 30th.
- USDOJ, Project X001 Fund Status Reports for the reporting period of September 2006.

Attachment C – Project X002 Exxon Valdez Civil Settlement Restoration Fund

- Graph Comparisons of Interest & Discount Earnings to Interest & Premiums Expense with Net Earnings Noted, as well as Unapplied Discount Earnings and Monthly Fund Balances for this fiscal year through September 30th.
- USDOJ, Project X002 Funds Status for the reporting period of September 2006.

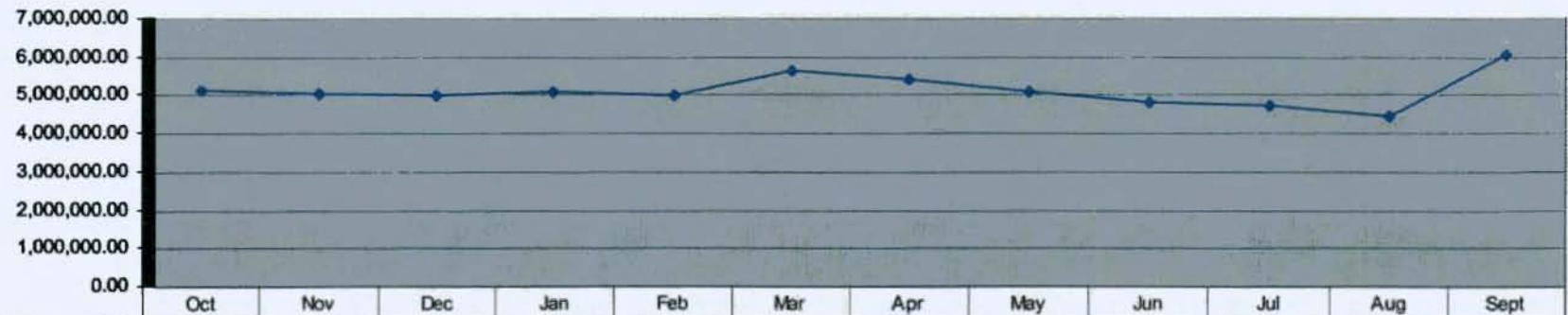
GeFonsi Income Distribution



Income Earnings Distribution Applied	-3,830.23	3,884.70	19,059.68	20,893.56	12,334.69	11,148.99	8,245.24	18,000.39	14,369.28	15,956.93	34,489.72	33,397.27
Remaining Cumulative Undistributed Earnings												23,826.24

Income Earnings Distribution Applied Remaining Cumulative Undistributed Earnings

GeFonsi Balance



GeFonsi Balance	5,131,173.41	5,000,273.25	4,969,909.81	5,068,286.59	4,974,491.84	5,604,487.42	5,382,470.64	5,084,076.48	4,808,312.32	4,719,079.48	4,429,211.87	6,022,084.66
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GeFONSI Account Activity

Account Name: 22177 EXXON VALDEZ SETTLEMENT

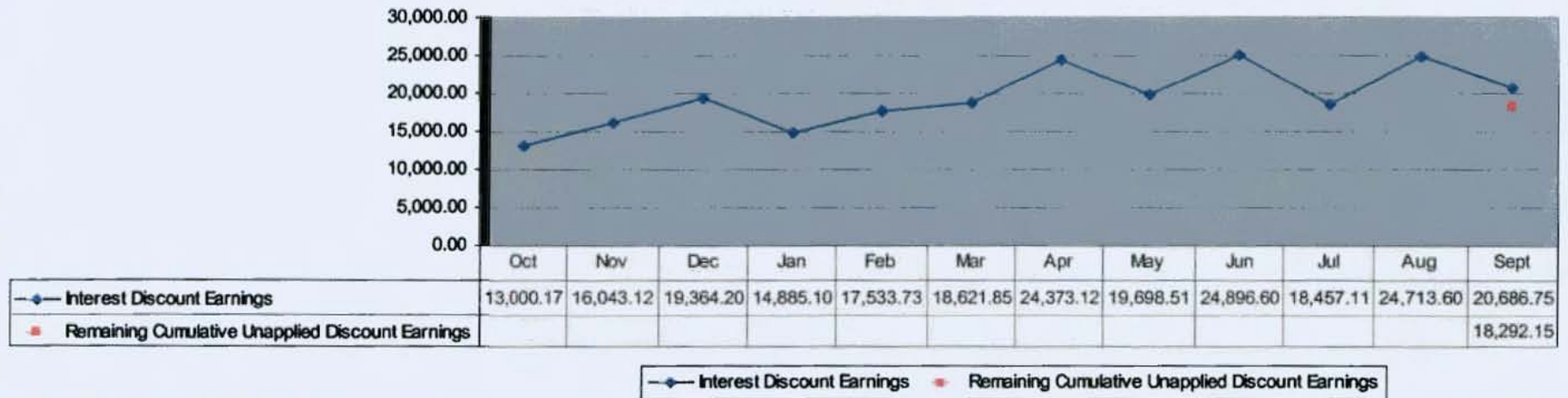
Account No: 22177 GASB Fund: 33070

Date	Balance	Income Distribution	Rate	Daily Earnings	Cumulative Undistributed Earnings
9/1/2006	4,428,704.38		0.000935386	4,173.79	37,571.06
9/2/2006	4,428,704.38		0.	0.00	37,571.06
9/3/2006	4,428,704.38		0.	0.00	37,571.06
9/4/2006	4,428,704.38		0.	0.00	37,571.06
9/5/2006	4,426,297.38		-0.000437862	-1,954.56	35,616.50
9/6/2006	4,377,653.53		-0.000061089	-269.60	35,346.90
9/7/2006	4,371,143.40		0.000104933	462.39	35,809.29
9/8/2006	4,363,860.51		0.0008277	3,641.61	39,450.90
9/9/2006	4,353,860.51		0.	0.00	39,450.90
9/10/2006	4,363,860.51		0.	0.00	39,450.90
9/11/2006	4,364,433.45		-0.000286651	-1,262.38	38,188.52
9/12/2006	4,294,668.83		0.000405156	1,755.48	39,944.00
9/13/2006	4,324,728.80	33,397.27	0.000256424	1,110.64	7,657.37
9/14/2006	4,324,728.80		-0.000268468	-1,163.11	6,494.26
9/15/2006	4,324,691.61		0.000187045	810.13	7,304.39
9/16/2006	4,324,691.61		0.	0.00	7,304.39
9/17/2006	4,324,691.61		0.	0.00	7,304.39
9/18/2006	4,324,272.11		-0.0000664	-287.62	7,016.77
9/19/2006	4,322,745.63		0.001072475	4,643.56	11,660.33
9/20/2006	4,384,088.98		0.000131876	579.69	12,240.02
9/21/2006	4,383,523.05		0.001250033	5,494.85	17,734.87
9/22/2006	4,382,670.85		0.0008504	3,742.11	21,476.98
9/23/2006	4,382,670.85		0.	0.00	21,476.98
9/24/2006	4,382,670.85		0.	0.00	21,476.98
9/25/2006	4,381,810.81		0.000628296	2,766.57	24,243.55
9/26/2006	4,348,311.39		-0.000322106	-1,408.43	22,835.12
9/27/2006	4,336,384.79		0.000108731	473.98	23,309.10
9/28/2006	4,336,378.69		-0.000032114	-140.01	23,169.09
9/29/2006	6,022,084.66		0.000108705	657.15	23,826.24
9/30/2006	6,022,084.66		0.	0.00	23,826.24
Account Totals:		33,397.27		23,826.24	

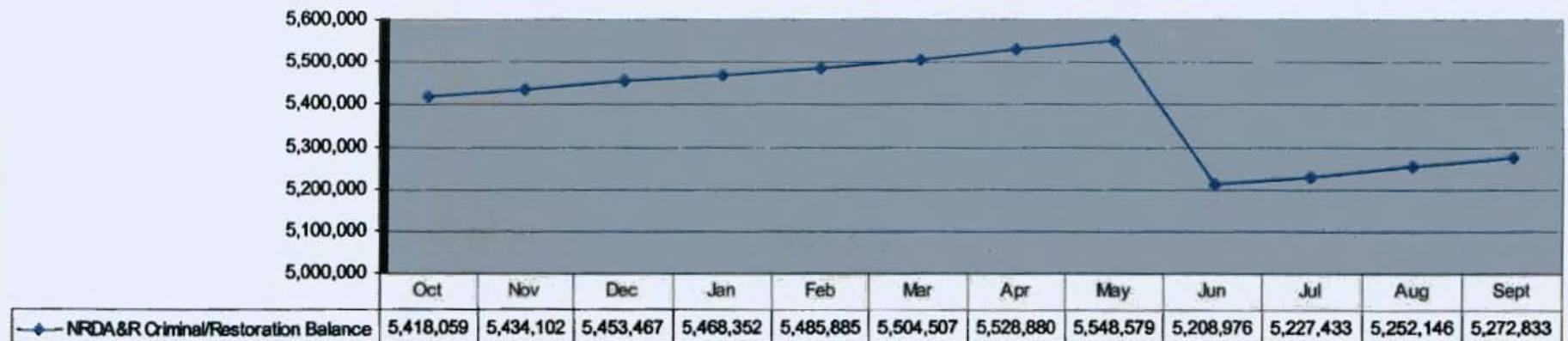
Thursday, October 05, 2006

Attachment A-2

NRDA&R - Criminal/Restoration Earnings Status



NRDA&R Criminal/Restoration Fund Balance



Project X001 Exxon Valdez Criminal Settlement Restoration Status For FY2006 Through 10/16/2006

Summary of Transactions Year to Date for Restoration

At Start	Collections	Investments			Adjustments	Allocations	Current
		Income	Expense	Net Earnings			
5,405,059.11	0.00	232,273.86	0.00	232,273.86	0.00	(364,500.00)	5,272,832.97

- 1) Investment Income consists of periodic interest payments, discount earned, etc.
- 2) Investment Expense consists of Accrued Interest and Premiums paid at the time of purchase.

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Transaction Detail for Restoration

Date	Action	From or For	Restoration	Balance	Remarks
10/01/2005	Start Year	Carryover	5,405,059.11	5,405,059.11	-
10/27/2005	Interest/Discount	R-06-10-340349	13,000.17	5,418,059.28	-
11/25/2005	Interest/Discount	R-06-11-346214	16,043.12	5,434,102.40	-
12/29/2005	Interest/Discount	R-06-12-353563	19,364.20	5,453,466.60	-
01/26/2006	Interest/Discount	R-06-01-359861	14,885.10	5,468,351.70	-
02/23/2006	Interest/Discount	R-06-02-366149	17,533.73	5,485,885.43	-
03/23/2006	Interest/Discount	R-06-03-372484	18,621.85	5,504,507.28	-
04/27/2006	Interest/Discount	R-06-04-380334	24,373.12	5,528,880.40	-
05/25/2006	Interest/Discount	R-06-05-386892	19,698.51	5,548,578.91	-
06/20/2006	Allocation	FWS	(364,500.00)	5,184,078.91	-
06/29/2006	Interest/Discount	R-06-06-394902	24,896.60	5,208,975.51	-

07/27/2006	Interest/Discount	R-06-07-402254	18,457.11	5,227,432.62	-
08/31/2006	Interest/Discount	R-06-08-410464	24,713.60	5,252,146.22	-
09/28/2006	Interest/Discount	R-06-09-416703	20,686.75	5,272,832.97	-

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Investment Acquisitions for Restoration										
Note Number	Matures	SF1081 Number	SF1081 Date	Yield	Par Value	Discount	Premium	Interest	Net Cost	Status
FY06-EXXCR-01	10/27/2005	D-05-09-335126	09/29/2005	3.1317	5,418,000.00	13,000.17	0.00	0.00	5,404,999.83	Closed
FY06-EXXCR-02	11/25/2005	B-06-10-340474	10/27/2005	3.7216	5,434,000.00	16,043.12	0.00	0.00	5,417,956.88	Closed
FY06-EXXCR-03	12/29/2005	B-06-11-346418	11/25/2005	3.8192	5,453,000.00	19,364.20	0.00	0.00	5,433,635.80	Closed
FY06-EXXCR-04	01/26/2006	D-06-12-353689	12/29/2005	3.5536	5,468,000.00	14,885.10	0.00	0.00	5,453,114.90	Closed
FY06-EXXCR-05	02/23/2006	D-06-01-360104	01/26/2006	4.174	5,485,000.00	17,533.73	0.00	0.00	5,467,466.27	Closed
FY06-EXXCR-06	03/23/2006	D-06-02-366370	02/23/2006	4.4182	5,504,000.00	18,621.85	0.00	0.00	5,485,378.15	Closed
FY06-EXXCR-07	04/27/2006	D-06-03-372705	03/23/2006	4.6084	5,528,000.00	24,373.12	0.00	0.00	5,503,626.88	Closed
FY06-EXXCR-08	05/25/2006	D-06-04-680561	04/27/2006	4.6369	5,548,000.00	19,698.51	0.00	0.00	5,528,301.49	Closed
FY06-EXXCR-09	06/29/2006	D-06-05-387096	05/25/2006	4.6696	5,573,000.00	24,896.60	0.00	0.00	5,548,103.40	Closed
FY06-EXXCR-10	07/27/2006	D-06-06-395134	06/29/2006	4.6115	5,227,000.00	18,457.11	0.00	0.00	5,208,542.89	Closed
FY06-EXXCR-11	08/31/2006	D-06-07-402540	07/27/2006	4.9191	5,252,000.00	24,713.60	0.00	0.00	5,227,286.40	Closed
FY06-EXXCR-12	09/28/2006	D-06-08-410779	08/31/2006	5.1255	5,272,000.00	20,686.75	0.00	0.00	5,251,313.25	Closed
FY06-EXXCR-13	10/26/2006	D-06-09-416931	09/28/2006	4.5148	5,291,000.00	18,292.15	0.00	0.00	5,272,707.85	Open

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Investment Interest and Redemptions for Restoration							
Note Number	Matures	SF1081 Number	SF1081 Date	Par Value	Discount	Premium	Discount/Interest Earned
FY06-EXXCR-01	10/27/2005	R-06-10-340349	10/27/2005	5,418,000.00	13,000.17	0.00	13,000.17
FY06-EXXCR-02	11/25/2005	R-06-11-346214	11/25/2005	5,434,000.00	16,043.12	0.00	16,043.12

FY06-EXXCR-03	12/29/2005	R-06-12-353563	12/29/2005	5,453,000.00	19,364.20	0.00	19,364.20
FY06-EXXCR-04	01/26/2006	R-06-01-359861	01/26/2006	5,468,000.00	14,885.10	0.00	14,885.10
FY06-EXXCR-05	02/23/2006	R-06-02-366149	02/23/2006	5,485,000.00	17,533.73	0.00	17,533.73
FY06-EXXCR-06	03/23/2006	R-06-03-372484	03/23/2006	5,504,000.00	18,621.85	0.00	18,621.85
FY06-EXXCR-07	04/27/2006	R-06-04-380334	04/27/2006	5,528,000.00	24,373.12	0.00	24,373.12
FY06-EXXCR-08	05/25/2006	R-06-05-386892	05/25/2006	5,548,000.00	19,698.51	0.00	19,698.51
FY06-EXXCR-09	06/29/2006	R-06-06-394902	06/29/2006	5,573,000.00	24,896.60	0.00	24,896.60
FY06-EXXCR-10	07/27/2006	R-06-07-402254	07/27/2006	5,227,000.00	18,457.11	0.00	18,457.11
FY06-EXXCR-11	08/31/2006	R-06-08-410464	08/31/2006	5,252,000.00	24,713.60	0.00	24,713.60
FY06-EXXCR-12	09/28/2006	R-06-09-416703	09/28/2006	5,272,000.00	20,686.75	0.00	20,686.75

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Total Resources Including Income Forecast for Restoration

Date	From or For	Restoration	Balance
10/16/2006	Resources Realized	63,834,759.01	63,834,759.01
10/26/2006	Disc Earned	18,292.15	63,853,051.16

1) Resources Realized are the sum of all collections, earnings, and net adjustments.

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Allocation History Summary for Restoration

Recipient	Type	2006	2005	2004	2003	2002	2001	Prior Yrs	Total
Department of Interior	Allocation	0.00	0.00	0.00	0.00	0.00	0.00	1,290,570.04	1,290,570.04
Department of Interior	Return	0.00	0.00	0.00	0.00	0.00	0.00	(75,700.00)	(75,700.00)

Fish and Wildlife Service	Allocation	364,500.00	0.00	0.00	107,400.00	795,400.00	585,000.00	24,825,400.00	26,677,700.00
Fish and Wildlife Service	Return	0.00	0.00	0.00	0.00	(28,000.00)	0.00	(150,000.00)	(178,000.00)
National Oceanic and Atmospheric Administration	Allocation	0.00	0.00	249,000.00	349,000.00	514,000.00	187,000.00	8,414,500.00	9,713,500.00
US Forest Service	Allocation	0.00	0.00	0.00	0.00	0.00	0.00	21,953,169.00	21,953,169.00
US Forest Service	Return	0.00	0.00	0.00	0.00	0.00	0.00	(819,313.00)	(819,313.00)
US Geologic Survey	Allocation	0.00	13,022.07	0.00	0.00	0.00	0.00	0.00	13,022.07
US Geologic Survey	Return	0.00	(13,022.07)	0.00	0.00	0.00	0.00	0.00	(13,022.07)
Total	All	364,500.00	0.00	249,000.00	456,400.00	1,281,400.00	772,000.00	55,438,626.04	58,561,926.04

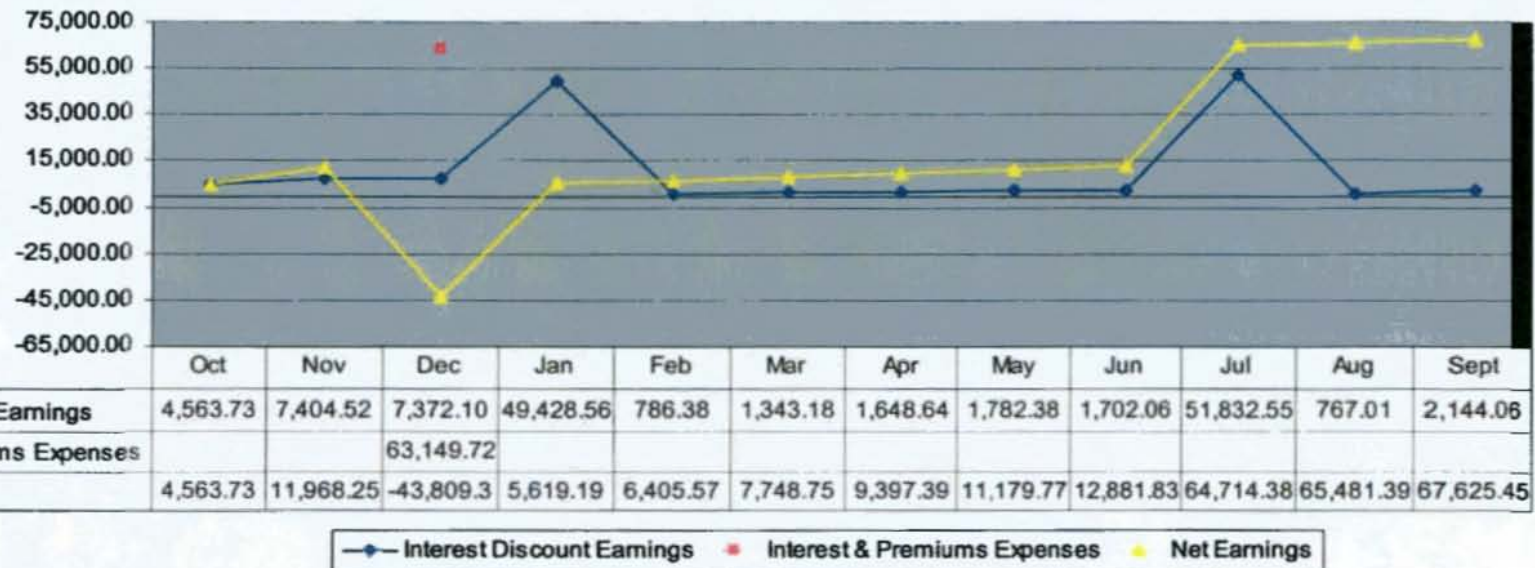
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Collection History Summary for Restoration								
Responsible Party	2006	2005	2004	2003	2002	2001	Prior Yrs	Total
Bureau of Public Debt	0.00	0.00	0.00	0.00	0.00	258.89	0.00	258.89
Pre-1999 Collections	0.00	0.00	0.00	0.00	0.00	0.00	50,000,000.00	50,000,000.00
Total	0.00	0.00	0.00	0.00	0.00	258.89	50,000,000.00	50,000,258.89

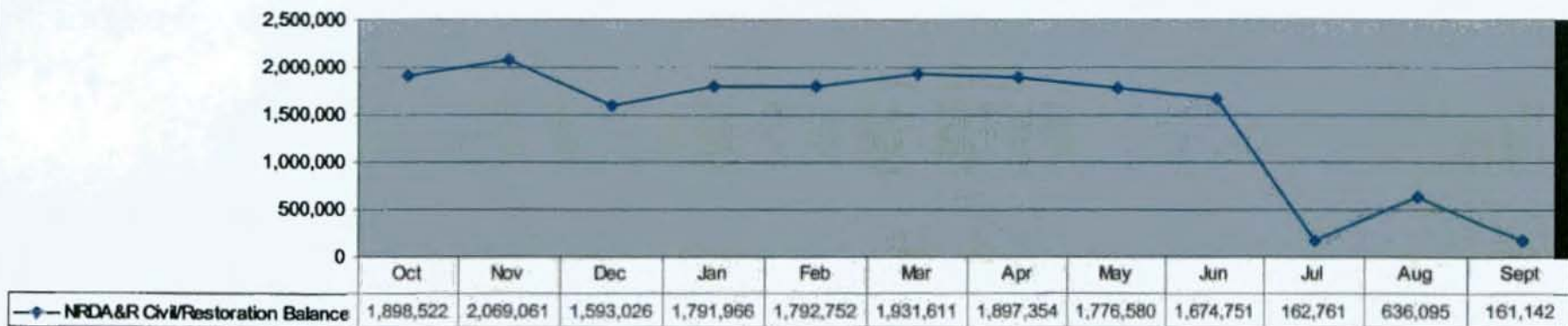
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NRDA&R - Civil/Restoration Earnings Status



NRDA&R Civil/Restoration Fund Balance



Project X002 Exxon Valdez Civil Settlement Restoration Status For FY2006 Through 10/16/2006

Summary of Transactions Year to Date for Restoration

At Start	Collections	Investments			Adjustments	Allocations	Current
		Income	Expense	Net Earnings			
1,898,521.69	1,620,121.45	130,775.17	(63,149.72)	67,625.45	0.00	(3,425,126.30)	161,142.29

- 1) Investment Income consists of periodic interest payments, discount earned, etc.
2) Investment Expense consists of Accrued Interest and Premiums paid at the time of purchase.

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Transaction Detail for Restoration

Date	Action	From or For	Restoration	Balance	Remarks
10/01/2005	Start Year	Carryover	1,898,521.69	1,898,521.69	-
10/11/2005	Collection	State of Alaska	597,649.13	2,496,170.82	-
10/27/2005	Interest/Discount	R-06-10-340349	4,563.73	2,500,734.55	-
11/23/2005	Allocation	FWS	(439,078.00)	2,061,656.55	-
11/25/2005	Interest/Discount	R-06-11-346214	7,404.52	2,069,061.07	-
12/09/2005	Allocation	USGS	(373,474.87)	1,695,586.20	-
12/14/2005	Allocation	OS-NR	(2,725.00)	1,692,861.20	-
12/14/2005	Allocation	OS-OE	(545.00)	1,692,316.20	Valdez Support
12/19/2005	Allocation	FWS	(43,513.00)	1,648,803.20	-
12/29/2005	Interest/Discount	R-06-12-353563	7,372.10	1,656,175.30	-
12/29/2005	Prem/Accr Interest	I-06-12-353690	(63,149.72)	1,593,025.58	-
01/17/2006	Interest/Discount	P-06-01-357885	48,895.00	1,641,920.58	-

01/26/2006	Interest/Discount	R-06-01-359861	533.56	1,642,454.14	-
01/27/2006	Collection	State of Alaska	149,511.68	1,791,965.82	-
02/23/2006	Interest/Discount	R-06-02-366149	786.38	1,792,752.20	-
03/20/2006	Allocation	FWS	(138,648.02)	1,654,104.18	-
03/20/2006	Allocation	OS-NR	(4,087.50)	1,650,016.68	Valdez Trustee Support
03/20/2006	Allocation	OS-OE	(817.50)	1,649,199.18	Valdez Trustee Support
03/20/2006	Allocation	OS-TC	(4,360.00)	1,644,839.18	Valdez Trustee Support
03/23/2006	Interest/Discount	R-06-03-372484	1,343.18	1,646,182.36	-
03/29/2006	Collection	State of Alaska	285,428.40	1,931,610.76	-
04/12/2006	Allocation	FWS	138,648.02	2,070,258.78	Correction, s/b to USGS
04/12/2006	Allocation	USGS	(138,648.02)	1,931,610.76	Correction of alloc 21,
04/17/2006	Allocation	FWS	(35,904.40)	1,895,706.36	-
04/27/2006	Interest/Discount	R-06-04-380334	1,648.64	1,897,354.00	-
05/24/2006	Allocation	USGS	(122,557.31)	1,774,797.69	-
05/25/2006	Interest/Discount	R-06-05-386892	1,782.38	1,776,580.07	-
06/07/2006	Allocation	USFS	(49,050.00)	1,727,530.07	-
06/13/2006	Allocation	EVOS	(34,044.40)	1,693,485.67	-
06/13/2006	Allocation	OS-OE	(5,722.50)	1,687,763.17	-
06/13/2006	Allocation	OS-PO	(14,714.50)	1,673,048.67	-
06/29/2006	Interest/Discount	R-06-06-394902	1,702.06	1,674,750.73	-
07/07/2006	Allocation	USGS	62,780.94	1,737,531.67	-
07/17/2006	Interest/Discount	R-06-07-399829	48,895.00	1,786,426.67	-
07/27/2006	Interest/Discount	R-06-07-402254	2,937.55	1,789,364.22	-
07/28/2006	Allocation	NOAA	(1,626,603.00)	162,761.22	-
08/31/2006	Collection	State of Alaska	472,567.00	635,328.22	-
08/31/2006	Interest/Discount	R-06-08-410464	767.01	636,095.23	-
09/01/2006	Collection	State of Alaska	114,965.24	751,060.47	-
09/15/2006	Allocation	FWS	(49,479.00)	701,581.47	-
09/25/2006	Allocation	EVOS	(70,016.24)	631,565.23	-

09/26/2006	Allocation	OS-TC	(472,567.00)	158,998.23	KONAIG PYMT
09/28/2006	Interest/Discount	R-06-09-416703	2,144.06	161,142.29	-

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Investment Acquisitions for Restoration										
Note Number	Matures	SF1081 Number	SF1081 Date	Yield	Par Value	Discount	Premium	Interest	Net Cost	Status
FY06-EXXCV-01	10/27/2005	D-05-09-335165	09/29/2005	3.1317	1,710,000.00	4,103.04	0.00	0.00	1,705,896.96	Closed
FY06-EXXCV-02	10/27/2005	D-05-09-335127	09/29/2005	3.1317	192,000.00	460.69	0.00	0.00	191,539.31	Closed
FY06-EXXCV-03	11/25/2005	B-06-10-340476	10/27/2005	3.7216	2,508,000.00	7,404.52	0.00	0.00	2,500,595.48	Closed
FY06-EXXCV-04	12/29/2005	B-06-11-346419	11/25/2005	3.8192	2,076,000.00	7,372.10	0.00	0.00	2,068,627.90	Closed
FY06-EXXCV-05	07/15/2006	I-06-12-353690	12/29/2005	4.4721	1,397,000.00	0.00	18,772.19	44,377.53	1,460,149.72	Closed
FY06-EXXCV-06	01/26/2006	D-06-12-353691	12/29/2005	3.5537	196,000.00	533.56	0.00	0.00	195,466.44	Closed
FY06-EXXCV-07	02/23/2006	D-06-01-360105	01/26/2006	4.174	246,000.00	786.38	0.00	0.00	245,213.62	Closed
FY06-EXXCV-08	03/23/2006	D-06-02-366371	02/23/2006	4.4182	397,000.00	1,343.18	0.00	0.00	395,656.82	Closed
FY06-EXXCV-09	04/27/2006	D-06-013-372703	03/23/2006	4.6085	250,000.00	1,102.26	0.00	0.00	248,897.74	Closed
FY06-EXXCV-10	04/27/2006	D-06-04-377152	04/12/2006	4.6534	286,000.00	546.38	0.00	0.00	285,453.62	Closed
FY06-EXXCV-11	05/25/2006	D-06-04-380560	04/27/2006	4.6369	502,000.00	1,782.38	0.00	0.00	500,217.62	Closed
FY06-EXXCV-12	06/29/2006	D-06-05-387097	05/25/2006	4.6695	381,000.00	1,702.06	0.00	0.00	379,297.94	Closed
FY06-EXXCV-13	07/27/2006	D-06-06-395135	06/29/2006	4.6115	278,000.00	981.65	0.00	0.00	277,018.35	Closed
FY06-EXXCV-15	07/27/2006	D-06-07-400091	07/17/2006	4.7281	1,511,000.00	1,955.90	0.00	0.00	1,509,044.10	Closed
FY06-EXXCV-14	08/31/2006	D-06-07-402538	07/27/2006	4.9192	163,000.00	767.01	0.00	0.00	162,232.99	Closed
FY06-EXXCV-16	09/28/2006	DD-06-08-410782	08/31/2006	5.1255	164,000.00	643.52	0.00	0.00	163,356.48	Closed
FY06-EXXCV-17	09/28/2006	D-06-09-411539	09/05/2006	5.0321	474,000.00	1,500.54	0.00	0.00	472,499.46	Closed
FY06-EXXCV-18	10/26/2006	D-06-09-416932	09/28/2006	4.5148	161,000.00	556.61	0.00	0.00	160,443.39	Open

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Investment Interest and Redemptions for Restoration

Note Number	Matures	SF1081 Number	SF1081 Date	Par Value	Discount	Premium	Discount/Interest Earned
FY06-EXXCV-01	10/27/2005	R-06-10-340349	10/27/2005	1,710,000.00	4,103.04	0.00	4,103.04
FY06-EXXCV-02	10/27/2005	R-06-10-340349	10/27/2005	192,000.00	460.69	0.00	460.69
FY06-EXXCV-03	11/25/2005	R-06-11-346214	11/25/2005	2,508,000.00	7,404.52	0.00	7,404.52
FY06-EXXCV-04	12/29/2005	R-06-12-353563	12/29/2005	2,076,000.00	7,372.10	0.00	7,372.10
FY06-EXXCV-05	07/15/2006	P-06-01-357885	01/17/2006	0.00	0.00	0.00	48,895.00
FY06-EXXCV-06	01/26/2006	R-06-01-359861	01/26/2006	196,000.00	533.56	0.00	533.56
FY06-EXXCV-07	02/23/2006	R-06-02-366149	02/23/2006	246,000.00	786.38	0.00	786.38
FY06-EXXCV-08	03/23/2006	R-06-03-372484	03/23/2006	397,000.00	1,343.18	0.00	1,343.18
FY06-EXXCV-09	04/27/2006	R-06-04-380334	04/27/2006	250,000.00	1,102.26	0.00	1,102.26
FY06-EXXCV-10	04/27/2006	R-06-04-380334	04/27/2006	286,000.00	546.38	0.00	546.38
FY06-EXXCV-11	05/25/2006	R-06-05-386892	05/25/2006	502,000.00	1,782.38	0.00	1,782.38
FY06-EXXCV-12	06/29/2006	R-06-06-394902	06/29/2006	381,000.00	1,702.06	0.00	1,702.06
FY06-EXXCV-05	07/15/2006	R-06-07-399829	07/17/2006	1,397,000.00	0.00	18,772.19	48,895.00
FY06-EXXCV-13	07/27/2006	R-06-07-402254	07/27/2006	278,000.00	981.65	0.00	981.65
FY06-EXXCV-15	07/27/2006	R-06-07-402254	07/27/2006	1,511,000.00	1,955.90	0.00	1,955.90
FY06-EXXCV-14	08/31/2006	R-06-08-410464	08/31/2006	163,000.00	767.01	0.00	767.01
FY06-EXXCV-16	09/28/2006	R-06-09-416703	09/28/2006	164,000.00	643.52	0.00	643.52
FY06-EXXCV-17	09/28/2006	R-06-09-416703	09/28/2006	474,000.00	1,500.54	0.00	1,500.54

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Total Resources Including Income Forecast for Restoration

Date	From or For	Restoration	Balance
10/16/2006	Resources Realized	268,142,271.01	268,142,271.01
10/26/2006	Disc Earned	556.61	268,142,827.62

1) Resources Realized are the sum of all collections, earnings, and net adjustments.

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Allocation History Summary for Restoration									
Recipient	Type	2006	2005	2004	2003	2002	2001	Prior Yrs	Total
Bureau of Indian Affairs	Return	0.00	0.00	0.00	0.00	0.00	0.00	(5,900.00)	(5,900.00)
Bureau of Land Management	Allocation	0.00	0.00	0.00	0.00	0.00	42,000.00	85,800.00	127,800.00
Department of Interior	Allocation	0.00	0.00	0.00	0.00	0.00	0.00	20,835,109.43	20,835,109.43
Department of Interior	Return	0.00	0.00	0.00	0.00	0.00	0.00	(1,122,924.31)	(1,122,924.31)
EXXON VALDEZ CIVIL-INTERIM EX DIR	Allocation	104,060.64	0.00	0.00	0.00	0.00	0.00	0.00	116,595.64
Fish and Wildlife Service	Allocation	845,270.44	612,289.00	813,470.40	249,500.00	607,710.00	786,850.00	94,379,416.00	98,294,505.84
Fish and Wildlife Service	Return	(277,296.04)	0.00	0.00	(84,674.07)	(42,947.71)	(5,178,629.32)	(1,792,760.81)	(7,376,307.95)
NRDA PROGRAM MANAGER'S OFFICE (BRUCE NESSLAGE)	Allocation	6,812.50	0.00	0.00	0.00	10,000.00	0.00	0.00	23,897.50
NRDA PROGRAM MANAGER'S OFFICE (BRUCE NESSLAGE)	Return	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(7,085.00)
NRDA Program Office	Allocation	14,714.50	13,000.00	0.00	10,500.00	10,000.00	20,000.00	50,000.00	118,214.50
NRDAR-Co-Trustee Payments Holding Account	Allocation	0.00	0.00	0.00	0.00	0.00	0.00	6,900.00	6,900.00
National Oceanic and Atmospheric Administration	Allocation	1,626,603.00	1,489,307.00	1,372,421.00	1,171,800.00	1,160,100.00	1,893,300.00	26,157,100.00	34,870,631.00
National Oceanic and Atmospheric Administration	Return	0.00	0.00	0.00	0.00	(94,900.00)	0.00	(227,200.00)	(322,100.00)
National Park Service	Allocation	0.00	4,100.00	0.00	364,825.00	12,800.00	16,500.00	844,250.00	1,242,475.00
National Park Service	Return	0.00	(4,100.00)	0.00	(360,125.00)	0.00	(12,233.53)	(38,421.23)	(414,879.76)
OSEF	Allocation	0.00	0.00	0.00	0.00	0.00	0.00	1,372,600.00	1,372,600.00
Office of Environmental Policy & Compliance	Allocation	7,085.00	2,500.00	19,600.00	13,700.00	4,000.00	5,500.00	11,800.00	64,185.00
Office of Environmental Policy & Compliance	Return	0.00	0.00	0.00	0.00	(500.00)	(2,000.00)	(6,832.00)	(9,332.00)
Office of Solicitor	Allocation	0.00	0.00	0.00	0.00	2,500.00	4,800.00	14,100.00	21,400.00
Office of Solicitor	Return	0.00	0.00	0.00	0.00	0.00	(19,267.95)	(1,000.00)	(20,267.95)
Trustee Council	Allocation	476,927.00	9,000.00	0.00	0.00	0.00	0.00	3,000.00	488,927.00
U.S. Forest Service	Allocation	0.00	0.00	0.00	0.00	7,000,000.00	11,000,000.00	29,854.00	18,029,854.00

US Forest Service	Allocation	49,050.00	2,000.00	0.00	1,130,000.00	44,200.00	106,600.00	95,462,811.00	96,794,661.00
US Forest Service	Return	0.00	0.00	0.00	0.00	(531,368.00)	0.00	(1,445,287.00)	(1,976,655.00)
US Geologic Survey	Allocation	634,680.20	1,029,879.07	679,916.00	1,198,810.52	7,875,800.00	862,440.00	1,045,600.00	13,327,125.79
US Geologic Survey	Return	(62,780.94)	(55,519.24)	(29,000.00)	(407,871.04)	(7,006,652.38)	(28,597.46)	(54,579.95)	(7,645,001.01)
US Geological Survey-BRD	Allocation	0.00	0.00	0.00	0.00	0.00	0.00	1,146,700.00	1,146,700.00
Total	All	3,425,126.30	3,102,455.83	2,856,407.40	3,286,465.41	9,050,741.91	9,497,261.74	236,750,135.13	267,981,128.72

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Collection History Summary for Restoration								
Responsible Party	2006	2005	2004	2003	2002	2001	Prior Yrs	Total
Pre-1999 Collections	0.00	0.00	0.00	0.00	0.00	0.00	200,072,482.68	200,072,482.68
State of Alaska	1,620,121.45	1,874,347.00	5,710,420.40	2,406,100.00	8,024,750.00	7,794,100.00	21,400.00	27,827,398.85
U.S. District Court, Anchorage, AK	0.00	0.00	0.00	0.00	0.00	0.00	38,295,604.00	38,295,604.00
Total	1,620,121.45	1,874,347.00	5,710,420.40	2,406,100.00	8,024,750.00	7,794,100.00	238,389,486.68	266,195,485.53

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Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, Alaska 99501-2340 • 907/278-8012 • fax 907/276-7178



MEMORANDUM

TO: Exxon Valdez Oil Spill Trustee Council

THRU: Michael Baffrey
Executive Director *Michael Baffrey*

FROM: Barbara Hannah
Administrative Manager *BH*

DATE: October 18, 2006

SUBJECT: FY 2006 Investment Report Update for September 2006

Please find attached the following Alaska Department of Revenue, Treasury Division reports for the Exxon Valdez Oil Spill Investment Fund for the monthly reporting period of September 2006.

Attachment A - Schedule(s) of Invested Assets

- Graph Comparison of Monthly Investment Activity by Sub-Account and Total Combined
- Department of Revenue, Treasury Division, "Schedules of Invested Assets" – Monthly report for September 2006

Attachment B - Schedule(s) of Investment Income & Schedule(s) of Changes in Invested Assets

- Graph Comparison of Invested Assets for Federal Fiscal Years 2003 – 2006
- Department of Revenue, Treasury Division, "Schedule(s) of Investment Income & Changes In Invested Assets" – Monthly report for September 2006

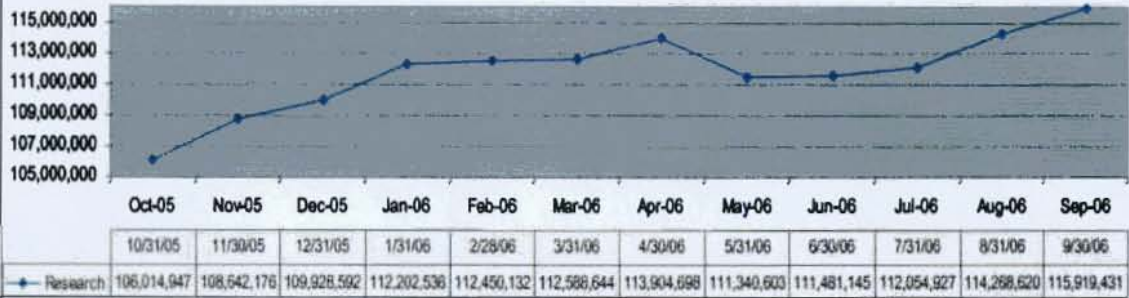
Attachment C - Asset Allocation Worksheet

- Graph Comparison of Allocated Investment Holdings and Resultant Variances for the period ending September, 2006.
- Department of Revenue, Treasury Division, "Asset Allocation Policy & Actual Investment Holdings" – Monthly report for September 2006

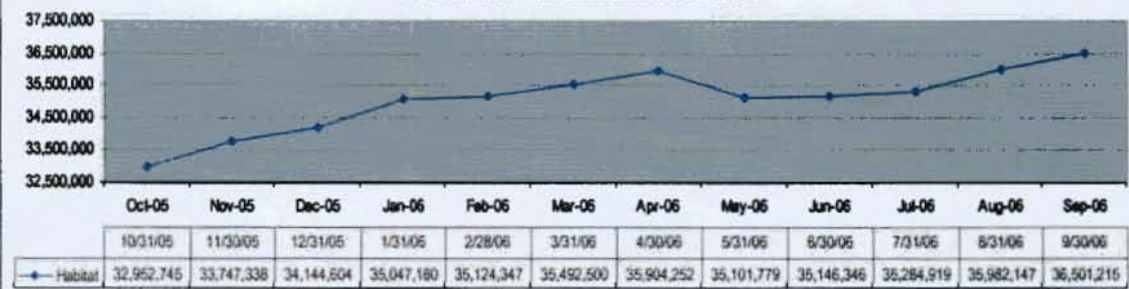
Attachment D - Performance Measurement Report(s)

- Graph Comparisons of Various Performance Measurements, to include: Period Comparisons of the Investment Fund Index, Market Value Comparisons by Sub-Account and Investment Pools; and Comparisons of Investment Pools Rates of Return.
- Department of Revenue, Treasury Division, "Summary of Performance and Rates of Returns" – Monthly report for September 2006

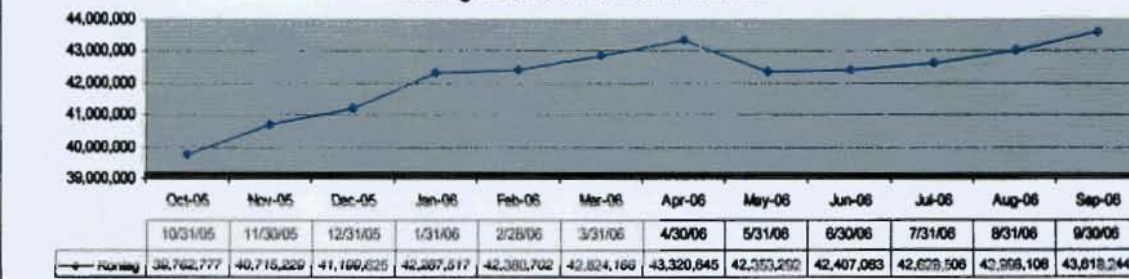
Research Sub-Account Invested Assets



Habitat Sub-Account Invested Assets



Konlag Sub-Account Invested Assets



Combined Sub-Accounts Invested Assets



STATE OF ALASKA
DEPARTMENT OF REVENUE
TREASURY DIVISION

Exxon Valdez Oil Spill Investment Fund

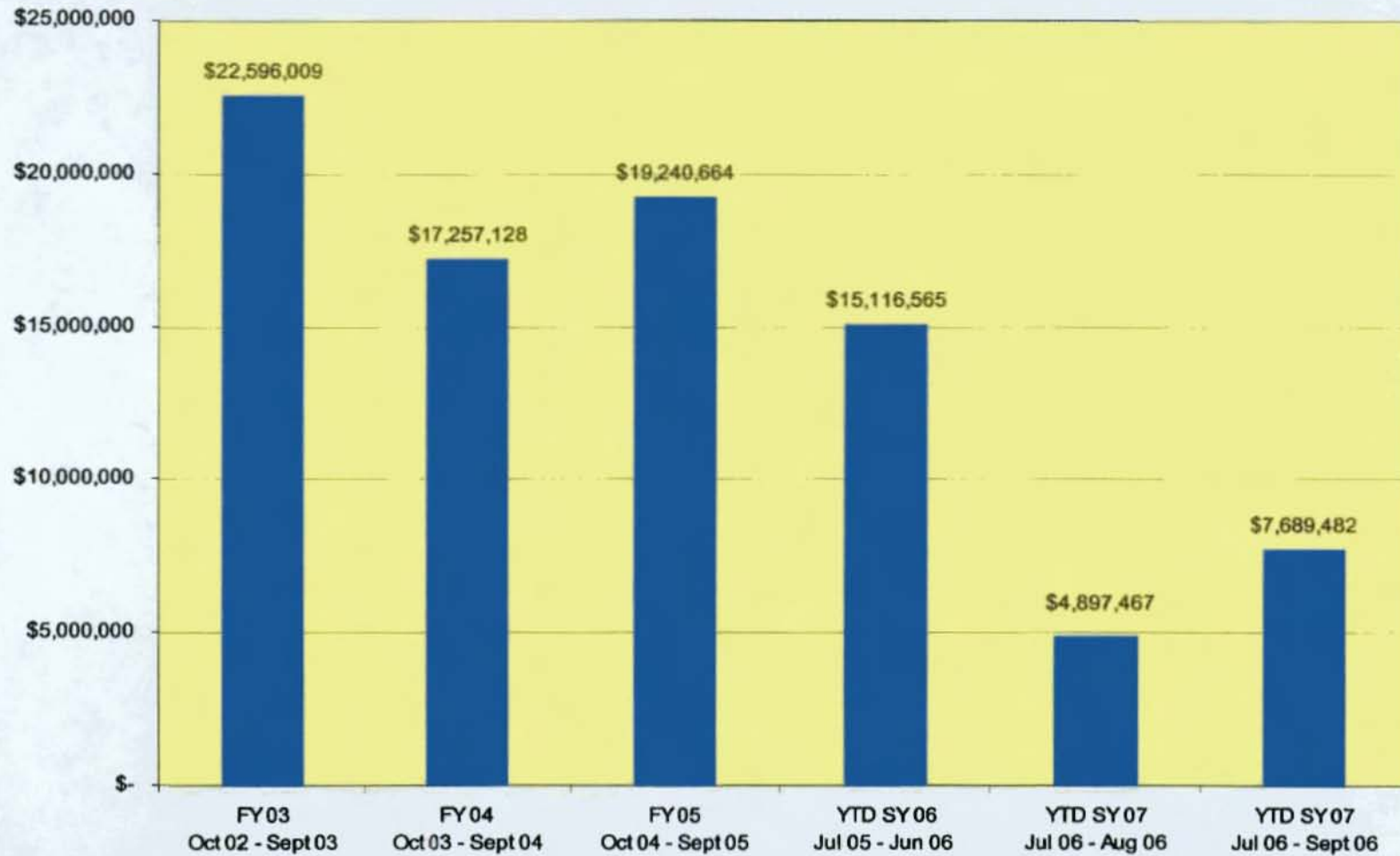
SCHEDULE OF INVESTED ASSETS

September 30, 2006 and 2005

Investments (at fair value)	<u>2006</u>	<u>2005</u>
Research Investment		
Cash and cash equivalents		
Short-term Fixed Income Pool	\$ 2,063,410	\$ -
Marketable debt and equity securities		
Broad Market Fixed Income Pool	40,131,231	38,293,821
Non-retirement Domestic Equity Pool	53,820,395	49,206,861
SOA International Equity Pool	19,903,711	20,931,332
Income Receivable	<u>684</u>	<u>2,883</u>
Total Research Investment	<u>115,919,431</u>	<u>108,434,897</u>
Habitat Investment		
Cash and cash equivalents		
Short-term Fixed Income Pool	690	-
Marketable debt and equity securities		
Broad Market Fixed Income Pool	12,787,155	11,578,714
Non-retirement Domestic Equity Pool	17,216,174	15,620,158
SOA International Equity Pool	6,497,193	6,321,964
Income Receivable	<u>3</u>	<u>24</u>
Total Habitat Investment	<u>36,501,215</u>	<u>33,520,860</u>
Koniag Investment		
Cash and cash equivalents		
Short-term Fixed Income Pool	343	-
Marketable debt and equity securities		
Broad Market Fixed Income Pool	15,034,904	14,118,158
Non-retirement Domestic Equity Pool	20,742,542	18,611,836
SOA International Equity Pool	7,840,454	7,717,450
Income Receivable	<u>1</u>	<u>522</u>
Total Koniag Investment	<u>43,618,244</u>	<u>40,447,966</u>
Total invested assets	<u>\$ 196,038,890</u>	<u>\$ 182,403,723</u>

Annual Change in Invested Assets - Fiscal Years 2003 - 2006

(FY 03 - FY 05 YTD Federal Yr; FY 06 YTD State Yr)



STATE OF ALASKA
DEPARTMENT OF REVENUE
TREASURY DIVISION

Exxon Valdez Oil Spill Investment Fund

SCHEDULE OF INVESTMENT INCOME
AND CHANGES IN INVESTED ASSETS

For the month ended September 30, 2006

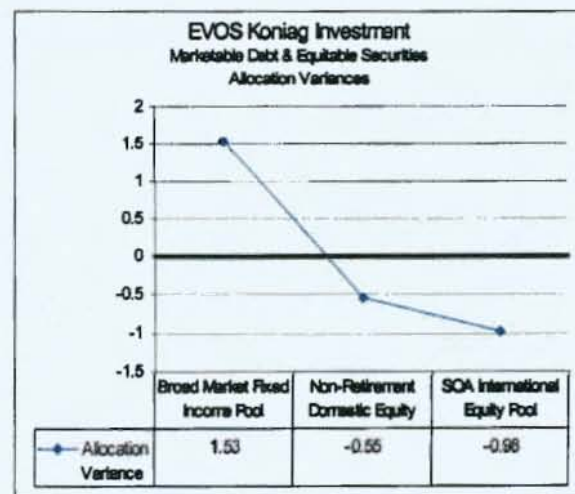
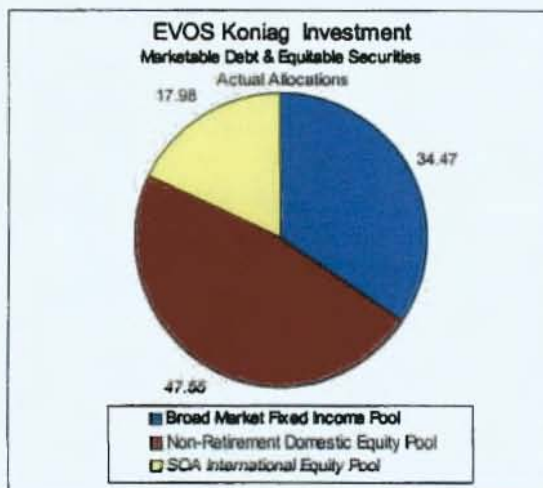
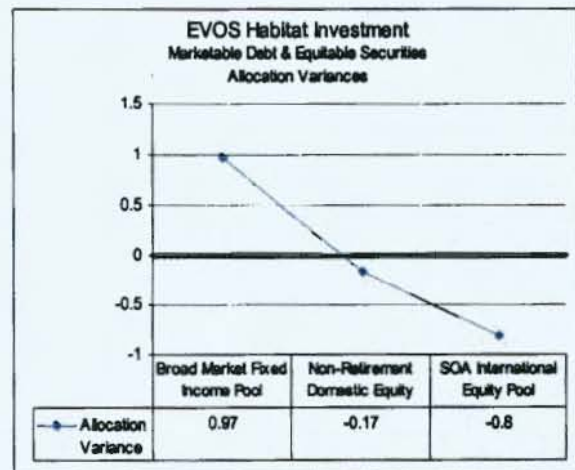
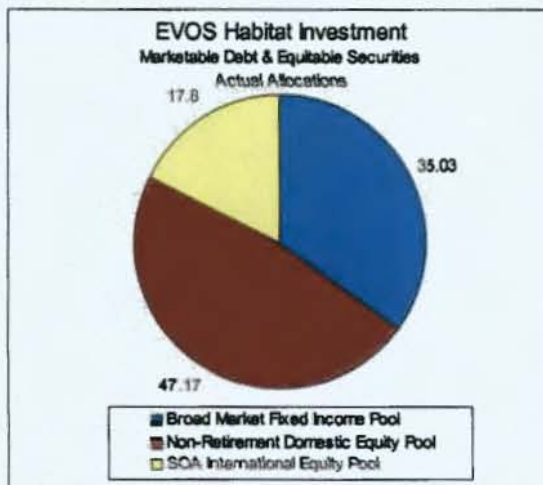
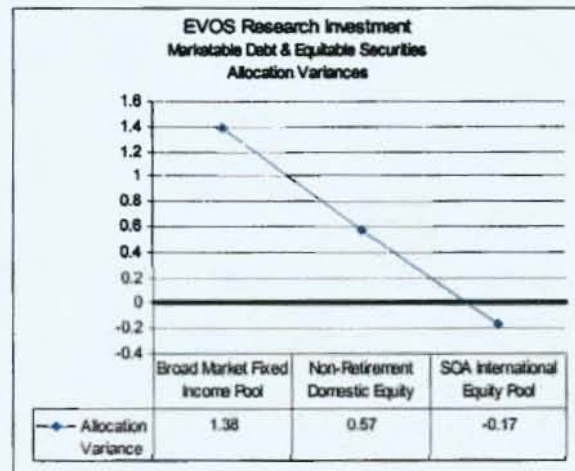
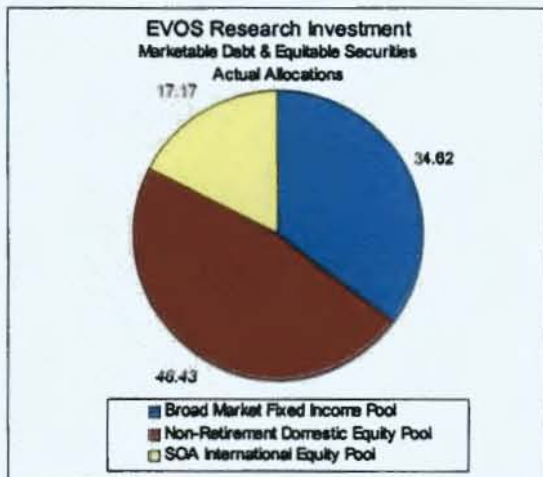
	<u>CURRENT MONTH</u>	<u>YEAR TO DATE</u>
Investment Income		
Research Investment		
Cash and cash equivalents		
Short-term Fixed Income Pool	\$ 684	\$ 749
Marketable debt and equity securities		
Broad Market Fixed Income Pool	356,715	1,449,373
Non-retirement Domestic Equity Pool	1,210,804	2,447,551
SOA International Equity Pool	82,608	641,659
Commission Recapture	-	113
Total investment income (loss) Research Investment	<u>1,650,811</u>	<u>4,539,445</u>
Habitat Investment		
Cash and cash equivalents		
Short-term Fixed Income Pool	3	41
Marketable debt and equity securities		
Broad Market Fixed Income Pool	113,661	461,779
Non-retirement Domestic Equity Pool	378,438	764,983
SOA International Equity Pool	26,966	202,378
Commission Recapture	-	35
Total investment income (loss) Habitat Investment	<u>519,068</u>	<u>1,429,216</u>
Koniag Investment		
Cash and cash equivalents		
Short-term Fixed Income Pool	2	2
Marketable debt and equity securities		
Broad Market Fixed Income Pool	133,641	554,883
Non-retirement Domestic Equity Pool	455,952	921,674
SOA International Equity Pool	32,541	244,219
Commission Recapture	-	43
Total investment income (loss) Koniag Investment	<u>622,136</u>	<u>1,720,821</u>
Total investment income (loss)	2,792,015	7,689,482
Total invested assets, beginning of period	193,246,875	189,034,574
Net contributions (withdrawals):		
Research Investment	-	(101,159)
Habitat Investment	-	(74,348)
Koniag Investment	-	(509,659)
Total invested assets, end of period	<u>\$ 196,038,890</u>	<u>\$ 196,038,890</u>

Attachment B-2

Exxon Valdez Oil Spill Trustee Council
Actual Investment Holdings as of August 31, 2006

Allocation Policy

Broad Market = 36% (Range 29% - 43%)
 Non-retirement Domestic Equity - 47% (Range 40% - 54%)
 SOA Int'l Equity Pool = 17% (Range 12% - 22%)



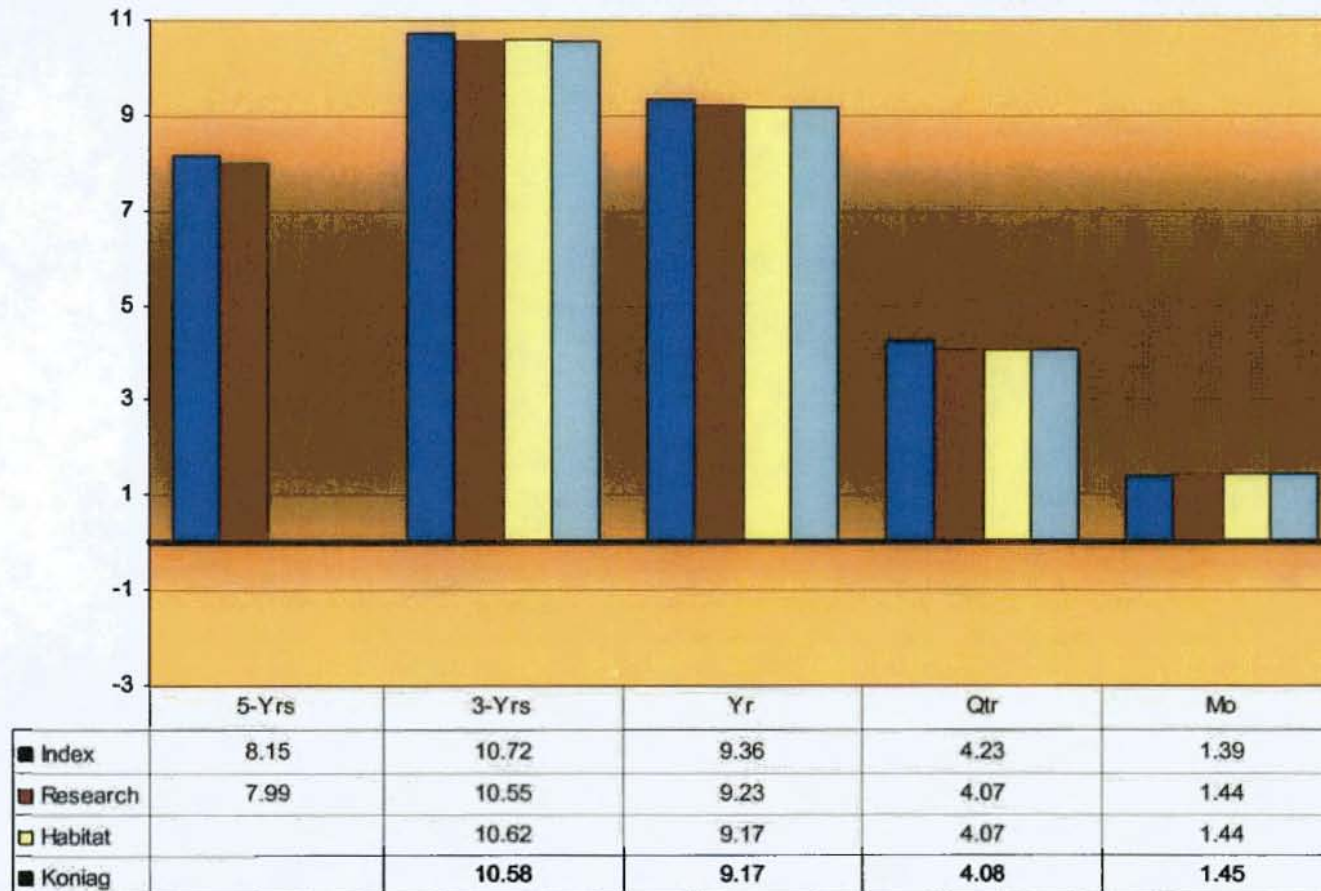
STATE OF ALASKA
DEPARTMENT OF REVENUE - TREASURY DIVISION

Exxon Valdez Oil Spill Investment Fund
Asset Allocation Policy with Actual Investment Holdings as of
September 30, 2006

Effective 7/1/06

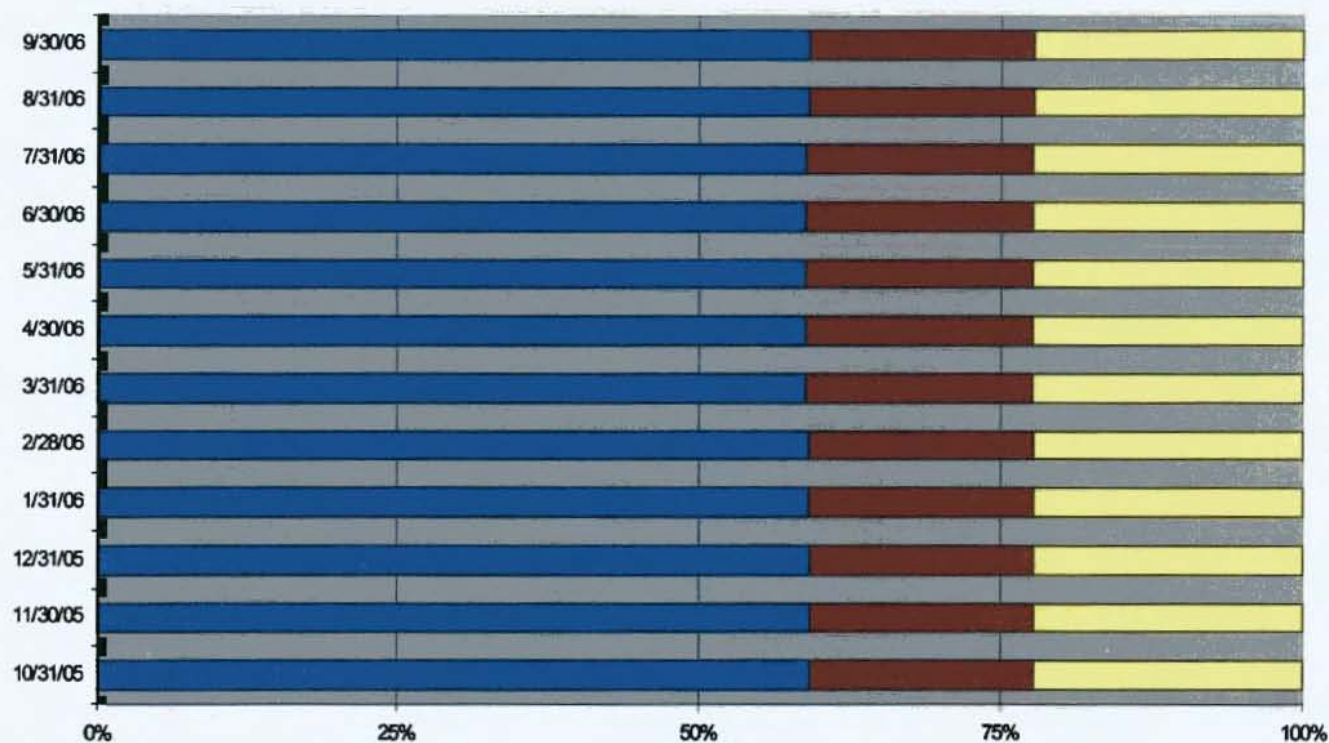
EVOS RESEARCH INVESTMENT	Asset Allocation		Fair value	Allocation	Variance
	Policy	Range			
Cash and cash equivalents					
Short-term Fixed Income Pool	0.00%		2,063,409.90	1.78%	-1.78%
Total cash and cash equivalents	0.00%		2,063,409.90	1.78%	-1.78%
Marketable debt and equity securities					
Broad Market Fixed Income Pool	36.00%	29% - 43%	40,131,230.80	34.62%	1.38%
Non-retirement Domestic Equity Pool	47.00%	40% - 54%	53,820,394.57	46.43%	0.57%
SOA International Equity Pool	17.00%	12% - 22%	19,903,711.55	17.17%	-0.17%
Total marketable debt securities	100.00%		113,855,336.92	98.22%	1.78%
Total holdings	100.00%		115,918,746.82	100.00%	0.00%
Income Receivable			684.25		
Total Invested Assets at Fair Value			115,919,431.07		
EVOS HABITAT INVESTMENT	Asset Allocation		Fair value	Allocation	Variance
	Policy	Range			
Cash and cash equivalents					
Short-term Fixed Income Pool	0.00%		689.73	0.00%	0.00%
Total cash and cash equivalents	0.00%		689.73	0.00%	0.00%
Marketable debt and equity securities					
Broad Market Fixed Income Pool	36.00%	29% - 43%	12,787,155.21	35.03%	0.97%
Non-retirement Domestic Equity Pool	47.00%	40% - 54%	17,216,174.18	47.17%	-0.17%
SOA International Equity Pool	17.00%	12% - 22%	5,497,192.66	17.80%	-0.80%
Total marketable debt securities	100.00%		36,500,522.05	100.00%	0.00%
Total holdings	100.00%		36,501,211.78	100.00%	0.00%
Income Receivable			3.08		
Total Invested Assets at Fair Value			36,501,214.86		
EVOS KONIAG INVESTMENT	Asset Allocation		Fair value	Allocation	Variance
	Policy	Range			
Cash and cash equivalents					
Short-term Fixed Income Pool	0.00%		343.27	0.00%	0.00%
Total cash and cash equivalents	0.00%		343.27	0.00%	0.00%
Marketable debt and equity securities					
Broad Market Fixed Income Pool	36.00%	29% - 43%	15,634,904.04	34.47%	1.53%
Non-retirement Domestic Equity Pool	47.00%	40% - 54%	20,742,541.86	47.55%	-0.55%
SOA International Equity Pool	17.00%	12% - 22%	7,840,453.80	17.98%	-0.98%
Total marketable debt securities	100.00%		43,617,899.70	100.00%	0.00%
Total holdings	100.00%		43,618,242.97	100.00%	0.00%
Income Receivable			1.53		
Total Invested Assets at Fair Value			43,618,244.50		

**Exxon Valdez Oil Spill Trustee Council
Investment Fund Index
Past 5 Yrs to Current Month**



Exxon Valdez Oil Spill Trustee Council

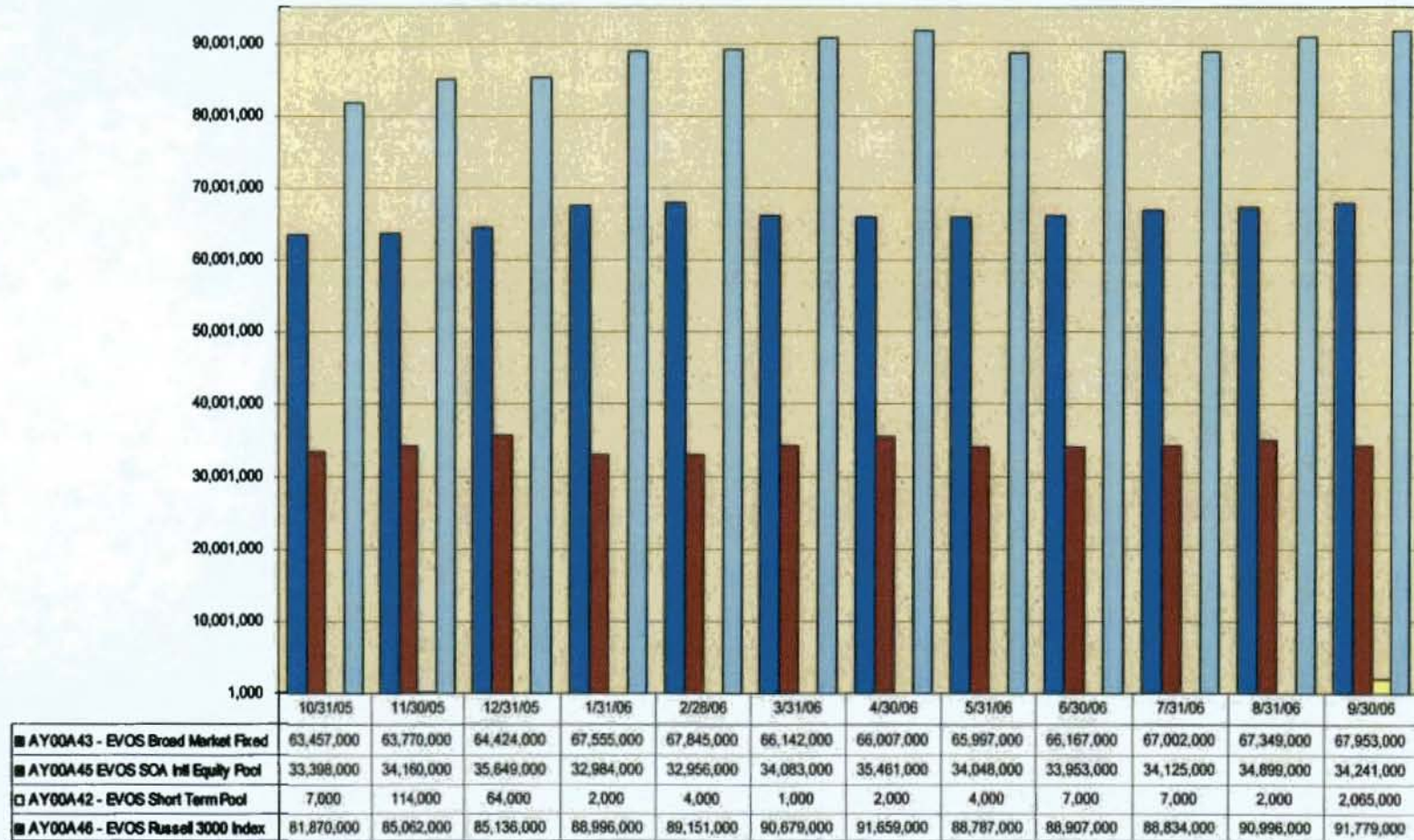
Summary of Performance - Market Value by Sub-Accounts



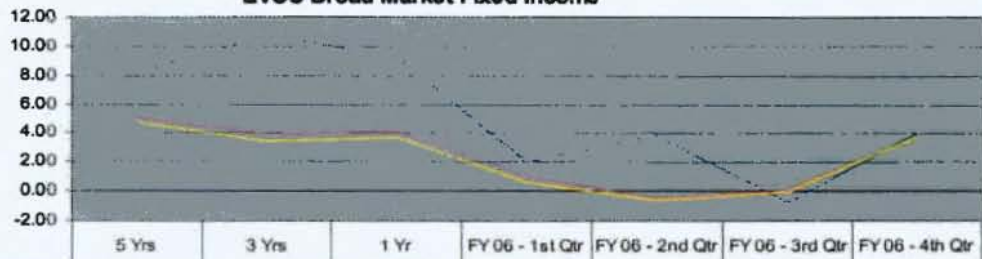
	10/31/05	11/30/05	12/31/05	1/31/06	2/28/06	3/31/06	4/30/06	5/31/06	6/30/06	7/31/06	8/31/06	9/30/06
AY2J - E/OS Koning Investment Fund	39,763,000	40,715,000	41,200,000	42,288,000	42,381,000	42,624,000	43,321,000	42,353,000	42,407,000	42,629,000	42,996,000	43,618,000
AY2H - E/OS Habitat Investment Fund	32,953,000	33,747,000	34,145,000	35,047,000	35,124,000	35,492,000	35,904,000	35,102,000	35,146,000	35,285,000	35,982,000	36,501,000
AY02 - Ecos Research Investment	106,015,000	108,642,000	109,929,000	112,203,000	112,450,000	112,598,000	113,905,000	111,341,000	111,481,000	112,055,000	114,269,000	115,919,000

Exxon Valdez Oil Spill Trustee Council

Summary of Performance - Market Value by Investment Pools

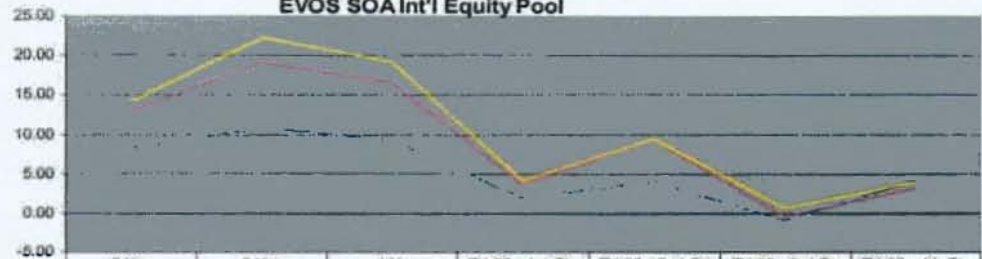


**Summary of Performance - Rates of Return
EVOS Broad Market Fixed Income**



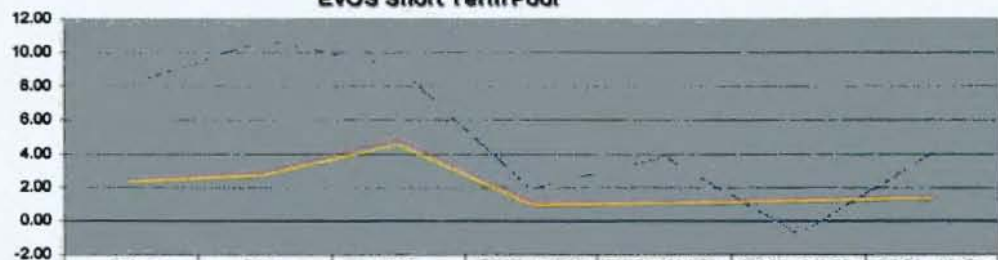
	5 Yrs	3 Yrs	1 Yr	FY 06 - 1st Qtr	FY 06 - 2nd Qtr	FY 06 - 3rd Qtr	FY 06 - 4th Qtr
Investment Fund Index	8.15	10.72	9.23	1.89	3.83	-0.82	4.07
Broad Market Fixed	5.13	3.92	4.13	0.91	-0.57	0.05	3.74
XSL-LB Aggregate	4.81	3.38	3.67	0.59	-0.65	-0.06	3.81

**Summary of Performance - Rates of Return
EVOS SOA Int'l Equity Pool**



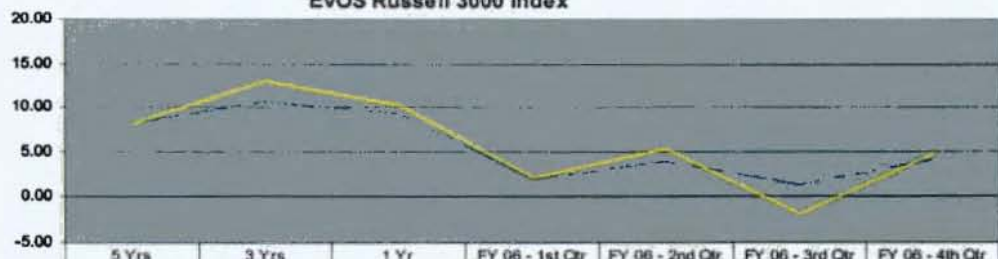
	5 Yrs	3 Yrs	1 Yr	FY 06 - 1st Qtr	FY 06 - 2nd Qtr	FY 06 - 3rd Qtr	FY 06 - 4th Qtr
Investment Fund Index	8.15	10.72	9.23	1.89	3.83	-0.82	4.07
SOA Int'l Equity Pool	12.93	19.10	16.66	3.73	9.41	-0.36	3.21
XCB - MSCI EAFE - (NET)	14.26	22.32	19.16	4.06	9.40	0.70	3.93

**Summary of Performance - Rates of Return
EVOS Short Term Pool**



	5 Yrs	3 Yrs	1 Yr	FY 06 - 1st Qtr	FY 06 - 2nd Qtr	FY 06 - 3rd Qtr	FY 06 - 4th Qtr
Investment Fund Index	8.15	10.72	9.23	1.89	3.83	-0.82	4.07
Short Term Pool	2.46	2.88	4.94	1.04	1.11	1.28	1.42
X11 - 91 Day T-Bill	2.30	2.73	4.60	0.92	1.02	1.16	1.33

**Summary of Performance - Rates of Return
EVOS Russell 3000 Index**



	5 Yrs	3 Yrs	1 Yr	FY 06 - 1st Qtr	FY 06 - 2nd Qtr	FY 06 - 3rd Qtr	FY 06 - 4th Qtr
Investment Fund Index	8.15	10.72	9.23	1.89	3.83	-1.26	4.07
Russell 3000 Index	8.04	13.02	10.23	2.03	5.29	-1.95	4.65
XP3 - Russell 3000	8.06	13.00	10.22	2.04	5.31	-1.98	4.64

State of Alaska

SUMMARY OF PERFORMANCE

RATES OF RETURN

PERIODS ENDING September 30, 2006



STATE STREET.
For Everything You Invest In

EVOS INVESTMENT REPORT

	MKT VAL \$(T)	Month	QTR	1 Year	3 Years	5 Years
AY02 - EVOS RESEARCH INVESTMENT	115,919	1.44	4.07	9.23	10.55	7.99
<i>EVOSINF1 - EVOS INVESTMENT FUND INDEX</i>		<i>1.39</i>	<i>4.23</i>	<i>9.36</i>	<i>10.72</i>	<i>8.15</i>
AY2H - EVOS HABITAT INVESTMENT FUND	36,501	1.44	4.07	9.17	10.62	
<i>EVOSINF1 - EVOS INVESTMENT FUND INDEX</i>		<i>1.39</i>	<i>4.23</i>	<i>9.36</i>	<i>10.72</i>	
AY2J - EVOS KONIAG INVESTMENT FUND	43,618	1.45	4.08	9.17	10.58	
<i>EVOSINF1 - EVOS INVESTMENT FUND INDEX</i>		<i>1.39</i>	<i>4.23</i>	<i>9.36</i>	<i>10.72</i>	
AY00A43 - EVOS BROAD MARKET FIXED INCO	67,953	0.90	3.74	4.13	3.92	5.13
<i>XSL - LB AGGREGATE</i>		<i>0.88</i>	<i>3.81</i>	<i>3.67</i>	<i>3.38</i>	<i>4.81</i>
AY00A45 - EVOS SOA INT'L EQUITY POOL	34,241	0.41	3.21	16.68	19.10	12.93
<i>XCB - MSCI EAFE (NET)</i>		<i>0.15</i>	<i>3.93</i>	<i>19.16</i>	<i>22.32</i>	<i>14.26</i>
AY00A42 - EVOS SHORT TERM POOL	2,065	0.49	1.42	4.94	2.88	2.46
<i>X11 - 91 DAY T-BILL</i>		<i>0.46</i>	<i>1.33</i>	<i>4.50</i>	<i>2.73</i>	<i>2.30</i>
AY00A46 - EVOS RUSSELL 3000 INDEX	91,779	2.25	4.65	10.23	13.02	8.04
<i>XF3 - RUSSELL 3000</i>		<i>2.24</i>	<i>4.64</i>	<i>10.22</i>	<i>13.00</i>	<i>8.08</i>

Exxon Valdez Oil Spill Restoration Plan

Update on Injured Resources and Services 2006

DRAFT
October 2006

Revised November 3, 2006



Exxon Valdez Oil Spill Trustee Council
441 W. 5th Avenue, Suite 500
Anchorage, AK 99051
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1-800-283-7745 (outside Alaska)

PLEASE COMMENT

You can help the Trustee Council by reviewing this draft Update and letting us know your opinion on the recovery status of injured resources and services. To be most useful, your comments should be received by the Council on or before November 10, 2006. You can comment by:

Mail: Exxon Valdez Oil Spill Trustee Council
441 W. 5th Avenue, Suite 500
Anchorage, AK 99501
Attn: Draft Fiscal Year 2007 Work Plan

Telephone: 1-800-478-7745 (within Alaska)
1-800-283-7745 (outside of Alaska)
Collect calls will be accepted from fishers and boaters who call through the marine operator.

Fax: 907-276-7178

E-mail: projects@evostc.state.ak.us

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- ADF&G ADA Coordinator, P.O. Box 115526, Juneau, AK 99811-5526.

The department's ADA Coordinator can be reached via phone at the following numbers: (VOICE) 907-465-6077, (Statewide Telecommunication Device for the Deaf) 1-800-478-3648, (Juneau TDD) 907-465-3646, or (FAX) 907-465-6078.

- U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, Suite 300 Webb, Arlington, VA 22203
- Office of Equal Opportunity, U.S. Department of the Interior, Washington DC 20240.

Release authorized by the Exxon Valdez Oil Spill Trustee Council.

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UPDATE ON INJURED RESOURCES AND SERVICES *DRAFT*

INTRODUCTION

Purpose of the Injured Resources and Services List

In November 1994, the *Exxon Valdez* Oil Spill Trustee Council adopted an official list of resources and services injured by the Spill as part of its *Restoration Plan* (<http://www.evostc.state.ak.us/Policies/restplan.htm>). The Injured Resources and Services List (List) serves three main purposes in the Restoration Program:

1. Initially, the List identified natural resource and human service injuries caused by the oil spill and clean-up efforts.
2. The List helped guide the *Restoration Plan* and was especially important in 1994 when the plan was first adopted. The List was created as guidance for the expenditure of public restoration funds under the Plan, and assisted the Trustees and the public with ensuring that money was expended on resources that needed attention. The List continues to serve that purpose today.
3. Finally, the status of injured resources on the List provides the Trustees and the public a way to monitor recovery of ecological functions and human services that depend on those resources.

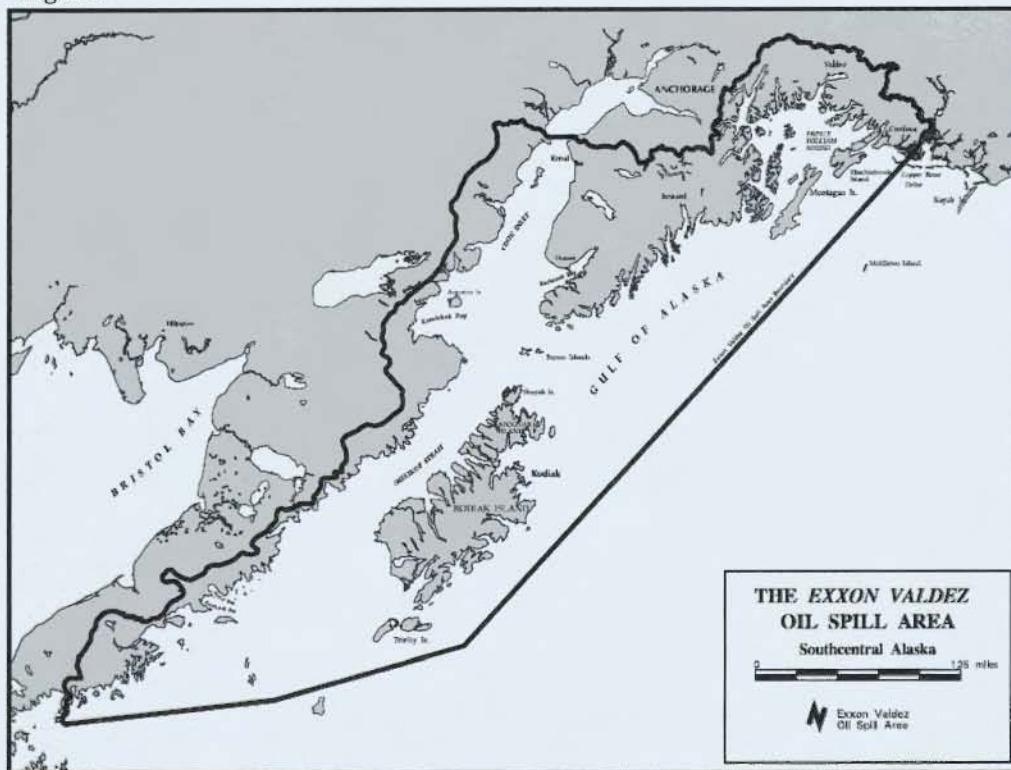
Although the fish and wildlife resources that appear on the List experienced population-level or chronic injury from the spill, not every species that suffered some degree of injury was included. For example, carcasses of about 90 different species of oiled birds were recovered in 1989, but only 10 species of birds were included on the List.

Moreover, it should be noted that the analysis of resources and services in relation to their recovery status only pertains to amelioration of effects from the 1989 oil spill. When the Restoration Plan was first drafted, the distinction between effects of the oil spill and the effects of other natural or anthropogenic stressors on affected natural resources was not clearly delineated. At that time, the spill was recent; the impact to the spill area ecosystem was profound and adverse effects of the oil on biological resources were apparent. As time passes, the ability to distinguish effects of oil from other factors affecting fish and wildlife populations diminishes. Currently, natural and human perturbations may be hindering recovery of some resources initially injured by the spill. While those perturbations warrant consideration in defining and assessing recovery, they do not negate the responsibility of the Trustee Council to pursue restoration of spill-affected resources.”

Restoration Goals and Objectives

The *Restoration Plan* guides the Trustee Council’s restoration efforts with respect to resources and services in the spill-affected area (Figure 1)

Figure 1



Map produced by: Alaska Department of Natural Resources, Land Records Information Service

It contains policies for making restoration decisions and describes how restoration actions will be implemented. As part of the *Restoration Plan*, the List was created to officially document those injured resources that were of concern to the Trustee Council. The following benchmarks were established to assess the status of the resources and services injured by the oil spill:

- **Restoration Goal:** The overarching goal of the Restoration Program is the recovery of all injured resources and services, sustained by healthy, productive ecosystems to maintain naturally occurring diversity.
- **Recovery Goal of Injured Resources and Services:** The primary goal for all recovering injured resources and services is a return to conditions that would have existed had the spill not occurred.
- **Recovery Objective/s:** Specific, measurable parameters that, when achieved, signal the recovery of an injured resource or service.
- **Restoration Strategy:** The restoration strategy is a plan of action adopted by the Trustee Council to achieve recovery objectives.

It is difficult to predict conditions that would have existed in the absence of the spill. Therefore, the recovery objectives include measurable and biologically substantive parameters that can be used as proxies for these conditions. In some cases, multiple objectives are used for individual resources. For some resources, so little is known about the original or current injury or status that identifying a recovery objective has not been possible.

In the 2002 Update to the List (<http://www.evostc.state.ak.us/Habitat/injuredresources.htm>), the following factors were considered in the development of the Recovery Objectives established for injured resources:

- **Return to prespill levels:** Used where population estimates or indices were available prior to 1989. For species that are highly variable, these numbers could reflect a range of values. Where possible, these numbers account for the effects of other influences on injured populations, such as from climate change, although these other effects may interact with oil spill effects.
- **Hydrocarbon exposure:** Used where hydrocarbon exposure itself was part of the original basis for injury, where hydrocarbon exposure may limit recovery, or where hydrocarbon exposure in an injured resource may be a pathway to injury in other resources. Oil exposure may refer to background concentrations, which takes into account hydrocarbon exposure from natural oil seeps, natural coal deposits, and oil released from the Valdez petroleum plant as a result of the 1964 earthquake.
- **Stable or increasing population:** Used where resources were in decline before the spill or where ongoing declines unrelated to the spill may be occurring.
- **Productivity:** Reproductive success and population demographics are used in lieu of or to supplement data on population sizes. Measures include such indicators as eggs produced per female, young successfully reared, returns per spawning adult and growth rates.

In the 2006 List, the objectives were updated to address:

- Stressors other than oil that may be currently affecting a population
- The likelihood that a resource has recovered given the amount of time that has lapsed since the spill

Recovery Status Categories:

The List has historically included four categories of recovery which are defined below. The categories represent a scale along which an injured resource can progress:

- **Not Recovering:** Resources that are not recovering continue to show little or no clear improvement from injuries stemming from the oil spill. Recovery objectives have not been met.
- **Recovering:** Recovering resources are demonstrating substantive progress toward recovery objectives, but are still adversely affected by residual impacts of the spill or are currently being exposed to lingering oil. The amount of progress and time needed to attain full recovery varies depending on the species.
- **Recovered:** Recovery objectives have been met, and the current condition of the resource is not related to residual effects of the oil spill
- **Recovery Unknown:** For resources in the unknown category, data on life history or the extent of injury from the spill is limited. Moreover, given the length of time since the spill, it is unclear if new or further research will provide information that will help in comprehensively assessing the original injury or determining the residual effects of the spill such that a better evaluation of recovery can occur.

Human services that rely on natural resources were also injured by the oil spill and can thus be placed in one of the above categories. Because the recovery status of injured services is inextricably linked to the state of the resource on which it depends, full recovery of the spill area can not occur until both resources and services are restored.

Update History: The *Restoration Plan* states that the List should be reviewed periodically and updated to reflect results from scientific studies and other information.

Table 1: *Historical overview of the status of injured resources and services during each reassessment.*

Resource	1996 Status	1999 Status	2002 Status	Proposed 2006 Status
Archaeological Resources	Recovering	Recovering	Recovered	Recovered
Bald Eagles	Recovered	Recovered	Recovered	Recovered
Black Oystercatchers	Unknown	Recovering	Recovered	Recovering
Clams	Unknown	Recovering	Recovering	Recovering
Common Loons	Unknown	Not Recovering	Not Recovering	Recovered
Common Murres	Recovering	Recovering	Recovered	Recovered
Cormorants	Not Recovering	Not Recovering	Not Recovering	Recovered
Cutthroat Trout	Unknown	Unknown	Unknown	Unknown
Designated Wilderness	Unknown	Unknown	Recovering	Recovering
Dolly Varden	Unknown	Unknown	Unknown	Recovered
Harbor Seals	Not Recovering	Not Recovering	Not recovering	Recovering
Harlequin Ducks	Not Recovering	Not Recovering	Not recovering	Recovering
Intertidal Communities	Recovering	Recovering	Recovering	Recovering
Killer Whales	Not Recovering Not Listed	Not Recovering Not Listed	Recovering Not Listed	Recovering: AB Not Recovering: AT
Kittlitz's Murrelets	Unknown	Unknown	Unknown	Unknown
Marbled Murrelets	Not Recovering	Recovering	Recovering	Unknown
Mussels	Recovering	Recovering	Recovering	Recovering
Pacific Herring	Not Recovering	Recovering	Not recovering	Not recovering
Pigeon Guillemots	Not Recovering	Not Recovering	Not recovering	Not recovering
Pink Salmon	Recovering	Recovering	Recovered	Recovered
River Otters	Unknown	Recovered	Recovered	Recovered
Rockfish	Unknown	Unknown	Unknown	Unknown
Sea Otters	Not Recovering	Recovering	Recovering	Recovering
Sediments	Recovering	Recovering	Recovering	Recovering
Sockeye Salmon	Recovering	Recovering	Recovered	Recovered
Subtidal Communities	Recovering	Recovering	Unknown	Unknown
Human Service				
Commercial Fishing	Recovering ^a	Recovering	Recovering	Recovering
Passive Use	Recovering ^a	Recovering	Recovering	Recovering
Recreation and Tourism	Recovering ^a	Recovering	Recovering	Recovering
Subsistence	Recovering ^a	Recovering	Recovering	Recovering

^a Classified as "Lost or Reduced Service" in 1996 Update, meaning that the service was negatively indirectly impacted by the spill due to its connection with impacted natural resources

A summary of how the list has changed since 1996 is available in Table 1.

A reassessment of the List is necessary to understand the consequences of the original spill and the effects of oil remaining in the environment. It also provides a way to identify areas where additional restoration activities are needed and documents each resource's progress toward its recovery objectives.

The List was first updated in September 1996. At that time, the bald eagle was upgraded from recovering to recovered. In March 1999, a major review of recovery objectives and status occurred and several more changes were made. River otters were then considered to be recovered, and five resources—black oystercatchers, clams, marbled murrelets, Pacific herring, and sea otters—were upgraded to recovering. One resource, the common loon, was moved from recovery unknown to not recovering. Five resources remained as recovery unknown. All four human services were classified as recovering.

Recovery continued to progress and more changes were made to the List in 2002. Five more species or resources were moved to the recovered category: archaeological resources, black oystercatchers, common murrelets, sockeye salmon and pink salmon. In addition, designated wilderness areas were moved from the recovery unknown to the recovering category; Pacific herring were moved back from the recovering to the not recovering category; subtidal communities were moved from the recovering to recovery unknown category; and killer whales were moved from not recovering to recovering. In all, seven resources were considered fully recovered from the effects of the oil spill; 16 resources and all four human services were not fully recovered; and the recovery of five resources was still considered unknown.

Seventeen years after oil spill, we are again evaluating the status of injured resources and services and providing a synopsis of the most current information available in the updated List. In 2006, the Trustee Council funded Restoration Project #060783 which provided a comprehensive synthesis of information for resources and services that had been considered not recovered, recovering or unknown in the 2002 Update. Much of the supporting documentation in the 2006 List has been derived from information contained in the final report from that project (See References). Several species have been moved into the recovered category: common loons, cormorants and Dolly Varden. Harlequin ducks and harbor seals are improving and moved into the recovering category. Black oystercatchers have been down listed from recovered to recovering, and the recovery status of marbled murrelets has changed from recovering to unknown. The AT1 population of killer whales has been separated from the AB pod, and they are considered not recovering and recovering, respectively. Nine resources are considered fully recovered; 10 resources and all four human services are still recovering; five resources remain unknown and three resources (including the AT1 population of killer whales) have not recovered.

Recovery Status Determination

The recovery goal for injured resources is a condition that would exist in the absence of the *Exxon Valdez* oil spill (EVOS). It is important to understand that ecosystems are dynamic and the spill-affected area would have changed even without the spill. Given our limited ability to predict multi-year changes in marine ecosystems, it is difficult to know precisely what changes

were inevitable had the spill not occurred. However, it is still possible to assess the recovery status of a particular resource by reviewing multiple sources of applicable information.

Types of information that were used to assess the recovery status of a particular resource or service included:

- initial magnitude of oil impacts to a population in the spill area
- comparisons of population demographic in oiled and reference areas
- survey data of community members in oiled and reference areas
- continued exposure to residual oil in the spill area as measured by the biomarker cytochrome P450 or tissue concentrations of petroleum hydrocarbons
- exposure potential as evaluated by the distribution of lingering oil; overlap in spatial distribution of lingering oil and a resource; and identification of an exposure pathway
- persistence of sublethal or chronic injuries
- intrinsic ability of the population to recover
- other natural or human-caused stressors

Even with such an evaluation, direct links cannot always be drawn between effects from the oil spill and the observed, current condition of a particular resource: in most cases the amount or type of data is insufficient to complete a cause and effect relationship. Specifically, we have little prespill data for many of the injured resources. Moreover, the physiological effects of oil on key species of wildlife and subsequent population consequences were not well understood at the time of the spill. As a result, few species exist for which we have complete knowledge of the original impacts of the oil spill. To mitigate the uncertainties inherent in evaluating recovery we reviewed current, relevant scientific information while acknowledging the limitations of assigning an ultimate cause and effect relationship using the existing data. The types of uncertainty found in the literature include:

1. *Variability in population estimates.* Because the patterns of animal distribution present challenges in getting accurate counts (especially of highly mobile fish, birds and marine mammals), most estimates of population size have wide ranges of variability associated with the data.
2. *Lack of prespill data.* Many of the resources affected by the spill had limited or no recent data on their status in 1989. Additionally, some of the available pertinent data were the result of limited sampling, which consequently produced wide confidence intervals around the population estimates.
3. *Interaction of spill and natural factors.* It is increasingly difficult to separate what may be lingering effects of the spill from changes that are natural or caused by factors unrelated to the oil spill.
4. *Scale.* The geographic scale of studies conducted over the years has varied among resources and this disparity must be considered when interpreting data and applying results to recovery status. Some studies were conducted at the large spatial scale to address population and ecosystem concerns, while other studies focused on localized exposure and effects of oil.

Ecosystem Perspective and Recovery

The List consists mainly of single species and resources, but it provides a basis for evaluating the recovery of the overall ecosystem; its functions and the services it provides to people. In fact,

through the *Restoration Plan*, the Trustee Council adopted an ecological approach to restoration, and the studies and projects the Trustee Council sponsors have been ecologically-based.

The *Restoration Plan* defines ecosystem recovery as follows:

Full ecological recovery will have been achieved when the population of flora and fauna are again present at former or prespill abundances, healthy and productive, and there is a full complement of age classes at the level that would have been present had the spill not occurred. A recovered ecosystem provides the same functions and services as would have been provided had the spill not occurred.

Although significant progress has been made, using this definition of recovery, the coastal and marine ecosystems in the oil spill region have not fully recovered at this time from the effects of the oil spill. For example, harlequin ducks still show signs of oil exposure and may be negatively affected by such exposure. A number of other species and communities are showing signs of recovery, but are still not fully recovered from the effects of the oil spill. Although full ecological recovery has not been achieved, the spill area ecosystem is making progress towards recovery 17 years after the *Exxon Valdez* oil spill.

INJURED RESOURCES

ARCHAEOLOGICAL RESOURCES

Injury The oil spill area is believed to contain more than 3,000 sites of archaeological and historical significance. Twenty-four archaeological sites on public lands are known to have been adversely affected by clean-up activities or looting and vandalism linked to the oil spill. Additional sites on both public and private lands were probably injured, but damage assessment studies were limited to public land and not designed to identify all such sites.

Documented injuries included theft of surface artifacts, masking of subtle clues used to identify and classify sites, violation of ancient burial sites, and destruction of evidence in layered sediments. In addition, residual oil may have contaminated sites.

Recovery Objective Archaeological resources are nonrenewable: they cannot recover in the same sense as biological resources. Archaeological resources will be considered to have recovered when spill-related injury ends, looting and vandalism are at or below prespill levels, and the artifacts and scientific data remaining in vandalized sites are preserved (e.g., through excavation, site stabilization, or other forms of documentation).

Recovery Status Assessments of 14 sites in 1993 suggested that most of the archaeological vandalism that can be linked to the spill occurred early in 1989, before adequate constraints were put into place over the activities of oil spill clean-up personnel. Most vandalism took the form of “prospecting” for high yield sites. Once these problems were recognized, protective measures were implemented and successfully limited additional injury. Although some cases of vandalism were documented in the 1990s, there appears to be no spill-related vandalism at the present time.

From 1994-1997, two sites in Prince William Sound were partly documented, excavated, and stabilized by professional archaeologists because they had been so badly damaged by oiling and erosion. The presence of oil in sediment samples taken from four sites in 1995 did not appear to have been the result of re-oiling by Exxon Valdez oil. Residual oil does not appear to be contaminating any known archaeological sites.

In 1993, the Trustee Council provided part of the construction costs for the Alutiiq Archaeological Repository in Kodiak (www.alutiiqmuseum.com). This facility now houses Kodiak area artifacts that were collected during spill response. In 1999, the Trustee Council approved funding for an archaeological repository and local display facilities for artifacts from Prince William Sound and lower Cook Inlet. Local displays are now open to the public in Port Graham, Cordova, Seward, Seldovia, and Tatitlek. The facility in Seward serves as the repository for the Chugach region.

Based on the apparent absence or extremely low rate of spill-related vandalism and the preservation of artifacts and scientific data on archeological sites, archaeological resources are considered to be recovered.

BALD EAGLES

Injury The bald eagle is an abundant resident of marine and riverine shorelines throughout the oil spill area. Following the oil spill, a total of 151 eagle carcasses were recovered from the spill area. Prince William Sound provides year-round and seasonal habitat for about 6,000 bald eagles, and within the Sound it is estimated that about 250 bald eagles died as a result of the spill. There were no estimates of mortality outside the Sound, but there were deaths throughout the spill area. In addition to direct mortalities, productivity was reduced in oiled areas of Prince William Sound in 1989.

Recovery Objective Bald eagles will have recovered when their population and productivity (reproductive success) have returned to prespill levels.

Recovery Status Productivity (or reproductive success as measured by chicks per nest) was back to normal in 1990 and 1991, and an aerial survey of adults in 1995 indicated that the population had returned to or exceeded its prespill level in the Sound. **In September 1996, the Trustee Council classified the bald eagle as recovered from the effects of the oil spill.**

BLACK OYSTERCATCHERS

Injury Black oystercatchers spend their entire lives in or near intertidal habitats and are highly vulnerable to oil pollution. They are fully dependent on the nearshore environment and forage exclusively on invertebrate species along shorelines. It is estimated that 1,500-2,000 oystercatchers breed in south-central Alaska. Only nine carcasses of adult oystercatchers were recovered following the spill, but the actual number of mortalities may have been several times higher.

In addition to direct mortalities, breeding activities were disrupted by the oil and clean-up activities. When comparing 1989 with 1991, significantly fewer pairs occupied and maintained

nests on oiled Green Island, while during the same two years the number of pairs and nests remained similar on unoiled Montague Island. Nest success on Green Island was significantly lower in 1989 than in 1991, but Green Island nest success in 1989 was not lower than on Montague Island. In 1989, chicks disappeared from nests at a significantly greater rate on Green Island than from nests on Montague Island. Disturbance associated with clean-up operations also reduced productivity on Green Island in 1990. In general, the overt effects of the spill and clean-up had dissipated by 1991, and in that year productivity on Green Island exceeded that on Montague Island.

Recovery Objective Black oystercatchers will have recovered when the population returns to prespill levels and reproduction and productivity are within normal bounds. An increasing population trend and comparable hatching success and growth rates of chicks in oiled and unoiled areas, after taking into account geographic differences, will indicate that recovery is underway.

Recovery Status Black oystercatchers are long-lived (15+ years) and territorial, occupying nests in rocky areas close to the intertidal zone and returning in successive years to nest again in the same vicinity. In the early 1990's, elevated hydrocarbons in feces were measured in chicks living on oiled shorelines. Deleterious behavioral and physiological changes including, lower body weight of females and chicks were also recorded. Because foraging areas are limited to a few kilometers around a nest, contaminations of mussel beds in the local vicinity was thought to provide a source of exposure. In 1998 the Trustee Council sponsored a study to reassess the status of this species in Prince William Sound. The data indicated that oystercatchers had fully reoccupied and were nesting at oiled sites in the Sound. The breeding phenology of nesting birds was relatively synchronous in oiled and unoiled areas, and no oil-related differences in clutch size, egg volume, or chick growth rates were detected. However, a higher rate of nest failure occurred on oiled Green Island: At the time this was thought to be the result of predation, not lingering effects of oil. Because the extent of shoreline with persistent contamination was limited and lingering oil was patchy, it was concluded that the overall effects of oil on oystercatchers in the Sound had been minimal. However, the reasons that predation was higher at oiled Green Island than at Montague were not investigated. It is not clear whether predation was higher because there were higher numbers of predators, lower number of nests initiated or a behavioral change in the parents that would have led to lower nest protection.

Based on this study and one year of boat-based surveys (2000) of marine birds in Prince William Sound indicating that there were increases in numbers of oystercatchers in both the oiled and unoiled areas for that year, the black oystercatcher was identified as recovered. Since 2002, additional information has come to light indicating that designation may have been premature. A long-term (1989 – 2005) evaluation of marine bird population trends suggest that populations of black oystercatchers in the Sound have likely not recovered to pre-spill conditions.

Further, ongoing oil exposure to oystercatchers was documented in 2004 using a biochemical marker of exposure, cytochrome P450IA. Given our more recent understanding of the persistence of oil in sediments along shorelines that initially received heavy or moderate oiling, it is likely that black oystercatchers in oiled areas have suffered chronic exposure as has been shown for sea otters and harlequin ducks. Hydrocarbon exposure in 2004 is likely considerably

less than in the early 1990's, but at this time, we do not know if there are any significant physiological or population level consequences from chronic exposure.

Therefore, because population trends do not indicate recovery over 16 years of surveys, because a high rate of nest failure occurred in the oiled study area in the late 1990s, and because in 2004, continuing exposure of black oystercatchers to oil was reported, this species is listed as recovering.

CLAMS

Injury Clams are widely distributed throughout the oil spill area. They can be found in a variety of substrates and are most abundant in the lower intertidal and subtidal zones. Clams are important prey for various fish and wildlife resources including sea otters, sea birds, sea ducks and others.

The magnitude of the immediate impacts of oil on clam populations varied depending on species of clam, degree of oiling and location. Although direct mortality of some clam species like littlenecks and butter clams were assessed for several years after the spill, other more sensitive species, (e.g., *Macoma* and *Mya* spp) were not the focus of much study, and the immediate impact of the oil to these species remains unknown. In 1990 and 1991, growth of littleneck clams at oiled sites was less than at reference sites, and growth rate was directly proportional to hydrocarbon concentrations. Additionally, mortality was higher and growth rates lower in clams transplanted from oiled areas to clean areas, 5 -7 years after the spill.

Clean-up technologies were detrimental to clam populations and included hot water, high pressure washing, manual and mechanical scrubbing and physical removal of oiled sediments. Hot water washing caused thermal stress, oil dispersal into the water column, animal displacement and burial, and the transportation of fine grain sediment from the upper intertidal into the lower intertidal zone. Early assessments reported that clean-up activities resulted in reductions in clam abundance and distribution on treated (oiled-but-treated) beaches up to three years after the spill.

Recovery Objective Clams will have recovered when population and productivity measures (such as size and distribution) at oiled sites are comparable to populations and productivity measures at unoiled sites, taking into account geographic differences.

Recovery Status Studies have indicated that abundances of some species of clams were lower on treated beaches through 1996. Densities of littleneck and butter clams were depressed through 1997 on cleaned mixed-sedimentary shores where fine sediments had been washed down the beach during pressured water treatments.

As part of an investigation of sea otter populations conducted from 1996-1998, researchers compared clam densities between oiled sites on Knight Island and unoiled sites on Montague Island. They reported an increase in mean size of littlenecks and butter clams at Knight Island, where numbers of sea otters, a major predator of clams were significantly reduced. Absolute densities of littlenecks and butter clams were not different between oiled and unoiled sites; however, oiled sites had fewer juvenile clams and lower numbers of other clam species. In 2002, differences in species richness, diversity and abundance of several species were still measurable

between cleaned (oiled and treated) and untreated (oiled but untreated) beaches. Moreover, as of 2005, several wildlife species that use the intertidal zone and feed on clams (e.g., harlequin ducks and black oystercatchers) are still being exposed to oil. These resources are included on the injured resources list and although the exact route of oil has not been established for these birds, it is likely they are ingesting oil with their prey.

Some overlap occurs between areas where lingering oil and populations of littleneck and butter clams co-exist. Given the burrowing behavior of these animals, it is likely they would be exposed to oil as they dig into the subsurface sediments known to contain oil. In fact, it has been demonstrated that littleneck clams exposed for a year to the surface layer of contaminated sediments did not accumulate oil, but if the clams were buried in sediments mixed with oil, accumulation did occur.

Clam populations found on oiled but untreated beaches have likely recovered from the effects of the spill. However, several factors continue to impact clam populations on oiled and treated beaches: Abundances and distribution differences are still measurable between cleaned and untreated sites; Lingering oil occurs in habitats with clams, and exposure of clams to oil could result in upper trophic level predators eating contaminated prey; Other species on the injured resources list are still being exposed to oil and are known to forage on clams. **Based on all of the evidence summarized above, clams continue to be recovering, but are not yet fully recovered from the effects of the oil spill.**

COMMON LOONS

Injury Carcasses of 395 loons of four species were collected following the spill, including at least 216 common loons. Current population sizes in the spill area are not known for any of these species, but it is estimated that the 216 common loons represented between 720 – 2,160 individuals that died as a result of the initial oiling event. Common loons in the spill area may number only a few thousand, including only hundreds in Prince William Sound. Common loons injured by the spill probably included a mixture of wintering and migrating birds. The specific breeding areas used by the loons affected by the spill are not known.

Recovery Objective Common loons will have recovered when their population returns to prespill levels in the oil spill area. An increasing population trend in Prince William Sound will indicate that recovery is underway.

Recovery Status Boat-based surveys of marine birds in Prince William Sound give some insight into the recovery status of the loons affected by the oil spill. Prespill counts of loons exist only for 1972-1973 and 1984-1985. After the spill, contrasts between oiled and unoiled areas of the sound indicated that loons as a group were generally doing better in unoiled areas than in oiled areas. Thus, the survey data suggested that the oil spill had a negative effect on numbers of loons (all species combined) in the oiled parts of the Sound.

Common loons exhibited declines in population numbers and habitat usage in oiled areas in 1989 but not in 1990 and there was a weak negative effect of oiling on population numbers again in 1993, but not in 1996 or 1998. Based on the boat surveys carried out through 2000, there were indications of recovery, because in that year the highest counts ever recorded for common loons

occurred in the March surveys of Prince William Sound. In addition, July counts in 2000 were the third highest of the 11 years since 1972, although these increases were limited to the unoiled portion of the Sound. Loons are a highly mobile species with widely variable population numbers and the prespill data were limited, thus this one year of high counts in the unoiled areas was insufficient to indicate that recovery had started.

Population surveys conducted from 1989 - 2005 found increasing winter population trends in common loon densities in oiled areas. The summer counts do not show a consistent positive relationship, however the summer counts of loons are usually low and variable because they are predominately found on their breeding grounds in other areas. Common loons have an intrinsically low population growth rate and relatively large numbers of carcasses were recovered after the spill, yet post spill winter population counts of common loons have met or exceeded available pre-spill counts for all years measured since the spill (except 1993). **Given the long-term positive changes in winter population information, common loons are considered recovered from effects of the oil spill.**

COMMON MURRES

Injury About 30,000 carcasses of oiled birds were picked up in the first four months following the oil spill, and 74 percent of them were common and thick-billed murres (mostly common murres). Many more murres probably died than actually were recovered. Based on surveys of index breeding colonies at such locations as the Barren Islands, Chiswell Islands, Triplet Islands, Puale Bay, and Ugiashak Island, the spill area populations may have declined by about 40 percent following the spill. In addition to direct losses of murres, there is evidence that the timing of reproduction was disrupted and productivity reduced. Interpretation of the effects of the spill, however, is complicated by incomplete prespill data and by indications that populations at some colonies were in decline before the oil spill.

Recovery Objective Common murres will have recovered when populations at index colonies have returned to prespill levels and when reproductive success (productivity) is sustained within normal bounds. Increasing population trends at index colonies will be an indication that recovery is underway.

Recovery Status Postspill monitoring at the breeding colonies in the Barren Islands indicated that productive success was within normal bounds by 1993, and it has stayed within these bounds each breeding season since then. During the period 1993-1997, the murres nested progressively earlier by 2-5 days each year, suggesting that the age and experience of nesting birds were increasing, as might be expected after a mass mortality event. By 1997, numbers of murres at the Barren Island had increased, probably because 3- and 4-year old nonbreeding sub-adult birds that were hatched there in 1993 and 1994 were returning to their natural nesting colony. Although counts were low in 1996, the counts in 1997 at this index site brought the colony size to prespill levels. **Population size coupled with normal reproductive success (productivity), indicate that recovery has been achieved for common murres.**

CORMORANTS

Injury Cormorants are large fish-eating birds that spend much of their time on the water or perched on rocks near the water. Three species typically are found within the oil spill area.

Carcasses of 838 cormorants were recovered following the oil spill, including 418 pelagic, 161 red-faced, 38 double-crested, and 221 unidentified cormorants. From this sample, direct oil spill related mortality was estimated to be between 2,900 and 8,800 deaths. In 1996, the U.S. Fish and Wildlife Service Alaska Seabird Colony Catalog, however, listed counts of 7,161 pelagic cormorants, 8,967 red-faced cormorants, and 1,558 double-crested cormorants in the oil spill area. These are direct counts at colonies, not overall population estimates, but they suggest that population sizes are small. In this context, it appears that injury to all three cormorant species was significant.

Counts on the outer Kenai Peninsula coast suggested that the direct mortality of cormorants due to oil resulted in fewer birds in this area in 1989 compared to 1986. In addition, there were statistically-significant declines in the estimated numbers of cormorants (all three species combined) in the oiled portion of Prince William Sound based on pre and postspill boat surveys in July 1984-85 compared to 1989-91. It is not known what the counts and trends of cormorants would have been in the absence of the oil spill.

Recovery Objective Pelagic, red-faced, and double-crested cormorants will have recovered when their populations return to prespill levels in oiled areas. An increasing population trend in Prince William Sound will indicate that recovery is underway.

Recovery Status Marine bird surveys were conducted in ten of the 16 years between 1989-2005. For 'cormorants', trends for both summer and winter populations were increasing in the oiled area of Prince William Sound. Moreover, population estimates for cormorants in summer 2004 ranged from 9,000 – 11,000 birds, which falls within the range of 10,000 - 30,000 estimated in 1972. **Therefore, although population estimates of cormorants are highly variable throughout their range, the recovery objectives have been met and cormorants are considered to be recovered.**

CUTTHROAT TROUT

Injury Anadromous streams throughout the spill zone were initially oiled in 1989, and oil was sequestered in the intertidal sediments at stream mouths and along shorelines. Subsequently, it was documented that cutthroat trout emigrating within the oiled areas in 1989 -1990 grew more slowly than those in the unoiled areas. When trout leave their freshwater spawning areas they feed primarily in the nearshore environment, thus it is likely cutthroats were exposed to oil in this environment. The difference in growth rates between trout in oiled versus unoiled streams persisted through 1991. It was hypothesized that the slower rate of growth in oiled streams was the result of reduced food supplies or direct exposure to oil, and there was concern that reduced growth rates resulted in reduced survival.

Recovery Objective Cutthroat trout will have recovered when growth rates within oiled areas are similar to those for unoiled areas, after taking into account geographic differences.

Recovery Status Limited information exists regarding the current status of cutthroat trout. Recent exposure to lingering oil is unlikely, because most of the bioavailable oil appears to be confined to subsurface intertidal areas, and not dissolved in the water column. Moreover, distribution of cutthroat trout is patchy throughout the Sound, thus access to oil is restricted. However, the

Sound is the northern edge of cutthroat trout range and dispersal during marine migration is restricted, thereby increasing their susceptibility to habitat alteration and pollution. Cutthroat trout populations in the Sound are small and geographically isolated from each other: These characteristics suggest that recovery of a population would depend less on mixing with nearby aggregates than on the productivity of the endemic population and the extent to which it was injured by the spill. Confounding factors such as sport fishing and habitat alterations of spawning streams (e.g., through logging) may also inhibit successful recruitment of young into a population and subsequent increase in numbers. **Finally, growth rate data has not been collected since the early 1990s, thus the recovery objective has not been met. The recovery status of cutthroat trout remains unknown.**

DESIGNATED WILDERNESS AREAS

Injury The spill deposited oil into the waters and tidelands adjoining areas designated as Wilderness or Wilderness Study Areas by Congress or the Alaska State Legislature. During the intense clean-up seasons of 1989 and 1990, thousands of workers and hundreds of pieces of equipment were at work in the spill zone. This activity was an unprecedented imposition of people, noise, and activity on the area's undeveloped and normally sparsely occupied landscape. Although human activity levels on these wilderness shores have returned to normal, lingering oil still occurs at some locations. The affected areas were: designated wilderness in the Katmai National Park, wilderness study areas in the Chugach National Forest and Kenai Fjords National Park, and Kachemak Bay Wilderness State Park.

Recovery Objective Designated wilderness areas will have recovered when oil is no longer encountered in them and the public perceives that they are recovered from the spill.

Recovery Status Six moderately to heavily oiled sites on the Kenai and Katmai coasts were surveyed in 1994, at which time some oil mousse persisted in a remarkably unweathered state on boulder-armored beaches at five sites. These sites were visited again in 1999, and oil was found along park shorelines of the Katmai coast. Surveys carried out in 2001 and 2003 to determine the surface and subsurface distribution of oil in Prince William Sound found lingering oil on shorelines within designated wilderness study areas. Finally, in 2005 the sites surveyed in 1999 were again sampled. Although surface cover of oil had declined, the subsurface oil persisted in amounts similar to those found in 1999. Moreover, the oil at those sites was compositionally similar to 11-day-old Exxon Valdez oil.

Lingering oil persists in designated wilderness areas, and quantitative studies of lingering oil outside of the Sound are lacking. However, in many areas absolute amounts of oil are diminishing, therefore, designated wilderness areas are recovering but have not fully recovered from the oil spill.

DOLLY VARDEN

Injury Dolly Varden are widely distributed in the spill area. Adults spawn in natal streams and most overwinter in contiguous freshwater lakes. Migration into the marine environment occurs in the summer where the fish spend time feeding in nearshore waters. Many fish were in freshwater when the oil spill occurred but emigrated in and out of the spill area later in the season. Concentrations of hydrocarbons in the bile of Dolly Varden were some of the highest of any fish

sampled in 1989. Like the cutthroat trout, there is evidence from 1989-90 that Dolly Varden, in a small number of oiled index streams in Prince William Sound, grew more slowly than in unoiled streams. It was hypothesized that the slower rate of growth in oiled streams was the result of reduced food supplies or exposure to oil, and there was concern that reduced growth rates would result in reduced survival.

Recovery Objective Dolly Varden will have recovered when growth rates within oiled streams are comparable to those in unoiled streams, after taking into account geographic differences.

Recovery Status The growth differences between Dolly Varden in oiled and unoiled streams did not persist into the 1990-91 winter, but no growth data have been gathered since 1991. In addition, by 1990 the concentrations of hydrocarbons in bile had dropped substantially and a biochemical marker of oil exposure had a diminished.

In a 1991 restoration study sponsored by the Trustee Council, some tagged Dolly Varden moved considerable distances among streams within Prince William Sound, suggesting that mixing of overwintering stocks takes place during the summer in saltwater. Follow up studies indicate that Dolly Varden are abundant throughout the Sound, and genetically similar among geographically different aggregates. Frequent genetic exchange among groups of fish implies that mixing occurs, and outside populations are available to enhance depleted stocks. Moreover, fishing pressure on Dolly Varden is likely not as intense as that on coastal cutthroat trout. Populations are larger, the fish are more widely spread throughout the Sound and larger numbers can better tolerate harvest. Finally, current exposure to lingering oil is unlikely because most of the bioavailable oil is confined to subsurface intertidal areas and not dissolved in the water column. **Given the available evidence, Dolly Varden are considered to be recovered from effects of the oil spill.**

HARBOR SEALS

Injury Harbor seal numbers were declining in the Gulf of Alaska, including in Prince William Sound, before the oil spill. Exxon Valdez oil affected harbor seal habitats, including key haul-out areas and adjacent waters, in Prince William Sound and as far away as Tugidak Island, near Kodiak. Estimated mortality as a direct result of the oil spill was about 300 seals in oiled parts of Prince William Sound. In some parts of the Sound, 80% of the seals had oil on them in May 1989 and remained oiled until their molt in August. Some of the haul-out sites were oiled through the pupping season, and many pups became oiled shortly after birth. Based on aerial surveys conducted at trend-count haulout sites in central Prince William Sound before (1988) and after (1989) the oil spill, seals in oiled areas declined by 43 percent, compared to 11 percent in unoiled areas.

Recovery Objective Harbor seals will have recovered from the effects of the oil spill when their population is stable or increasing.

Recovery Status Harbor seal populations in the Sound were declining before the oil spill and the decline continued after the spill occurred. Factors contributing to this decline may involve environmental changes that occurred in the 1970s in which the amount and quality of prey resources were diminished. It is possible that the changes in the availability of high quality forage fish such as Pacific herring and capelin altered the ecosystem such that it may now support fewer seals than it did prior to the late 1970s. Other sources of mortality that may be

contributing to lower seal numbers could include predation, subsistence hunting, and commercial fishery interactions (e.g., drowning in nets).

Satellite tagging studies sponsored by the Trustee Council and genetic studies carried out by the National Marine Fisheries Service indicate that harbor seals in the Sound are largely resident throughout the year and have limited movement and interbreeding with other subpopulations in the northern Gulf of Alaska. This suggests that recovery must come largely through recruitment and survival within resident populations.

Based on annual counts from haul-outs concentrated in the south-central region of the Sound, seal numbers stabilized over the last 10 years (1996-2005). However, counts in recent years (2000, 2001 and 2003) have shown lower numbers suggesting continued stress on the population. Counts from those sites over a longer period (1990 – 2005) indicate an average annual rate of decline of 2.4 percent, and numbers have not returned to prespill levels. From 1990-2005, seal numbers at sites that were not oiled decreased at a greater rate than oiled sites. However, the entire spill zone was not surveyed and trends may have been influenced by movements of seals from oiled to unoled sites after the spill and a return to more oiled sites in recent years. **Collective evidence from the last ten years indicates that harbor seal population numbers may be stabilizing; however inconsistent counts in recent years, low numbers and a long-term negative population trajectory indicate that seals have not recovered from the effects of the spill. Harbor seals are considered recovering from effects of the oil spill.**

HARLEQUIN DUCKS

Injury Harlequin ducks spend most of their time in intertidal and shallow subtidal habitats where much of the oil was initially stranded. In Prince William Sound, about 150 harlequin duck carcasses were collected immediately after the spill in 1989. From these birds, it was estimated that 1,000 harlequins were killed by the initial oiling event, which represented about 7 percent of the wintering population. In addition to acute effects, harlequin ducks were one of the few species for which chronic injury related to long-term exposure to lingering oil was documented.

Recovery Objective Harlequin ducks will have recovered when breeding- and nonbreeding-season demographics return to prespill levels and when biochemical indicators of hydrocarbon exposure in harlequins in oiled areas of Prince William Sound are similar to those in harlequins in unoled areas.

Recovery Status Winter populations of harlequin ducks in Prince William Sound have ranged from a high of 19,000 ducks in 1994 to a low of around 11,000 ducks in March of 1990, one year after the spill. The 2000 estimate of wintering harlequin ducks in the Sound was approximately 15,000.

Several post-spill studies were designed to measure the extent and severity of injuries to the Prince William Sound harlequin duck population from the oil spill and assess recovery. Through 1998, oil spill effects were still evident although the extent and magnitude of the injury remained unclear. Supporting studies provided evidence of continuing injury to harlequins through the following mechanisms: 1) invertebrate recovery in upper intertidal and subtidal areas remained incomplete for some species, thereby impacting potential prey base for harlequins; 2) oil

persisted in intertidal areas of Prince William Sound where it was identified as a source of contamination of benthic invertebrates; 3) the possibility of external oiling of feathers remained due to lingering surface oil; 4) a biochemical marker of oil exposure (cytochrome P450) was greater in tissues of harlequin ducks captured in oiled areas than in reference areas and 5) overwinter female survival was lower in oiled than reference areas.

More recent studies indicate improving conditions. From 1997 – 2005, age composition and population trends were compared in harlequin ducks between oiled and unoiled areas of the Sound. No difference in population trends was observed between areas. Although populations in the oiled area were no longer declining as they were in the mid 1990s, a positive trend was not observed. Overall, more males than females occurred Sound-wide which is consistent with other Pacific populations of harlequin ducks. The ratio of immature to adult males was similar between areas, thus indicating similar recruitment into both populations. However, there remains a disproportionately lower number of female ducks in the oiled areas. From 2000 – 2002, measurements of cytochrome P450 activity and female survival rates were converging between oiled and unoiled areas. However, in 2005 the P450 biomarker was elevated in ducks from the oiled areas. Finally, lingering oil still remains in habitats used by harlequins, thereby maintaining the possibility of chronic effects related to continued exposure.

Evaluation of population trends, survival measures, and indicators of exposure through 2005 indicates a positive relationship among these parameters within harlequin duck populations in the Sound. The evidence suggests that harlequin ducks are recovering, but have not fully recovered from the effects of the oil spill.

INTERTIDAL COMMUNITIES

Injury Over 1,400 miles of coastline were oiled by the spill in Prince William Sound, on the Kenai and Alaska peninsulas, and in the Kodiak Archipelago. Heavy oiling affected approximately 220 miles of this shoreline. It is estimated that 40-45 percent of the 11 million gallons of crude oil spill by the Exxon Valdez washed ashore in the intertidal zone. For months after the spill in 1989, and again in 1990 and 1991, both oil and intensive clean-up activities had significant impacts on the flora and fauna of this environment.

Initial impacts to the intertidal zone occurred at all tidal levels and in all types of habitats throughout the oil spill area. Direct assessment of the spill effects included sediment toxicity testing, documenting abundance and distribution of intertidal organisms and sampling ecological parameters of community structure. Dominant species of algae and invertebrates directly affected by the spill included common rockweed, speckled limpet, several barnacle species, blue mussels, periwinkles, and oligochaete worms. At lower elevations on gravel and mixed sand/gravel beaches, the abundance of sediment organisms and densities of clams declined. Large numbers of dead and moribund clams were documented on treated beaches, but these effects were likely due to a combination of oil toxicity and hot water washing. Intertidal fish were also affected. In a study conducted in different habitats, density and biomass of fish at oiled sites showed declines relative to reference sites in 1990.

Recovery Objective Intertidal communities will have recovered when such important species as *Fucus* have been reestablished at sheltered rocky sites, the differences in community composition and organism abundance on oiled and unoiled shorelines are no longer apparent after taking into

account geographic differences, and the intertidal and nearshore habitats provide adequate, uncontaminated food supplies for top predators.

Recovery Status By 1991, in the lower and middle intertidal zones, algal coverage and invertebrate abundances on oiled rocky shores had returned to conditions similar to those observed in unoiled areas. However, large fluctuations in the algal coverage in the oiled areas caused a subsequent alteration in community structure. The *Fucus* canopy was initially eliminated in most of the areas that underwent extensive cleaning, thereby removing the protection provided by this alga to intertidal organisms from predation, desiccation and abrasion. This early eradication of *Fucus* led to instability of this alga's subsequent populations because the single-aged stands present after recolonization of the habitat were susceptible to large synchronous die-offs. Until a broader distribution of mixed-aged stands is established, this cycle may continue for many generations. Meanwhile, full recovery of *Fucus* is crucial for the recovery of intertidal communities at oiled sites, because many intertidal organisms depend on the shelter this seaweed provides.

As of 1997, *Fucus* had not yet fully recovered in the upper intertidal zone on shores oriented towards direct sunlight, but in many locations, recovery of intertidal communities had been substantial. In other habitat types, such as estuaries and cobble beaches, many species did not show signs of recovery when they were last surveyed in 1991. Studies on the effects of clean-up activities on oiled and washed beaches showed some invertebrates, like molluscs and annelid worms were still much less abundant than on comparable unoiled beaches through 1997. It is undetermined how much recovery has occurred in these locations since 1997, because further work has not been conducted.

Lingering oil is still present in some intertidal areas within the spill zone. Recent studies indicate that at beaches with pockets of buried lingering oil, high amphipod mortality is associated with elevated hydrocarbon concentrations. Moreover, the recovery objective states that the intertidal zone must provide uncontaminated food to top predators, including human subsistence users. As recently as 2005, some bird species which rely exclusively on the intertidal zone (harlequin ducks, Barrow's goldeneye and black oystercatchers) were still being exposed to hydrocarbons. Although the route of oil exposure has not been established, it is possible they are consuming contaminated prey during feeding.

Reestablishment of functioning intertidal communities is progressing, and they are classified as recovering. However, the slow recovery of some soft-sediment intertidal invertebrates, the presence of lingering, bioavailable oil, the continuing oil exposure of obligate intertidal foragers that are known to eat clams, and the lack of recent data characterizing the intertidal community indicate that this resource has not fully recovered from the effects of the oil spill.

KILLER WHALES

Injury More than 160 killer whales in eight resident (fish eating) pods regularly use Prince William Sound/Kenai Fjords as part of their ranges. Transient (marine mammal eating) groups are observed in the Sound less frequently, but some (the AT1 population) use the Sound year-round. After the spill, the loss of individual whales from the resident AB pod was of particular concern. At the time of the spill, this group numbered 36 animals, and from 1989 - 1990,

fourteen whales disappeared. During that time no young were recruited into the population. Members of the transient AT1 population were also observed in the area of the spill and adjacent to the tanker as it was leaking oil. Two stranded whales were found in 1990, but their cause of death was not determined.

The original link between the AB pod losses and the oil spill was largely circumstantial. No carcasses of any resident whales were discovered. Whales were observed surfacing in Exxon Valdez oil slicks following the spill in 1989 and nearly all of the deaths occurred at the time of the spill or the following winter. It is likely that petroleum or petroleum vapors were inhaled by whales, and it is possible that they ate contaminated fish. The mortality rate for the AB pod was 19 percent in 1989 and 21 percent in 1990 compared to an expected natural mortality rate of 2.2 percent or less.

The AT1 population has not been listed by the Trustee Council as an injured resource. However, this group also suffered losses subsequent to the spill. The AT1 population centers its range around the Sound and Kenai Fjords. From 1984 – 1989, their numbers were stable at 22 regularly observed individuals, but in a retrospective analysis it was determined that nine whales disappeared shortly after the spill. Because transients may occasionally leave their groups and swim with other transient whales, it could not be immediately determined if these whales were dead. However, in the subsequent 15 years these individuals were not seen by researchers with any other transient groups and they had not reappeared with their original group. Thus, they were considered deceased. It was hypothesized that these whales died from inhaling toxic oil vapors or as a result of eating oiled harbor seals.

Recovery Objective The recovery objective for killer whales is a return to a prespill number of 36 for the AB pod.

Recovery Status From 1990–1995 seven calves were born within the AB pod; however, additional mortalities occurred and by 2005, the number of whales was only 27. Killer whales are long-lived and slow to reproduce. Female killer whales give birth about every five years, and are likely to produce only four to six calves throughout their life. Moreover, a disproportionate number of females were lost at the time of the spill, and population modeling has demonstrated that the spill impacted the AB pod primarily through the loss of young and reproductive females. Unexpected mortalities in the years since the spill have also impacted this group. These factors indicate that the recovery rate of this population after a large loss of individuals will be slow. Therefore, the AB pod of killer whales in the Sound is considered to be recovering from the effects of the spill.

Because of the initial difficulty in confirming deaths of the whales from the AT1 population, the classification of this pod as injured was not pursued by the Trustee Council. However, this group was recently listed as threatened under the Marine Mammal Protection Act. The timing and magnitude of missing individuals directly following the spill and the fact that the AT1 pod is a year-round resident of the Sound suggests that oil was the likely cause of the decline immediately after the spill. Since 1990, 14 individuals have gone missing from the AT1 group and are now almost certainly dead (five of the carcasses were found on beaches). During that same period there has been no recruitment of calves into this group of transients.

Transient killer whales largely prey on marine mammals, especially harbor seals. From data collected at haul-outs in the south-central region of the Sound, it has been established that although harbor seals numbers appear to have increase over the past five years, the long term trend for the past 15 years is an annual decline of 2.4 percent. It is unclear how the population dynamics of harbor seals influence transient whale populations, but changes in the availability of such an important prey species could impact survival of individuals and reproductive success within groups. Trustee Council sponsored research on contaminants in killer whales in the Sound indicates that individuals of the AT1 group are carrying elevated levels of PCBs, DDT, and DDT metabolites in their blubber. Although the presence of these contaminants is not related to the oil spill, the high concentrations found in these transients are comparable to levels that cause reproductive problems in other marine mammals.

Due to the downward population trend of the AT1 group, the lack of recruitment of new animals and the convincing recent evidence that this group was initially injured by the spill, the Trustee Council is listing the AT1 population as not recovering from the effects of the oil spill.

KITTLITZ'S MURRELETS

Injury The Kittlitz's murrelet is found only in Alaska and portions of the Russian Far East. A large percentage of the world population, which may number only a few tens of thousands, breed in Prince William Sound. The Kenai Peninsula coast and Kachemak Bay are also important concentration areas for this species.

Seventy-two Kittlitz's murrelets were positively identified among the bird carcasses recovered after the oil spill. Nearly 450 more Brachyramphus murrelets were not identified to the species level, and it is reasonable to assume that some of these were Kittlitz's. In addition, many more murrelets probably were killed by the oil than were actually recovered. Estimates of the total number of Kittlitz's murrelets that died as a result of the spill vary from 255 – 2,000; it has been suggested that this represents 5 – 10 percent of the world's population.

Recovery Objective No recovery objective can be identified for Kittlitz's murrelet at this time.

Recovery Status Few studies have been conducted on Kittlitz's murrelets, however they are known to nest in areas of glacial outcroppings, and they are thought to reside within the Sound from May until September/October. Kittlitz's murrelets have an intrinsically low population growth rate, thus recovery from an acute loss is likely to be slow.

The Kittlitz's murrelet is a candidate species for listing as threatened or endangered under the federal Endangered Species Act. They have declined 99 percent from 1972 to 2004 and 88 percent from 1989 – 2004. While this decline likely started prior to the spill, the rate of decline was 18 percent per year from 1972, but since 1989 that rate increased to 31 percent. The recovery status of Kittlitz's is complicated because confounding factors influence their current population growth. The decline may be attributable in part to a decline in a primary food source; high-lipid forage fish, like sand lance and Pacific herring. However, other factors with no potential connection to the oil spill-e.g., habitat loss, likely play a significant role as well. For example, most of the tidewater glaciers in the Sound associated with these birds are receding, and this is apparently causing a concurrent shift in murrelet distribution. **Because of the**

uncertainties surrounding the original extent of injury and the current limited availability of life history data, the Kittlitz's murrelets remain in the unknown category.

MARBLED MURRELET

Injury Marbled murrelets are found throughout the northern Gulf of Alaska and are known to concentrate in Prince William Sound. Carcasses of nearly 1,100 *Brachyramphus* murrelets were found after the spill, and about 90 percent of the murrelets that could be identified to the species level were marbled murrelets. Since they are a small bird and not easily seen, many more murrelets probably were killed by the oil than were found. Estimates vary but between 2,900 and 14,800 individuals were killed by the initial oiling and this represented 6 – 12 percent of the marbled murrelets in the spill area. In addition to direct mortality, foraging activity and behavior was likely disrupted during the clean-up activities.

Recovery Objective Marbled murrelets will have recovered when their populations are stable or increasing. Sustained or increasing productivity within normal bounds (based on adults and juveniles on the water) will be an indication that recovery is underway.

Recovery Status Marbled murrelets were declining in the Sound before the oil spill, and the decline has continued since the spill. It is listed as a threatened species in Washington, Oregon, California and British Columbia. Marbled murrelets have low intrinsic productivity and a slow population growth rate. Therefore, recovery from an acute loss will likely take many years.

Summer populations in the Sound declined from an estimated 304,000 birds in 1972 to 97,000 shortly after the spill. Population trends from 1989 – 2005 do not indicate increasing numbers of marbled murrelets. Comparing summer population trend data of marbled murrelets between oiled and unoled areas is difficult because of widespread nesting distributions and overlapping foraging ranges. Moreover, declines in marbled murrelet breeding populations are occurring in both oiled and unoled areas. Similar trends throughout the Sound suggest that factors, other than or in addition to the oil spill are influencing murrelet populations. Marbled murrelets rely on forage fish such as Pacific herring and sand lance, which are declining in the spill area for various reasons including a potential link to the oil spill. Although a correlation between the availability of forage fish and the production of young murrelets appears to exist, there is conflicting evidence that links declines in prey resources with the oil spill. However, other factors with no potential link to the spill, such as climate change, decreases in habitat availability and mortalities from the gill net fisheries are probably influencing marbled murrelet population dynamics. Although lingering oil exists in the Sound, the dietary preference and foraging areas of marbled murrelets do not provide much opportunity for current exposure.

Marbled murrelets do not meet their specific recovery objective of increasing or stable populations. Moreover, their decline may be attributable in part to a decline in a primary food source; high-lipid forage fish, like sand lance and Pacific herring. We cannot make a direct link among the decline in forage fish, the effects of the spill and the decline in marbled murrelets. Therefore, the Trustee Council considers the recovery status for marbled murrelets to be unknown.

MUSSELS

Injury Mussels are a keystone species in the nearshore environment throughout the spill area and are locally important for subsistence users. They provide prey for harlequin ducks, black oystercatchers, juvenile sea otters, river otters and many other species. Mussel beds are also important components of intertidal habitats because they provide physical stability and habitat for other organisms in the intertidal zone. Although mussels were coated with oil from the Exxon Valdez, dense mussel beds were purposely not disturbed during clean-up operations so the stability and habitat they provided would be preserved. However, some unconsolidated groups of mussels were subjected to hot water high pressure washing.

In 1989, after the spill, concentrations of oil in mussel tissue from the oiled area increased rapidly: These concentrations were typically far higher than in mussels from nonoiled areas (or in mussels sampled from 1977-1979). The chemical composition of this oil was consistent with *Exxon Valdez* oil. Long-term mussel contamination occurred where substantial amounts of oil was trapped in sediment; primarily within coarse-textured habitats, including heavily oiled beaches exposed to considerable wave and storm energy (e.g., Sleepy Bay). In 1991, high concentrations of relatively unweathered oil were found in the mussels and in underlying byssal mats and sediments in certain dense mussel beds. No differences in abundance or biomass were documented in sheltered rocky and estuarine habitats. However, in coarse-textured habitats along the Kenai Peninsula, mussel populations were still affected.

Recovery Objective Mussels will have recovered when concentrations of oil in the mussels reach background concentrations, and mussels do not contaminate their predators.

Recovery Status The primary route by which mussels accumulate oil is through ingestion of petroleum hydrocarbons in the water. Much of the lingering oil in the Sound and the Gulf of Alaska is sequestered in the subsurface sediments. Mussels are found both as epibiota, attached to the surface substrates, and also partially embedded in coarse sediment, where they could come into close contact with oiled sediments. It is possible that mussels could filter particulate and dissolved hydrocarbons from the water if the oil is re-suspended during storm surges, wave action or when underlying sediments are disturbed by predators. The current distribution of oil within a mussel bed is determined by water flow, amount of oil present, sediment grain size and disturbance history.

After the spill, hydrocarbons accumulated in mussels for about a decade at sites where oil was retained by sediment. Remaining oil was biologically available for many years after the spill, but the frequency of occurrence and average hydrocarbon concentrations in mussel tissue has declined with time. In most instances concentrations of oil in mussels from the most heavily oiled beds in Prince William Sound were largely indistinguishable from background by 1999. However, concentrations in sediment underlying the mussel beds remained elevated.

Recent data indicate that hydrocarbon concentrations in mussels are declining, even in armored beaches where elimination has been slow, and at many sites concentrations are not different from background. While a decrease in tissue concentration addresses part of the recovery objective, in order to be fully recovered mussels must provide uncontaminated food to top predators, including human subsistence users. As recently as 2005, some bird species which rely exclusively on the intertidal zone (harlequin ducks, Barrow's goldeneye and black

oystercatchers) were still being exposed to hydrocarbons. The route of oil exposure has not been established for these birds, however, it is possible that they are consuming contaminated prey or foraging in contaminated sediment during feeding. For many of these species mussels are a known prey item, and they could be foraging in contaminated sediments underlying mussel beds. **Because we cannot verify that predators are not being exposed to oil while foraging in mussel beds, mussels are considered to be recovering from the effects of the oil spill.**

PACIFIC HERRING

Injury Pacific herring are an ecologically and commercially important species in the Sound ecosystem. They are central to the marine food web; providing food to marine mammals, birds, invertebrates and other fish. Herring are also commercially fished for food, bait, sac-roe and spawn on kelp.

Pacific herring spawned in intertidal and subtidal habitats in Prince William Sound shortly after the oil spill. All age classes and a significant portion of spawning habitats and staging areas in the Sound were contaminated by oil. Juvenile and adult herring typically come to surface at night to feed and would have had increased exposure probability at this time. Lesions and elevated hydrocarbon levels were documented in some adult Pacific herring from the oiled areas. Laboratory studies showed abnormalities and possible depressed immune functions in Pacific herring exposed to oil. Significant adult mortality was not observed in 1989, but this would not be unexpected given the heavy predation or scavenging by different groups of predators. Egg mortalities and larval deformities were also documented in the 1989 year class, but population level effects of the spill were never clearly established.

Prior to the spill, herring populations in the Sound were increasing as recorded by record harvests in the late 1980s. However, four years after the spill a dramatic collapse of the fishery occurred, and the herring population has never rebounded. Herring populations are dominated by occasional, very strong year classes that are recruited into the overall population. The 1988 prespill year-class of Pacific herring was large in Prince William Sound, and as a result, the estimated peak biomass of spawning adults in 1992 was high. Despite the expectation that this large spawning event would lead to high numbers of fish, the population exhibited a density-dependent reduction in size of individuals, and in 1993 there was an unprecedented crash of the adult herring population. The overall 1993 harvest was about 14 percent of the 1992 harvest, and the 1989 year class was one of the smallest cohorts ever to return as spawning adults.

Recovery Objective Pacific herring will have recovered when the next highly successful year class is recruited into the population and when other indicators of population health (such as biomass, size-at-age, and disease expression) are within normal bounds in Prince William Sound.

Recovery Status The herring fishery in the Sound has been closed for 11 of the 17 years since the spill. The population began increasing again in 1997 and the fishery was opened briefly in 1997 and 1998. However, the population increase stalled in 1999, and recent research suggests that the opening of the fishery in 1997 and 1998 stressed an already weakened population and contributed to the 1999 decline. The fishery has been closed since then, including 2006. No trend suggesting healthy recovery has occurred over the last eight years.

The residual effects of oil on Pacific herring populations is the subject of an ongoing Trustee Council-funded review scheduled for completion in 2006. The review focuses on the contribution of oil, disease, recruitment success, and genetic diversity to the current status of herring in the Sound. Preliminary findings suggest the following:

The primary factor currently limiting recovery of herring in the Sound seems to be disease. Two pathogens, a virus and a fungal infection are prevalent in herring populations among several age classes. Conditions which made herring susceptible to these two diseases (viral hemorrhagic septicemia and *Ichthyophonus hoferi* infection) are unknown, but it appears they have been impacting herring for over a decade. These diseases do not usually distress fish populations for such a long duration, and this cycle seems to be unique to the herring of Prince William Sound.

Lingering oil exists in the Sound, however there does not appear to be much overlap between current herring spawning areas and sites known to harbor residual oil. In 2006, some herring spawn was observed in areas of the Sound that were oiled however, the spatial extent was limited, and this was the first year in decades that it has been reported. Therefore, it is not likely that lingering oil is directly affecting spawning adults, eggs or larvae.

Low genetic diversity does not appear to be a limitation within herring populations. It was suggested that historic overfishing coupled with the population crash of 1993 could have resulted in a population with low genetic diversity. Similar genetic structure could limit a population's ability to tolerate disease or recover from acute losses, but the genetic diversity of Prince William Sound herring is no different from other northwest populations.

Multigenerational toxicity and effects from original contact with oil does not seem plausible, however this hypothesis has not been directly investigated.

Other factors may have contributed to the crash of 1993. Some evidence implies that zooplankton production in the 1990s was less than in the 1980s, thereby causing food to be limited at the time of a peaking population. This hypothesis is somewhat supported by the fact that the average size-at-age of herring had been decreasing since the mid-1980s as population numbers were rising. Poor nutrition may also increase susceptibility of herring to disease.

Predation also plays a role in herring population dynamics as they are a primary forage fish within the Prince William Sound ecosystem. It is plausible that the small herring population is fighting an on-going disease problem and is further being kept in check by predators such as whales, seals, sea lions and seabirds.

Despite the numerous studies directed at understanding the effects of oil on herring, the causes constraining population recovery are not well understood. A combination of factors, including disease, predation and poor recruitment appear to contribute to the continued suppression of herring populations in the Sound. In summary, Pacific herring have not met their recovery objective. No strongly successful year class has been recruited into the population and health indices suggest that herring in the Sound are not fit. Therefore, the Pacific herring are classified as not recovering.

PIGEON GUILLEMOTS

Injury Although pigeon guillemots are widely distributed in the north Pacific region, they do not occur anywhere in large concentrations. An estimated 2,000 - 6,000 guillemots, representing 10-15 percent of the spill area population died from acute oiling. Additionally, an increase in nest predation of pigeon guillemot chicks and incubating adult birds occurred in the Sound after the spill. It was speculated that immediately after the spill, predators such as river otters and minks preyed more heavily on nesting guillemots due to heavy oiling and subsequent reduction of their customary shellfish prey.

Recovery Objective Pigeon guillemots will have recovered when their population is stable or increasing. Sustained or increasing productivity within normal bounds will be an indication that recovery is underway.

Recovery Status Pigeon guillemot populations were likely declining prior to the spill and this decline has continued through 2005. The causes of the decline are unclear and the extent to which the spill has been a factor has not been determined. From 1989 to 1991, pigeon guillemot abundance decreased more in oiled areas than in unoiled areas, and this accelerated decrease persisted in most years through 2001. Summer surveys along both oiled and unoiled shorelines of the Sound have indicated that numbers of guillemots continued to decline through 2005. March surveys reveal no significant trends in abundance although the data appear to suggest a decline at this time of year as well.

As of 1999, adult pigeon guillemots in the oiled areas were still being exposed to oil as indicated by elevation of a biochemical marker of exposure, cytochrome P450. No differences were found between P450 activity in chicks from oiled and unoiled sites. The difference in P450 activity between adults and chicks is probably due to the fact that pigeon guillemot chicks are fed primarily fish, while adults eat a combination of fish and invertebrates. Invertebrates are more likely to sequester petroleum compounds, whereas fish metabolize them. Data collected in 2004 indicated that there was no difference in P450 activity in adult pigeon guillemots collected in oiled and unoiled parts of the Sound.

Lingering oil occurs in habitats used by pigeon guillemots. They feed on fish and invertebrates by diving and probing the bottom with their bills. Because their diet includes benthic organisms living in the intertidal zone, they could encounter subsurface oil while foraging. However, guillemots do not use the intertidal zone exclusively and can travel several miles offshore to feed. Thus, their exposure to lingering oil is probably intermittent.

Reduction in forage fish, specifically herring and sand lance has been implicated in declines of pigeon guillemots. The extent to which the oil spill resulted in the depletion of these species could indirectly injure guillemots and other seabirds by removing the food resources on which they depend. Other factors, such as predation and interactions with commercial fisheries might be contributing to the negative population trend, but comprehensive studies including these variables have not been conducted.

Pigeon guillemot populations are not recovering in the spill area. In fact, populations have been steadily declining throughout the Sound since the spill, with lower numbers of birds counted in the spill area through 2004. **The failure of Pacific herring to recover and its implication for**

prey availability coupled with the potential for direct exposure to lingering oil in localized intertidal areas, supports a conclusion that pigeon guillemots remain in the category of not recovering from the effects of the spill.

PINK SALMON

Injury Up to 75 percent of wild pink salmon in Prince William Sound spawn in the intertidal portions of streams. Eggs deposited in gravel and developing embryos were chronically exposed to hydrocarbon contamination from the water column and from leaching oil deposits on adjacent beaches. When juvenile pink salmon migrate to saltwater, they spend several weeks foraging for food in nearshore habitats. Thus, juvenile salmon entering seawater from both wild and hatchery sources were likely exposed to oil as they swam through contaminated waters and fed along oiled beaches. Two primary types of injury impacted early life stages of pink salmon: 1) growth rates in both wild and hatchery-reared juvenile pink salmon from oiled parts of the Sound were reduced; and 2) increased embryo mortality was documented in oiled versus unoled streams.

Recovery Objective Pink salmon will have recovered when population indicators, such as juvenile growth and survival, are within normal bounds and when ongoing oil exposure, which may cause injury to pink salmon embryos (eggs), is negligible.

Recovery Status In the years preceding the spill, returns of wild pink salmon in Prince William Sound varied from a maximum of 23.5 million fish in 1984 to a minimum of 2.1 million in 1988. Many factors, such as the timing of spring plankton blooms and changes in water circulation patterns throughout the Gulf of Alaska are likely to have a great influence on year-to-year returns in both wild and hatchery stocks of pink salmon. Since the spill, returns of wild pinks have varied from a high of about 12.7 million fish in 1990 to a low of about 1.9 million in 1992. In 2001 the return of wild stock fish was estimated to be 6.7 million fish.

The decade preceding the oil spill was a time of peak productivity for pink salmon in the Sound. In 1991 and 1992, it appears that wild adult pink salmon returns to the Sound's Southwest District were reduced by 11 percent; however wild salmon returns are naturally highly variable. Furthermore, the methods used to estimate this decrease could not be used to produce reliable injury estimates across multiple generations of salmon. An analysis of escapement data from 1968-2001 did not show any differences in annual escapements between oiled and unoled parts of the Sound. Therefore, population-level effects from the spill did not impact wild pink salmon or were short-lived.

Sound-wide population levels appear to be within normal bounds. In addition, reduced juvenile growth rates in Prince William Sound occurred only in the 1989 season. Since then, juvenile growth rates have been within normal bounds.

Higher embryo mortality persisted in oiled streams when compared to unoled streams through 1993: These differences were not detected from 1994 - 1996, but higher embryo mortality was again reported in 1997. It could not be determined if the reemergence of elevated embryo deaths was due to the effects of lingering oil (perhaps newly exposed by storm-related disturbance of adjacent beaches), or due to other natural factors (e.g., differences in the physical environment). Although patches of lingering oil still persist in or near intertidal spawning habitats in a few of the streams used by pink salmon in southwestern Prince William Sound, the amounts were

considered negligible based on 1999 and 2001 studies. In 1999, dissolved oil was measured in six pink salmon streams that had been oiled in 1989. Only one of the six streams had detectable concentrations of oil, and they were about a thousand times lower than concentrations reported as toxic to developing pink salmon embryos. **Based on these results, continuing exposure of pink salmon embryos to lingering oil is negligible and unlikely to limit pink salmon populations. Given the fact that pink salmon population levels and indicators such as juvenile growth and survival were within normal bounds, pink salmon were considered recovered from the effects of the oil spill in 1999.**

RIVER OTTERS

Injury River otters have a low population density in Prince William Sound. Twelve river otter carcasses were found following the spill, but the actual total mortality is not known. Studies conducted during 1989-91 identified several differences between river otters in oiled and unoiled areas in the Sound, including biochemical alterations, reduced body size, and increased home-range size. The lack of comparable pre-spill information precluded any effort to determine if these differences were the result of the oil spill.

Recovery Objective The river otter will have recovered when biochemical indicators of hydrocarbon exposure or other stresses and indices of habitat use are similar between oiled and unoiled areas of Prince William Sound, after taking into account any geographic differences.

Recovery Status Although some of the differences (e.g., values of blood characteristics) between river otters in oiled and unoiled areas in Prince William Sound were apparent through 1996, they did not persist in 1997 and 1998. **In 1999, the Trustee Council considered river otters to be recovered, because the recovery objectives had been met and indications of possible lingering injury from the oil spill were not present.**

ROCKFISH

Injury Dead rockfish were observed throughout the Sound immediately following the spill, but an absolute count was never documented. Necropsies of five fish indicated that oil ingestion was the cause of death. Additionally, hydrocarbon concentrations in dead fish from oiled areas were higher than those from unoiled areas. Closures to salmon fisheries apparently caused increasing fishing pressure on rockfish, which, in turn, may have adversely affected local populations.

Recovery Objective No recovery objective can be identified.

Recovery Status From 1989 – 1991, higher petroleum hydrocarbon concentrations were measured in rockfish from oiled areas when compared to unoiled areas. Interpretation of these data is limited, however, because oil accumulation differs by species and by age of the fish, and these variables were not fixed across sites. Other Council-funded studies have been conducted on rockfish since the spill, including 1) an examination of larval growth of fish, (including rockfish) in 1989; 2) a genetics investigation designed to identify species of rockfish larvae and young in the Gulf of Alaska and 3) a microscopic examination of fish tissues to identify lesions associated with oil exposure. These studies were inconclusive as none of them directly linked exposure of Exxon Valdez oil to any of the endpoints that were measured.

It is unlikely that rockfish are currently being exposed to lingering oil because known pockets of lingering oil rarely occur in their preferred habitat. Documented lingering bioavailable oil is in the subsurface sediments of the intertidal zone, and rockfish mostly occur in differing habitats of subtidal areas and in pelagic environments. From 1999 – 2000, no differences were measured in physiological responses to oil in rockfish from oiled and unoiled areas.

Since the spill, few studies have provided information about rockfish abundance, species composition and the impacts of commercial fisheries. Although it is unlikely that most species and life-stages of rockfish are currently being exposed to lingering oil, the original extent of injury was not documented. **Therefore, the current understanding of the long-term effects of the original spill can not be determined. The recovery status of rockfish remains unknown.**

SEA OTTERS

Injury Sea otters were originally found throughout the north Pacific including Japan, Russia, the United States and Canada. By the late 1800s, they had been eliminated from most of their range due to over-harvest by Russian and American fur traders. Sea otters came under international protection in the early 1900s and since then, their numbers have rebounded. Today, sea otters can only be harvested for subsistence purposes. Surveys of sea otters in the 1970s and 1980s indicated a healthy and expanding population in most of Alaska, including Prince William Sound.

Hundreds of otters became coated with oil in the days following the spill, and 871 carcasses were collected throughout the spill area. Estimates of the total number of sea otters lost to acute mortality vary, but range as high as 40 percent (2,650) of the approximately 6,500 sea otters inhabiting the western areas of the Sound. In 1990 and 1991, higher than expected proportions of prime-age adult sea otters were found dead in western Prince William Sound. Higher mortality of recently weaned juveniles in oiled areas was documented through 1993. Continuing studies of mortality rates, based largely on sea otter carcass recoveries, suggest that relatively poor survival of otters in the oiled area has persisted for well over a decade.

Recovery Objective Sea otters will have recovered when the population in oiled areas returns to its prespill levels and distribution, and when biochemical indicators of hydrocarbon exposure in otters in the oiled areas are similar to those in otters in unoiled areas. An increasing population trend and normal reproduction and age structure in western Prince William Sound will indicate that recovery is underway.

Recovery Status No apparent population growth occurred for Prince William Sound sea otters through 1991. After 1993, the population in the western Sound began increasing at a rate approximately one-half of the prespill rate of increase. From 1993 -2000, the number of otters increased by 600 animals which represents an annual growth rate of 4 percent. However, in areas that were heavily oiled, such as northern Knight Island, sea otter populations have remained well below pre-spill numbers, and population trends continued to decline through 2005. Moreover, the demographics within this group apparently are not stable as many of the females are below reproductive age and young, non-territorial males have moved into and out of the population.

The lack of recovery may reflect the extended time required for population growth for a long-lived mammal with a low reproductive rate, but likely reflects the effects of chronic exposure to

hydrocarbons, or a combination of both factors. Food limitation does not appear to be a factor limiting recovery in the Knight Island group, because food resources are at least as plentiful there as they are at unoiled Montague Island. Productivity is also similar between oiled and unoiled sites. Exposure of sea otters to lingering oil is plausible because their foraging sites and prey species occur in habitats harboring oil. Additionally, biochemical responses (cytochrome P450) of oil exposure were elevated in animals from oiled sites through 2002. By 2004 – 2005, the response of this biomarker was similar in animals from oiled and unoiled areas. However, more years of data will need to be gathered to determine if the similarity is true convergence, and the apparent diminishing exposure to oil is a long-term trend.

Sea otter recovery is underway for much of western Prince William Sound, and sea otters are generally increasing in much of the spill area. However, the data from otters in heavily oiled Knight Island reflect a population that is not rebounding. Factors affecting this population could include residual or continuing oil effects, predation, subsistence use or a combination of multiple causes. **Therefore, sea otters continue to be in the recovering category.**

SEDIMENTS

Injury The Exxon Valdez spilled approximately 11 million gallons of crude oil into Prince William Sound, and much of this oil washed up on shores and deposited in intertidal and subtidal zones of the spill area. Intertidal shorelines captured approximately 40 – 45 percent of the oil, and up to 13 percent of the oil settled in subtidal habitats. Using a variety of methods, manual removal eliminated some of the oil from the intertidal zone early in the response phase, and within a few months of the spill, 89 percent of the moderately to heavily oiled beaches had been treated. Clean-up activities also occurred in 1990 and 1991. According to Shoreline Clean-up Assessment Team (SCAT) surveys, by 1992, approximately 10 km of the original estimated 583 km beaches with surface oiling remained uncleared. The SCAT surveys were focused on documenting surface oiling as a way to direct clean-up activities. Therefore, subsurface and subtidal oil was not as closely monitored.

Recovery Objective Sediments will have recovered when there are no longer significant residues of Exxon Valdez oil on shorelines (both intertidal and subtidal) in the oil spill area. Declining oil residues and diminishing toxicity are indications that recovery is underway.

Recovery Status Approximately 10 acres of Exxon Valdez oil remains in surface sediments of Prince William Sound, primarily in the form of highly weathered, asphalt-like or tar deposits. In 2003, it was estimated that 20 acres of unweathered, lingering oil may still be present in subsurface, intertidal areas of the Sound, which could represent up to 100 tons of remaining oil. Most of this oil is found in protected, unexposed bays and beaches. Subsurface oil was not subjected to the original clean-up activities, and because this oil is trapped beneath a matrix of cobbles, gravel and finer sediments, it is not easily exposed to natural weathering processes.

The most recent studies documenting residual oil occurred on those beaches that were considered heavily or moderately oiled in 1989: Beaches reported as lightly oiled were not surveyed. Moreover, beaches outside of the Sound were not included, so the amount and extent of residual oil in the entire spill zone is not known, but one estimate suggests as much as 200 tons of oil may still exist. Several studies have evaluated the extent of lingering oil on armored oiled beaches along the outer Kenai Peninsula coast, the Alaska Peninsula, and Kodiak Archipelago: These

studies looked at the same sites repeatedly at intervals from 1992 - 2005. By 1995, little visible oiling was observed in the study area on Kodiak. Overall, by 1995, hydrocarbon concentrations in sediments at the Gulf of Alaska sites were generally lower than for sites in Prince William Sound, but at some locations substantial concentrations persisted. Through 2005, surface oil was not frequently observed in these areas, and subsurface oil was present as mostly unweathered mousse.

In 1989, chemical analysis of oil in subtidal sediments was conducted at a small number of index sites in Prince William Sound. In the subtidal areas, petroleum hydrocarbon concentrations were highest at depths of 1 - 60 feet (below mean low water) and diminished out to depths of 300 feet. It is likely that oil in subtidal sediments have decreased substantially since the spill. In 2001, several sites that were sampled after the spill were re-visited, and no oil was found in the subtidal sediment from these locations.

Seventeen years after the spill, lingering oil has persisted in the intertidal zones of Prince William Sound and on northwest shorelines of the spill area. The presence of subsurface oil continues to compromise wilderness and recreational values, expose and potentially harm living organisms, and offend visitors and residents, especially those who engage in subsistence activities along still-oiled shorelines. Although much of the oil has diminished over time, pockets of unweathered oil exist, and natural degradation of this oil is very slow. Moreover, some obligate intertidal foraging bird species are still being exposed to oil. **Therefore, sediments are considered to be recovering, but not yet recovered from the effects of the spill.**

SOCKEYE SALMON

Injury Commercial salmon fishing was closed in Prince William Sound and in portions of Cook Inlet and near Kodiak in 1989 to avoid the possibility of contaminated salmon being sold at market. As a result, there were higher-than-desirable numbers (i.e., "overescapement") of spawning sockeye salmon entering the Kenai River and Red and Akalura lakes on Kodiak Island. Initially, these high escapements produced an overabundance of juvenile sockeye that overgrazed the zooplankton, and altered planktonic food webs in the nursery lakes. As a result, growth rates were reduced during the freshwater stage of the salmon's life cycle, which led to a decline in returns of spawning adults. The net result was an initial loss of sockeye production.

Recovery Objective Sockeye salmon in the Kenai River system and Red and Akalura lakes will have recovered when adult returns-per-spawner are within normal bounds.

Recovery Status Although sockeye freshwater growth tends to return to normal within two or three years following an overescapement event, there are indications that the populations are less stable for several years. The overescapement following the spill resulted in lower sockeye productivity, (as measured by return per spawner) in the Kenai River watershed from 1989-92. However, production of zooplankton in both Red and Akalura lakes on Kodiak Island quickly rebounded from the initial effects overgrazing. By 1997, Red Lake had responded favorably in terms of smolt and adult production and was at or near prespill production of adult sockeye. At Akalura Lake there were low juvenile growth rates in freshwater during the period 1989-92, and these years of low growth correspond to low adult escapements during the period 1994-97. Starting in 1993, however, the production of smolts per adult increased sharply and the smolt sizes and age composition suggested that rearing conditions had improved. It is possible that

overescapement also affected lakes on Afognak Island and on the Alaska Peninsula. However, analysis of sockeye freshwater growth rates of juveniles from Chignik Lake on the Alaska Peninsula did not identify any impacts associated with a 1989 overescapement event. On the basis of catch data through 2001 and in view of recent analyses of return per spawner estimates presented to the Alaska Board of Fisheries in 2001, the return-per-spawner in the Kenai River system is within historical bounds. **Therefore, it is highly unlikely that the effects that reverberated from the overescapements in 1989 continue to affect sockeye salmon, and in 2002, this species was considered to be recovered from the effects of the oil spill.**

SUBTIDAL COMMUNITIES

Injury Subtidal habitats encompass all of the seafloor below the mean lower low water tide line to about 800 meters, although deeper habitats are often referred to as the deep benthos. For purposes of this List and evaluating oil spill effects, the impacted subtidal zone generally ranges from the lower intertidal zone to a depth of about 20 meters. Communities in the near subtidal areas are typically characterized by dense stands of kelp or eelgrass and comprise various invertebrate species, such as amphipods, polychaete worms, snails, clams, sea urchins and crabs. Subtidal habitats provide shelter and food for an array of nearshore fishes, birds, and marine mammals.

It is estimated that up to 13 percent of the oil that was spilled deposited in the subtidal zones. The direct toxicity of the oil, as well as subsequent clean-up activities caused changes in the abundance and species composition of plant and animal populations below lower tides. Initial injuries were evident for several oil-sensitive species. Infaunal amphipods, a prominent prey species in subtidal communities, were consistently less abundant at oiled than at unoiled sites. Reduced numbers of eelgrass shoots and flowers were also documented and may have resulted from increased turbidity associated with clean-up activities. Two species of sea stars and helmet crabs also were less abundant at oiled sites when compared to unoiled areas. However, stress tolerant organisms, including polychaete worms, snails and mussels were more abundant at oiled sites. It is suggested that these species may have benefited from organic enrichment of the area from the oil or from reduced competition or predation because other, more sensitive species were depleted.

Recovery Objective Subtidal communities will have recovered when community composition in oiled areas, especially in association with eelgrass beds, is similar to that in unoiled areas or consistent with natural differences between, sites such as proportions of mud and sand.

Recovery Status Invertebrate assemblages within eelgrass beds and adjacent areas of soft sediment, were compared at oiled and unoiled sites from 1990-1995. It was hypothesized that reduction in eelgrass and kelp could alter the habitat structure of subtidal communities and continue to impact resident species because food and shelter resources were removed from the environment. By 1995, some benthic species within eelgrass habitats of the oiled areas had recovered. However, important species such as amphipods, certain bivalves, crabs and sea stars were not as abundant at oiled sites as they were in unoiled areas. It was difficult to interpret the findings of these studies, because it was not possible to distinguish between natural conditions and differences in habitat characteristics caused by the spill or subsequent clean-up activities.

More recently, a census of marine life throughout the Gulf of Alaska measured biodiversity indices of plants and animals in the intertidal and shallow subtidal zones. Measurements of species abundance, richness and evenness were compared among areas in Prince William Sound, Kodiak Island and Kachemak Bay. Generally, community structure was significantly different between intertidal and subtidal areas with intertidal communities comprising more species and being more variable than subtidal communities. However, direct comparisons between oiled and unoled sites were not evaluated for each community, and comparisons in these communities at a smaller scale are not known.

Concentrations of oil in subtidal areas declined by 1995, but were still slightly elevated over unoled sites. In 2001, at a few random sites adjacent to heavily or moderately oiled intertidal areas, little or no oil was found in the subtidal sediments. However, a systematic sampling of sediments from subtidal areas in the entire spill zone has not been conducted.

In the early 90's, several benthic organisms using the subtidal zones showed trends towards recovery, and hydrocarbon concentrations had declined in many areas. **However, consistent, systematic surveys have not been conducted for many species, and the recovery status of subtidal communities remains unknown.**

HUMAN SERVICES

COMMERCIAL FISHING

Injury Commercial fishing was injured as a result of the spill's direct impacts to commercial fish species (see individual resource accounts) and through subsequent emergency fishing closures. Fisheries for salmon, herring, crab, shrimp, rockfish and sablefish were closed in 1989 throughout Prince William Sound, Cook Inlet, the outer Kenai coast, Kodiak and the Alaska Peninsula. Shrimp and salmon commercial fisheries remained closed in parts of Prince William Sound through 1990.

Recovery Objective Commercial fishing will have recovered when the commercially important fish species have recovered and opportunities to catch these species are not lost or reduced because of the effects of the oil spill.

Recovery Status In the 1994 Restoration Plan, the Trustee Council specifically recognized the declines in pink salmon and Pacific herring populations, and considered the reduction in these two fisheries as the biggest contributors to injury of the commercial fishing service in the spill area. Therefore, many restoration activities were focused towards these resources. The strategy for restoring commercial fishing included funding projects that accelerated fish population recovery, protected and purchased important habitat and monitored recovery progress. By 2002, the Trustee Council considered pink salmon and sockeye salmon to be recovered from the oil spill. However, recovery was not considered complete for Pacific herring and the recovery status of this resource remains 'not recovering' (see individual resource accounts).

Income from commercial fishing dramatically declined immediately after the spill, and for a variety of reasons, disruptions to income from commercial fishing continue today, as evidenced by changes in average earnings, ex-vessel prices and limited entry permit values. Natural variability in fish returns and a number of economic changes in the commercial fishing industry

since 1989 probably mean that many of these changes in income are not directly attributable to the spill. However, these factors also make discerning spill-related impacts difficult. Economic changes confronting the industry include the increased world supply of salmon (due primarily to farmed salmonids) and corresponding reduced prices, entry restrictions in certain fisheries (such as Individual Fishing Quotas (IFQ), for halibut and sablefish), allocation changes (e.g., a reduction in the allocation of Cook Inlet sockeye salmon to commercial fishermen), reduction in processing capacity, and spatial limitations of groundfish fisheries in the spill areas in conjunction with sea lion management. Finally, competition among commercial, recreational and subsistence fishers influence management decisions of these shared resources.

No spill-related district-wide fishery closures related to oil contamination have been in effect since 1989, and populations of pink and sockeye salmon are considered recovered from the effects of the spill. However, the Prince William Sound herring fishery has been closed for 11 of the 17 years since the spill and herring are not considered recovered. **Therefore, commercial fishing, as a lost or reduced service, is in the process of recovering from the effects of the oil spill, but full recovery has not been achieved.**

PASSIVE USE

Injury Passive use is the service provided by natural resources to people that will likely not visit, contact or otherwise use the resource. Thus, injuries to passive use are tied to public perceptions of injured resources. Passive use is the appreciation of the aesthetic and intrinsic values of undisturbed areas and the value derived from simply knowing that a resource exists. The oil spill occurred in what many Americans viewed as an undisturbed area and caused visible injury to shorelines, fish and wildlife. The loss to passive use following the oil spill was estimated by the State of Alaska, at \$2.8 billion. Using a contingent valuation approach, this was the median value that those surveyed were willing to pay to prevent a catastrophe similar to the Exxon Valdez Oil Spill from happening again.

Recovery Objective Passive uses will have recovered when people perceive that aesthetic and intrinsic values associated with the spill area are no longer diminished by the oil spill.

Recovery Status The Trustee Council determined that passive use injuries occurred as a result of the oil spill because natural resources including scenic shorelines, wilderness areas, and popular wildlife species, from which passive uses are derived, were injured. The key to the recovery of passive use is providing the public with current information on the status of injured resources and the progress made towards their recovery.

Two vital components of the Trustee Council's restoration effort are the research, monitoring, and general restoration program and the habitat protection and acquisition program. Extensive work has been done to restore and monitor resources and communicate these findings to the public. The research, monitoring, and general restoration program is funded each year through the annual work plan, which documents the projects that are currently funded to implement restoration activities for injured resources and services. The habitat protection program preserves habitat important to injured resources through the acquisition of land or interests in land. As of 2006, the Council has protected more than 630,000 acres of habitat, including more than 1,400 miles of coastline and over 300 streams valuable for salmon spawning and rearing.

Other public information efforts in which the Council is currently engaged follows:

- The Trustee Council's web site (www.evostc.state.ak.us) offers detailed information regarding past, current, and future restoration efforts
- The Trustee Council prepares a number of documents for distribution to the public including:
 - The Invitation for Proposals, which solicits restoration project ideas from the scientific community and the public
 - The Annual Work Plan (described above)
 - Updates to the Restoration Plan (1996, 1999, 2002) which periodically provides new information on the recovery status of injured resources and services.
- Project final reports are available to the public at the Trustee Council's Website, through the Alaska Resource Library and Information Services (ARLIS) in Anchorage as well as at several other libraries in the State, at the Library of Congress, and through NTIS (National Technical Information Service). In addition, the Council supports researchers in publishing their project results in peer-reviewed scientific literature, which expands their audience well beyond Alaska. Over 500 such papers have been published as of September 2006.
- The Council supports an annual marine science symposium, which is open to the public that provides a venue in which to report the progress of restoration in the spill area.
- Public Input: The 15-member Public Advisory Committee (PAC) is an important means of keeping stakeholders and others informed of the progress of restoration and providing the public's opinions to the Trustee Council as they make decisions. Additionally, public meetings are held periodically throughout the spill area. All meetings of the Council are widely advertised and opportunity for public comment is always provided.

Until the public no longer perceives that lingering oil is adversely affecting the aesthetics and intrinsic value of the spill area it cannot be considered recovered. **Because recovery of a number of injured resources is incomplete, the Trustee Council considers services related to passive use to be recovering from the effects of the spill.**

RECREATION AND TOURISM

Injury Recreation and tourism in the spill area dramatically declined in 1989 in Prince William Sound, Cook Inlet and the Kenai Peninsula. Injuries to natural resources led resource managers to limit access to hunting and fishing areas, and users such as kayakers were prevented from enjoying those beaches that harbored visible oil. Recreation was also affected by changes in human use in response to the spill, because areas that were unoiled become more heavily used as activity was displaced from the oiled areas.

Recovery Objective Recreation and tourism will have recovered, in large part, when the fish and wildlife resources on which they depend have recovered, and recreation use of oiled beaches is no longer impaired.

Recovery Status Recreation and tourism accounted for 26,000 jobs, generated \$2.4 billion in gross sales and contributed \$1.5 billion to Alaska's economy in 2003. The number of visitors to Alaska has increased in the years since the spill and it is expected that the recreation and tourism industry in south-central Alaska will grow approximately 28 percent per year through 2020. By

2001, over \$10 million had been spent on repair and restoration of recreational facilities in the spill area, and damage caused by the spill or clean-up efforts at the Green Island cabin and Fleming Spit campsites were repaired.

Telephone interviews conducted in 1999 and 2002 of people who used the spill area for recreation before and after the spill, indicated that, although oil remained on beaches, it did not deter them from using the area. However, they continued to report diminished wildlife sightings in Prince William Sound, particularly in heavily oiled areas such as around Knight Island. They also reported seeing fewer seabirds, killer whales, sea lions, seals, and sea otters than were generally sighted before the spill, but also reported observing increases in the number of seabirds over the last several years. Key informants with experience along the outer Kenai coast reported diminished sightings of seabirds, seals, and sea lions. However, they indicated that the possible presence of residual oil has no effect on recreational activities along the outer Kenai coast, the Kodiak Archipelago, and the Lake Clark and Katmai national park coastlines. Changes in the amount of wildlife observed could be due to a variety of factors, including the spill.

Recreation and tourism rely on both consumptive and non-consumptive uses of natural resources. Although these activities have increased since the spill, several resources have not yet recovered from the spill and beaches used for recreation contain lingering oil. Resources that are important to recreation and tourism, but are still not considered recovered from the spill or their recovery is unknown include harbor seals, Kittlitz's and marbled murrelet, pigeon guillemot, clams, mussels, harlequin ducks, sea otters and killer whales. Sportfishing resources for which the recovery status is unknown are cutthroat trout and rockfish. However, the salmon species that were injured (pink and sockeye salmon) are recovered from the effects of the spill.

Even though visitation has increased since the oil spill, the Trustee Council's recovery objective requires that the injured resources important to recreation be recovered and recreational use of oiled beaches not be impaired. Lingering oil remains on beaches and in some localized areas this remains a concern for users. Moreover, several natural resources have not recovered from the effects of the spill. **Therefore, the Council finds recreation to be recovering from the effects of the spill, but not yet recovered.**

SUBSISTENCE

Injury Fifteen predominantly Alaskan Native communities (with a total population of about 2,200 people) in the oil spill area rely heavily on harvests of subsistence resources, such as fish, shellfish, seals, deer, and waterfowl. Oil from the spill disrupted subsistence activities for the people of these villages and approximately 13,000 other subsistence permit holders in the area. Oil affected the subsistence harvests through a variety of mechanisms including reduced availability of fish and wildlife due to injury, concern about possible health effects of eating oiled fish and wildlife, and disruption of the traditional lifestyle due to clean-up and related activities.

Recovery Objective Subsistence will have recovered when injured resources used for subsistence are healthy and productive and exist at prespill levels. In addition, there is recognition that people must be confident that the resources are safe to eat and that the cultural values provided by gathering, preparing, and sharing food need to be reintegrated into community life.

Recovery Status After the spill, subsistence harvest declined between 9 – 77 percent in 10 villages within Prince William Sound, Cook Inlet and Kodiak. Villages in Tatitlek and Chenega reduced their harvest by 56 and 57 percent, respectively. Outside of the Sound, harvest declined in Akhiok, on the lee side of Kodiak Island by nine percent, but by 77 percent in Ouzinkie, which is on the northern side of the island. The primary reason that harvest declined so dramatically was the fear that oil had contaminated the resources and made them unfit to eat.

Harvest levels have generally increased in many communities since the spill, but results of harvest surveys have been variable. By 2003, they were generally higher than prespill levels in the communities in Cook Inlet, but lower in Kodiak and Prince William Sound (except for Cordova). Even though the harvest levels in the PWS communities were not as high as prespill estimates, they were within the range of other Alaska rural communities. Harvest composition was also altered by the spill. In the first few years following the spill, people harvested more fish and shellfish than marine mammals because of the reduced number of marine mammals and the perception that these resources were contaminated and unsafe to eat.

Both safety concerns and the reduced availability of shellfish contributed to a decline in harvest levels. From 1989-94, subsistence foods were tested for evidence of hydrocarbon contamination, with no or very low concentrations of petroleum hydrocarbons found in most subsistence foods. However, concerns about oil contamination remained, and there was a belief that the increase in paralytic shellfish poisoning (PSP) was linked with Exxon Valdez oil. By 2003, most subsistence users expressed confidence in foods such as seals, finfish and chitons. However, the safety of certain shellfish, such as clams was still met with skepticism.

Subsistence use is a central way of life for many of the communities affected by the spill, thus the value of subsistence cannot be measured by harvest levels alone. The subsistence lifestyle encompasses a cultural value of traditional and customary use of natural resources. Following the oil spill, there was concern that the spill disrupted opportunities for young people to learn cultural subsistence practices and techniques, and that this knowledge may be lost to them in the future. In a 2004 survey of the spill area communities, 83 percent of respondents stated that the “traditional way of life” had been injured by the oil spill and 74 percent stated that recovery had not occurred.

Many factors may contribute to the changes observed in subsistence harvests and the lifestyle surrounding this tradition. Demographic changes in village populations, ocean warming, increased competition for subsistence resources by other people (e.g., sport fishing charters), predators (e.g., sea otters), and increased awareness of PSP and other contaminants may play a role in resource availability, food safety, and participation in traditional practices.

Fears about food safety have diminished since the spill, but it is still a concern for some users. Additionally, harvest levels from villages in the spill area are comparable to other Alaskan communities. However, many subsistence resources injured by the spill, including clams, mussels and harbor seals, have still not recovered from the effects of the spill. **For these reasons, subsistence continues to recover from the effects of the oil spill, but has not yet recovered.**

ACKNOWLEDGMENTS

We appreciate the technical review and helpful comments on drafts of this document from Brenda Ballachey, Mark Carls, Tom Dean, Dan Esler, Anne Hoover-Miller, Gail Irvine, Dennis Lees, Craig Matkin, Charles “Pete” Peterson, Stanley “Jeep” Rice, Dan Rosenberg, Robert Small and Jeff Short. Lucinda Jacobs and her crew at Integral Consulting, Inc. provided much of the supporting information that occurs in this Update in their synthesis report of the current state of injured resources and services. The Liaisons to the Trustee Council were helpful in guiding the final production of this document, and we would like to thank the Public Advisory Committee for their thoughtful comments on the draft.

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MOTION

FY 07 WORK PLAN

The Trustee Council approves the Executive Director's recommendations for the FY 07 Work Plan as detailed within Resolution 07-01 and the supporting resolution spreadsheet, Attachment A. The total amount of additional funding authorized for FY 2007 projects is \$2,992,800. This authorization includes interim funding amounts previously received for approved monitoring projects PJ 040340 and PJ 040624.

Funding in the amount of \$2,408,000 may be requested with the next court notice. Funding in the amount of \$584,800 for contingent projects PJ 70759, PJ 70290, PJ 70805 and PJ 70810 may only be transferred upon satisfactory receipt of delinquent deliverables affecting these projects' status.

This funding is for fiscal year 2007 and will lapse on September 30, 2007. Annual funding for approved projects with multi-year budgets will be re-considered annually.

**RESOLUTION 07-01 OF THE
EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
REGARDING THE FY 2007 WORK PLAN**

We, the undersigned, duly authorized members of the *Exxon Valdez* Oil Spill Trustee Council do hereby certify that, in accordance with the Memorandum of Agreement and Consent Decree entered as settlement of United States of America v. State of Alaska, No. A91-081 Civil, U.S. District Court for the District of Alaska, and after public meetings, unanimous agreement has been reached to expend funds received in settlement of State of Alaska v. Exxon Corporation, et al., No. A91-083 CIV, and United States of America v. Exxon Corporation, et al., No. A91-082 CIV, in U.S. District Court for the District of Alaska. This funding is for the necessary natural resource damage assessment and restoration activities for the FY 2007 Work Plan. The total amount of approved funding is \$2,992,800. The monies are to be distributed according to the following schedule:

Alaska Department of Fish & Game	<u>\$701,600</u>
SUBTOTAL TO STATE OF ALASKA	\$701,600
U.S. Department of the Interior - USGS	\$704,500
U.S. Department of the Interior – USFWS	\$178,100
National Oceanic & Atmospheric Administration	<u>\$1,408,600</u>
SUBTOTAL TO UNITED STATES OF AMERICA	\$2,291,200
TOTAL APPROVED	\$2,992,800

By unanimous consent, we hereby request the Alaska Department of Law and the Assistant Attorney General of the Environmental and Natural Resources Division of the United States Department of Justice to take such steps as may be necessary to make available for the Fiscal Year 2007 Work Plan, the amount of \$2,992,800 from the appropriate accounts designated by the Executive Director.

The Executive Director is to take necessary steps to ensure that contingent funding is only requested and transferred upon the satisfactory receipt of the delinquent deliverables affecting the approved project(s) status.

Approved by the Council at its meeting of November 14, 2006 as affirmed by our signatures affixed below.

JOE L. MEADE
Forest Supervisor
Forest Service Alaska Region
U.S. Department of Agriculture

DAVID W. MÁRQUEZ
Attorney General
State of Alaska

DRUE PEARCE
Senior Advisor to the Secretary
for Alaska Affairs
U.S. Department of the Interior

CRAIG R. O'CONNOR
Special Counsel
National Oceanic & Atmospheric
Administration
U.S. Department of Commerce

McKIE CAMPBELL
Commissioner
Alaska Department of Fish and Game

KURT FREDRIKSSON
Commissioner
Alaska Department of Environmental
Conservation

Attachment A: FY 2007 Work Plan - Spreadsheet

FY 07 Work Plan - Resolution 07-01 - Attachment A

Project Number	PI	Project Title	FY 07 Funded	FY 08 Adjusted	FY 09 Adjusted	FY 10 Adjusted	Project Total
70340	Weingartner	Long-Term Oceanographic Monitoring of the Alaska Coastal Current	\$ 128,200	\$ 131,300	\$ 129,500		\$ 389,000
70769	Otis/Bickford	Using Otolith Chemistry to Discriminate Pacific Herring Stocks in AK	\$ 67,100				\$ 67,100
70782	BickfordNorcross	Herring Restoration in PWS: Identifying Natal & Nursery Habitats	\$ 123,400	\$ 135,600	\$ 78,600		\$ 337,600
70819	Herschberger	PWS Herring Disease Program	\$ 6,800	\$ 10,500	\$ 10,500	\$ 10,500	\$ 38,300
70822	Moffitt	Herring Data & Information Portal	\$ 132,100				\$ 132,100
70834	MeuretWoody	Identification of Essential Habitat for Pacific Herring in Sitka Sound for Comparison to PWS	\$ 157,300				\$ 157,300
ADF&G FY 07 Work Plan Total w/o Contingent Projects			\$ 614,900	\$ 277,400	\$ 218,600	\$ 10,500	\$ 1,121,400
70759	Rosenberg	Harlequin Duck Population Dynamics in Prince William Sound: Measuring Recovery from EVOS - Contingent	\$ 86,700				\$ 86,700
State of Alaska FY 07 Work Plan Total w/Contingent Projects			\$ 701,600	\$ 277,400	\$ 218,600	\$ 10,500	\$ 1,208,100
70624	Batten	Acquisition of Continuous Plankton Recorder Data (BAA)	\$ 135,400				\$ 135,400
70742	Matkin	Monitoring, Tagging, Feeding Studies, and Restoration of Killer Whales in Prince William Sound/Kenai Fjords in 2007	\$ 100,000				\$ 100,000
70806	Vollenweider	Are Herring (<i>Clupea pallasii</i>) Energetics in PWS a Limiting Factor?	\$ 139,200				\$ 139,200
70817	Gay	Oceanographic Factors Affecting Productivity in Juvenile Pacific Herring Nursery Habitats	\$ 71,900	\$ 56,400	\$ 25,500		\$ 153,800
70820	Lauenstein/Apeti	Assessment of PAHs and Heavy Metals in Subsistence Mollusks from the Prince William Sound's Traditional Use Areas	\$ 121,600				\$ 121,600
70829	Shigenaka	Bioavailability and Effects of Lingering Oil to Littleneck Clams (<i>Protothaca staminea</i>) and Population Recovery Status in PWS	\$ 239,000				\$ 239,000
70830	Thorne	Trends in Adult & Juvenile Herring Distribution & Abundance in PWS (BAA)	\$ 103,400	\$ 103,400	\$ 226,800		\$ 433,600
NOAA FY 07 Work Plan Total w/o Contingent Projects			\$ 910,500	\$ 159,800	\$ 252,300	\$ -	\$ 1,322,600
70290	Nelson/Short	The Exxon Valdez Trustee Hydrocarbon Database - Contingent	\$ 30,100				\$ 30,100
70805	Lindeberg	ShoreZone Mapping for PWS - Contingent	\$ 237,900	\$ 322,300			\$ 560,200
70810	Kiefer/Brown	An Ecosystem Model of PWS Herring: A Mangement & Restoration Tool - Contingent	\$ 230,100	\$ 230,100	\$ 230,100		\$ 690,300
NOAA FY 07 Work Plan Total with Contingent Projects			\$ 1,408,600	\$ 712,200	\$ 482,400	\$ -	\$ 2,603,200
70751	Irons	Prince William Sound Marine Bird Surveys, Synthesis and Restoration	\$ 178,100				\$ 178,100
USFWS FY 07 Work Plan Total			\$ 178,100	\$ -	\$ -	\$ -	\$ 178,100
70750	Bodkin/Dean	Database Development and Implementation of Long-Term Monitoring for Evaluation of Recovery of Nearshore Resources	\$ 135,400				\$ 135,400
70808	Ballachey	Sea Otter Recovery and Nearshore Synthesis	\$ 154,000	\$ 97,700			\$ 251,700
70816	Esler	Evaluating Harlequin Duck Population Recovery: CYP1A Monitoring and a Demographic Population Model	\$ 177,800	\$ 23,900			\$ 201,700
70819	Herschberger	PWS Herring Disease Program	\$ 237,300	\$ 245,500	\$ 248,300	\$ 262,000	\$ 993,100
USGS FY 07 Work Plan Total			\$ 704,500	\$ 367,100	\$ 248,300	\$ 262,000	\$ 1,581,900
United States FY 07 Work Plan Total w/o Contingent Projects			\$ 1,793,100	\$ 526,900	\$ 500,600	\$ 262,000	\$ 3,082,600
United States FY 07 Work Plan Total w/Contingent Projects			\$ 2,291,200	\$ 1,079,300	\$ 730,700	\$ 262,000	\$ 4,363,200

Total FY 07 Work Plan Projects w/o Contingent Projects \$2,408,000

Contingent Projects Total \$ 584,800

Total FY 07 Work Plan Projects with Contingent Projects \$2,992,800

Table 1 - Original Funding Requested by PI's in Their Submitted Proposals

ID	PI	Topic	Total Requested	FY07 Requested	FY08 Requested	FY09 Requested	FY10 Requested	FY11 Requested	Budget Adjustments ^a	Travel Adjustments ^b	Total Adjusted ^c
Part 1 - HERRING											
70812	Adams	Pacific Herring - A Project to Aid Coordination, Compliance & Rapid Integration	\$ 252,900	\$ 252,900	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ (4,500)	\$ 248,400
70807	AlleeNorcross	Herring Restoration in PWS: Enhancement Workshop	\$ 193,100	\$ 126,500	\$ 66,600	\$ 0	\$ 0	\$ 0	\$ 0	\$ (3,800)	\$ 189,300
70624	Batten	Acquisition of Continuous Plankton Recorder Data (BAA)	\$ 135,400	\$ 135,400	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 135,400
70813	Bickford	Herring Resoration in PWS: Marking Pacific Herring Otoliths in PWS	\$ 158,300	\$ 67,000	\$ 91,300	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 158,300
70782	Bickford/Norcross	Herring Restoration in PWS: Identifying Natal & Nursery Habitats	\$ 344,600	\$ 125,200	\$ 138,300	\$ 81,100	\$ 0	\$ 0	\$ 0	\$ (7,000)	\$ 337,600
70814	Bishop/Kuletz	Seabird Predation on Juvenile Herring in PWS	\$ 609,200	\$ 197,000	\$ 204,300	\$ 196,000	\$ 11,900	\$ 0	\$ -	\$ -	\$ 609,200
70803	Castellini/Norcross	Herring Restoration in PWS: Condition Indices	\$ 540,300	\$ 165,000	\$ 195,700	\$ 179,600	\$ 0	\$ 0	\$ 0	\$ (4,700)	\$ 535,600
70699	Cokelet/Mordy/Pegau	Biophysical Observations Aboard Alaska Marine Highway System Ferries	\$ 686,900	\$ 300,300	\$ 188,100	\$ 198,500	\$ 0	\$ 0	\$ 0	\$ 0	\$ 686,900
70815	Crawford	Characterization of Herring Nursery Habitat in PWS	\$ 580,600	\$ 271,800	\$ 146,700	\$ 162,100	\$ 0	\$ 0	\$ 0	\$ (4,400)	\$ 576,200
70817	Gay	Oceanographic Factors Affecting Productivity in Juvenile Pacific Herring Nursery Habitats	\$ 157,000	\$ 73,400	\$ 58,100	\$ 25,500	\$ 0	\$ 0	\$ 0	\$ (3,200)	\$ 153,800
70819	Herschberger	PWS Herring Disease Program	\$ 1,074,600	\$ 257,500	\$ 265,100	\$ 272,100	\$ 279,900	\$ 0	\$ (33,500)	\$ (9,700)	\$ 1,031,400
70810	Kiefer/Brown	An Ecosystem Model of PWS Herring: A Management & Restoration Tool	\$ 690,300	\$ 230,100	\$ 230,100	\$ 230,100	\$ 0	\$ 0	\$ 0	\$ 0	\$ 690,300
70811	Kline	PWS Herring Forage Contingency	\$ 907,500	\$ 282,000	\$ 355,400	\$ 270,100	\$ 0	\$ 0	\$ (134,100)	\$ 0	\$ 773,400
70805	Lindeberg	ShoreZone Mapping for PWS	\$ 661,100	\$ 237,900	\$ 423,200	\$ -	\$ 0	\$ 0	\$ (100,900)	\$ 0	\$ 560,200
70821	Linley/Betka/Ferren	Development of Culture Technology to Support Restoration of Herring in PWS:	\$ 1,342,200	\$ 407,600	\$ 417,100	\$ 517,500	\$ 0	\$ 0	\$ 58,000	\$ 0	\$ 1,400,200
70834	Meuret-Woody	Identification of Essential Habitat for Pacific Herring in Sitka Sound for Comparison to PWS	\$ 159,000	\$ 159,000	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ (1,700)	\$ 157,300
70822	Moffitt	Herring Data & Information Portal	\$ 132,100	\$ 132,100	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 132,100
70823	Mullins/Patrick	Herring Restoration Activity Involving Herring Egg Translocation	\$ 3,001,800	\$ 705,800	\$ 1,088,800	\$ 1,207,200	\$ 0	\$ 0	\$ 0	\$ (25,300)	\$ 2,976,500
70769	Otis/Bickford	Using Otolith Chemistry to Discriminate Pacific Herring Stocks in AK	\$ 69,200	\$ 69,200	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ (2,100)	\$ 67,100
70804	Rice/Heintz/Moran	Significance of Whale Predation on Natural Mortality Rate of Pacific Herring in PWS	\$ 513,600	\$ 197,700	\$ 315,900	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 513,600
70830	Thorne	Trends in Adult & Juvenile Herring Distribution & Abundance in PWS (BAA)	\$ 433,600	\$ 103,400	\$ 103,400	\$ 226,800	\$ 0	\$ 0	\$ 0	\$ 0	\$ 433,600
70831	Thorne/Crawford	The PWS Herring Ecosystem: An International Scientific Workshop	\$ 68,100	\$ 19,900	\$ 48,200	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 68,100
70832	Thorne/Frid	Modeling Ecological Interactions between Steller Sea Lions & Pacific Herring	\$ 149,200	\$ 76,100	\$ 73,100	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 149,200
70806	Vollenweider	Are Herring (<i>Clupea pallasii</i>) Energetics in PWS a Limiting Factor?	\$ 140,500	\$ 140,500	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ (1,300)	\$ 139,200
70833	Wang/Norcross	Herring Restoration in PWS: Modeling Circulation & Larval Transport	\$ 311,500	\$ 97,900	\$ 106,200	\$ 107,400	\$ 0	\$ 0	\$ 0	\$ (9,100)	\$ 302,400
70340	Weingartner	Long-Term Oceanographic Monitoring of the Alaska Coastal Current	\$ 389,000	\$ 128,200	\$ 131,300	\$ 129,500	\$ 0	\$ 0	\$ 0	\$ 0	\$ 389,000
70835	Wright/Heintz	Salmon Sharks Preying on Aggregated Herring & Salmon in PWS	\$ 439,700	\$ 287,900	\$ 75,900	\$ 75,900	\$ 0	\$ 0	\$ 0	\$ 0	\$ 439,700

^a - Budget adjusted for some proposals based on requests from the EVOSTC Science Director after peer review, Science Panel, and Executive Director briefing.^b - All meeting travel expenses, except those for the Marine Science Symposium, were removed from proposed budgets^c - Total Adjusted = Total requested minus budget and travel adjustments

Table 1 - Original Funding Requested by PI's in Their Submitted Proposals

ID	PI	Topic	Total Requested	FY07 Requested	FY08	FY09	FY10	FY11	Budget Adjustments	Travel Adjustments	Adjusted Total
Part 2 - NON-HERRING											
70808	Ballachey	Sea Otter Recovery and Nearshore Synthesis	\$ 251,700	\$ 154,000	\$ 97,700	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 251,700
70750	Bodkin/Dean	Database Development and Implementation of Long-Term Monitoring for Evaluation of Recovery of Nearshore Resources	\$ 136,600	\$ 136,600	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ (1,200)	\$ 135,400
70131	Brown-Schwalenberg/ Brooks/Hetrick	Plan Development for Establishing a Program for Subsistence Clam Enhancement and Rehabilitation of Clam Populations Injured by EVOS	\$ 78,500	\$ 78,500	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 78,500
70809	Carls/Rice	The Risk of Buried Oil to Fauna: A Pre-Remediation Assessment	\$ 399,700	\$ 399,700	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 399,700
70816	Esler	Evaluating Harlequin Duck Population Recovery: CYP1A Monitoring and a Demographic Population Model	\$ 201,700	\$ 177,800	\$ 23,900	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 201,700
70703	Honnold/Duesterlo/ Finney/Whitledge/ Stockwell	Marine-Terrestrial Linkages in Northern Gulf of Alaska Watersheds	\$ 1,442,600	\$ 278,200	\$ 291,500	\$ 299,100	\$ 311,500	\$ 262,300	\$ 0	\$ 0	\$ 1,442,600
70639	Goldman	Monitoring Ecosystem Parameters in the Northern Gulf of Alaska.	\$ 288,100	\$ 102,100	\$ 88,300	\$ 97,700	\$ 0	\$ 0	\$ 0	\$ (3,300)	\$ 284,800
70751	Irons	Prince William Sound Marine Bird Surveys, Synthesis and Restoration	\$ 1,829,100	\$ 459,200	\$ 336,900	\$ 318,900	\$ 340,700	\$ 373,400	\$ (1,651,000)	\$ 0	\$ 178,100
70709	Jack	Population Monitoring of Sea Otters in the Exxon Valdez Spill Area	\$ 329,600	\$ 96,700	\$ 102,800	\$ 130,100	\$ 0	\$ 0	\$ 0	\$ 0	\$ 329,600
70820	Lauenstein/Apeti	Assessment of PAHs and Heavy Metals in Subsistence Mollusks from the Prince William Sound's Traditional Use Areas	\$ 121,600	\$ 121,600	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 121,600
70802	Lohmann/Burgess	Predicting and Validating the Bioavailability of PAHs from the Exxon Valdez Oil Spill	\$ 335,500	\$ 81,000	\$ 133,700	\$ 120,800	\$ 0	\$ 0	\$ 0	\$ (4,000)	\$ 331,500
70742	Matkin	Monitoring, Tagging, Feeding Studies, and Restoration of Killer Whales in Prince William Sound/Kenai Fjords in 2007	\$ 103,000	\$ 103,000	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ (3,000)	\$ 100,000
70290	Nelson/Short	The Exxon Valdez Trustee Hydrocarbon Database	\$ 30,100	\$ 30,100	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 30,100
70825	Pawlowski/Simpson	Monitoring Lingering Oil and Resources at Risk with Time-Lapse Digital Photography	\$ 258,800	\$ 258,800	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 258,800
70759	Rosenberg	Harlequin Duck Population Dynamics in Prince William Sound: Measuring Recovery from EVOS	\$ 86,700	\$ 86,700	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 86,700
70827	Rosenberg/Springman	Assessing Potential Oil Exposure to Harlequin Duck Populations in Prince William Sound	\$ 89,200	\$ 89,200	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 89,200
70210	Salasky/Crumley	Youth Area Watch - PWS	\$ 960,400	\$ 174,300	\$ 182,400	\$ 191,500	\$ 201,100	\$ 211,100	\$ 0	\$ 0	\$ 960,400
70610	Schneider	Kodiak Archipelago Youth Area Watch	\$ 287,600	\$ 93,800	\$ 95,300	\$ 98,500	\$ 0	\$ 0	\$ 0	\$ 0	\$ 287,600
70829	Shigenaka/Fukuyama/ Downs/Holderied/Coats/ Thompson	Bioavailability and Effects of Lingering Oil to Littleneck Clams (Protothaca Staminea) and Population Recovery Status in PWS	\$ 556,200	\$ 495,700	\$ 60,500	\$ 0	\$ 0	\$ 0	\$ (317,200)	\$ 0	\$ 239,000

a - Budget adjusted for some proposals based on requests from the EVOSTC Science Director after peer review, Science Panel, and Executive Director briefing.

b - All meeting travel expenses, except those for the Marine Science Symposium, were removed from proposed budgets

c - Total Adjusted = Total requested minus budget and travel adjustments

Table 2 - Funding Recommendations for FY07 Work Plan

ID	PI	Project Title	Total Adjusted ^a	FY 07 Adjusted	FY 08 Adjusted	FY 09 Adjusted	FY 10 Adjusted	FY 11 Adjusted	Priority Ranking ^b	SP Recommendation	PAC Recommendation	Science Director Recommendation	Executive Director Recommendation
Part 1 - HERRING													
70624	Batten	Acquisition of Continuous Plankton Recorder Data (BAA)	\$ 135,400	\$ 135,400	\$ 0	\$ 0	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund
70782	BickfordNorcross	Herring Restoration in PWS: Identifying Natal & Nursery Habitats	\$ 337,600	\$ 123,400	\$ 135,600	\$ 78,600	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund
70819	Herschberger	PWS Herring Disease Program	\$ 1,031,400	\$ 244,100	\$ 256,000	\$ 258,800	\$ 272,500	\$ 0	1	Fund	Fund	Fund	Fund
70810	Kiefer/Brown	An Ecosystem Model of PWS Herring: A Management & Restoration Tool	\$ 690,300	\$ 230,100	\$ 230,100	\$ 230,100	\$ 0	\$ 0	1	Fund	Do Not Fund	Fund	Fund Contingent ^c
70805	Lindeberg	ShoreZone Mapping for PWS	\$ 560,200	\$ 237,900	\$ 322,300	\$ -	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund Contingent ^c
70834	MeuretWoody	Identification of Essential Habitat for Pacific Herring in Sitka Sound for Comparison to PWS	\$ 157,300	\$ 157,300	\$ 0	\$ 0	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund
70822	Moffitt	Herring Data & Information Portal	\$ 132,100	\$ 132,100	\$ 0	\$ 0	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund
70830	Thorne	Trends in Adult & Juvenile Herring Distribution & Abundance in PWS	\$ 433,600	\$ 103,400	\$ 103,400	\$ 226,800	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund
70340	Weingartner	Long-Term Oceanographic Monitoring of the Alaska Coastal Current	\$ 389,000	\$ 128,200	\$ 131,300	\$ 129,500	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund
70814	Bishop/Kuletz	Seabird Predation on Juvenile Herring in PWS	\$ 609,200	\$ 197,000	\$ 204,300	\$ 196,000	\$ 11,900	\$ 0	2	Fund	Do Not Fund	Abstain	Do Not Fund
70817	Gay	Oceanographic Factors Affecting Productivity in Juvenile Pacific Herring Nursery Habitats	\$ 153,800	\$71,900	\$ 56,400	\$ 25,500	\$ 0	\$ 0	2	Fund	Fund	Fund	Fund
70811	Kline	PWS Herring Forage Contingency	\$ 773,400	\$ 262,000	\$ 344,100	\$ 167,300	\$ 0	\$ 0	2	Fund	Fund	Fund	Do Not Fund
70821	Linley/Betka/Ferren	Development of Culture Technology to Support Restoration of Herring in PWS:	\$ 1,400,200	\$ 92,700	\$ 372,900	\$ 417,000	\$ 517,600	\$ 0	2	Fund (FY07 Only)	Do Not Fund	Do Not Fund	Do Not Fund
70769	Otis/Bickford	Using Otolith Chemistry to Discriminate Pacific Herring Stocks in AK	\$ 67,100	\$ 67,100	\$ 0	\$ 0	\$ 0	\$ 0	2	Fund	Fund	Fund	Fund
70804	Rice/Heintz/Moran	Significance of Whale Predation on Natural Mortality Rate of Pacific Herring in PWS	\$ 513,600	\$ 197,700	\$ 315,900	\$ 0	\$ 0	\$ 0	2	Fund	Do Not Fund	Fund	Do Not Fund
70806	Vollenweider	Are Herring (<i>Clupea pallasii</i>) Energetics in PWS a Limiting Factor?	\$ 139,200	\$ 139,200	\$ 0	\$ 0	\$ 0	\$ 0	2	Fund	Fund	Fund	Fund
70833	Wang	Herring Restoration in PWS: Modeling Circulation & Larval Transport	\$ 302,400	\$ 96,000	\$ 101,200	\$ 105,200	\$ 0	\$ 0	2	Fund	Do Not Fund	Not Reviewed	Do Not Fund
70812	Adams	Pacific Herring - A Project to Aid Coordination, Compliance & Rapid Integration	\$ 248,400	\$ 248,400	\$ 0	\$ 0	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70807	AlleeNorcross	Herring Restoration in PWS: Enhancement Workshop	\$ 189,300	\$ 126,500	\$ 62,800	\$ 0	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70813	Bickford	Herring Restoration in PWS: Marking Pacific Herring Otoliths in PWS	\$ 158,300	\$ 67,000	\$ 91,300	\$ 0	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70803	Castellini/Norcross	Herring Restoration in PWS: Condition Indices	\$ 535,600	\$ 165,000	\$ 191,000	\$ 179,600	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70699	Cokelet/Mordy/Pegau	Biophysical Observations Aboard Alaska Marine Highway System Ferries	\$ 686,900	\$ 300,300	\$ 188,100	\$ 198,500	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70815	Crawford	Characterization of Herring Nursery Habitat in PWS	\$ 576,200	\$ 271,800	\$ 144,500	\$ 159,900	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70823	Mullins/Patrick	Herring Restoration Activity Involving Herring Egg Translocation	\$ 2,976,500	\$ 696,700	\$ 1,080,700	\$ 1,199,100	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70831	Thorne/Crawford	The PWS Herring Ecosystem: An International Scientific Workshop	\$ 68,100	\$ 19,900	\$ 48,200	\$ 0	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70832	Thorne/Frid	Modeling Ecological Interactions between Steller Sea Lions & Pacific Herring	\$ 149,200	\$ 76,100	\$ 73,100	\$ 0	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70835	Wright/Heintz	Salmon Sharks Preying on Aggregated Herring & Salmon in PWS	\$ 439,700	\$ 287,900	\$ 75,900	\$ 75,900	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund

	Total Adjusted	Total FY07		Total Adjusted	Total FY07
SUBTOTAL - Priority 1	\$3,866,900	\$1,491,900	Recommended - Priority 1	\$3,866,900	\$1,491,900
SUBTOTAL - Priority 2	\$3,958,900	\$1,123,600	Recommended - Priority 2	\$360,100	\$278,200
SUBTOTAL - Priority 0	\$5,588,500	\$2,259,600			
ADJUSTED TOTAL: \$	13,414,300	\$ 4,875,100	RECOMMENDED TOTAL: \$	4,227,000	\$1,770,100

^aThe dollar amounts recommended are the amended requests being recommended to the Trustee Council for funding by the Executive Director. The changes occurred based on proposal revisions or recommended reduced funding.

^bPriority Ranking - Herring Projects - In 2006, the Trustee Council emphasized the need to initiate herring recovery projects responding to the FY07 Invitation; It also expressed support for the development of a Herring Recovery Plan, which has been initiated by personnel at the Restoration office. It was noted by all groups reviewing the proposals (e.g., Science Panel, PAC and the Liaisons) that guidance from a Recovery Plan would be helpful in determining which projects to recommend in FY07. However, given that a Plan has not yet been implemented, the Science Panel in collaboration with the Science Director devised a ranking system to provide guidance in determining which projects to recommend: It is a three point system (0, 1, and 2). Projects ranked with a 0 are those projects that are not recommended for funding. Projects which ranked a 1 or a 2 are projects that are recommended for funding by at least one group; however, the projects given a 1 ranking are those projects that will provide information that will benefit any broad-scale restoration effort for herring.

The projects that are ranked with a 2 are those projects that warrant funding (i.e, scientifically valid and applicable to herring) but would benefit from the guidance of a herring steering committee and a focused, developed recovery plan.

Table 2 - Funding Recommendations for FY07 Work Plan

ID	PI	Project Title	Total Adjusted ^a	FY 07 Adjusted	FY 08 Adjusted	FY 09 Adjusted	FY 10 Adjusted	FY 11 Adjusted	Priority Ranking ^b	SP Recommendation	PAC Recommendation	Science Director Recommendation	Executive Director Recommendation
Part 2 - NON-HERRING													
70750	Bodkin/Dean	Database Development and Implementation of Long-Term Monitoring for Evaluation of Recovery of Nearshore Resources	\$ 135,400	\$ 135,400	\$ 0	\$ 0	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund
70816	Esler	Evaluating Harlequin Duck Population Recovery: CYP1A Monitoring and a Demographic Population Model	\$ 201,700	\$ 177,800	\$ 23,900	\$ 0	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund
70742	Matkin	Monitoring, Tagging, Feeding Studies, and Restoration of Killer Whales in Prince William Sound/Kenai Fjords in 2007	\$ 100,000	\$ 100,000	\$ 0	\$ 0	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund
70290	Nelson/Short	The Exxon Valdez Trustee Hydrocarbon Database	\$ 30,100	\$ 30,100	\$ 0	\$ 0	\$ 0	\$ 0	1	Fund	Fund	Fund	Fund Contingent ^c
70808	Ballachey	Sea Otter Recovery and Nearshore Synthesis	\$ 251,700	\$ 154,000	\$ 97,700	\$ 0	\$ 0	\$ 0	2	Fund	Fund	Fund	Fund
70751	Irons	Prince William Sound Marine Bird Surveys, Synthesis and Restoration	\$ 178,100	\$ 178,100	\$ 0	\$ 0	\$ 0	\$ 0	2	Do Not Fund	Fund	Abstain	Fund
70759	Rosenberg	Harlequin Duck Population Dynamics in Prince William Sound: Measuring Recovery from EVOS	\$ 86,700	\$ 86,700	\$ 0	\$ 0	\$ 0	\$ 0	2	Fund	Fund	Fund	Fund Contingent ^c
70829	Shigenaka/ Fukuyama/Downs/ Holderied/Coats/ Thompson	Bioavailability and Effects of Lingering Oil to Littleneck Clams (Protothaca Staminea) and Population Recovery Status in PWS	\$ 239,000	\$ 239,000	\$ 0	\$ 0	\$ 0	\$ 0	2	Do Not Fund	Fund	Fund	Fund
70210	Salasky/Crumley	Youth Area Watch - PWS	\$ 960,400	\$ 174,300	\$ 182,400	\$ 191,500	\$ 201,100	\$ 211,100	2	Fund (FY07 only)	Do Not Fund	Fund (FY07 only)	Do Not Fund
70610	Schneider	Kodiak Archipelago Youth Area Watch	\$ 287,600	\$ 93,800	\$ 95,300	\$ 98,500	\$ 0	\$ 0	2	Fund (FY07 only)	Do Not Fund	Fund (FY07 only)	Do Not Fund
70820	Lauenstein/Apeti	Assessment of PAHs and Heavy Metals in Subsistence Mollusks from the Prince William Sound's Traditional Use Areas	\$ 121,600	\$ 121,600	\$ 0	\$ 0	\$ 0	\$ 0	3	Fund	Fund	Fund	Fund
70131	Brown-Schwalenberg/ Brooks/Hetrick	Plan Development for Establishing a Program for Subsistence Clam Enhancement and Rehabilitation of Clam Populations Injured by EVOS	\$ 78,500	\$ 78,500	\$ 0	\$ 0	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70809	Carls/Rice	The Risk of Buried Oil to Fauna: A Pre-Remediation Assessment	\$ 399,700	\$ 399,700	\$ 0	\$ 0	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70703	Honnold/Duesterloh/ Finney/Whitledge/ Stockwell	Marine-Terrestrial Linkages in Northern Gulf of Alaska Watersheds	\$ 1,442,600	\$ 278,200	\$ 291,500	\$ 299,100	\$ 311,500	\$ 262,300	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70639	Goldman	Monitoring Ecosystem Parameters in the Northern Gulf of Alaska.	\$ 284,800	\$ 102,100	\$ 86,200	\$ 96,500	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70709	Jack	Population Monitoring of Sea Otters in the Exxon Valdez Spill Area	\$ 329,600	\$ 96,700	\$ 102,800	\$ 130,100	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Abstain	Do Not Fund
70802	Lohmann/Burgess	Predicting and Validating the Bioavailability of PAHs from the Exxon Valdez Oil Spill	\$ 331,500	\$ 81,000	\$ 129,700	\$ 120,800	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70825	Pawlowski/Simpson	Monitoring Lingering Oil and Resources at Risk with Time-Lapse Digital Photography	\$ 258,800	\$ 258,800	\$ 0	\$ 0	\$ 0	\$ 0	0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
70827	Rosenberg/ Springman	Assessing Potential Oil Exposure to Harlequin Duck Populations in Prince William Sound	\$ 89,200	\$ 89,200	\$ 0	\$ 0	\$ 0	\$ 0	0	Defer	Do Not Fund	Defer	Do Not Fund

	Total Adjusted	Total FY07
SUBTOTAL - Priority 1	\$467,200	\$443,300
SUBTOTAL - Priority 2	\$2,003,500	\$657,800
SUBTOTAL - Priority 3	\$121,600	\$121,600
SUBTOTAL - Priority 0	\$3,214,700	\$1,384,200
ADJUSTED TOTAL:	\$ 5,807,000	\$ 2,606,900

	Total Adjusted	Total FY07
Recommended - Priority 1	\$467,200	\$443,300
Recommended - Priority 2	\$755,500	\$657,800
Recommended - Priority 3	\$121,600	\$121,600
RECOMMENDED TOTAL:	\$ 1,344,300	\$1,222,700

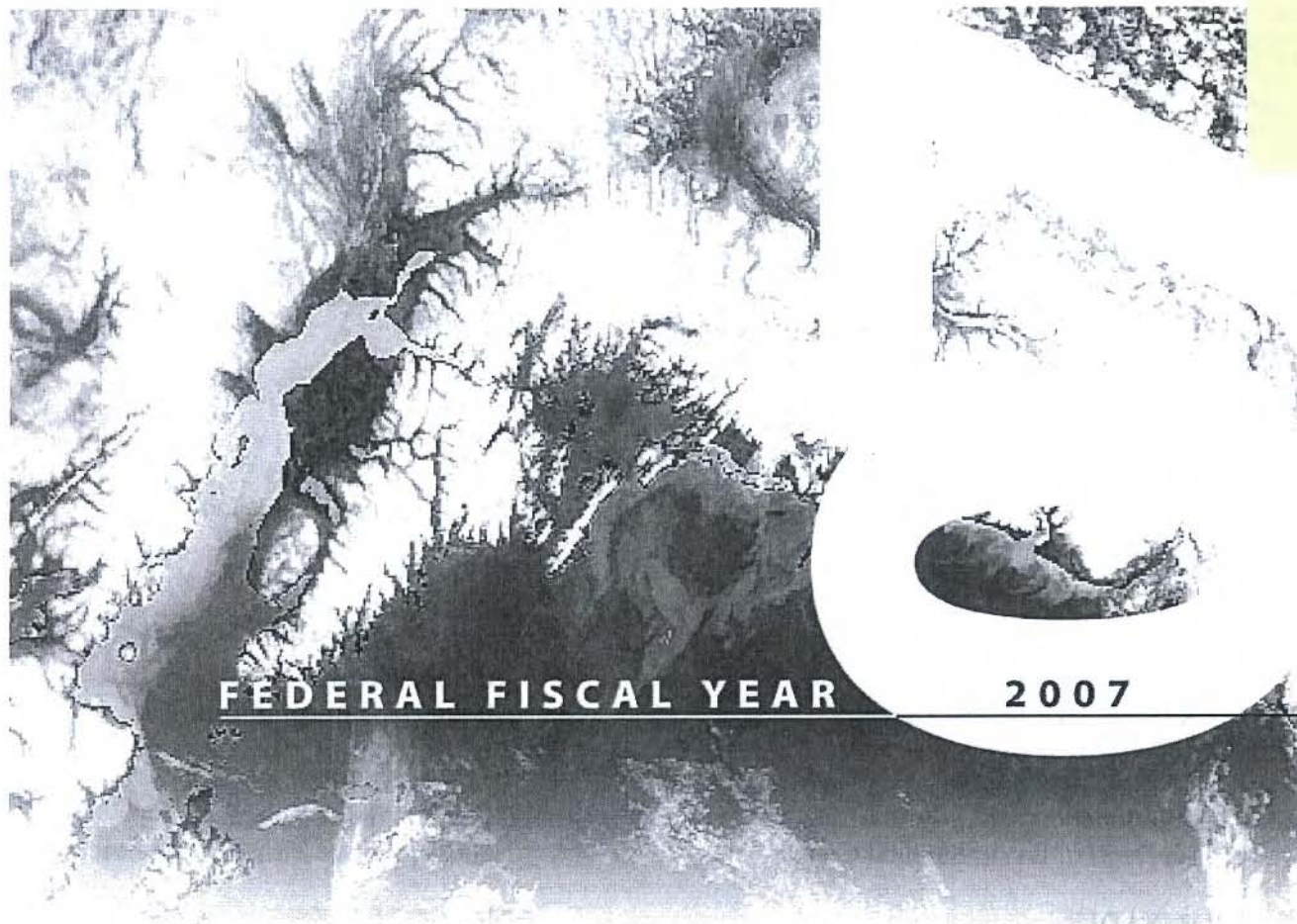
^aThe Total Funding Recommended column reflects amended amounts being recommended to the Trustee Council for funding by the Executive Director. The changes occurred based on proposal revisions or recommended reduced funding.

^bPriority Ranking - Non-Herring Projects – The Science Panel, in collaboration with the Science Director, devised a four point (0,1,2,3) ranking system to provide guidance in determining which Injured Resources and Services projects to recommend. Those projects that are not recommended for funding were given a "0". All projects given a 1, 2, or 3 were recommended for funding, but these projects were ranked in order of priority.

^cFund Contingent – Projects with a Fund Contingent are recommended for funding by the Executive Director, but the PI's have an outstanding final report due to the Trustee Council from a past project. Upon receipt of the report, any approved funds will be released.

PART 1

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL



FEDERAL FISCAL YEAR

2007

DRAFT WORK PLAN PART 1 : PACIFIC HERRING

Issued October 2, 2006
Revised November 6, 2006



Exxon Valdez Oil Spill Trustee Council
441 West 5th Avenue, Suite 500
Anchorage, AK 99501-2340
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FISCAL YEAR 2007
DRAFT WORK PLAN

October 2, 2006
Revised November 6, 2006

Prepared by:
Exxon Valdez Oil Spill Trustee Council

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Notice

The abstract of each proposal submitted in response to the FY07 Invitation for Proposals 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, the Science Director or other staff of the *Exxon Valdez* Oil Spill Trustee Council, nor do they reflect policies or positions of the Trustee Council.

The Alaska Department of Fish and Game (ADF&G) administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility please write:

- ADF&G ADA Coordinator, P.O. Box 115526, Juneau, AK 99811-5526.
- The department's ADA Coordinator can be reached via phone at the following numbers: (VOICE) 907-465-6077, (Statewide Telecommunication Device for the Deaf) 1-800-478-3648, (Juneau TDD) 907-465-3646, or (FAX) 907-465-6078.
- U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, Suite 300 Webb, Arlington, VA 22203
- Office of Equal Opportunity, U.S. Department of the Interior, Washington DC 20240.

Dear Reviewer,

Each year, the *Exxon Valdez* Oil Spill Trustee Council funds activities to restore the resources and services injured by the 1989 *Exxon Valdez* oil spill. Public input is critical to the Council's decision making process and this draft work plan has been prepared to solicit your comments on which projects to fund in Fiscal Year 2007.

In 2006, the Council recognized that a tremendous amount of work had been accomplished over 15 years of research, monitoring and specific activities directed at addressing the restoration and rehabilitation goals of the 1994 Restoration Plan (www.evostc.state.ak.us/Policies/restplan.htm). However, the Council determined that results of previous efforts needed synthesis in order to better understand the effects of lingering oil and to evaluate the status of injured resources and services. They decided to realign priorities and restorative activities, placing focus on critical work required to reach closure in areas of restoration related to lingering oil and injured resources. The Council's priorities are outlined in the Interim Guidance Document (IGD), www.evostc.state.ak.us/Policies/igd.htm.

Several resources in the Sound continue to be affected by the spill and have been monitored closely by the Council. While the 1994 Restoration Plan establishes a plan for the restoration of all injured resources and services in the Sound, the current critical status of the Pacific herring requires immediate attention. The Council has identified the need for a comprehensive herring restoration program that will help re-establish the declining herring population in Prince William Sound for use by both the commercial fisheries and local subsistence communities.

Herring are an important component of the Sound ecosystem, both ecologically and commercially. Herring were initially impacted by the oil spill, and the Council has continued to classify them as a non-recovering injured resource. Pacific herring are an essential part of the marine food web in the Sound and provide food for birds, marine mammals and invertebrates. Moreover, herring have been fished commercially for food, bait, sac-roes and spawn-on-kelp. The fishery in the Sound collapsed in 1993, four years after the spill, and since then a consistent fishery has not been sustainable. Because herring are a forage fish for many other species, it is speculated that the decline of herring has also had deleterious effects on other animals that depend on them for food. The Council appreciates the dire situation of PWS herring and the ecological and human impact caused by their decline. Therefore, the Council has committed to develop a long-term Herring Recovery Plan and implement enhancement activities with the ultimate goal of assisting herring recovery in the Sound. A restoration planning effort will begin in late 2006. This collaborative planning process will include subsistence-resource users, government agency representatives, non-governmental organizations (NGO), commercial fishermen, scientists and other stakeholders. The Recovery Plan will define critical decision pathways needed to make progress in herring recovery and provide a structure for evaluating and assessing decisions and actions as the recovery effort progresses.

The following draft work plan, entitled "**Draft Work Plan, FY07, Part 1: Pacific Herring**", contains proposal information and funding recommendations for herring-related projects, only. The Trustee Council also received non-herring related proposals in response to the FY07

EVOSTC FY 2007 Draft Work Plan, Part 1: Pacific Herring 10/02/2006

Invitation for Proposals, and these will be evaluated by the Trustee Council in meetings held later this year. The **"Draft Work Plan, FY07, Part 2: Injured Resources and Services"** will be published for public review prior to funding decisions by the Trustee Council. Check our website, (www.evostc.state.ak.us) periodically for updates.

I am interested in your thoughts and ideas in regard to this draft work plan, as well as our restoration plan in general. Comments on this draft work plan need to be received at the Trustee Council office by COB October 31, 2006. Please see the "Please Comment" section prior to the Table of Contents for more information regarding how to submit comments.

Sincerely,



Michael Baffrey
Executive Director

PLEASE COMMENT

You can help the Trustee Council by reviewing this draft work plan and letting us know your priorities for Fiscal Year 2007. To be most useful, your comments should be received by the Council on or before October 31, 2006. You can comment by:

Mail: Exxon Valdez Oil Spill Trustee Council
441 W. 5th Avenue, Suite 500
Anchorage, AK 99501
Attn: Draft Fiscal Year 2007 Work Plan

Telephone: 1-800-478-7745 (within Alaska)
1-800-283-7745 (outside of Alaska)
Collect calls will be accepted from fishers and boaters who call through the marine operator.

Fax: 907-276-7178

E-mail: projects@evostc.state.ak.us

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Acknowledgements

We are pleased to acknowledge Trustee Council staff members Carrie Holba, Michael Schlei, Cherri Womac, Barbara Hannah, Catherine Boerner, and Colleen Keane whose hard work and dedication made this Draft Work Plan possible. Special thanks to the anonymous scientists who peer reviewed the proposals received this year and thanks also to the principal investigators and their collaborators for giving us so many fine proposals from which to choose in building our program. Many thanks to those scientists from Trustee Council agencies that provided help, and in particular we offer special thanks to Dede Bohn, Carol Fries, Pete Hagen, Hans Neidig, Heather Brandon, Jenifer Kohout, Jennifer Thomson, Larry Dietrick, and Steve Zemke. We also owe our thanks for their expert program guidance and peer review efforts to the members of the Science Panel (Steve Braund, Ron O'Dor, Gary Cherr, Tom Dean, Robert Spies, Charles (Pete) Peterson and Leslie Holland-Bartels).

Michael Baffrey, Executive Director

Kimberly A. Trust, Science Director

Overview of the FY07 Work Plan

The Draft Work Plan comprises multi-year projects submitted in previous years which have received continuous funding by the Trustee Council and new proposals received in response to the FY07 Invitation for Proposals. This document allows the Council to review the projects proposed for fiscal year 2007, and the funding requested to implement the proposed work. This year the Draft Work Plan is divided into two sections: **FY07 Draft Work Plan, Part 1: Pacific Herring** and **FY07 Draft Work Plan, Part 2: Injured Resources and Services**. Upon final funding decisions by the Trustee Council, these two sections will be condensed into one final Work Plan for 2007. Each section of the Draft Work Plan contains basic information about an individual proposal and its complete record of funding recommendations during the review process. Recommendations from the Science Panel and preliminary recommendations of the Science Director and Executive Director are included in this draft. The recommendations of the Public Advisory Committee (PAC) will be added prior to the Draft Work Plan's review by the Trustee Council.

Part 1 of the FY07 Draft Work Plan, enclosed here, presents those proposals that focus on the restoration of Pacific Herring. The lack of recovery of the Pacific Herring has been identified as a priority for 2007, primarily because the herring fishery in the Sound has been closed for 11 of the 17 years since the spill. After the 1993 'crash', the population began increasing in 1997 and the fishery was opened briefly in 1997 and 1998. However, the population stalled in 1999, and the fishery has been closed since then, including 2006. No trend suggesting healthy recovery has occurred over the last eight years.

Twenty-seven herring-related proposals were received by the Trustee Council and the proposed work fell roughly into several key areas: habitat, predation/disease, juvenile survival, population modeling and data management. The total requested funding for herring projects in FY07 is \$5,247,300 and the total requested funding for herring projects over the next three years is \$14,141,200. Twenty-five additional proposals were received by the Trustee Council for review and 12 project ideas were submitted for consideration by the Trustee Council for full proposal development. These projects will be presented in Part 2 of the Draft Work Plan which will be released later this year.

The Trustee Council has an open, competitive contracting process that is designed to allow proposals from any source to be considered for funding as an external project. The system works well for this purpose as demonstrated by the fairly even distribution of funding across the home institutions of the principal investigators of external projects.

Projects Currently Funded Through FY07*

PI	Project #	Title	Funding to Date	FY07 Funding
Matkin	050742	Monitoring of Humpback Whales in PWS/Kenai Fjords in 2005-2007	\$42,800	\$23,800
Baird	050743	Linking Shoreline Mapping with Community-Based Monitoring	\$57,800	\$11,900
Hoover/Miller	050749	Harbor Seal Monitoring in Southern Kenai Peninsula Fjords	\$223,000	\$82,300
Short	050763	Long-term Monitoring of Anthropogenic Hydrocarbons	\$117,800	\$58,900
Willette	050765	Improving Preseason Forecasts of Kenai River Sockeye Salmon Runs	\$134,700	\$67,000
Otis	050769	Temporal Stability of Fatty Acids used to Discriminate Pacific Herring	\$157,100	\$25,100

*The Trustee Council has already approved funding for these projects in FY07.

Summary of Funding Recommendations for FY07

Project Number	PI	Title	Total Funding Requested	Total FY07 Funding Recommended ^a	Priority Ranking ^b	Science Panel	PAC	Science Director	Executive Director
070812	Adams	Pacific Herring Restoration	\$252,900		0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
070807	Allee/Norcross	Herring Restoration Workshop	\$193,100		0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
070624	Batten	Continuous Plankton Data Recorder	\$135,400	\$135,400	1	Fund	Fund	Fund	Fund
070813	Bickford	Marking Pacific Herring Otoliths in PWS	\$158,300		0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
070782	Bickford/Norcross	Identifying Herring Natal and Nursery Habitats	\$344,600	\$123,400	1	Fund	Fund	Fund	Fund
070814	Bishop/Kuletz	Seabird Predation on Juvenile Herring in PWS	\$609,200		2	Fund	Do Not Fund	Abstain	Do Not Fund
070803	Castellini/Norcross	Herring Restoration in PWS: Condition Indices	\$540,300		0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
070699	Cokelet/Mordy/Pegau	Biophysical Observations Aboard Alaska Marine Highway System	\$686,900		0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
070815	Crawford	Characterization of Pacific Herring Nursery Habitat in Prince William Sound	\$580,600		0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
070817	Gay	Physical Oceanographic Factors Affecting Juvenile Pacific Herring Nursery Habitats	\$157,000	\$71,900	2	Fund	Fund	Fund	Fund

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Project Number	PI	Title	Total Funding Requested	Total FY07 Funding Recommended ^a	Priority Ranking ^b	Science Panel	PAC	Science Director	Executive Director
070819	Herschberger	PWS Herring Disease Program	\$1,074,600	\$244,100	1	Fund	Fund	Fund	Fund
070810	Kiefer/Brown	An Ecosystem Model of PWS	\$690,300	\$230,100	1	Fund	Do Not Fund	Fund	Fund Contingent ^c
070811	Kline	PWS Herring Forage Contingency	\$907,500		2	Fund	Fund	Fund	Do Not Fund
070805	Lindeberg	ShoreZone Mapping for PWS	\$661,100	\$237,900	1	Fund	Fund	Fund	Fund Contingent ^c
070821	Linley/Betka/Ferren	Development of Culture Technology to Support Restoration of Herring in PWS	\$1,342,200		2	Fund (FY07 Only)	Do Not Fund	Do Not Fund	Do Not Fund
070834	Meuret-Woody	Habitat for Pacific Herring in Sitka Sound	\$159,000	\$157,300	1	Fund	Fund	Fund	Fund
070822	Moffitt	Herring Data and Information	\$132,100	\$132,100	1	Fund	Fund	Fund	Fund
070823	Mullins/Patrick	Herring Restoration Activity Involving Herring Egg Translocation	\$3,001,800		0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
070769	Otis/Bickford	Using Otolith Chemistry to Discriminate Pacific Herring Stocks	\$ 69,200	\$67,100	2	Fund	Fund	Fund	Fund
070804	Rice/Heintz/Moran	Whale Predation on Mortality Rate of Pacific Herring	\$513,600		2	Fund	Do Not Fund	Fund	Do Not Fund
070830	Thorne	Trends in Adult and Juvenile Herring Distribution and Abundance in PWS	\$433,600	\$103,400	1	Fund	Fund	Fund	Fund
070831	Thorne/Crawford	Restoration & Management Applications Workshop	\$ 68,100		0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
070832	Thorne/Frid	Modeling Ecological Interactions Between Stellar Sea Lions and Pacific Herring	\$149,200		0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund
070806	Vollenweider/Heintz	Are Herring Energetics in PWS a Limiting Factor in Successful Recruitment of Juveniles and Reproduction Investment of Adults?	\$140,500	\$139,200	2	Fund	Fund	Fund	Fund
070833	Wang/Norcross	Herring Restoration in PWS-Modeling Circulation and Larval Transport	\$311,500		2	Fund	Do Not Fund	Not Reviewed	Do Not Fund
070340	Weingartner	Long-Term Oceanographic Monitoring of the ACC	\$389,000	\$128,200	1	Fund	Fund	Fund	Fund
070835	Wright/Heintz	Salmon Sharks Preying on Aggregated Herring and Salmon in PWS	\$439,700		0	Do Not Fund	Do Not Fund	Do Not Fund	Do Not Fund

TOTAL FY07 FUNDING REQUESTED: \$5,247,300
TOTAL FY07 FUNDING RECOMMENDED: \$1,770,100
TOTAL FUNDING REQUESTED: \$14,141,300

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^aThe dollar amounts recommended are the amended requests being recommended to the Trustee Council for funding by the Executive Director. The changes occurred based on proposal revisions or recommended reduced funding.

^bPriority Ranking - Herring Projects - In 2006, the Trustee Council emphasized the need to initiate herring recovery projects responding to the FY07 Invitation: It also expressed support for the development of a Herring Recovery Plan, which has been initiated by personnel at the Restoration office. It was noted by all groups reviewing the proposals (e.g., Science Panel, PAC and the Liaisons) that guidance from a Recovery Plan would be helpful in determining which projects to recommend in FY07. However, given that a Plan has not yet been implemented, the Science Panel in collaboration with the Science Director devised a ranking system to provide guidance in determining which projects to recommend: It is a three point system (0, 1, and 2). Projects ranked with a 0 are those projects that are not recommended for funding. Projects which ranked a 1 or a 2 are projects that are recommended for funding by at least one group; however, the projects given a 1 ranking are those projects that will provide information that will benefit any broad-scale restoration effort for herring. These are shaded in the table above. The projects that are ranked with a 2 are those projects that warrant funding (i.e, scientifically valid and applicable to herring) but would benefit from the guidance of a herring steering committee and a focused, developed recovery plan.

^cFund Contingent – Projects with a Fund Contingent are recommended for funding by the Executive Director, but the PI's have an outstanding final report due to the Trustee Council from a past project. Upon receipt of the report, any approved funds will be released.

Proposed Projects

Acronyms:

ADEC – Alaska Department of Environmental Conservation

ADFG – Alaska Department of Fish and Game

DOI – US Department of Interior

EVOS – Exxon Valdez Oil Spill

FWS – US Fish and Wildlife Service

NOAA – National Oceanic and Atmospheric Administration

PWS – Prince William Sound

PWSFRAP- Prince William Sound Fisheries Research Application and Planning

PWSSC – Prince William Sound Science Center

UAF – University of Alaska, Fairbanks

USGS – US Geologic Survey

Project: EVOS Administration
Project Title: Annual Program Development and Implementation
Location: Anchorage, AK
Principal Investigator: EVOS Administration
Funding Requested by Fiscal Year:
FY07: \$2,062,447
Total Funding Requested:
\$2,062,447

Abstract:

The Council adopted a new budget structure in FY 2006 in order to more clearly identify the allocation of funds supporting Trustee Council activities. The presentation of the initial Annual Program Development and Implementation Budget instituted in FY 2006 is being mirrored within the submittal of this funding request for FY 2007. The intent is to continue emphasizing the estimated costs associated with the current activities and directives of the Trustee Council.

This budget has been developed with the focus on completing the Trustee Council's planned activities detailed within the "Interim Guidance Document" implemented in August of 2005 and effective through December 2006, as well as initiating any restoration planning efforts resulting from the determinations regarding the fate and impact of lingering oil in the spill area and the status of injured resources and services identified in the updated list.

In addition, this budget expands upon activities started in FY 2006 toward developing a plan for herring recovery; and includes estimates of the direct and indirect costs of the Trustee Council's agencies and administrative office, in providing services for the Trustee Council's programs and approved projects of FY 07.

The "Program Development and Implementation Budget" includes the following components:

- Administration Management
- Data Management
- Science Management
- Community Involvement
- Public Advisory Committee (PAC)
- Small Parcel Program
- Trustee Council Member Direct Expenses
- Program Support/Project Management by Agencies
- Alaska Resource Library & Information Services (ARLIS)

Various aspects of the italicized 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 07 Work Plan. This component is an initial funding request. Upon adoption of the FY 07 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.

The Trustee Council Office is administratively located within the Alaska Department of Fish and Game. Allocation of funds by agency is detailed within the Budget Summary.

NOTE: THIS BUDGET HAS ALREADY BEEN APPROVED BY THE TRUSTEE COUNCIL

Project Number: 070812
Project: Adams-Pacific Herring Restoration
Project Title: Pacific Herring – From Familiar Inquiry to Uncharted Restoration
A Project to Aid Coordination, Compliance, and Rapid Integration
Location: PWS and Cordova
Principal Investigator: Ken Adams
Affiliation: PWSFRAP
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$252,900 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:
\$252,900

Abstract:

The year 2006 may well be remembered as the year that restoration of Pacific herring moved from inquiry to intervention. Whether the year will a success technically will depend less on what we know now than on how we use what is know. This project provides three parts of a larger collection that together enable first trial interventions to be conducted in April 2007. This project provides a means for independently prepared proposals to coordinate efforts and improve outcomes. It provides assistance to collaborators who need the models developed over the past 12 years of Restoration to be able to reliably and efficiently carry out interventions and track the outcomes.

Science Panel Comments: The strength of this proposal is the involvement from the residents of Cordova that have been affected by the spill. It is hoped that the PIs will remain active participants in the process of a developing herring restoration program. However, this proposal is poorly written and not well organized. The project fails to demonstrate links to herring restoration because the objectives are not clear and methods are vague. The Panel does not recommend funding this proposal because the ultimate outcome and/or products of this project are unknown. RECOMMENDATION: DO NOT FUND

Public Advisory Council Comments: RECOMMENDATION: DO NOT FUND

Science Director Comments: Concur with Science Panel. RECOMMENDATION: DO NOT FUND

Executive Director Comments: RECOMMENDATION: DO NOT FUND

Project Number: 070807
Project: Allee/Norcross-Herring Restoration Workshop
Project Title: Herring Restoration in PWS: Enhancement Workshop
Location: PWS
Principal Investigator: Brian Allee, Brenda Norcross
Affiliation: Sea Grant/UAF
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$126,500 FY08: \$66,600 FY09: \$0 FY10: \$0

Total Funding Requested:
\$193,100

Abstract:

In response to the decline of herring in PWS, the EVOS Council has committed to develop a long-term Herring Restoration Plan, and to implement enhancement activities with the ultimate goal of assisting herring recovery in the Sound. This plan calls for the identification and evaluation of national and international efforts related to herring enhancement. We propose to hold an international workshop on herring enhancement. Leading authorities on enhancement of herring and related species will be invited, and a call for papers will yield additional presentations on research, techniques and existing enhancement programs. Immediately following the workshop the Steering Committee will compose an Executive Summary and compile all of the presentations given at the workshop. In the following fiscal year, Alaska Sea Grant College Program will produce a fully peer-reviewed proceedings of the papers submitted for this workshop.

Science Panel Comments: The proposal is well-written, concise and responds to the Invitation. The PI's are well-qualified. However, costs seem high for a two-day conference. No clear explanation is given of how the products will benefit the herring restoration process. The main deliverables are an executive summary produced immediately after the conference and a peer reviewed workshop Proceedings document. The Proceedings, produced several years after the meeting will not meet the immediate needs of a developing herring restoration program.
RECOMMENDATION: DO NOT FUND

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Concur with Science Panel. The Alaska SeaGrant program has experience organizing these types of events and would likely do an excellent job in presenting a workshop. However, the costs seem high and input from the international community into a herring recovery program needs to be expedited. Final deliverables from the proposed workshop will not be available for two years. The Trustee Council needs information on enhancement/restoration options for herring more quickly. **RECOMMENDATION: DO NOT FUND**

Executive Director Comments: The Trustee Council has approved funding for both an international herring restoration workshop and a herring restoration plan/team in the FY07 Administrative Budget. It is hopeful the PI's will participate in the planning and implementation of these activities. **RECOMMENDATION: DO NOT FUND**

Project Number: 070624
Project: **Batten-Continuous Plankton Data Recorder**
Project Title: Acquisition of Continuous Plankton Recorder Data
Location: Cook Inlet
Principal Investigator: Sonia Batten
Affiliation: BAA
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$135,400 FY08: \$0 FY09: \$0 FY10: \$0
Total Funding Requested:
\$135,400

Abstract:

This project will use a Continuous Plankton Recorder to collect plankton samples from the Alaskan shelf and Gulf of Alaska to determine variability in abundance and distribution of herring prey. Understanding variability in their food source is one requirement for understanding variability in Prince William Sound herring populations. Recent CPR data have shown large differences in mesozooplankton biomass on the Alaskan shelf in 2004 and 2005. This project will increase the time series of data collected with previous EVOS TC funding and improve our understanding of how the food chain supporting Alaskan fisheries is regulated.

Science Panel Comments: This project has been funded for several years by the Trustee Council and funds are being requested for an additional year. 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. This project is cost effective because the PI is utilizing ships of opportunity transecting the entire Gulf of Alaska thus funding for a vessel is not required. **RECOMMENDATION: FUND**

Public Advisory Council Comments: **RECOMMENDATION: FUND**

Science Director Comments: This project collects important long-term plankton trend data across the Gulf of Alaska and is very cost effective because the instruments are located on ships of opportunity and vessel costs are not needed. It is the only long-term record of plankton abundance and species composition in the Gulf of Alaska ecosystem. However, I have reservations about the continued long-term funding of this project by the Trustee Council. The vessel routes have recently changed and the ships no longer move through Prince William Sound; they go into Cook Inlet. The tie between these data and the restoration of Prince William Sound herring is not clear in the proposal, although the movement of food resources from the GOA into PWS is an important consideration for herring. This project is scientifically solid, and the data are important, but the connection to Trustee Council concerns is not strong. Given the importance of maintaining a long-term data set to measure change in marine environments that affect the spill area, I recommend that this project be funded for one year. However, I encourage

the PIs to seek future funding from sources with a broader oceanographic management umbrella.
RECOMMENDATION: FUND

Executive Director Comments: This proposal does not show the link between the data collected and the restoration of herring in PWS. However, this proposal has received strong support from the science community and funding through FY07 would allow the PI to continue this valuable long-term data series while requesting future funding from sources other than the Trustee Council. RECOMMENDATION: FUND

Project Number: 070813
Project: Bickford-Herring Restoration
Project Title: Herring Restoration in PWS: Marking Pacific Herring (*Clupea pallasii*) Otoliths in Prince William Sound
Location: PWS
Principal Investigator: Nate Bickford
Affiliation: UAF
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$67,000 FY08: \$91,300 FY09: \$0 FY10: \$0

Total Funding Requested:
\$158,300

Abstract:

The success of relocating of Pacific herring to more suitable habitats will need to be monitored by mass marking groups of herring. We need to know if it is feasible to use otoliths to mass mark herring using Sr and Ba with low mortality and low cost. Once we know that it is possible to artificially mark herring otoliths in a controlled environment we will mark herring in natural habitats found in PWS. We will then collect the marked herring from PWS. If artificial mass marking of otoliths is successful, then we will have a tool that managers and researchers will be able to use to monitor the success of relocating Pacific herring to more suitable habitats in PWS.

Science Panel Comments: While this proposal is responsive to the Invitation and entails good project management, it did not demonstrate that the planned methods would provide a cost effective mass marking tool for herring. Other methods (e.g. fluorescent dye technologies) are currently being used commercially and have a wider range of application. The proposed method only provides the ability to distinguish between two marked cohorts of fish. Moreover, it is unclear if the PI's considered disease and mortality factors in their field work. Finally, even if the proposed tools could be developed, it is uncertain that a sufficient number of marked fish could be recaptured to provide meaningful estimates of survival. **RECOMMENDATION: DO NOT FUND**

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Concur with Science Panel. **RECOMMENDATION: DO NOT FUND**

Executive Director Comments: **RECOMMENDATION: DO NOT FUND**

Project Number: 070782
Project: Bickford/Norcross-Herring Restoration
Project Title: Herring Restoration in PWS: Identifying Natal and Nursery Habitats
Location: PWS
Principal Investigator: Nate Bickford, Brenda Norcross
Affiliation: UAF
Disbursing Agency: TBD
Funding Requested by Fiscal Year:

FY07: \$125,200 FY08: \$138,300 FY09: \$81,100 FY10: \$0

Total Funding Requested:

\$344,600

Abstract:

More information is required to understand the life history of Pacific herring and thus success of future enhancement experiments designed to improve the survival rate of juveniles into adulthood. Chemical analysis of trace element concentrations in otoliths can be used to identify geographic signatures of natal habitats used by fishes captured either as juveniles or adults. Because survival of the population is dependent on successful spawning, it is imperative to understand if distinct groups of herring are contributing to the success of the population. If most of spawning success comes from a distinct groups of herring we need to know which population survived and why. This will allow us to protect the most important populations and also identify those environmental variables needed to enhance other populations.

Science Panel Comments: This proposal is responsive to the Invitation and the PIs are well-qualified to do the work. The project provides for the development of a potentially important technique that would allow identification of habitat favorable for juvenile herring survival. If successful, the method could be used to identify those areas that yield healthy juveniles which are eventually recruited into the population as adults. The proposal is recommended for funding contingent on a few minor revisions. The methods do not clearly describe how the technique used by the PIs will allow them to identify the location that an individual fish spent it's natal or juvenile period. Additionally, the statistical analyses are not well described and their sample sizes should be justified. The project would greatly benefit from coordination with similar efforts proposed by Meuret-Woody. A combination of these two proposals would allow a comparison of the technique between healthy (Sitka) and depressed (PWS) herring populations.
RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: FUND

Science Director Comments: Concur with Science Panel. This project will result in the identification of bays in PWS used as natal habitat by different cohorts of herring. Upon determining where fish are raised, specific characteristics of these bays can be measured. This

will then help decide where enhancement/restoration activities best succeed. Reduce funding by the amount requested for conference travel other than the annual Marine Science Symposium.

RECOMMENDATION: FUND

Executive Director Comments: RECOMMENDATION: FUND

Project Number: 070814
Project: Bishop/Kuletz-Herring Restoration
Project Title: Seabird Predation on Juvenile Herring in Prince William Sound
Location: PWS
Principal Investigator: Mary Anne Bishop, Katherine Kuletz
Affiliation: PWSSC
Disbursing Agency: TBD

Funding Requested by Fiscal Year:

FY07: \$197,000 FY08: \$204,300 FY09: \$196,000 FY10: \$11,900

Total Funding Requested:

\$609,200

Abstract:

Based on population trends, the PWS Pacific herring population does not show signs of recovering. Predation pressure on juvenile herring may be an important factor in preventing recovery. We propose a large-scale, three-year study to investigate seabird predation on juvenile herring during winter months (October-March), a season about which relatively little is known. Juvenile herring are heavily preyed upon by multiple species of seabirds including five species injured by EVOS, one recovering species, and one recovered species. We will examine the spatial and temporal abundance of seabird predators in and around juvenile herring schools, as well as the physical and biological characteristics of the schools they feed on. Our project relies on seabird surveys being performed onboard vessels associated with three other projects (2 proposed EVOS studies, 1 PWSSC study) conducting hydroacoustic surveys for juvenile herring. Our estimates of juvenile herring consumption will aid in planning future restoration efforts as well as in assessing the role of seabird predation on herring recruitment by providing data to both herring and ecosystem modeling efforts.

Science Panel Comments: This proposal fills an important gap in our knowledge of herring predators and their impacts on herring populations. Therefore, the proposal is being recommended for funding with revisions. The authors need to specifically identify how the project will provide an estimate of the number and sizes of herring being eaten by birds in the winter. Also, it is unclear how this data is to be used in a comprehensive life history model of herring and how they will extrapolate their information to all of PWS. The panel suggests the PI's consider aerial surveys to provide a Sound-wide estimate of abundance and distribution of seabirds feeding on herring. **FINAL RECOMMENDATION: FUND**

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Not Reviewed. The Science Director is on a detail from the FWS and must recuse herself from making recommendations on proposals that involve FWS personnel. The co-PI on this project is an employee of the FWS. **RECOMMENDATION: ABSTAIN**

Executive Director Comments: The Science Panel stated this proposal warrants funding but would benefit from the guidance of a PWS herring restoration steering committee and a focused, developed recovery plan. I recommend not funding this proposal until the herring recovery plan has been implemented for PWS. RECOMMENDATION: DO NOT FUND

Project Number: 070803
Project: Castellini/Norcross-Herring Restoration
Project Title: Herring Restoration in PWS: Condition Indices
Location: PWS
Principal Investigator: Michael Castellini, Brenda Norcross
Affiliation: UAF
Disbursing Agency: TBD

Funding Requested by Fiscal Year:

FY07: \$165,000 FY08: \$195,700 FY09: \$179,600 FY10: \$0

Total Funding Requested:

\$540,300

Abstract:

UAF is proposing a suite of integrated proposals to better understand PWS herring and address future enhancement experiments to improve the survival rate of juvenile fish. This project collects information on the condition of herring collected at various nurseries by the field components (Bickford/Norcross). We measure herring energy content and use recently enhanced chemical methods for the analysis of feeding history of the fish. These data are used in a multi-factorial herring condition index that is correlated to morphometric values easily measured in the field. This condition index, by itself, is a major product from this work. The herring condition will then be input into the survivorship and distribution models for different herring nurseries in PWS organized by Norcross. The ultimate goal will be to provide the data necessary to evaluate the recovery of PWS herring and the possibility of population enhancement methods.

Science Panel Summary: The PI for this project is well known as an expert in this type of analysis. The proposal responds to the Invitation and is well written. However, the condition index described for the project already exists and the project seems redundant to work completed under the SEA project. It is unclear whether refinement of this technique will provide incrementally significant understanding of the importance of energy reserves on herring survival. Moreover, the index would be most useful if there was a comparison between a healthy herring population and the one in PWS. This is not proposed. **RECOMMENDATION: DO NOT FUND**

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Concur with Science Panel. **RECOMMENDATION: DO NOT FUND**

Executive Director Comments: **RECOMMENDATION: DO NOT FUND**

Project Number: 070699
Project: Cokelet/Mordy/Pegau-AK Marine Highway Ferries
Project Title: Biophysical Observations Aboard Alaska Marine Highway System
Location: PWS and Alaska Coastal Current
Principal Investigator: Edward Cokelet, Calvin Mordy, Scott Pegau
Affiliation: NOAA
Disbursing Agency: NOAA
Funding Requested by Fiscal Year:
FY07: \$300,300 FY08: \$188,100 FY09: \$198,500 FY10: \$0

Total Funding Requested:

\$686,900

Abstract:

Oceanographic monitoring is essential to deliver real-time ecosystem information for public and advisory use, to provide boundary conditions for numerical models and to put the marine ecosystem into an historical perspective that can reveal long-term developmental, climatic and anthropogenic changes. In PWS it is important to monitor water temperature because it affects the Pacific herring fishery through alterations in spawning timing, metabolic rate and feeding, and wintertime resistance to disease. Salinity affects circulation, therefore herring larval dispersal. Circulation models used to predict herring larval drift require periodic calibration to actual temperature and salinity observations to give realistic results. In September 2004, we installed an EVOS-funded monitoring system aboard the Alaskan ferry M/V *Tustumena* that operated in two oil-spill areas, PWS and the Alaska Coastal Current (ACC). The monitoring system measures water temperature, salinity, and indicators of essential nutrients, phytoplankton biomass, freshwater influence and sediment load. The system operated successfully in PWS until May 2005 when the ferry was reassigned to ACC routes only. We propose to add a similar oceanographic monitoring system in PWS to the Alaskan ferry M/V *Aurora*, a volunteer observing ship that transits the sound daily. These observations will complement the present data set. Furthermore, we propose to continue *Tustumena's* ACC measurements at marginal cost to monitor essential biophysical variables in the coastal Gulf of Alaska.

Science Panel Comments: This project is a continuation of an existing project that collects chemical/physical measurements of the water in Prince William Sound. The PI was responsive to the Invitation and is qualified to continue the research. However, this project is expensive and is conducted from a potentially unreliable ship of opportunity (Alaska Marine Ferry System). Also, the direct link to herring restoration is not made, and it was difficult to determine if the timing and geographic coverage of this project would provide information towards enhancing herring recovery. **RECOMMENDATION: DO NOT FUND**

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Concur with Science Panel. **RECOMMENDATION: DO NOT FUND**

Executive Director Comments: RECOMMENDATION: DO NOT FUND

Project Number: 070815
Project: Crawford-Pacific Herring Nurseries
Project Title: Characterization of Pacific Herring Nursery Habitat in Prince William Sound
Location: PWS
Principal Investigator: Richard Crawford
Affiliation: BAA
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$271,800 FY08: \$146,700 FY09: \$162,100 FY10: \$0

Total Funding Requested:

\$580,600

Abstract:

A method for identifying the location of Pacific herring nursery grounds in Prince William Sound is needed as a basis for restoration. The SEA study established that juvenile herring prefer bays and fjords but smaller-scale resolution of nursery habitat remains to be elucidated. This study will collect high resolution information on the distribution of juvenile herring and their prey, and concomitant descriptors of extant hydrographic conditions, in three areas known to contain herring spawning and nursery habitat. A statistical model will be developed that delineates nursery habitat within a water body to provide managers with a tool for locating nursery habitat elsewhere in the Sound. Field work involves collecting detailed hydrographic information (undulating profiler operated between surface and up to 50 m; horizontal profiler measuring ~ 1 m surface layer) while hydroacoustic measurements of water column biomass are being made. Trawl nets (fish and plankton) will groundtruth hydroacoustic data sets.

Science Panel Comments: This is one of the few projects that provide important environmental information on physical/chemical characteristics of herring nursery habitat at a fine scale (i.e., nursery bays). The panel suggests that the PI work with Gay to provide these types of data on a greater number of sites in PWS at multiple scales. The project is responsive to the Invitation, Appendix A. It is well-written and technically strong. Preliminary Recommendation: FUND CONTINGENT

Science Panel Summary Based on Addenda: Upon further consideration, the panel recommends that this project not be funded. While it provides for interesting scientific investigations, the small scale of the investigations (within several bays near Cordova), and problems with making broader geographic inferences from these, makes the project of limited use to restoration efforts. FINAL RECOMMENDATION: DO NOT FUND

Public Advisory Council Comments: RECOMMENDATION: DO NOT FUND

Science Director Comments: This project is a continuation of some aspects of the SEA program but at a smaller geographic scale. The proposal is technically strong, however, the limited

geographic scope of the project limits its utility in herring restoration. It is possible that this specific project would be more relevant in the context of a larger herring recovery program.
RECOMMENDATION: DO NOT FUND

Executive Director Comments: RECOMMENDATION: DO NOT FUND

Project Number: 070817
Project: Gay-Juvenile Herring Nursery Habits
Project Title: Physical Oceanographic Factors Affecting Productivity in Juvenile Pacific Herring Nursery Habitats
Location: PWS
Principal Investigator: Shelton Gay, III
Affiliation: BAA
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$73,400 FY08: \$58,100 FY09: \$25,500 FY10: \$0

Total Funding Requested:
\$157,000

Abstract:

Past research of juvenile Pacific herring in PWS has shown that recruitment is highly influenced by conditions within nursery sites affecting survival within the first year. 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. The proposed study will build upon past research by continuing a hydrographic time series within nursery fjords and collect high resolution data on currents and hydrography to determine the dominant mechanisms of water exchange and circulation within two experimental fjords; one located in a highly productive sub-region (Simpson Bay) and one located in less productive sub-region influenced by tidewater glacial outflow (Whale Bay). Also, this project will provide a physical context for a suite of biological sampling proposed for these sites.

Science Panel Comments: This proposal is responsive to the Invitation and the PI is qualified to complete the work. This project is an expansion of a four bay study initiated under the Sound Ecosystem Assessment (SEA) program to examine hydrographic and circulation patterns in PWS. It will share a platform and information with projects collecting plankton data (Kline) and distribution and abundance measurements of herring (Thorne). Gay should work closely with Crawford to combine similar data collections on multiple geographic scales. The Panel also recommends that at least two addition CTD units be deployed in PWS and additional funding be provided to the PI for these units. RECOMMENDATION: FUND CONTINGENT

Science Panel Summary Based on Addenda: The panel recommends funding with the inclusion of two additional CTDs. However, we still have concerns with respect to placement of these. The intent of adding CTDs was to provide basic oceanographic data from as many bays as possible that are to be sampled by Thorne and others. To this end, we recommend redistributing CTD placements. FINAL RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: FUND

Science Director Comments: While I agree that additional CTD units would provide useful information, I recommend that the PI be given funding in the amount originally requested. If needed, the PI can request two additional CTDs in subsequent funding years. Concur with other Science Panel recommendations. RECOMMENDATION: FUND

Executive Director Comments: Reduce funding by the amount requested for conference travel other than the annual Marine Science Symposium. RECOMMENDATION: FUND

Project Number: 070819
Project: Hershberger -PWS Herring Disease Program
Project Title: Prince William Sound Herring Disease Program
Location: PWS
Principal Investigator: Paul Hershberger
Affiliation: DOI/USGS
Disbursing Agency: DOI

Funding Requested by Fiscal Year:

FY07: \$257,500 FY08: \$265,100 FY09: \$272,100 FY10: \$279,900

Total Funding Requested:

\$1,074,600

Abstract:

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

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

Science Panel Summary Based on Addenda: The panel recommends that the project be funded, but that the EVOS Science Director review the budget. It appeared that while immune gene expression work was eliminated as suggested, other work was substituted for this. It is unclear whether this new work is justified or if it materially impacts the budget. FINAL RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: FUND

Science Director Comments: No other disease proposals were submitted to the Trustees, and disease plays an important role in the current state of PWS herring. However, disease is not fully understood in the PWS herring population. Understanding disease is vital to any direct intervention activity, so that the spread and expansion of disease problems can be prevented. The PIs removed the gene expression objective and addressed the recommendations of the Science Panel to expedite the laboratory assays so they could be used in the field more quickly. The budget was adjusted to reflect these changes. RECOMMENDATION: FUND

Executive Director Comments: Agree with the Science Panel's recommendation that the EVOS Science Director review the budget as suggested. RECOMMENDATION: FUND

Project Number: 070810
Project: **Keifer/Brown-Herring Modeling**
Project Title: An Ecosystem Model of Prince William Sound Herring: A Management & Restoration Tool
Location: PWS
Principal Investigator: Dale Keifer, Evelyn Brown
Affiliation: BAA
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$230,100 FY08: \$230,100 FY09: \$230,100 FY10: \$0

Total Funding Requested:
\$690,300

Abstract:

Over a three-year period, we propose to develop a life-stage specific, ecosystem based model of the Prince William Sound (PWS) herring that will aid in the integration ecological data that has been gathered on herring over the last 2 decades, evaluation of proposed restoration activities, and attempt to simulation of the processes that cause the chronic decrease in herring stocks since the 1989 spill. More specifically, it will be used to test the unresolved hypotheses of why the herring have not recovered to pre-spill densities. The model and associated data will be housed in a geographic information system that we have developed specifically for marine applications. The geo-spatial information from field surveys and simulations with the model will available for interactive viewing and downloading of files over the Internet.

The model will provide a mathematical description of the population dynamics of annual herring cohorts as they mature through their life stages. In particular we will focus on arrival of larvae to the Bays of PWS, the maturation and survival of juveniles in these bays, and the survival and reproductive success of adults as they move seasonally from spawning grounds, feeding grounds and wintering grounds. The system of coupled differential equations that describe these processes will be tuned to prove a best fit between model calculations and field and laboratory measurements. In its final form the model will consist of 3 sets of such equations that will simulate the unique conditions found in herring habitats of the eastern, northern and southwestern regions of PWS. Most importantly, the model will be formulated according to the principals of the trophic trap in which 2 metastable states for herring exist, low-density and high-density. We propose that a sequence of events following the spill drove the herring from high-density to low-density and a trophic trap prevents stocks from recovering. Thus, we will tune our model to both high-density and low-density states and then run the tuned models in the forward or backward direction to identify both the most probable causes of the injury and the most promising approaches to restoration. Our team has the scientific and technical experience to succeed, and we will work closely with researchers from the other herring projects, especially those working on larval drift, disease, otolith marking, and intervention. Our web-based system will promote such collaboration particularly with such groups as PWSFRAP and with the PWS Science Center.

Science Panel Comments: This proposal is one of the most original and synthetic of the proposals reviewed. The predictive capability of the proposed model makes it a valuable tool for examining population dynamics of herring. This project could provide a central data gathering point for several of the other, more detailed, modeling proposals. The Panel suggests that the PIs accelerate the model development, such that it would be useable to assess efficacy of various potential restoration methods. The Panel was concerned that the model is inextricably linked with the patented EZ software system and wants to ensure that the model could stand alone as a predictive tool. RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: DO NOT FUND

Science Director Comments: Concur with Science Panel. The PI will need to work directly with the data management staff at the Trustee Council office to create a web-based product that is user-friendly and available to the public. The life-stage model will be useful in understanding how different stressors affect the PWS herring population, which up till now has not been developed. The one-dimensional model can be used as a stand-alone tool, however viewing the three dimensional model with the Easy software will make the product more useful. The PIs have agreed to provide software and training to other herring researchers/managers that may eventually be using the model. RECOMMENDATION: FUND

Executive Director Comments: Agree with the PAC recommendation to not fund this proposal until the co-PI submits the final deliverable for a previous Trustee Council funded project (Project 030584). RECOMMENDATION: FUND CONTINGENT

Project Number: 070811
Project: Kline-Herring Forage Contingency
Project Title: Prince William Sound Herring Forage Contingency
Location: PWS
Principal Investigator: Thomas Kline
Affiliation: BAA
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$282,000 FY08: \$355,400 FY09: \$270,100 FY10: \$0

Total Requested Funding:
\$907,500

Abstract:

Prince William Sound (PWS) herring recruitment is hypothesized to be contingent on young of the year herring attaining from zooplankton sufficient whole body energy content (WBEC) to survive their first winter. PWS recruitment is presently variable, having changed since the Trustee Council funded Sound Ecosystem Assessment (SEA) project ended. Juvenile herring will be sampled and analyzed for WBEC and natural stable isotope abundance (SIA) for comparison with SEA data. The PI has direct familiarity with WBEC and SIA done during SEA enabling duplication. Oceanic subsidies (detected with SIA) are hypothesized to augment zooplankton energy density, which varies in time and locations. High zooplankton energy density is hypothesized to enable herring to acquire high WBEC in certain areas at certain times. To test these hypotheses, herring forage will be assessed in terms species composition and density, SIA, and energy density, which will be related to herring WBEC by location and time.

Science Panel Comments: Strong recruitment of juvenile herring is required for healthy viable herring populations, and it is important for young of the year fish to acquire enough energy to survive their first winter. The relationship between herring food resources (e.g., species, source, abundance etc) and body condition can be used to understand herring survival which will ultimately influence the regulation of population densities. The Panel recommends that this project be funded, however, it is expensive and costs should be re-evaluated. Preliminary RECOMMENDATION: FUND CONTINGENT

Science Panel Summary Based on Addenda: We recognize the importance of the data that will be generated by this project, and especially the data regarding energetic values for juvenile herring prior to over-wintering. However, given the project costs, we are less convinced of the necessity for and utility of other aspects of the project including detailed plankton analysis and isotope ratio analysis. We strongly recommend that a thorough budget justification is provided and funding is substantially reduced from the original budget. FINAL RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: FUND

Science Director Comments: This project will provide useful comparisons between juvenile herring condition and food availability and source. However, the costs are high and should be re-evaluated prior to funding decisions. Preliminary Recommendations: Fund Contingent. Note: The PI reduced the overall costs of this project by about 15% from the original amount requested without compromising the quality of the data collection. RECOMMENDATION: FUND.

Executive Director Comments: The Science Panel stated this proposal warrants funding but would benefit from the guidance of a PWS herring restoration steering committee and a focused, developed recovery plan. I recommend not funding this proposal until the herring recovery plan has been implemented for PWS. RECOMMENDATION: DO NOT FUND

Project Number: 070805

Project: Lindberg-ShoreZone Mapping
Project Title: ShoreZone Mapping for Prince William Sound
Location: PWS
Principal Investigator: Mandy Lindberg
Affiliation: NOAA
Disbursing Agency: NOAA
Funding Requested by Fiscal Year:
FY07: \$237,900 FY08: \$423,200 FY09: \$0 FY10: \$0

Total Funding Requested:

\$661,100

Abstract:

This proposal will continue *ShoreZone* mapping in Prince William Sound (PWS), Alaska. Approximately 8,400 km of shoreline has been mapped in the central Gulf of Alaska, including 1,600 km of shoreline in western PWS in 2004. The majority of the spill area inside PWS, including Knight island area and all of northern and eastern PWS have not been mapped. To support both future oil remediation efforts as well as restoration activities would be supported by a single mapping protocol that included geomorphology, substrate type, as well as the biological substrate on all beaches. Completing PWS would fill the gap by providing a contiguous data set from across the entire spill area using a standard protocol. Most importantly, this data set will be useful to managers, as it combines photographs of the entire beach area, as well as having a data set that can be sorted by location, substrate type, and other factors. The *ShoreZone* data set is recognized as a significant tool for oil spill response planning, identifying essential fish and wildlife habitat, and for monitoring long-term changes in coastal habitat that may result from development, restoration, or even global climate change.

Science Panel Comments: This proposal provides Sound-wide data on important physical and biological characteristics of the environment that would be applicable to herring restoration, as well as lingering oil issues and injured resource recovery. The Panel did not see the value in the fish sampling effort and suggested its removal, along with a reduction in the amount of ground-truthing proposed. A great deal of information is already known about the PWS, and the field effort should be enough to validate the aerial surveys. However, it is not necessary to cover such a large proportion of the area. The cost seemed high, but with a reduction in the field effort this project should be more cost effective. RECOMMENDATION: FUND CONTINGENT

Science Panel Summary Based on Addenda: Several project tasks were eliminated and costs reduced as suggested. Funding of the revised project is recommended. FINAL RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: FUND

Science Director Comments: Concur with Science Panel. The information derived from this project will be applicable to most injured resources and services, especially those reliant on the nearshore environment. The fish collections should be removed, the number of ground-truthing

events reduced and costs trimmed accordingly. Note: The PI addressed the concerns outlined above and reduced the budget accordingly. RECOMMENDATION: FUND

Executive Director Comments: Until the co-PI submits the final report for a previously Trustee Council funded project (Project 040740), it is recommended to not fund this proposal. RECOMMENDATION: FUND CONTINGENT

Project Number: 070821
Project: Linley/Betka/Ferren-Herring Restoration
Project Title: Development of Culture Technology to Support Restoration of Herring in Prince William Sound: Use Of *in vitro* Studies to Validate and Optimize Restoration Actions
Location: PWS
Principal Investigator: Tim Linley, Marlies Betka, Howard Ferren
Affiliation: Sea Life Center/BAA
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$407,600 FY08: \$417,000 FY09: \$517,600 FY10: \$0

Total Funding Requested:

\$1,342,200

Abstract:

Intervention in the form of artificial propagation may be needed to restore Prince William Sound (PWS) herring to levels capable of supporting a healthy ecosystem as well as sustainable fisheries. We propose to test and refine propagation methods through laboratory and field studies over a three year period to evaluate the likely benefits and costs of stock restoration. The overall objective is to obtain biological and economic benchmarks of stock enhancement strategies by integrating established techniques for laboratory rearing of herring with state of the art methods used in the culture of multiple marine species. Our specific efforts will focus on the role of calcium sensing receptor proteins in herring osmoregulation, nutrition and immune function. The results will provide PWS stakeholders and other researchers with improved understanding of the optimal husbandry and nursery conditions for herring stock enhancement, and the potential effects of such restoration on PWS herring.

Science Panel Comments: If direct enhancement or other types of intervention is a likely direction that a herring restoration program will pursue, then captive rearing and propagation of herring will be needed. This proposal is the only project that seeks to develop culture techniques suitable for herring in Alaska. The PIs have a great deal of experience with fish culture (mostly salmon), but it is unclear how much experience they have with herring. Herring culture techniques have been successfully implemented in Japan, and the panel believes that the PIs would benefit from learning how those methods that can be used in Alaska. Therefore, they recommend a reduction in the first year of funding to \$60,000 for the PI's to collaborate with the Japanese on herring culture techniques. In the second year, the PI's should submit a reworked proposal. They should remove the calcium receptor gene objective, because it is unclear how that relates to herring. They should consider a larger range of environmental factors in their culture methods and analyze their effects on growth and survival. The PIs also need to define a source for their captive fish, describe how they will consider the role of disease in their work and resolve permitting issues. RECOMMENDATION: FUND CONTINGENT

Science Panel Summary Based on Addenda: The responses to the panel's queries were adequate. The PIs requested \$25,000 in addition to the \$60,000 suggested by the Science Panel, so they can begin feeding pilot studies. We recommend funding in the amount of \$60,000 for FY07 to cover travel expenses and salary for investigators to visit Japan. The Panel suggests that any further funding, including \$25,000 requested to conduct pilot studies, be based on a resubmitted proposal and budget for FY08. **FINAL RECOMMENDATION: FUND (One Year)**

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: If direct intervention or enhancement activities are eventually recommended for PWS herring, an understanding of culture techniques and large-scale production will be necessary. The PIs have experience in fish culture, (although their experience with herring is not clear in the proposal), and the Alaska SeaLife Center would provide an excellent facility to establish this program. The Japanese have a great deal of experience with commercial scale herring production, and their experience would benefit any program initiated in Alaska.

The PIs responded to a request to modify their request for FY07 and travel to Japan to confer with experts in the field of commercial herring production. They proposed to work with Japanese experts, but also initiate pilot feeding studies. However, the calcium receptor portion of their proposal was retained. Although they did explain how it would relate to herring, this is a patented process that they Trustee Council would be funding, and it is unclear if full-scale production occurred how the costs of using a patented technique would be incorporated. The larger issue, however, is the need for this project at this time. In light of the proposed herring recovery plan, it may be prudent to wait until a steering committee develops alternatives and recommendations for future herring enhancement work. If culture techniques and captive rearing are needed, then the proposed work should be re-evaluated, and the PIs should be encouraged to work with local aquaculture experts. **RECOMMENDATION: DO NOT FUND**

Executive Director Comments: The Science Panel stated this proposal warrants funding but would benefit from the guidance of a PWS herring restoration steering committee and a focused, developed recovery plan. I recommend not funding this proposal until the herring recovery plan has been implemented for PWS. **RECOMMENDATION: DO NOT FUND**

Project Number: 070834
Project: Meuret-Woody-Essential Habitat for Herring
Project Title: Identification of Essential Habitat for Pacific Herring in Sitka Sound for Comparison to Prince William Sound i.e. Source vs. Sink Habitat
Location: Sitka Sound
Principal Investigator: Heather Meuret-Woody
Affiliation: BAA
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$159,000 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:

\$159,000

Abstract:

Once herring hatch and the larvae drift to retention areas, they begin metamorphosis. As juveniles, herring forage in productive waters of the North Pacific. Adult herring then return to natal beaches to spawn. What is unknown is where the herring go and if certain regions contribute more to the spawning population. Once we know which population contributes more to the spawning groups, we can then identify those variables that enhance the life histories of the source population. We can identify these groups and track their movements using otolith chemistry. If most of the survivors come from a distinct population, then we need to know which population survive and why. This will allow managers to protect the most important populations and also identify those environmental variables needed to enhance other populations.

Science Panel Comments: This proposal was submitted by the southeast Alaska Sitka Tribe. It is well-written and in context, responsive to the Invitation. The project would be strengthened if the PI incorporated a comparison, using their proposed methods between herring in Sitka with those in PWS. The Sitka stock is healthy, and it would be a valuable to understand the habitats associated with herring in those areas vs areas inhabited by the depressed herring stocks of PWS. Without this comparison, it is difficult to make a strong connection to the Invitation. Therefore, this project should only be funded if the similar proposal by Bickford and Norcross is also funded. RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: FUND

Science Director Comments: Concur with Science Panel. The project should be funded in conjunction with a similar project being proposed in PWS (BickfordNorcross). Reduce funding by the amount requested for conference travel other than the annual Marine Science Symposium RECOMMENDATION: FUND

Executive Director Comments: Reduce funding by the amount requested for conference travel other than the annual Marine Science Symposium RECOMMENDATION: FUND

Project Number: 070822
Project: **Moffitt-Herring Data and Information Portal**
Project Title: Herring Data and Information Portal
Location: PWS
Principal Investigator: Steve Moffitt
Affiliation: ADFG
Disbursing Agency: ADFG
Funding Requested by Fiscal Year:
FY07: \$132,100 FY08: \$0 FY09: \$0 FY10: \$0
Total Funding Requested:
\$132,100

Abstract:

This project will consolidate, document, and enter data sets, metadata, and other electronic resources into a web portal. The web portal will provide public access to information, data, and GIS visualizations. Scientists and researchers will utilize the web portal as a resource to assist in consolidating, accessing and synthesizing herring data. This project will also develop an ArcPad application for collecting herring aerial survey data directly into a GIS format. The project was conceived during an EVOS sponsored workshop in April 2006 that was tasked to identify Prince William Sound herring data gaps and develop restoration or research projects to help herring recovery. Participants indicated that knowledge of the spatial and temporal aspects of herring related data sets, e.g., herring spawn, was necessary to understand how restoration activities might affect herring abundance trajectories. Several restoration projects would require spatial and temporal knowledge of herring data as input to a model or as a measure of the success of a restoration project. This project would provide easier access and visualization of selected herring data sets and other electronic resources.

Science Panel Comments: This is a strong proposal that is well written and responsive to the Invitation. The web portal could be used by managers, researchers and the public, and it would provide a central location for historical data. The panel recommends that the PI coordinate his efforts with work proposed by Kiefer (if funded), and determine how the database should be populated. As submitted, the proposal only identifies funds for an IT professional and a graphic designer. For this project to be useful the database needs to be populated and managed, however no funds are requested for data gathering or management of the system. The Panel recommends that additional budget items should include funds for populating the database after the structure is created and management of the system. The PI should also explain how this project can be incorporated into the larger EVOS database. Preliminary Recommendation: FUND
CONTINGENT

Science Panel Summary Based on Addenda: All questions were adequately addressed in the response to panels' request. We recommend funding as originally requested. Additional funding for populating the database with non-ADF&G data will be considered in a follow on proposal in future years. FINAL RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: FUND

Science Director: The PI must work closely with the EVOS data management staff to ensure a product that is user friendly and available to the public. Additionally, two specific areas should be addressed prior to funding commitments: 1) Population of the data base with historic information and 2) Long-term maintenance of the database (i.e, not the system but the data). This project will only be useful if it data is incorporated into the system, such that it is available to managers, researchers and the public. Also, the data needs to be updated periodically, so it does not become obsolete. This will be a valuable tool as the Trustees move forward with herring recovery, but only if it is maintained with current information. Note: The PIs addressed the Science Panel's concerns, and I agree that the proposal should be funded as originally proposed. RECOMMENDATION: FUND

Executive Director Comments: Concur with Science Panel and Science Director recommendations. RECOMMENDATION: FUND

Project Number: 070823
Project: Mullins/Patrick-Herring Egg Translocation
Project Title: Herring Restoration Activity Involving Herring Egg Translocation, Marking and Rearing Larvae to Various Stages & Incorporating Community and Commercial Stakeholders
Location: PWS, Cordova
Principal Investigator: Ross Mullins, Vince Patrick
Affiliation: PWSFWAP
Disbursing Agency: TBD

Funding Requested by Fiscal Year:

FY07: \$705,800 FY08: \$1,088,800 FY09: \$1,207,200 FY10: \$0

Total Funding Requested:

\$3,001,800

Abstract:

Population restoration for herring is generally approached by: 1) protecting the diminished stock from exploitation; 2) restoring near-shore spawning habitats – principally intertidal vegetation; and 3) supplementing the damaged stock through ocean ranching involving hatcheries (Japan). We propose an additional supplementing activity to directly enhance the survival of each year-class during the vulnerable larval/early juvenile stage. Our approach will be to short-term rear larvae emerging from eggs collected in natal areas, for later release in nurseries determined to be optimal for growth and survival. Our understanding of optimal rearing habitat originates from work undertaken on juvenile herring by the Sound Ecosystem Assessment (SEA) program, 1994-99. By protecting a significant fraction of the most vulnerable early stages (post-hatch larvae), and relocating them in optimal rearing areas, our “intervention” will partially by-pass the risky period of larval drift where most believe the bulk of the mortality of a year-class occurs.

Science Panel Comments: Several major concerns caused the Panel to not recommend this proposal for funding. The spill area communities are strongly supportive of an active herring restoration program; however, there are too many uncertainties regarding the success of egg translocation and the proposed larval culture techniques to recommend this project. Issues include evidence that suggests translocating herring eggs causes the death of all harvested eggs; disease implications which are not addressed, and permitting issues. Additionally, it is unclear if the PI's have experience with herring culture techniques or have examined alternatives to translocation. Finally, the methods are not detailed enough to allow the Panel to understand how the PIs will accomplish their objectives or determine success. **RECOMMENDATION: DO NOT FUND**

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Concur with Science Panel. The PIs are obviously knowledgeable about the issue and have proposed a project they believe will jump-start herring recovery in PWS. They are understandably concerned about the condition of herring and have

put much thought into direct intervention activities. However, much more preliminary information should be collected prior to actively altering herring habitat or translocating herring within PWS. Disease containment was not discussed in the proposal, and given the devastating effects diseases are currently inflicting upon PWS herring, this issue needs to be thoroughly discussed in the context of translocating herring eggs and releasing young reared in captivity. Moreover, the proposal does not present supporting evidence that these techniques have worked in other places, and the PIs do not address State and/or Federal permit requirements for their project. The proposal should be reworked, such that it includes the topics of concern in these comments and those of the Science Panel. These activities should also be discussed as part of a bigger, long-term herring recovery program. RECOMMENDATION: DO NOT FUND

Executive Director Comments: RECOMMENDATION: DO NOT FUND

Project Number: 070769
Project: Otis/Bickford-Herring Stocks
Project Title: Using Otolith Chemistry to Discriminate Pacific Herring Stocks in AK
Location: PWS
Principal Investigator: Ted Otis, Nate Bickford
Affiliation: UAF
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$69,200 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:
\$69,200

Abstract:

This proposal is an extension of EVOS Project 050769, which is currently assessing the temporal stability of stock discrimination criteria derived from fatty acid analysis (FAA) of herring cardiac tissues. In 2006, Otis (050769) collected heads from fish sampled for FAA so chemical analysis of the otoliths could be conducted to evaluate which technique was most effective for determining herring stock structure at fine spatial scales. In this study, Dr. Nate Bickford (EVOS Project 060782) will process those samples using laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS) to determine whether otolith chemistry can be used to corroborate FAA techniques for determining fine scale structuring within and among Alaska's herring stocks (e.g., Sitka, PWS, Kamishak, Kodiak, Dutch Harbor, Togiak, and Kuskokwim Bay). Results will be published and should allow researchers to better define ecologically significant stock boundaries, likely affecting how commercially exploited herring populations are assessed and managed.

Science Panel Comments: This project proposes to analyze otoliths from fish collected from a previous TC-funded study. Therefore, the samples are already 'in-hand' and the project would be very cost-effective. The method provides a corroborating technique (along with fatty acid analysis) that will assist managers in identifying herring stock boundaries, thus the direct management applications are strong. **RECOMMENDATION: FUND**

Public Advisory Council Comments: **RECOMMENDATION: FUND**

Science Director Comments: This project is a follow-up on a Trustee Council funded project. It will provide validation on techniques to stock assessment in herring. **RECOMMENDATION: FUND**

Executive Director Comments: **RECOMMENDATION: FUND.**

Project Number: 070804
Project: Rice/Heintz/Moran-Herring and Humpback Whales
Project Title: Significance of Whale Predation on Natural Mortality Rate of Pacific Herring in PWS
Location: PWS
Principal Investigator: Stanley Rice, Ron Heintz, John Moran
Affiliation: NOAA
Disbursing Agency: NOAA
Funding Requested by Fiscal Year:
FY07: \$197,700 FY08: \$315,900 FY09: \$0 FY10: \$0

Total Funding Requested:

\$513,600

Abstract:

Pacific herring (*Clupea pallasii*) in Prince William Sound (PWS) have been classified as "not-recovered" by the Exxon Valdez Oil Spill Trustee Council. Predation by marine mammals has been cited as a factor in the failure of this population to rebound. We will assess the significance of humpback whale predation on herring in PWS, particularly in winter. Specifically we will estimate the number of whales foraging in winter, determine when and if there is a prey switch to herring, and how long whales focus on herring as prey. Year one, is stand alone, small in scale with an intense monitoring strategy; year 2 would expand the scale up in area significantly. 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.

Science Panel Comments: This proposal is responsive to the Invitation and the PIs are well qualified. Predator impacts on herring, especially in winter, are poorly understood and need to be quantified. The number of whales over-wintering in PWS is growing each year, and it is important to understand their contribution to the population dynamics of herring as part of a successful restoration program. This proposal also incorporates comparisons in whale predation among multiple sites (southeast vs PWS) with both depressed and healthy populations of herring.
RECOMMENDATION: FUND

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Concur with Science Panel. **RECOMMENDATION: FUND**

Executive Director Comments: Agree with the PAC recommendation to not fund this proposal until the co-PI submits the final deliverable for a previous Trustee Council funded project (040740). **RECOMMENDATION: DO NOT FUND**

Project Number: 070830
Project: Thorne-Herring Distribution in PWS
Project Title: Trends in Adult and Juvenile Herring Distribution and Abundance in Prince William Sound
Location: PWS
Principal Investigator: Richard Thorne
Affiliation: PWSSC
Disbursing Agency: TBD
Funding Requested by Fiscal Year:

FY07: \$103,400 FY08: \$103,400 FY09: \$226,800 FY10: \$0

Total Funding Requested:

\$433,600

Abstract:

Information on abundance, distribution and condition of key herring life stages is needed as a basis for restoration. Critical barometers of the PWS herring population are the adult abundance and condition, as monitored in March, and the juvenile abundance and condition going into and coming out of the long winter period (October to March). Some of this information is currently provided through a program at PWSSC that focuses on herring as a critical food source for Steller sea lions. We propose to fill data gaps in this program with juvenile herring surveys in March of 2007 and 2008 and three additional surveys in FY 2009. These surveys can be conducted in a very cost efficient manner because of the much larger concurrent program that will conduct two surveys each year in FY 2007 and 2008. In addition, the direct capture effort associated with all surveys will be expanded, and biological samples will be available for other uses including disease, marking and stable isotope research. Several collaborations have been established in this regard with investigators at the University of Alaska, Fairbanks, Auke Bay and PWSSC.

Science Panel Comments: This proposal describes the “backbone” project for many of the other herring proposals submitted to the TC this year. It is a core field project for gaining information about abundance and distribution of herring in PWS, and other management and restoration activities will rely on this data. The project design yields a broader coverage of PWS, and because of matching funds the costs are reasonable. The PI is qualified and has many years of experience. This proposal received strong support from the Science Panel.

RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: FUND

Science Director: Concur with Science Panel. This is a keystone project that will provide status and trend data on herring (juvenile and adult) abundance and distribution throughout PWS across multiple seasons. RECOMMENDATION: FUND

Executive Director Comments: RECOMMENDATION: FUND

Project Number: 070831
Project: Thorne/Crawford-Herring Workshop
Project Title: The Prince William Sound Herring Ecosystem: Reconciling Divergent Interpretations for Effective Restoration and Management Applications – An International Scientific Workshop
Location: PWS
Principal Investigator: Richard Thorne, Richard Crawford
Affiliation: PWSSC
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$19,900 FY08: \$48,200 FY09: \$0 FY10: \$0

Total Funding Requested:

\$68,100

Abstract:

Prince William Sound's (PWS) Pacific herring population is classified by the EVOS Trustee Council as "non-recovered". The population prior to the Exxon Valdez Oil Spill was above 100,000 mt; the current population is estimated at 20,000-25,000 mt. This proposal's purpose is to follow on the intentions of the April 2006 PWS herring workshop sponsored by EVOS TC. In that workshop, local herring experts began scoping PWS herring research needs (EVOS FY 07 Invitation, Appendix A) but did not resolve competing hypotheses for the lack of recovery. We propose to assemble a PWS Herring Science Workshop in November 2007. This will include the broadest possible array of scientific expertise on herring to 1) review and synthesize available information on PWS herring, 2) incorporate outside expertise from regional and international clupeid experts, and 3) recommend future PWS herring research and management. Funds will be used for planning and implementing the workshop.

Science Panel Comments: The proposal was well-organized and the PIs qualified to initiate the project. However, it is unclear how the workshop suggested in this proposal would advance herring restoration. Available herring information has been synthesized in recently funded TC projects, and the April 2006 TC funded workshop brought together experts and community members to exchange information on the current state of herring in the Sound. It is unlikely that another workshop of this type will result in consensus regarding the original cause of the herring collapse, nor does the Panel believe it is necessary to come to such a resolution before implementing a recovery program. **RECOMMENDATION: DO NOT FUND**

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director: Concur with Science Panel. **RECOMMENDATION: DO NOT FUND**

Executive Director Comments: **RECOMMENDATION: DO NOT FUND**

Project Number: 070832
Project: Thorne/Frid-Sea Lions and Herring
Project Title: Modeling Ecological Interactions Between Steller Sea Lions and Pacific Herring
Location: PWS
Principal Investigator: Richard Thorne, Alejandro Frid
Affiliation: PWSSC
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$76,100 FY08: \$73,100 FY09: \$0 FY10: \$0

Total Funding Requested:

\$149,200

Abstract:

The herring population of Prince William Sound is suppressed by predation from Steller sea lions (SSLs) and other predators, including humpback whales and harbor seals. Simultaneously, the abundance and distribution of Pacific herring appear to strongly influence energy gain by SSLs, which are listed as threatened under the Endangered Species Act. Thus, efforts towards restoring herring and SSL populations should consider ecological games in which both species simultaneously respond to the behavior of each other. Previously we used Dynamic State Variable Modeling to investigate interactions between harbor seals and herring in PWS. We are currently using this technique to seek insight into how the abundance and distribution of herring affect the behavior and fitness of SSLs. Our proposed work would complement that research by 1) developing a comparable model of herring decisions on use of space (e.g. aggregate in bays vs. disperse in main basin) in response to resource distributions and predation pressure from SSLs, and 2) using game theoretic equations to link the SSL and herring models. The second objective will be used to predict the simultaneous response of SSLs and herring to each other's behavior under different conditions, and the ensuing consequences to the survival and reproduction of individuals.

Science Panel Comments: Predation is a concern for PWS herring and the PIs are qualified to conduct this project. Although the budget is reasonable for the type of work proposed, it is unclear whether or not this project is redundant with work ongoing at the Prince William Sound Science Center. This project would be useful as part of an integrated herring restoration program, but is not an immediate need for herring recovery. **RECOMMENDATION: DO NOT FUND**

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director: Concur with Science Panel. **RECOMMENDATION: DO NOT FUND**

Executive Director Comments: **RECOMMENDATION: DO NOT FUND**

Project Number: 070806
Project: Vollenweider/Heintz-Herring Energetics
Project Title: Are Herring (*Clupea pallasii*) Energetics in PWS a Limiting Factor in Successful Recruitment of Juveniles and Reproduction Investment of Adults?
Location: PWS
Principal Investigator: Johanna Vollenweider, Ron Heintz
Affiliation: NOAA
Disbursing Agency: NOAA
Funding Requested by Fiscal Year:
FY07: \$140,500 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:

\$140,500

Abstract:

The causes underlying the depressed recruitment rates among PWS herring are unknown, but are likely to include reduced survival of offspring to maturity. Potential agents for depressed recruitment include chronic exposure to pathogens and increased numbers of predators. While identification of the causative agents remains elusive, it is likely that their combined effects are reflected in herring energy dynamics. Previous work in PWS demonstrated the need for juvenile herring to acquire and store energy prior to winter to ensure survival when prey resources were scarce. Juveniles facing increased predation risk or immune response may have less surplus energy available to allocate to storage at the onset winter. In addition, continuing disease and predation stress may increase the rate at which individuals lose energy during winter. Thus decreased offspring survival may result from increased energetic demand over winter. Similarly, adults facing increased energy demand as a result of environmental stress are likely to have decreased energy available for reproduction with consequent effects on offspring survival rates. Therefore, we propose to examine the energy dynamics of herring in PWS and other locations to test the hypothesis that PWS herring stocks have higher energy consumption rates than healthier stocks in other parts of Alaska.

Science Panel Comments: Whole body energy content is measured in herring from three areas in Alaska, and energy consumption rates are compared among healthy (southeast) and depressed (PWS) populations. The strength of this project is the comparison of the depressed PWS population with other, healthy populations. Understanding how the environments differ between areas with healthy fish and those with a stressed population of herring will enhance our knowledge of factors potentially contributing to the continued decline of herring in PWS.
RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: FUND

Science Director: Concur with Science Panel. Understanding the state of herring in PWS can only be enhanced by comparing similar attributes (e.g., habitat characteristics, body condition,

age and size distribution and abundance, etc) between areas with depressed population and areas with healthy populations. This proposal is one of the few that suggests making these comparisons. RECOMMENDATION: FUND

Executive Director: RECOMMENDATION: FUND

Project Number: 070833
Project: Wang/Norcross-Herring Restoration Modeling
Project Title: Herring Restoration in PWS-Modeling Circulation and Larval Transport
Location: PWS
Principal Investigator: Jia Wang, Brenda Norcross
Affiliation: UAF
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$97,900 FY08: \$106,200 FY09: \$107,400 FY10: \$0

Total Funding Requested:
\$311,500

Abstract:

We propose to investigate the effects of 3-D ocean circulation and zooplankton on the successful transport of larval herring from spawning to nursery grounds. We will combine a 3-D coupled Physical-Ecosystem Model (PhEcoM) and a 1-D Larval Herring Growth (LHG) model to investigate the effect of circulation on transport of larval Pacific herring in PWS. This 100m resolution, coupled 3-D PhEcoM is forced by tides, freshwater discharge, heat flux, and wind stress derived from NCEP, station data or high-resolution wind products by a regional model. The LHG model is affected by the amount of food and the vertical distribution of the food and the larvae. Larval herring drift will be simulated by combining the PhEcoM-LHG model and the historical hydrographical conditions and herring spawning locations in PWS to investigate the effect of (1) spawning location and (2) ocean circulation on the potential for a successful year class of juveniles.

Science Panel Comments: The design and approach of this proposal were well described, and the PI is very well qualified to complete this work. The project is relevant to herring enhancement activities: It predicts how water circulates within the Sound, which is important to understanding how certain life stages (e.g., larvae) get distributed and the location of their deposition. Similar work was initiated under the SEA program, but additional information will be added to refine and 'ground truth' the model. **RECOMMENDATION: FUND**

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Not Reviewed

Executive Director Comments: Do not fund due to the uncertainty of need for interacting models and applicability to herring restoration. **RECOMMENDATION: DO NOT FUND**

Project Number: 070340
Project: Weingartner-Oceanographic Monitoring of the Alaska Coastal Current
Project Title: Long-Term Oceanographic Monitoring of the Alaska Coastal Current
Location: Hydrographic Station GAK 1, Entrance to Resurrection Bay
Principal Investigator: Thomas Weingartner
Affiliation: UAF
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$128,200 FY08: \$131,300 FY09: \$129,500 FY10: \$0

Total Funding Requested:

\$389,000

Abstract:

This program continues a 36-year time series of temperature and salinity measurements at hydrographic station GAK 1. The data set, which began in 1970, now consists of monthly CTDs and a mooring with 6 temperature/conductivity recorders throughout the water column, 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: This proposal, which is an extension of an existing TC funded project, is well-written and clear in its design. The project measures physical/chemical data from one point in the Alaska Coastal Current that has been measured continuously for over 36 years. The ACC flushes PWS with water, thereby bringing nutrients and food into the system from the Gulf of Alaska. The project would provide basic, environmental measurements of constituents that affect all organisms inhabiting PWS including herring. **RECOMMENDATION: FUND**

Public Advisory Council Comments: **RECOMMENDATION: FUND**

Science Director: Given the importance of maintaining a long-term data set to measure change in marine environments that affect the spill area, I recommend that this project be funded for one

year. However, I encourage the PIs to seek future funding from sources with a broader oceanographic management umbrella. RECOMMENDATION: FUND

Executive Director: RECOMMENDATION: FUND

Project Number: 07835
Project: Wright/Heintz-Salmon Sharks and Herring
Project Title: Salmon Sharks Preying on Aggregated Herring and Salmon in Prince William Sound

Location: PWS
Principal Investigator: Bruce Wright, Ron Heintz
Affiliation: BAA
Disbursing Agency: TBD

Funding Requested by Fiscal Year:

FY07: \$287,900 FY08: \$75,900 FY09: \$75,900 FY10: \$0

Total Funding Requested:

\$439,700

Abstract:

Pacific herring populations found in Prince William Sound (PWS) have experienced an extended period of depressed numbers. During this same period the salmon shark (*Lamna ditropis*) population has increased in PWS. Salmon sharks have been observed at PWS spring herring spawning events. Our work on salmon sharks at salmon spawning locations reveals the sharks consuming large numbers of salmon. This project will investigate if salmon sharks are also taking large numbers of Pacific herring in PWS. We propose to investigate the diets of salmon sharks to determine if they feed on herring, track salmon sharks as they move from herring spawning to salmon spawning events and examine stomach contents to identify the primary energy sources consumed by sharks and confirm these conclusions through fatty acid analysis of shark triacylglycerols.

Science Panel Comments: This panel recognizes that sharks may be important predators of herring. However, the proposal as designed provides little of the information necessary to make needed quantitative evaluations of these effects. The project does not provide data on the number of sharks or on the number of herring eaten by a shark. Given this, the panel does not feel that information gained will substantively help in evaluation of herring restoration and recovery. While the project would provide meaningful data with respect to shark feeding and energetics, these are not data critical to herring restoration. **RECOMMENDATION: DO NOT FUND**

Public Advisory Council Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: The Science Panel comments have been revised to address concerns of the PI. I agree with their assessment. **RECOMMENDATION: DO NOT FUND**

Executive Director: **RECOMMENDATION: DO NOT FUND**

Predators

Disease
Hershberger¹

Sea Birds
Bishop²

Stellar Sea Lions
Thorne/Frid⁰

Whales
Rice²

Sharks
Wright⁰

Herring Life Cycle

EGG

LARVAL

JUVENILE

ADULT

Ecological Factors

Biological (Food)
Batten¹
Castellini⁰
Kline²
Vollenweider²
Cokelet⁰

Physical/Chemical
& Habitat
Crawford⁰
Gay²
Lindeberg¹
Weingartner¹
Cokelet⁰

Global Influence

Marking

Bickford⁰
Bickford/Norcross¹
Meuret-Woody¹
Otis/Bickford²

Distribution/
Abundance

Thorne¹

Life Cycle Proposals

Workshops

Adams⁰
Allee⁰
Thorne/Crawford⁰

Intervention

Linley²
Mullins⁰

Database

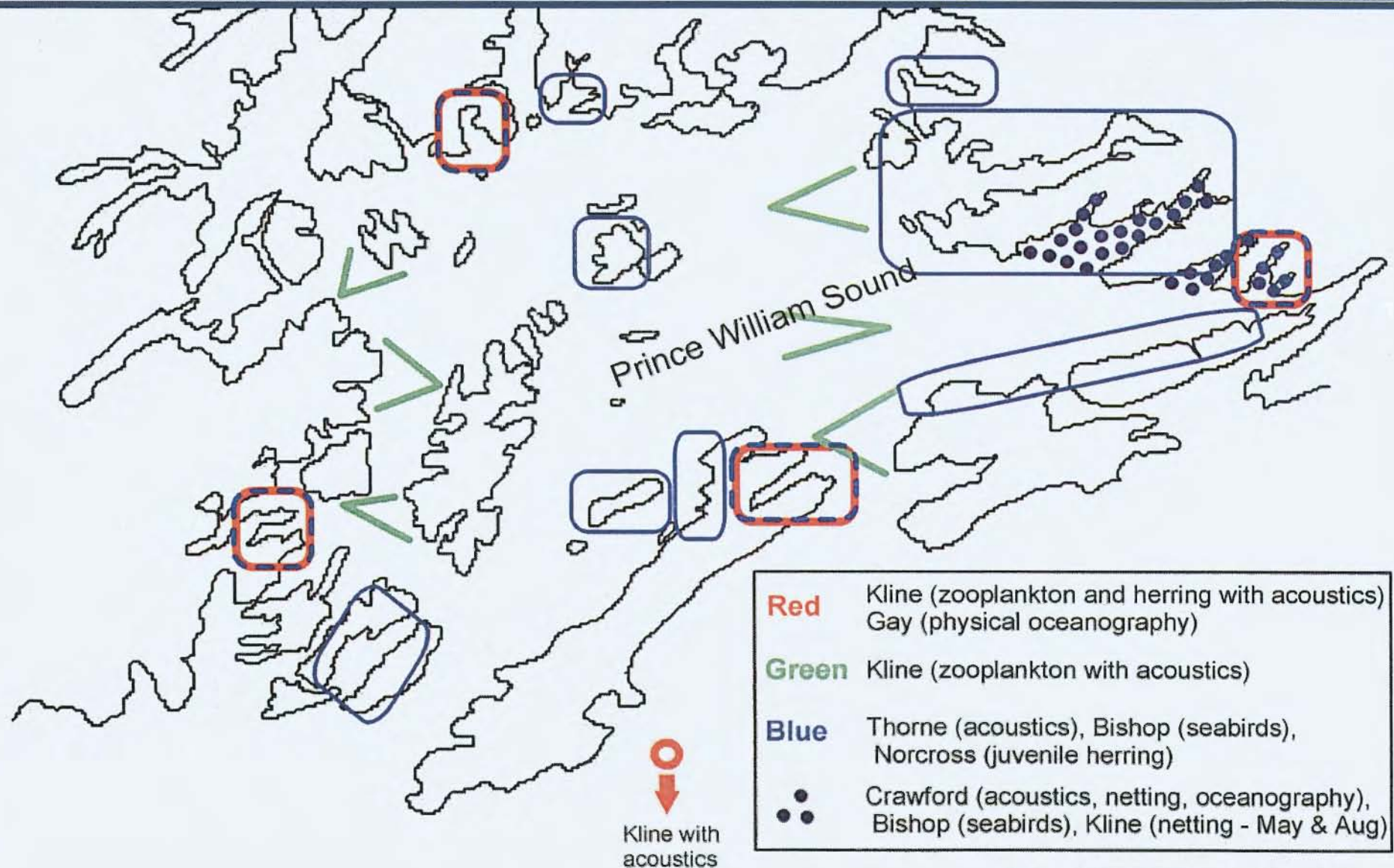
Kiefer¹
Moffit¹

Models

Kiefer¹
Wang²
Thorne-Frid⁰

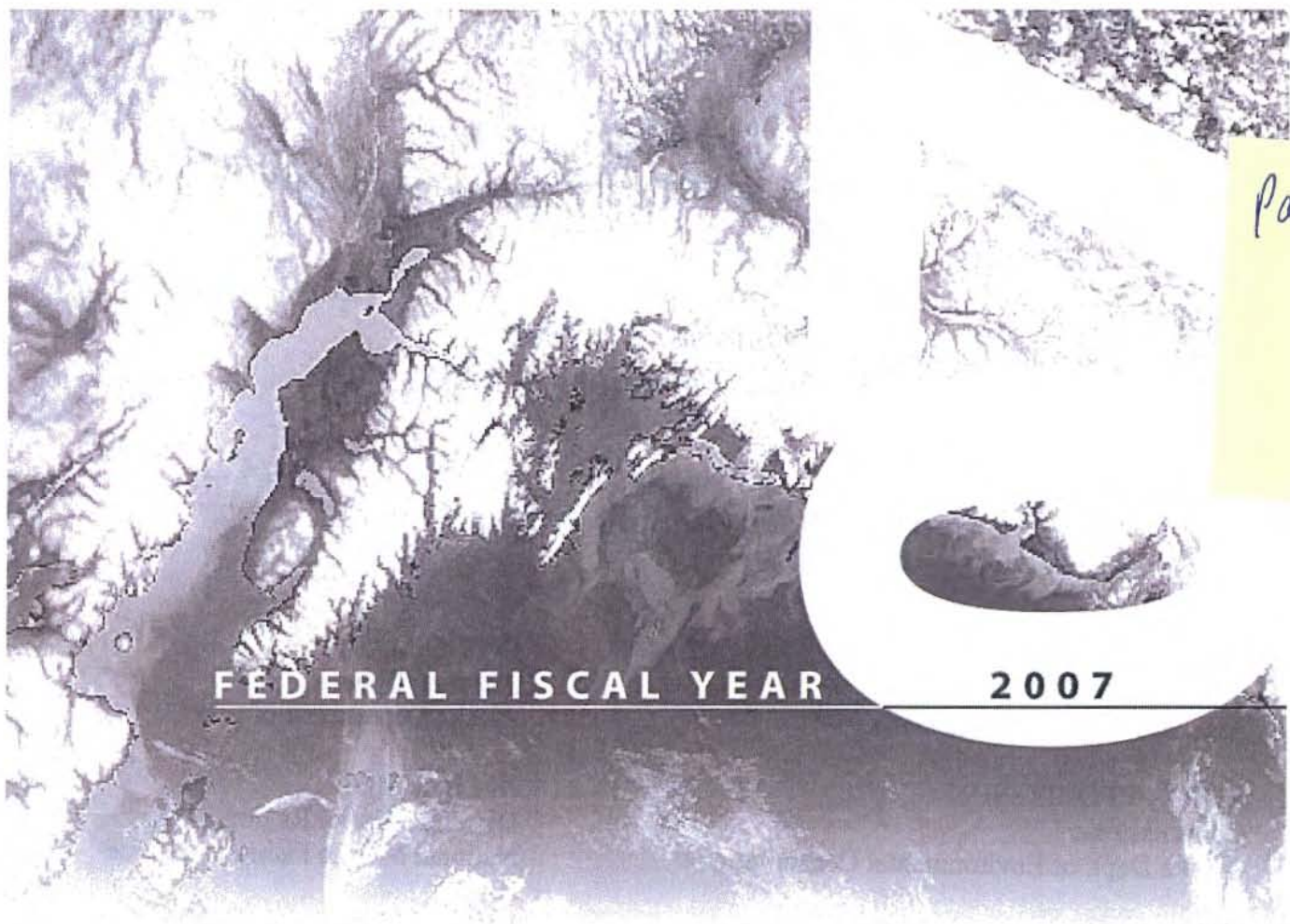
PWS Science Center Proposals

Spatial Coverage



BACK TO DIAGRAM

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL



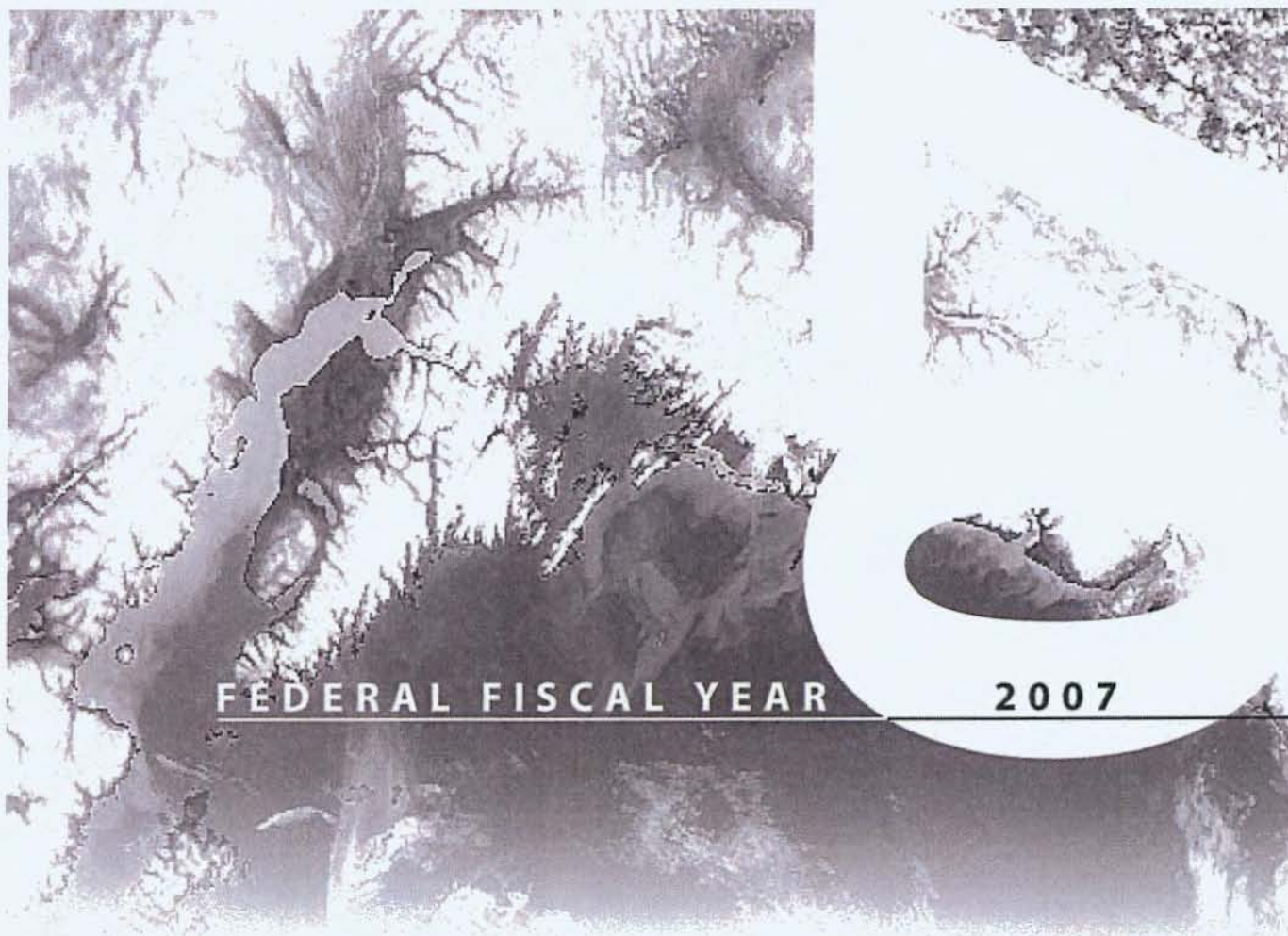
DRAFT WORK PLAN PART 2 : INJURED RESOURCES AND SERVICES

Issued October 27, 2006
Revised November 6, 2006



Exxon Valdez Oil Spill Trustee Council
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EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL



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FISCAL YEAR 2007

DRAFT WORK PLAN PART 2: INJURED RESOURCES AND SERVICES

**October 27, 2006
Revised November 6, 2006**

Prepared by:
Exxon Valdez Oil Spill Trustee Council

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Notice

The abstract of each proposal submitted in response to the FY07 Invitation for Proposals 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, the Science Director or other staff of the *Exxon Valdez* Oil Spill Trustee Council, nor do they reflect policies or positions of the Trustee Council.

The Alaska Department of Fish and Game (ADF&G) administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility please write:

- ADF&G ADA Coordinator, P.O. Box 115526, Juneau, AK 99811-5526.
- The department's ADA Coordinator can be reached via phone at the following numbers: (VOICE) 907-465-6077, (Statewide Telecommunication Device for the Deaf) 1-800-478-3648, (Juneau TDD) 907-465-3646, or (FAX) 907-465-6078.
- U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, Suite 300 Webb, Arlington, VA 22203
- Office of Equal Opportunity, U.S. Department of the Interior, Washington DC 20240.

Dear Reviewer,

The following draft work plan, entitled “**Draft Work Plan, FY07, Part 2: Injured Resources and Services**”, contains proposal information and funding recommendations for non-herring related projects only. The Trustee Council also received herring related proposals in response to the FY07 Invitation for Proposals, which were contained in Draft Work Plan, FY07, Part 1: Pacific Herring. Check our website, www.evostc.state.ak.us, periodically for updates.

Each year, the *Exxon Valdez* Oil Spill Trustee Council funds activities to restore the resources and services injured by the 1989 *Exxon Valdez* oil spill. Public input is critical to the Council’s decision making process and this draft work plan has been prepared to solicit your comments on which projects to fund in Fiscal Year 2007.

In 2006, the Council recognized that a tremendous amount of work had been accomplished over 15 years of research, monitoring and specific activities directed at addressing the restoration and rehabilitation goals of the 1994 Restoration Plan (www.evostc.state.ak.us/Policies/restplan.htm). However, the Council determined that results of previous efforts needed synthesis in order to better understand the effects of lingering oil and to evaluate the status of injured resources and services. They decided to realign priorities and restorative activities, placing focus on critical work required to reach closure in areas of restoration related to lingering oil and injured resources. The Council’s priorities are outlined in the Interim Guidance Document (IGD), www.evostc.state.ak.us/Policies/igd.htm.

In this Draft Work Plan, Part 2: Injured Resources and Services, the Trustee Council has endorsed a comprehensive, balanced approach to the restoration of injured resources and services which is reflected in this draft work plan. This approach recognizes the importance of research to determine why resources are not recovering, or are recovering slowly, and recognizes the need for monitoring to track the status of recovery. It provides for cost effective general restoration activities, especially those that help the resources upon which communities and industries depend.

Also, the Trustee Council’s commitment to community involvement in the restoration process remains strong. Projects that involve local youth in ongoing restoration and monitoring activities and projects that proposed to enhance subsistence resources injured by the spill were recommended for continued funding.

I am interested in your thoughts and ideas in regard to this draft work plan, as well as our restoration plan in general. Comments on this draft work plan need to be received at the Trustee Council office by COB November 10, 2006. Please see the “Please Comment” section prior to the Table of Contents for more information regarding how to submit comments.

Michael Baffrey
Executive Director

PLEASE COMMENT

You can help the Trustee Council by reviewing this draft work plan and letting us know your priorities for Fiscal Year 2007. To be most useful, your comments should be received by the Council on or before November 10, 2006. You can comment by:

Mail: Exxon Valdez Oil Spill Trustee Council
441 W. 5th Avenue, Suite 500
Anchorage, AK 99501
Attn: Draft Fiscal Year 2007 Work Plan

Telephone: 1-800-478-7745 (within Alaska)
1-800-283-7745 (outside of Alaska)
Collect calls will be accepted from fishers and boaters who call through the marine operator.

Fax: 907-276-7178

E-mail: projects@evostc.state.ak.us

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Acknowledgements

We are pleased to acknowledge Trustee Council staff members Carrie Holba, Michael Schlei, Cherri Womac, Barbara Hannah, Catherine Boerner, and Colleen Keane whose hard work and dedication made this Draft Work Plan possible. Special thanks to the anonymous scientists who peer reviewed the proposals received this year and thanks also to the principal investigators and their collaborators for giving us so many fine proposals from which to choose in building our program. Many thanks to those scientists from Trustee Council agencies that provided help, and in particular we offer special thanks to Dede Bohn, Carol Fries, Pete Hagen, Hans Neidig, Heather Brandon, Jenifer Kohout, Jennifer Thomson, Larry Dietrick, and Steve Zemke. We also owe our thanks for their expert program guidance and peer review efforts to the members of the Science Panel (Steve Braund, Ron O'Dor, Gary Cherr, Tom Dean, Robert Spies, Charles (Pete) Peterson and Leslie Holland-Bartels). Finally, we appreciate the participation and comments on this plan provided to us by the Public Advisory Committee (PAC).

Michael Baffrey, Executive Director

Kimberly A. Trust, Science Director

Overview of the FY07 Work Plan

The Draft Work Plan comprises multi-year projects submitted in previous years which have received continuous funding by the Trustee Council and new proposals received in response to the FY07 Invitation for Proposals. This document allows the Council to review the projects proposed for fiscal year 2007, and the funding requested to implement the proposed work. This year the Draft Work Plan is divided into two sections: **FY07 Draft Work Plan, Part 1: Pacific Herring** and **FY07 Draft Work Plan, Part 2: Injured Resources and Services**. Upon final funding decisions by the Trustee Council, these two sections will be condensed into one final Work Plan for 2007. Each section of the Draft Work Plan contains basic information about an individual proposal and its complete record of funding recommendations during the review process. Recommendations from the Science Panel and preliminary recommendations of the Science Director and Executive Director are included in this draft. The recommendations of the Public Advisory Committee (PAC) will be added prior to the Draft Work Plan's review by the Trustee Council.

Part 2 of the FY07 Draft Work Plan, enclosed here, presents those proposals that focus on the restoration and monitoring of injured resources and services. Nineteen proposals were reviewed by the Trustee Council that related to injured resources and services. The total requested funding for these projects in FY07 is \$3,441,000 and the total requested funding for injured resources and services projects over the next three years is an additional \$2,734,540.

The Trustee Council has an open, competitive contracting process that is designed to allow proposals from any source to be considered for funding as an external project. The system works well for this purpose as demonstrated by the fairly even distribution of funding across the home institutions of the principal investigators of external projects.

Projects Currently Funded Through FY07*

PI	Project #	Title	Funding to Date	FY07 Funding
Matkin	050742	Monitoring of Killer Whales in PWS/Kenai Fjords in 2005-2007	\$42,800	\$23,800
Baird	050743	Linking Shoreline Mapping with Community-Based Monitoring	\$49,200	\$11,900
Hoover/Miller	050749	Harbor Seal Monitoring in Southern Kenai Peninsula Fjords	\$223,000	\$82,300
Short	050763	Long-term Monitoring of Anthropogenic Hydrocarbons	\$117,800	\$58,900
Willette	050765	Improving Preseason Forecasts of Kenai River Sockeye Salmon Runs	\$134,700	\$67,000
Otis	050769	Temporal Stability of Fatty Acids used to Discriminate Pacific Herring	\$157,100	\$25,100

*The Trustee Council has already approved funding for these projects in FY07.

Summary of Funding Recommendations for FY07

Project Number	PI	Title	Total Funding Requested	Total FY07 Funding Recommended ^a	Priority Ranking ^b	Science Panel	
070808	Ballachey/Bodkin	Sea Otter Status & Nearshore Synthesis	\$251,700	\$154,000	2	Fund	1
070750	Bodkin/Dean	Database and Implementation of Evaluation of Recovery & Restoration of Nearshore	\$136,600	\$135,400	1	Fund	1
070131	Brown-Schwalenberg/Brooks/Hetrick	Subsistence Clam Enhancement and Rehabilitation of Clam Populations in PWS	\$ 78,500		1	Do Not Fund	Do Not Fund
070809	Carls/Rice	The Risk of Buried Oil to Fauna: A Pre-Remediation Assessment.	\$399,700		0	Do Not Fund	Do Not Fund
070816	Esler	Harlequin Duck Population: CYPLA Monitoring & A Demographic Population Model	\$201,700	\$177,800	1	Fund	1
070703	Honnold/Duesterloh/Finney/Whitledge/Stockwell	Effects of Anadromous Marine-Derived Nutrients on Biological Production in Sockeye Salmon	\$1,442,600		0	Do Not Fund	Do Not Fund
070639	Goldman	Monitoring Ecosystem Parameters in the Northern Gulf of Alaska	\$288,100		0	Do Not Fund	Do Not Fund
070751	Irons	PWS Marine Bird Surveys, Synthesis & Restoration	\$1,829,100	\$178,100	2	Do Not Fund	1

EVOSTC FY 2007 Draft Work Plan, Part 2: Injured Resources and Services 10/27/2006

Project Number	PI	Title	Total Funding Requested	Total FY07 Funding Recommended ^a	Priority Ranking ^b	Science Panel	
070709	Jack	Population Monitoring of Sea Otters in PWS	\$329,600		0	Do Not Fund	Do Not Fund
070820	Lauenstein/Apeti	Assessment of PAH's and Heavy Metals in Subsistence Mollusks from the PWS	\$121,600	\$121,600	3	Fund	Fund
070802	Lohmann/Burgess	Predicting & Validating the Bioavailability of PAH's from the EVOS	\$335,500		0	Do Not Fund	Do Not Fund
070742	Matkin	Monitoring, Tagging, Feeding Studies & Restoration of Killer Whales in PWS/Kenai	\$103,000	\$100,000	1	Fund	Fund
070290	Nelson/Short	The Exxon Valdez Trustee Hydrocarbon Database	\$30,100	\$30,100	1	Fund	Fund
070825	Pawlowski/Simpson	Monitoring Lingering Oil and Resources at Risk with Time-Lapse Digital Photography	\$258,800		0	Do Not Fund	Do Not Fund
070759	Rosenberg	Harlequin Duck Population Dynamics in PWS: Measuring Recovery	\$86,700	\$86,700	2	Fund	Fund
070827	Rosenberg/ Springman	Assessing Potential Oil Exposure to Harlequin Duck Populations in PWS	\$89,200		0	Defer	Do Not Fund
070210	Salasky/Crumley	PWS Youth Area Watch	\$960,400		2	Fund (FY07 only)	Do Not Fund
070610	Schneider	Kodiak Archipelago Youth Area Watch	\$287,600		2	Fund (FY07 only)	Do Not Fund
070829	Shigenaka/ Fukuyama/ Downs/Holderied/ Coats/Thompson	Bioavailability & Effects of Lingering Oil to Littleneck Clams	\$556,200	\$239,000	2	Do Not Fund	Fund

TOTAL FY07 FUNDING REQUESTED: \$3,417,000
TOTAL FY07 FUNDING RECOMMENDED: \$1,222,700
TOTAL FUNDING REQUESTED: \$7,786,700

^aThe Total Funding Recommended column reflects amended amounts being recommended to the Trustee Council for funding by the Executive Director based on proposal revisions or recommended reduced funding.

^bPriority Ranking - Non-Herring Projects – The Science Panel, in collaboration with the Science Director, devised a four point (0,1,2,3) guidance in determining which Injured Resources and Services projects to recommend. Those projects that are not recommended for funding are given a 0, but projects given a 1, 2, or 3 were recommended for funding, but these projects were ranked in order of priority.

^cFund Contingent – Projects with a Fund Contingent are recommended for funding by the Executive Director, but the PI's have an outstanding report to the Trustee Council from a past project. Upon receipt of the report, any approved funds will be released.

Proposed Projects

Acronyms:

ADEC – Alaska Department of Environmental Conservation

ADFG – Alaska Department of Fish and Game

BAA – Broad Agency Announcement

DOI – US Department of Interior

EVOS – Exxon Valdez Oil Spill

FWS – US Fish and Wildlife Service

NOAA – National Oceanic and Atmospheric Administration

PWS – Prince William Sound

PWSFRAP – Prince William Sound Fisheries Research Application and Planning

PWSSC – Prince William Sound Science Center

UAF – University of Alaska, Fairbanks

USGS – US Geologic Survey

Project Number: 070808
Project: Ballachey/Bodkin-Sea Otter Status and Nearshore Synthesis
Project Title: Sea Otter Status and Nearshore Synthesis
Location: PWS
Principal Investigator: Brenda Ballachey, James Bodkin
Affiliation: DOI/USGS
Disbursing Agency: USGS

Funding Requested by Fiscal Year:

FY07: \$154,000 FY08: \$97,700 FY09: \$0 FY10: \$0

Total Funding Requested:

\$251,700

Abstract:

Sea otters, and other nearshore birds and mammals were severely impacted by the 1989 *Exxon Valdez* oil spill. In areas where acute effects were greatest and lingering oil persists longest, recovery for some of those nearshore birds and mammals remains incomplete through 2005. We present three objectives in this proposal: (1) Evaluate progress toward sea otter recovery through surveys of abundance and carcass deposition. (2) Evaluate factors contributing to the status of sea otter populations through the synthesis of long-term data sets on individual exposure to oil, health, condition, behavior, and home range in the context of long-term survival. (3) Conduct spatial synthesis of elevated biomarkers in mammals, birds, and fishes. Anticipated outcomes will identify shorelines where lingering oil most likely persists and which may be candidates for restoration or remediation.

Science Panel Comments: The proposed project will extend long-term data sets on the population abundance and survival that are critical to the continued evaluation of injury and recovery of sea otters. In addition, the project will provide important syntheses of past data on population dynamics of sea otters and exposure of sea otters and other injured nearshore resources to oil. These syntheses will allow further assessment of the relative importance of continued oil exposure to sea otter recovery, provide information that will help in evaluation of the efficacy of potential restoration activities, and help to guide decisions regarding locations where clean up of oiled shorelines might be considered. The panel recognizes the excellent publication record of the Principal Investigators, but urges them to publish results of biomarker work that has yet to be fully addressed in peer reviewed publications. RECOMMENDATION: FUND

Public Advisory Council Comments: RECOMMENDATION: FUND

Science Director Comments: Concur with Science Panel. It is necessary to continue the carcass surveys in order to determine age-specific mortality which can be used in a population model. To be useful this information needs to be collected every year. The spatial synthesis of elevated biomarkers in a suite of nearshore species may allow them to identify 'hot spots' of oil exposure which could be beneficial in prioritizing areas of lingering oil. RECOMMENDATION: FUND

Executive Director Comments: RECOMMENDATION: FUND

Project Number: 070750
Project: Bodkin/Dean-Nearshore Resources Database
Project Title: Database Development and Implementation of Long-Term Monitoring for Evaluation of Recovery and Restoration of Nearshore Resources
Location: PWS
Principal Investigator: James Bodkin, Thomas Dean
Affiliation: DOI/USGS
Disbursing Agency: USGS
Funding Requested by Fiscal Year:
FY07: \$136,600 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:

\$136,600

Abstract:

The proposed project is designed to assist in the evaluation of recovery and restoration of injured nearshore resources in Prince William Sound. The project has two tasks. The first is to develop a database management system for nearshore data. The database management system will be developed using a web-based user interface and an underlying relational geodatabase. This database management system will ensure the preservation of existing nearshore monitoring data, allow for more integrated assessments of recovery and restoration of nearshore resources, and provide a structure for data gathered as part of future restoration monitoring. The second task is to initiate long-term recovery and restoration monitoring in the nearshore in Prince William Sound. Many of the data sets 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) are also a critical part of a comprehensive nearshore monitoring plan developed by Dean and Bodkin (2006) that is currently being implemented by the National Park Service along the Katmai coast. Funds for conducting most of these studies in Prince William Sound (e.g. aerial surveys of sea otter abundance, bird and mammal surveys, and shore-zone mapping) are being sought by several other proposals submitted to the Trustee Council and are not addressed herein. Our purpose is to fill in missing gaps in the long-term monitoring program in Prince William Sound and to make it comparable to the program being carried out at Katmai. This proposed nearshore sampling in PWS, the similar sampling being conducted on the Katmai coast, and the proposed development of a comprehensive nearshore database management system will provide the backbone of a long-term restoration monitoring program. The goal of this program is to detect and identify sources of change in the nearshore and to foster recovery of nearshore resources by ameliorating adverse effects of human-induced impacts.

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. Also, proposed database development will facilitate future integration and syntheses regarding nearshore resources including intertidal communities, sea otters, oyster catchers, and other nearshore birds. RECOMMENDATION: FUND

Public Advisory Committee Comments: RECOMMENDATION: FUND

Science Director Comments: Concur with Science Panel. This project takes a phased approach to developing a systematic way of assessing the nearshore environment in which the Trustees have previously invested. Collectively, the overall status of the intertidal environment has not been consistently evaluated. This project will build upon earlier work that developed the methods for assessing the nearshore and more fully implement the program on the ground. It is being done in conjunction with the National Park Service which is a partner in this program. Finally, it will provide a relational database for storing this information, which will allow for a wide range of uses of the data. RECOMMENDATION: FUND

Executive Director Comments: RECOMMENDATION: FUND

Project Number: 070131

Project: **Brown-Schwalenberg/Brooks/Hetrick –Subsistence Clam Enhancement**

Project Title: Plan Enhancement for Establishing a Program for Subsistence Clam Enhancement and Rehabilitation of Clam Populations Injured by the Exxon Valdez Oil Spill

Location: PWS and Outer Kenai Peninsula

Principal Investigator: Patricia Brown-Schwalenberg, Kenn Brooks, Jeff Hetrick

Affiliation: BAA

Disbursing Agency: TBD

Funding Requested by Fiscal Year:

FY07: \$78,500	FY08: \$0	FY09: \$0	FY10: \$0
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Total Funding Requested:

\$78,500

Abstract:

This project will produce a plan for establishing subsistence clam sites near the villages of Tatilek, Chenega Bay, Port Graham, and Nanwalek and for rehabilitating clam populations in western Prince William Sound and the outer Kenai Peninsula that were injured by the oil spill. The program that this plan would create would use enhancement techniques to establish subsistence clam sites near the villages as a replacement for subsistence resource that was severely damaged by the spill. The program resulting from this plan would also initiate a rehabilitation effort of clam populations injured by the spill.

Science Panel Comments: The proposal addresses restoration of an important injured resource, subsistence usage of clams. However, the proposal does not provide convincing evidence that plan provided will lead to effective restoration of clams. The Trustees have provided substantial funding for similar work in the past, but an update of the status of this work, a discussion of its accomplishments and failures (especially with respect to littleneck clam nurseries), and a recognition and summary of procedures that have proven successful in clam culture elsewhere are not provided. The proposed work will produce a set of how-to manuals, but it is unclear how this will lead to effective restoration. A substantial portion of the budget is related to culture of butter calms, but these are recognized as poor candidates for subsistence harvest restoration because of risk to PSP that is common in these clams. Also, what the panel sees as a disproportionate portion of the budget is related to coordination and not to more critical aspects of on-site restoration in areas of subsistence use. The panel urges the investigators to focus future proposed work on culture and grow out of littleneck clams and cockles, and direct this work more toward on-site restoration activities. **RECOMMENDATION: DO NOT FUND**

Public Advisory Committee Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Spill-affected communities have continued to express concerns about the use of clams as a subsistence resource for a variety of reasons (eg, PSP, reduced abundance etc), and subsistence continues to be a service considered injured as a result of the spill. Thus, it is important to consider ways of addressing clam restoration. This project proposes to develop a set of manuals that could possibly be used to facilitate enhancement of clams in some areas of the spill zone. However, it is unclear from this proposal how this project will lead to actual clam enhancement, because no work is proposed for implementation of the program proposed in the manuals. This proposal was developed from previous TC-funded projects, and it would be useful to understand how "lessons-learned" from historical work would be implemented in a new program. RECOMMENDATION: DO NOT FUND

Executive Director Comments: Concur with Science Panel comments and recommend not funding. Also agree with the PAC recommendation to not fund this proposal until the co-PIs submit final deliverables for a previous Trustee Council funded project (Project 030052). RECOMMENDATION: DO NOT FUND

Project Number: 070809
Project: Carls/Rice-Lingering Oil and Fauna
Project Title: The Risk of Buried Oil to Fauna: A Pre-Remediation Assessment.
Location: PWS
Principal Investigator: Mark Carls, Jeep Rice
Affiliation: NOAA
Disbursing Agency: NOAA
Funding Requested by Fiscal Year:
FY07: \$399,700 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:

\$399,700

Abstract:

To inform the decision whether or not to further remediate Prince William Sound (PWS) shorelines, we propose a study of intertidal infauna, a biological community possibly still exposed to and impacted by buried oil and plausibly (along with oiled sediment) the conduit whereby vertebrate predators continue to be exposed to *Exxon Valdez* oil. We pose several questions: are intertidal infauna still being exposed to oil? Is this oil affecting survival, growth, reproduction, and community structure? Are there plausible secondary effects on predators? These issues are of critical relevance for deciding whether to remediate oiled shoreline. If oil has become progressively isolated from surrounding areas, and thus relatively unavailable to organisms, including infauna, then removal disturbance may cause more harm than good. Conversely, if oil still adversely affects a significant fraction of infauna and their predators, oil removal may be prudent. We propose an integrated study to detail oil transportation, bioavailability, and effects on invertebrate communities in the intertidal zone to determine if the ecosystem is currently affected by remaining oil. The goal is to determine the significance, if any, of local patches of oil to the invertebrate community. Bioavailability will be determined at the surface and at depth, and biological impacts to community structure will be determined at the surface and at depth. The target area will be northern Knight Island archipelago, remains in beaches and exposure continues to harlequin ducks and sea otters. Worst case heavily oiled patches will be sampled along with matched reference areas. We believe that information on oil bioavailability at the surface and depth and assessment of biological impacts is critical information needed by managers to determine the scope of possible future clean-up and remediation.

Science Panel Comments: The proposal addresses two issues: 1) The extent of injury to intertidal communities associated with isolated patches of oil, and 2) The distribution of oil patches and its availability to higher trophic levels. The proposal did not clearly distinguish how each of the proposed tasks would be used to address these issues, but it is the panel's evaluation that infaunal community analysis would address injury while other tasks (passive samplers, tissue and sediment PAH, egg abnormalities, amphipod assays) would address oil patch distribution and bioavailability. The analysis of infaunal community structure is costly and notorious for providing relatively little power to detect effects. The panel did not feel that the

costs were justified given the limited benefit of these analyses. Also, infaunal invertebrate experts were not identified. The panel also had concerns regarding amphipod assays and tissue PAH analysis. Amphipod assays are often heavily influenced by environmental factors other than contaminants of interest, and unexplained instances of poor survival are common. Given the often messy nature of amphipod assay data, the panel does not see this as an extremely useful tool. Also, the tissue PAH analysis seems to focus on epibenthic animals that are less likely to have PAHs in tissue than infaunal organisms. The panel was intrigued with the potential for using passive samplers to evaluate potential for exposure to remaining oil, but thought that several design changes might be advisable including the inclusion of winter sampling when release of oil from sediment is most likely. **RECOMMENDATION: DO NOT FUND**

Public Advisory Committee Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Concur with Science Panel. **RECOMMENDATION: DO NOT FUND**

Executive Director Comments: **RECOMMENDATION: DO NOT FUND**

Project Number: 070816
Project: Esler-Harlequin Duck Population Recovery
Project Title: Evaluating Harlequin Duck Population Recovery: CYP1A Monitoring and a Demographic Population Model
Location: PWS
Principal Investigator: Dan Esler
Affiliation: DOI/USGS
Disbursing Agency: USGS
Funding Requested by Fiscal Year:
FY07: \$177,800 FY08: \$23,900 FY09: \$0 FY10: \$0
Total Funding Requested:
\$201,700

Abstract:

Harlequin ducks are one of the few species defined as “not recovered” from the 1989 *Exxon Valdez* oil spill. In this document, we propose 2 areas of inquiry to (1) evaluate the status of population recovery, specifically the degree of exposure to lingering oil, and (2) more fully understand the demographic processes underlying population recovery, through application of a quantitative population model.

Cytochrome P4501A (CYP1A) has proven to be an extremely useful tool for documenting the spatial and temporal degree of exposure to lingering oil, and there is a large body of historical CYP1A data (1998 to 2005) for harlequin ducks. The most recent data from March 2005 irrefutably demonstrated that harlequin ducks continued to be exposed to lingering oil. Because population recovery requires cessation of exposure to oil, we propose to resample harlequin ducks from throughout the oiled area of Prince William Sound, along with nearby unoiled areas, to determine whether they continue to be exposed to lingering oil.

A considerable volume of demographic data on harlequin ducks has been collected during research and monitoring efforts since the spill. We propose to assemble these data in a population model, which will be valuable for: (1) identifying the timing and magnitude of oil spill injury, (2) identifying the mechanisms by which injury occurred and population recovery was constrained, (3) evaluating the current status of recovery, including predictions for timing of full recovery, and (4) recommending future restoration activities.

Science Panel Comments: The proposed project will extend long-term data sets on potential exposure of Harlequin ducks to oil that is critical to the continued evaluation of injury and recovery of harlequin ducks. In addition, the project will provide important syntheses of past data on population dynamics of harlequin ducks. These syntheses will allow further assessment of the relative importance of continued oil exposure to harlequin recovery and provide information that will help in evaluation of the efficacy of potential restoration activities.

RECOMMENDATION: FUND

Public Advisory Committee Comments: RECOMMENDATION: FUND

Science Director Comments: This proposal will tie together years of harlequin duck data from the spill area that prior to now has not been synthesized in such a way that leads to a comprehensive understanding of harlequin population dynamics that have occurred as a result of the spill. This project will provide a predictive tool for understanding initial population impacts of the spill and possible population recovery scenarios. **RECOMMENDATION: FUND**

Executive Director Comments: RECOMMENDATION: FUND

Project Number: 070703

Project: **Finney/Honnold/Duesterloh/Whitledge/Stockwell - Sockeye Salmon**

Project Title: Marine-Terrestrial Linkages in Northern Gulf of Alaska Watersheds: Monitoring the Effects of Anadromous Marine-Derived Nutrients on Biological Production in Sockeye Salmon Systems

Location: Kodiak Island

Principal Investigator: Steven Honnold, Switgard Duesterloh, Bruce Finney, Terry Whitledge, Dean Stockwell

Affiliation: UAF/ADFG

Disbursing Agency: TBD

Funding Requested by Fiscal Year:

FY07: \$278,200	FY08: \$291,500	FY09: \$299,100	FY10: \$311,500
FY11: \$262,300			

Total Funding Requested:

\$1,442,600

Abstract:

We propose continuing our project examining roles of MDN in sockeye salmon nursery ecosystem productivity through studies of nutrient cycling, primary productivity, zooplankton and juvenile sockeye dynamics, and stable isotope abundance. We utilize detailed vertical and temporal sampling of the water column and contemporaneous sampling in a well-matched pair of salmon and control lakes. We will determine the extent to which the functioning and productivity of watersheds depends on MDN and how this marine-terrestrial linkage can be effectively monitored. Results to date demonstrate project feasibility, and novel findings document rates and mechanisms of MDN cycling and subsequent impacts to juvenile sockeye. Continued funding is required to develop time-series long enough to establish robust quantitative relationships and validate our monitoring protocols. Timely detection of lake impacts on juvenile salmon will assist fisheries managers by allowing assessment of potential impacts to adult salmon production.

Science Panel Comments: This proposal is for continuation of a previously funded project that evaluates influences of sockeye salmon and associated marine derived nutrients on lake productivity. While the panel and reviewers concluded that the scientific questions were important, and the design to address these was sound. However, the proposal was not responsive to specific questions raised in the invitation, and has no clear link to injured resources or their restoration. **RECOMMENDATION: DO NOT FUND**

Public Advisory Committee Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: This is a scientifically valid proposal but the link to the Invitation was tenuous. RECOMMENDATION: DO NOT FUND

Executive Director Comments: RECOMMENDATION: DO NOT FUND

Project Number: 070639
Project: Goldman-Monitoring Ecosystem Parameters
Project Title: Monitoring Ecosystem Parameters in the Northern Gulf of Alaska
Location: Kachemak Bay
Principal Investigator: Kenneth Goldman
Affiliation: ADFG
Disbursing Agency: ADFG
Funding Requested by Fiscal Year:

FY07: \$102,100 FY08: \$88,300 FY09: \$97,700 FY10: \$0

Total Funding Requested:

\$288,100

Abstract:

Ecosystem structure in the northern Gulf of Alaska, as indicated by the dominant fish and invertebrate populations, exhibited dramatic shifts in the late 1970s and early 1980s. Abundance of many apex species, particularly piscivores, declined from the 1970s through the 1990s. These changes are believed to be related to a decadal shift in climate as warming waters likely resulted in a transition from crustacean-dominated forage populations to fish dominated population, particularly gadid species (e.g. pollock and cod). Standardized small mesh trawl surveys, conducted by the Alaska Department of Fish and Game (ADF&G) in Kachemak Bay in lower Cook Inlet since 1971 have provided data that documents these changes. Coupling trawl survey and oceanographic data will allow ADF&G to better identify ecosystem links to population and biomass changes with the ultimate goals of: (1) monitoring of ecosystem changes; (2) identifying of species that are at risk; and (3) fostering better management of Alaska's marine resources.

Science Panel Comments: The proposed project provides for continuation of a small mesh trawl surveys that will extend a long-term data set that is potentially very valuable in assessing environmental change. However, potential links to injured resources and restoration are tenuous and not well spelled out in the proposal. The panel can not recommend funding for this reason. Also, it is unclear as to what extent agency funds will be used to support future surveys and at what frequency. The principal investigator is urged to synthesize existing small mesh trawl survey data (including the Kachemak Bay and Anderson surveys), to relate findings from these surveys to other physical/biological data sets that are available (e.g. GAK1 data and plankton data from Batten), and to assess potential causes for changes. The panel suggests that funding for publication of such an effort might be a project worth future consideration by the Trustees, and that trawl surveys might be a valuable part of future long-term monitoring.

RECOMMENDATION: DO NOT FUND

Public Advisory Committee Comments: RECOMMENDATION: DO NOT FUND

Science Director Comments: Although this project has been funded by the TC in response to previous requests for proposals, it is unclear how it relates to the current Invitation or links to restoration. RECOMMENDATION: DO NOT FUND

Executive Director Comments: RECOMMENDATION: DO NOT FUND

Project Number: 070751
Project: Irons-Marine Bird Surveys
Project Title: Prince William Sound Marine Bird Surveys, Synthesis and Restoration
Location: PWS
Principal Investigator: David Irons
Affiliation: DOI/FWS
Disbursing Agency: DOI
Funding Requested by Fiscal Year:
FY07: \$459,200 FY08: \$336,900 FY09: \$318,900 FY10: \$340,700
FY11: \$373,400

Total Funding Requested:

\$1,829,100

Abstract:

We propose to conduct small boat surveys to monitor abundance of marine birds in Prince William Sound, Alaska during March and July 2007-2011. Eight previous surveys have monitored population trends for >65 bird and 8 marine mammal species in Prince William Sound after the *Exxon Valdez* oil spill. We will use data collected in 2007-2011 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. To help determine when recovery has occurred we will examine population trends in other areas outside of Prince William Sound, and conduct population modeling for the non-recovered species. 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 2005 in the oiled area indicated that bald eagles (*Haliaeetus leucocephalus*), common loons (*Gavia immer*), and cormorants (*Phalacrocorax spp*) are increasing in winter. 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*) and common murrelets (*Uria aalga*) are showing no trend in the oiled area; pigeon guillemots (*Cephus columba*), marbled murrelets (*Brachyramphus marmoratus*), and Kittlitz's murrelets (*Brachyramphus brevirostris*) are declining in the oiled areas of Prince William Sound. Results of all surveys have been summarized in reports and results through 1998 have been published by Irons et al. (2000) and Lance et al. (2001). Analyses and synthesis of these survey data are the only ongoing means to evaluate the recovery of most of these injured species. A final report will be written upon completion of the project that will address population status of injured species, additionally, results will be published in a peer reviewed journal.

Science Panel Comments: The proposal provides for the extension of an important long-term data set that is critical to the evaluation of recovery of injured bird resources. However, the survey work is costly and previously presented power analyses have suggested that surveys conducted at a frequency of once every three years may be sufficient to detect reasonable levels

of change in seabird abundance. Thus, the panel felt that annual surveys as proposed are not warranted, and that postponing the start of less-frequently conducted potential future surveys would not be of great issue. The panel also found that methods and justification with respect to synthesis and modeling objectives were not sufficiently detailed or developed. The panel suggests that the proposal be reduced in scope (i.e. less frequent survey intervals, possible reduced modeling effort) and submitted for consideration in future funding cycles.

RECOMMENDATION: DO NOT FUND

Public Advisory Committee Comments: RECOMMENDATION: FUND (as modified in the Executive Director's comments below)

Science Director Comments: Not Reviewed. The Science Director is on a long-term detail from the FWS and must therefore, recuse herself from making recommendations on FWS proposals. The PI on this proposal is employed by the FWS. **RECOMMENDATION: ABSTAIN**

Executive Director Comments: Several species of seabirds remain on the Injured Resources list as recovering, not recovering, or unknown. To maintain long-term population trend data to evaluate recovery on these species it is important to continue the population surveys. However, it is not necessary to complete them every year. The PI has not conducted the surveys since 2005, so I recommend that the Trustee Council support one year of surveys at \$178,000 which replicates the scope of the 2005 survey. **RECOMMENDATIONS: FUND (\$178,000 in FY07, only)**

Project Number: 070709

Project: Jack-Sea Otter Monitoring

Project Title: Population Monitoring of Sea Otters in the EVOS Area

Location: PWS, Kachemak Bay, Kodiak

Principal Investigator: Lianna Jack

Affiliation: BAA

Disbursing Agency: TBD

Funding Requested by Fiscal Year:

FY07: \$96,700

FY08: \$102,800

FY09: \$130,100

FY10: \$0

Total Funding Requested:

\$329,600

Abstract:

One of the many marine mammal species that was contaminated by the Exxon Valdez Oil Spill was the northern sea otter (*Enhydra lutris kenyoni*). While sea otter recovery in oil spill areas is improving, sea otter populations are not at their prespill levels or distribution. To better understand the recovery of these populations of sea otter, it is important to continue population monitoring and surveys. The Alaska Sea Otter and Steller Sea Lion Commission (TASSC) proposes to annually monitor five areas located within the Exxon Valdez oil spill area through implementation of skiff surveys. TASSC will coordinate with local tribes and communities to implement the surveys. These surveys will be completed in an effort to monitor and gain a better understanding of the recovery of these populations of sea otter.

Science Panel Comments: The strength of this proposal is the direct involvement of members of communities impacted by the spill in restoration activities. However, the proposed skiff surveys of sea otter abundance are not well suited for use in the Spill area and provide relatively poor estimates of sea otter abundance compared to aerial surveys being conducted in parts of the same region. Therefore, the panel can not recommend this project for funding. The panel recognizes that the investigators and members of spill-impacted communities can make valuable contributions to the restoration of sea otters (e.g. by providing information of pup to adult ratios, collecting sea otter skulls for survival analysis) as well as other resources (e.g. providing boat-based survey data on oystercatcher and other nearshore bird abundance and time of onset of seasonal activities), and encourages the proposers to develop and seek funding these or other projects. RECOMMENDATION: DO NOT FUND

Public Advisory Committee Comments: RECOMMENDATION: DO NOT FUND

Science Director Comments: Not reviewed. The Science Director is on a long-term detail from FWS, and must recuse herself from making recommendations on proposal that involve FWS. RECOMMENDATION: ABSTAIN

Executive Director Comments: RECOMMENDATION: DO NOT FUND

Project Number: 070820

Project: **Lauenstein/Apeti-Heavy Metals in Mollusks in Sustainable Use Areas**

Project Title: Assessment of PAHs and Heavy Metals in Subsistence Mollusks from the Prince William Sound's Traditional Use Areas

Location: PWS

Principal Investigator: Gunnar Lauenstein, Dennis Apeti

Affiliation: NOAA

Disbursing Agency: NOAA

Funding Requested by Fiscal Year:

FY07: \$121,600 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:

\$121,600

Abstract:

Following the Exxon Valdez Oil Spill (EVOS), which affected Prince William Sound, most monitoring projects have analyzed hydrocarbons (PAHs) contamination in mussels as a measure of oil bioavailability. However, other oil related contaminants such as metals (Cd, Cr, Ni, Pb, Se, Hg, Ag, Cu, and Zn) may be elevated and affecting subsistence mollusks. This project will analyze mussels, cockles, razor and littleneck clams, and bidarkies for PAHS and heavy metal tissue burdens. Moreover, this project will establish interspecies contaminant factors (ICF) among the subsistence mollusks so that data collected on mussels by NOAA's Mussel Watch Project (MWP) can be used to estimate contamination in these mollusks. The ICF will thus provide cost effective indirect monitoring of subsistence resources based on subsequent MWP monitoring data. This study will be performed in partnership with the Chugach communities who have expressed interest in knowing levels of contaminant concentrations in their subsistence harvests.

Science Panel Comments: The proposal addresses a potentially important human health issue, the contamination of subsistence foods with oil or heavy metals. Previous studies have addressed potential hydrocarbon contamination of subsistence bivalves but there have been few if any examinations of potential contamination by metals. The panel views this proposal as one that will provide important screening information with respect to potential contamination of subsistence foods, especially contamination by metals, and recommends this proposal for funding. However, several design modifications are suggested. First, if possible, community members should be trained to collect samples and be largely responsible for routine collection of samples. Second, there should be a specific plan for presenting the results to the community. Third, while the sites indicated are of interest because there are historical data on hydrocarbons in mussels from these sites, alternative sites that are more often used for subsistence might be preferred. Fourth, the design calls for testing of multiple species, but not all of these species are likely to occur at the sites they have indicated, and only mussels are likely to occur in large numbers at all sites. Either sampling should be restricted to only a few species, or the sites to be

sampled reconsidered to include those where other resources are present. Consultation with community members and researchers that are familiar with these sites (e.g. members of the Tatitlek and Chenega villages, researchers associated with the NOAA Auke Bay Laboratory) should prove helpful. Finally, results should be clearly related to concentrations of concern with respect to human health so that that risk can be better evaluated. RECOMMENDATION: FUND

Public Advisory Committee Comments: RECOMMENDATION: FUND

Science Director Comments: Concur. Residents in spill-affected communities are still apprehensive about the safety of certain subsistence resources. This reasonably-priced proposal will measure the amounts of metals in intertidal species used for subsistence, which has not been done previously under the EVOS program. The modifications suggested by the Science Panel would focus the sampling in those areas that are used by the community as opposed to specifically going only to those areas where lingering oil has been found. RECOMMENDATION: FUND

Executive Director Comments: RECOMMENDATION: FUND

Project Number: 070802
Project: Lohmann/Burgess-Bioavailability of PAH's
Project Title: Predicting and Validating the Bioavailability of PAHs from the Exxon Valdez Oil Spill
Location: PWS
Principal Investigator: Rainer Lohmann, Robert Burgess
Affiliation: BAA
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$81,000 FY08: \$133,700 FY09: \$120,800 FY10: \$0

Total Funding Requested:

\$335,500

Abstract:

Our proposal addresses the physical and chemical processes that affect lingering oil in Prince William Sound. In particular, we will focus on the bioavailability of polycyclic aromatic hydrocarbons (PAHs), arguably the most toxic compounds of oil mixtures. Our proposed research will rely on using novel, passive polyethylene (PE) samplers. PE samplers will enable us to identify the major processes governing the availability of sediment-bound lingering oil, and identify the pathways (ingestion versus respiration) by which PAHs become available to the benthic food-chain. Model development involves the derivation of partitioning models for predicting dissolved and bioavailable concentrations of PAHs. In more detail, we propose to: Study and parameterize the distribution of remaining PAHs from EVOS in-between sediments and water (i.e., their sorption); predict and validate the bioaccumulation of PAHs by benthic invertebrates; and predict the risk posed to wildlife feeding upon contaminated benthic biota.

Science Panel Comments: The proposal examines the bioavailability of polycyclic aromatic hydrocarbons (PAHs) through use of passive samplers. However, the investigators failed to review other pertinent literature on the subject of PAHs in sediments in PWS, including past work using passive sampling devices. Furthermore, the proposers failed to demonstrate that the specific methods and models that they have employed in east coast estuaries will be applicable to the PWS environment where sediments are not well sorted, often contain a large proportion of coarser fractions, and can sequester pools of relatively unweathered oil. Finally, specific methods, including the number and location of sampling sites, have not been provided. The panel does not recommend that this proposal be funded. **RECOMMENDATION: DO NOT FUND**

Public Advisory Committee Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Concur with Science Panel comments. **RECOMMENDATION: DO NOT FUND**

Executive Director Comments: RECOMMENDATION: DO NOT FUND

Project Number: 070742
Project: Matkin-Killer Whale Restoration
Project Title: Monitoring, Tagging, Feeding Studies, and Restoration of Killer Whales in Prince William Sound/Kenai Fjords in 2007
Location: PWS
Principal Investigator: Craig Matkin
Affiliation: BAA
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$103,000 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:
\$103,000

Abstract:

The proposed project is an amendment to the previously funded project that addresses lingering effects of the *Exxon Valdez* oil spill by 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. This proposal seeks to extend the scope of work to include an innovative satellite tagging program to examine habitat preference and to aid in a more extensive examination of feeding habits using observational and chemical techniques. Results will allow us to more closely examine the potential for restoration. The project will more clearly delineate the role of killer whales in the nearshore ecosystem and possible effects on the restoration recovery of harbor seals and sea otters. Community based initiatives such as Youth Area Watch and educational programs for tour boat operators will continue to be integrated into the work to help foster restoration improving public understanding and reducing harassment of the whales

Science Panel Comments: The proposal asks for additional funds to employ a new method for tagging killer whales. The panel found this to be a very exciting opportunity that is likely to greatly enhance our ability to evaluate recovery status of killer whales and recommends funding. The panel's only additional recommendation is that the use of tags might afford opportunities to conduct winter observations of feeding, and that these might be considered for inclusion as the methods are more fully developed. RECOMMENDATION: FUND

Public Advisory Committee Comments: RECOMMENDATION: FUND

Science Director Comments: Currently, identifying and tracking killer whales in and around the spill area is based on observational methods. Tracking whales over large areas and understanding where and how they spend the majority of their time is measured by how frequently the investigators encounter whales and how long they are able to watch them. The proposed technique would allow the principal investigator to remotely track whales throughout their home range, which includes a much bigger area than can be reasonably covered by small

boat. This will provide much needed life-history information on an injured resource.
RECOMMENDATION: FUND

Executive Director Comments: RECOMMENDATION: FUND

Project Number: 070290
Project: Nelson/Short-EVOSTC Hydrocarbon Database
Project Title: The Exxon Valdez Trustee Hydrocarbon Database
Location: PWS
Principal Investigator: Bonita Nelson, Jeffrey Short
Affiliation: NOAA
Disbursing Agency: NOAA
Funding Requested:

FY07: \$30,100 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:

\$30,100

Abstract:

This project is an on-going service project providing 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 environmental and laboratory Response (National Resource Damage Assessment - NRDA) and Restoration data. Additionally, we provide interpretive services for the hydrocarbon analysis, provide public releases of the database (including FOIA requests) and maintain the hydrocarbon sample archives.

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. We recommend funding. The only recommendation of the panel was that the web interface be updated in consultation with EVOS Trustee Staff to ensure that it is compatible and non-duplicative with other ongoing web server tasks. RECOMMENDATION: FUND

Public Advisory Committee Comments: RECOMMENDATION: FUND

Science Director Comments: This database is a long-term project that has been funded by the TC. It provides a storage and archival repository for hydrocarbon data generated from projects centered in the spill-affected area. RECOMMENDATION: FUND

Executive Director Comments: Recommend to not fund this proposal until the co-PI submit final deliverables for a previous Trustee Council funded project (Project 040740). RECOMMENDATION: FUND CONTINGENT

Project Number: 070825
Project: Pawlowski/Simpson-Lingering Oil Using Time Lapse Photography
Project Title: Monitoring Lingering Oil and Resources at Risk with Time-Lapse Digital Photography
Location: PWS, Knight Island
Principal Investigator: Robert Pawlowski, Patrick Simpson
Affiliation: BAA
Disbursing Agency: TBD

Funding Requested by Fiscal Year:

FY07: \$258,800 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:

\$258,800

Abstract:

Deployment of time lapse digital cameras to known areas of lingering oil will document persistence of lingering oil and potential exposure to marine birds and mammals over time. A data base for assessing population density and risk of exposure with multiple images on a daily basis will be built in year 1 with year 2-5 options. Imagery with passage of meteorological events will document resuspension of oils, distribution of marine fauna in the area, or other specific components of interest to the EVOSTC. A DMR Plan will identify deployment sites for 30 cameras on high and low energy shores in Prince William Sound and Knight Island. Cameras for year 1 will be deployed in August 2007, serviced in November 2007 and recovered in July 2008. Time lapse imagery will be collected to the QA/QC Plan, archived and distributed to researchers and EVOSTC Agencies. Files will be maintained by AFDF.

Science Panel Comments: The proposal will provide time-lapse images of oiled shorelines to help evaluate the distribution of lingering oil and potential utilization of oiled sites by animals. While time-lapse photography has been shown to be an effective tool in monitoring other wildlife such as sea lions, it is unproven, and in our estimation, unlikely to be a reliable method for evaluating lingering oil. Oil sheens are probably extremely patchy and might be difficult to detect in intertidal habitats where there is wave action and obstruction by algae and other things on the shore. The proposal does not provide detail on where or how cameras will be deployed, or the scale of coverage and resolution of images to be provided. Furthermore, the proposal does not provide any clear objectives with respect to restoration and promises only to provide images for others to analyze without suggesting the sorts of information that may be obtained from those images. **RECOMMENDATION: DO NOT FUND**

Public Advisory Committee Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Time-lapsed photography is a well-established technique for remote monitoring of certain wildlife resources. However, it is unclear in this proposal how

these techniques can be used to facilitate restoration of injured resources or services or quantify distribution and abundance of lingering oil. To reiterate the science panels concerns, the spatial coverage, scale and resolution of the images is not discussed, nor do they provide an end-use for the images collected. It is possible that this method could be a useful tool in the context of a relevant question and the PIs should consider expanding upon it's applicability in response to restoration objectives. RECOMMENDATION: DO NOT FUND

Executive Director Comments: RECOMMENDATION: DO NOT FUND

Project Number: 070759
Project: Rosenberg-Harlequin Duck Population Dynamics
Project Title: Harlequin Duck Population Dynamics in Prince William Sound:
Measuring Recovery from the Exxon Valdez Oil Spill
Location: PWS
Principal Investigator: Dan Rosenberg
Affiliation: ADFG
Disbursing Agency: ADFG
Funding Requested by Fiscal Year:

FY07: \$86,700 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:

\$86,700

Abstract:

This project will monitor the recovery of harlequin ducks and is directly linked to recovery objectives in the EVOS Restoration Plan. The outlook for recovery is improving, however, oil remains in the intertidal, ducks are exposed to oil, populations in oiled areas while no longer declining have not increased more than those in unoiled areas, and proportions of females in oiled areas remain lower than reference areas. We will conduct winter boat surveys to test if harlequin ducks have recovered from the EVOS by comparing population structure and trends between oiled and unoiled treatments in four areas of PWS. Similar structure and increasing trends in oiled areas, when interpreted with complimentary data, will indicate recovery status. Work will be complimentary to studies addressing lingering oil, cytochrome P450 induction, and population modeling to provide a more comprehensive assessment of recovery.

Science Panel Comments: The proposed project will extend long-term data sets on winter abundance of seabirds that is especially critical to the continued evaluation of injury and recovery of harlequin ducks. We recommend this project be funded. However, the panel recommends that funding beyond FY07 be dependent upon several conditions. First, the investigator should provide data on species other than harlequin ducks that are presumably counted in the surveys. These may provide very valuable information on other nearshore species such as goldeneye which have recently demonstrated indications of oil exposure. Also, there should be a concerted effort to collaborate with others conducting bird surveys, such that there is a sharing of data and lack of duplicative survey efforts. RECOMMENDATION: FUND

Public Advisory Committee Comments: RECOMMENDATION: FUND

Science Director Comments: A continuation of this project will provide information on the demographics of harlequin duck populations in oiled and unoiled areas of the Sound. It will also funnel data into projects that propose to synthesize existing harlequin information into a comprehensive population dynamics model. If the investigator collects data on seabirds other than harlequin ducks, those data should be presented to the TC at the end of this project -

historical data on seaduck counts that have been generated from previously funded projects should also be analyzed and presented to the Trustees. RECOMMENDATION: FUND

Executive Director Comments: Until the PI submits the final report for a previously Trustee Council funded project (Project 00273), it is recommended to not fund this proposal.
RECOMMENDATION: FUND CONTINGENT

Project Number: 070827
Project: Rosenberg/Springman-Harlequin Duck Oil Exposure
Project Title: Assessing Potential Oil Exposure to Harlequin Duck Populations in Prince William Sound
Location: PWS
Principal Investigator: Dan Rosenberg, Katherine Springman
Affiliation: ADFG
Disbursing Agency: ADFG
Funding Requested by Fiscal Year:
FY07: \$89,200 FY08: \$0 FY09: \$0 FY10: \$0

Total Funding Requested:

\$89,200

Abstract:

Harlequin duck (*Histrionicus histrionicus*) populations in Prince William Sound (PWS) have not recovered from the effects of 1989 *Exxon Valdez* Oil Spill. Studies suggest full recovery is constrained by oil exposure through ingestion of contaminated prey or through direct contact with sediments. The geographic extent of potential oil exposure (where concentrations of harlequin ducks overlap with lingering oil) throughout the spill region of western PWS has not been quantified. Passive sampling devices will act as surrogates for plumage oiling and potential ingestion of contaminated prey and serve as indicators of oil exposure to harlequin ducks. Sampling will occur in late-winter/early spring (mid-March to mid-April) before birds migrate to breeding areas. This study will expand the geographic area sampled for bioavailable oil by other researchers and improve our ability to detect lingering oil and assess recovery in harlequin ducks and other intertidal predators.

Science Panel Comments: The proposal provides a potentially useful tool (SPMDs and LDPEs) in evaluating the potential exposure of harlequin ducks and other animals that feed and/or live in the intertidal to lingering oil. However, the panel sees several potential problems with the design. The most problematic is the distribution of sampling devices that may be too widely dispersed to detect patchy distribution of lingering oil and may provide negative results (no PAHs) that could lead to the erroneous conclusion that ducks are not being exposed to lingering oil. The panel recommends that the distribution of sampling devices be more closely linked to Esler's sampling locations (where P450 data indicate exposure) and to sites where Short et al. have shown there to be lingering oil and that sampling at lightly oiled sites eliminated or reduced. This would allow spacing between sampling devices to be reduced to increase the likelihood of detecting lingering oil. The design might also be combined with efforts using passive sampling devices as proposed by Carls and Rice to maximize efficiency. The panel also suggests that the cell line work is inadequately described, and should either be more fully explored or dropped from future submittals. We recommend that the funding of this project be deferred and that future funding be dependent on a redesign of the sampling scheme and the outcome of Esler's P450 work in FY07. **RECOMMENDATION: DEFER FUNDING**

Public Advisory Committee Comments: RECOMMENDATION: DO NOT FUND

Science Director Comments: Harlequin ducks, as well as several other intertidal species are still showing ongoing exposure from oil as indicated from elevated biomarker responses (i.e., cytochrome P450) in animals from the oiled areas. This project would use passive sampling devices to sample bioavailable oil in areas where harlequin ducks forage, which may provide initial data on possible exposure pathways. I have the same concerns as the Science Panel with regard to study design and recommend that the investigators address the issues outlined above, and the study be deferred until after the results of Eslers 06/07 P450 work is completed. This will provide information on whether harlequins are still being exposed to oil.

RECOMMENDATION: DEFER

Executive Director Comments: Until the PI submits the final report for a previously Trustee Council funded project (Project 00273), it is recommended to not fund this proposal.

RECOMMENDATION: DO NOT FUND

Project Number: 070210
Project: Salasky/Crumley-PWS Youth Watch
Project Title: PWS Youth Watch
Location: PWS, Resurrection Bay
Principal Investigator: Sheryl Salasky, Bob Crumley
Affiliation: BAA
Disbursing Agency: TBD
Funding Requested by Fiscal Year:
FY07: \$174,300 FY08: \$182,400 FY09: \$191,500 FY10: \$201,100
FY11: \$211,100

Total Funding Requested:

\$960,400

Abstract:

Youth Area Watch (YAW) is designed to involve students in working with scientists while making a meaningful contribution to research &/or restoration in oil spill affected communities. Youth are trained by scientists to design and conduct long term monitoring projects. In addition to learning current scientific sampling and research techniques (as mandated by Alaska State & National Science Standards), they return to their villages and survey community members for input toward designing a local environmental monitoring and/or restoration project.

Youth Area Watch fosters long-term commitment to the goals set out in the Restoration Plan of 1994 and offers a positive community investment in that process. Participating communities in FY 07-09 will be Chenega Bay, Cordova, Tatitlek, Valdez, Whittier, Anchorage and Wasilla.

Science Panel Comments: The proposal provides important educational opportunities in spill affected communities and is important for restoring injured resources. This is an ongoing program and we recommend continued funding. However, the panel was concerned that much of the funding was being directed toward coordinators that are located outside of the spill area and not toward resources within spill affected communities. Also, the panel felt that there had not been adequate review of results from previously funded projects. While the panel understands the concerns regarding budgeting based on a single year's funding, they recommend that the project be funded for one additional year, and that future funding be contingent on a thorough review of past project performance. **RECOMMENDATION: FUND FOR ONE YEAR.**

Public Advisory Committee Comments: **RECOMMENDATION: DO NOT FUND**

Science Director Comments: Educational opportunities in the communities are an important way for the TC to promote awareness, understanding and participation in restoration activities of injured resources and services. Thus, the TC should continue funding projects of this type. However, it is also necessary to evaluate the priorities, goals and direction of such programs after

they have been in operation for several years to ensure they are in alignment with TC restoration goals. This project should be funded for the upcoming fiscal year: During that time, a review and assessment of the program should be conducted between the YAW Directors, the Executive Director of EVOS TC office and other environmental educators. This review should summarize past performance of the YAW program, but the discussion should be broader and focus on the future direction of environmental education funded by the Trustee Council.

RECOMMENDATION: FUND FOR ONE YEAR.

Executive Director Comments: The PAC recommended not funding this proposal and further recommended the Trustee Council provide funding support to develop an environmental education-community outreach plan for the spill-affected area. The PAC expressed concern this proposal, which continues Project 040210, only targets a small percentage of students in the spill area. The sense of the PAC was before additional funding is approved, a comprehensive review of educational and community outreach efforts should be undertaken and a plan developed that would ensure broader accessibility of students within the spill-affected area and the implementation of school curricula specific to the Council's restoration goals. If the Council intends to provide transition funding until the environmental education-community outreach plan is implemented, it is recommended providing one year of funding at the FY06 level.

RECOMMENDATION: DO NOT FUND

Project Number: 070610
Project: Schneider-Kodiak Youth Watch
Project Title: Kodiak Youth Watch
Location: Kodiak
Principal Investigator: Teri Schneider
Affiliation: BAA
Disbursing Agency: TBD

Funding Requested by Fiscal Year:

FY07: \$93,800 FY08: \$95,300 FY09: \$98,500 FY10: \$0

Total Funding Requested:

\$287,600

Abstract:

The Kodiak Archipelago Youth Area Watch is an ongoing community involvement project designed to engage students in projects with goals aligned with the general restoration efforts of the Trustee Council. Students and site coordinators will conduct interviews with local experts and document TEK, while taking part in locally relevant research projects. Participation of KAYAW adults and students in the annual Academy of Elders/Science Camp will be strongly encouraged. Participants will share their research during regional gatherings and within District publications. Such participation will serve as another avenue for more tribal members to learn about restoration efforts, scientific monitoring techniques, and occupations related to such work. Students will explore local knowledge as it relates to marine mammal populations, inter-tidal environment, and the impact of humans on the coastal environment, human use overtime and intergenerational changes and cultural beliefs and practices that may provide insight in scientific studies. Student interns will be hired during the summer months to work directly with archaeologists and anthropologists in a community archeological dig in coordination with the Alutiiq Museum. The value and implications of TEK will be strongly emphasized throughout the implementation of the KAYAW project.

Science Panel Comments: The proposal provides important educational opportunities in spill affected communities and is important for restoring injured resources. This is an ongoing program and we recommend continued funding. However, the panel was concerned regarding the lack of linkages between the youth area watch program and EVOS scientists or programs. While this may not be the fault of the Kodiak YAW program, these linkages should be fostered. Also, the panel felt that there had not been adequate review of results from previously funded projects. While the panel understands the concerns regarding budgeting based on a single year's funding, they recommend that the project be funded for one additional year, and that future funding be contingent on a thorough review of past project performance.
RECOMMENDATION: FUND FOR ONE YEAR.

Public Advisory Committee Comments: RECOMMENDATION: DO NOT FUND

Science Director Comments: Educational opportunities in the communities are an important way for the TC to promote awareness, understanding and participation in restoration activities of injured resources and services. Thus, the TC should continue funding projects of this type. However, it is also necessary to evaluate the priorities, goals and direction of such programs after they have been in operation for several years to ensure they are in alignment with TC restoration goals. This project should be funded for the upcoming fiscal year: During that time, a review and assessment of the program should be conducted between the YAW Directors, the Executive Director of EVOS TC office and other environmental educators. This review should summarize past performance of the YAW program, but the discussion should be broader and focus on the future direction of environmental education funded by the Trustee Council.

RECOMMENDATION: FUND FOR ONE YEAR.

Executive Director Comments: The PAC recommended not funding this proposal and further recommended the Trustee Council provide funding support to develop an environmental education-community outreach plan for the spill-affected area. The PAC expressed concern this proposal, which continues Project 040610, only targets a small percentage of students in the spill area. The sense of the PAC was before additional funding is approved, a comprehensive review of educational and community outreach efforts should be undertaken and a plan developed that would ensure broader accessibility of students within the spill-affected area and the implementation of school curricula specific to the Council's restoration goals. If the Council intends to provide transition funding until the environmental education-community outreach plan is implemented, it is recommended providing one year of funding at the FY06 level.

RECOMMENDATION: DO NOT FUND

Project Number: 070829

Project: Shigenaka/Fukuyama/Downs/Holderied/Coats/Thompson -
Lingering Oil and Littleneck Clams

Project Title: Bioavailability and Effects of Lingering Oil to Littleneck Clams
(*Protothaca staminea*) and Population Recovery Status in PWS

Location: PWS

Principal Investigator: Gary Shigenaka, Allan Fukuyama, Craig Downs, Kris Holderied,
Douglas Coats, Terry S. Thompson

Affiliation: NOAA

Disbursing Agency: NOAA

Funding Requested by Fiscal Year:

FY07: \$495,700 FY08: \$60,500 FY09: \$0 FY10: \$0

Total Funding Requested:

\$556,200

Abstract:

We will determine the biological availability and effect of *Exxon Valdez* lingering oil to littleneck clams, *Protothaca staminea*. Results of laboratory exposures of *P. staminea* to oiled sediment collected in Prince William Sound will be compared to results from individuals collected *in situ* at known oiled and unoled sites. Molecular biomarker assays and tissue histology will be used to determine effects of lingering oil to growth, reproduction, and other physiological endpoints in the exposed clams. This information will be paired with a field assessment of clam abundance at sites surveyed in the 1990-2000 NOAA long-term monitoring program in Prince William Sound to determine if recovery endpoints that had not been met in the year 2000 have been attained in 2007.

Science Panel Comments: The proposal seeks to conduct sampling of littleneck clams at sites previously sampled by NOAA and includes evaluation of a variety of metrics including abundance, size, age, PAH in tissue, histopathology, and various biomarkers. The panel sees potential utility in examining abundance and size distributions, but much of the funding is directed toward other metrics that we see as having less value. Previous studies conducted shortly after the spill by Trowbridge failed to demonstrate any effects of oiling on histopathology. Also, little evidence exists that PAHs occur in clam tissues. Biomarkers have not been examined in the past, and there no compelling reasons to initiate this work so long after the spill. Given the high cost of the project and the concerns about many of the metrics to be examined, we recommend that the project not be funded. RECOMMENDATION: DO NOT FUND

Public Advisory Committee Comments: RECOMMENDATION: FUND (as modified by the Science Director)

Science Director Comments: It has been five years, since any sampling of abundance and distribution of littleneck clams has been conducted. The abundance and distribution information was collected by NOAA for many years and the sampling was stopped in 2000. In 2000, the data appeared to show convergence between oiled and treated and reference sites. However, one data point does not make a trend. Moreover, in 2002 abundance data was collected by a different researcher and although a subset of the NOAA sites were sampled, the project was not inclusive of all the sites. This data demonstrated a continued difference in the abundance of clams in areas that were oiled and treated with hot water washing and reference sites. True consensus on the recovery status of clams is lacking because of differences in data interpretation, differences in study design among projects and because recent information is not available. It would be helpful in understanding the current status of clams if additional information on abundance and distribution were collected from historically sampled areas. Therefore, I recommend that the section of the proposal that sample abundance and distribution of clams be conducted.

I also recommend that the investigators analyze the clams collected from the abundance and distribution sampling for PAHs. However, I agree the Science Panels recommendations regarding the ancillary tests, such as histopathology and do not recommend that they be funded.

Note: The PIs have modified their scope of work to address the concerns outlined above. The new budget reflects the amended proposal.

RECOMMENDATION: FUND

Executive Director Comments: Agree with Science Director's recommendation.
RECOMMENDATIONS: FUND

PROPOSAL SUMMARY

Project title: *EVOSTC Outreach & Information Sharing Venue – The Cordova Center*
Project period: 10/1/2006-06/30/2008
Proposers: City of Cordova Mayor Tim Joyce, timothyjoyce@yahoo.com
Director of Information Services Cathy Sherman,
infoservices@cityofcordova.net
Project location: Cordova, Alaska

The Cordova Center will be a 34,000 square foot, ADA accessible multi-use facility designed to address the following EVOSTC, community, and regional needs:

- public outreach and information sharing center for EVOS Trustee Council
- research sharing venue for Gulf of Alaska Ecosystem Monitoring and Research Program
- diversification of Cordova's injured fishing and tourism-based economy
- economic revitalization locally and regionally

Upon completion of construction the Center will provide

- venue to host symposia, workshops, classes
- library supporting scientific research and offering online access to EVOS program reports
- repository for EVOS documents
- Science Discovery Room
- museum exhibit on oil spill history and advances in science, technology and industry stimulated by the spill
- Oil Spill Response Emergency and Communications Center
- EVOS research, SEA, and GEM research findings educational displays, restoration effort results, art representing Delta and Sound ecosystems
- Visitor Center promoting PWS tourism, outdoor recreation, seafood marketing

Total estimated project cost: \$17.2 million
EVOSTC funding requested: \$6,831,000
Non-EVOSTC funds to be used: \$10,369,000

Cordova Center Proposal
PROJECT PLAN

NEED FOR THE PROJECT

Statement of problem

The Prince William Sound region has a strong need for a facility whose mission includes providing the venue and means for education of citizens, students, scientists, resource managers and stakeholders about the Prince William Sound and Gulf ecosystems and how best to manage its natural resources.

The EVOS Trustee Council's goals of outreach, sharing research and providing educational opportunities correspond with needs of the City of Cordova.

Cordova has no centrally located community center providing the facilities and amenities necessary to meet all the population's needs. While there are public and private facilities that are used for meetings and conferences in the community, none provides adequate space, equipment and services to meet Cordova's needs. The existing facilities in Cordova for science education programs, meeting rooms, museum, library, auditorium/theater and emergency response are inefficient and do not meet ADA standards. The present visitor center is not adequate; yet diversifying Cordova's injured tourism and fishing-based economy depends increasingly on the expanding of tourism and outdoor recreation-based industries.

The existing municipal building functions as emergency dispatch and communications center in case of tsunami, oil spill and other emergencies. The current location has serious problems which need to be remedied in order to provide emergency services and respond to disasters:

- absence of backup electrical power would greatly hinder emergency response personnel's ability to communicate with others in the region, state or nation
- location of existing facility within the tsunami zone requiring equipment and personnel to be relocated to higher ground for actual events
- lack of space for oil spill training response leaves responders unprepared

Background and history

The community of Cordova was heavily impacted by the devastating effects of the 1989 Exxon Valdez oil spill to the region's economy. Commercial fishing, passive use, recreation and tourism are services that were reduced because of the spill. Cordova's dependence on commercial fishing has resulted in an economy that is cyclical in nature and very specialized. This reliance on one industry has led to economic difficulties as fluctuations occur in fishing and fishing related ventures. The community recognizes the need for economic diversification to promote long-term sustainability.

Lack of economic diversity has led to the following problems:

- long-term impact of the oil spill on fishing families and community businesses that relied on those families for a sizeable portion of their income;
- economic difficulties during low fishing cycles leading to increased hardship for over half the households in Cordova;
- seasonal influx of workers for fishing industry who leave at the end of the season taking their income with them instead of spending it in the community;

Cordova Center Proposal

- business closures during the off season due to reduced population, leaving locals with fewer choices and opportunities;
- employee lay-off during the off season resulting in a high unemployment rate;
- decrease in raw fish tax revenues from a high of 1,294,704 in 1989 to 448,958 in 2004;
- decrease in local sales tax revenue.

The City of Cordova is seeking funding to construct the Cordova Center, a 34,000 square foot, fully ADA accessible multi-use facility. The Center will combine a number of functions for the community of Cordova including **conference center, library, Science Discovery Room, museum, Oil Spill Response Center and visitors' center**. Throughout the building there will be educational displays of: the results of SEA, GEM and other EVOS related research findings; restoration efforts and their results; and of art representative of the ecosystems on the Delta and in the Sound. These displays will ensure that any visitor to the Center will have exposure to educational materials about the natural resources of the region and the progress of restoration efforts related to the EVOS.

As well as providing a solution to the problems noted above, the Cordova Center offers many exciting opportunities. **The Cordova Center is strategically positioned to be a centerpiece of EVOS Trustee Council information sharing in the region.** The new facility will enhance and expand scientific research services and the regional visitor industry.

Relevance to 1994 Restoration Plan Goals and Scientific Priorities

The EVOSTC FY 07 invitation for proposals states that the Council is interested in local community based proposals that would address community revitalization restoration objectives. The Cordova Center Project is an important part of Cordova's efforts to model the original mission of the Trustee Council's Restoration Program, by taking into account the importance of the quality of life and the need for viable opportunities to establish and sustain a reasonable standard of living.

As an integrated community facility, the Cordova Center is designed to address all of the following objectives. The Center will provide a venue from which personnel can:

- provide access to SEA, GEM and other EVOS related data through **library** services;
- offer citizen training and support in oil spill response through the **emergency response center**;
- provide citizen training and support environmental monitoring activities through the **science discovery program**;
- manage a data/local knowledge **archive**;
- make available **educational programs**;
- publicize **community involvement opportunities**;
- provide a **forum** to identify important community and region-wide issues and concerns that could be addressed by EVOS related monitoring and research;
- provide **information** to communities regarding data and scientific research performed by the Trustee Council science program;
- improve **communication** of findings and results of restoration efforts to spill area residents, village councils, and the appropriate regional organizations;

Cordova Center Proposal

The new Cordova Center will provide an oil spill response training and incident command and communications center, as well as an emergency administrative response and communications center. The Oil Spill Prevention and Response Center will: conduct oil spill response training (members of Cordova's fishing fleet were and are first responders to a spill in Prince William Sound); instruct community members in oil spill prevention and clean-up techniques; build partnerships between resources-dependent community members and state and federal resource agencies; house an Oil Spill Response Emergency and Communications Center; and serve as a repository for EVOS related documents currently stored at the State of Alaska archives in Juneau.

Cordova is one of five community response centers that have been established in Prince William Sound where the oil industry has stockpiled spill containment and removal equipment. Local fishing vessels are part of Alyeska's planned nearshore response. They are used, among other things, to transport response equipment, deploy and tend boom, and mobilize pre-staged equipment to protect fish hatcheries. Twice yearly, Alyeska provides response training to hundreds of fishing boat crews. The fishing vessels, based in communities in Prince William Sound, the Kenai Peninsula, and Kodiak Island are under contract with Alyeska to respond to spills if willing and available at the time of an incident.

The Center will function as a repository for data generated by EVOS projects that will make this information readily available to the scientific communities, resource managers, resource dependent people and their communities, policy makers, EVOS staff and contractors, GEM committees and working groups, state and federal resource agencies, and concerned members of the public. By providing easy access to well-organized materials the Cordova Center will increase the long-term value of the projects' research.

The new facility will offer information in easily accessible formats, including displays, exhibits and art, thereby fulfilling the Trustee Council's goal of disseminating information on restoration to the broadest audience possible.

We are glad to see in the EVOSTC FY 07 invitation for proposals the statement that "the Council believes that the human population can not be separated from the ecosystem and the components that comprise human use." The Cordova Center project will address the EVOS Trustee Council objectives for human services that depend on natural resources. The Visitors' Center will serve as a focus to restore and develop Cordova's outdoor recreation, tourism and commercial fishing industries. It will promote opportunities for outdoor recreation and tourism in the Prince William Sound region; serve as stimulus for restoration of injured services of recreation and tourism in the region; and provide for seafood marketing and availability information in a kiosk at the Cordova Center, helping to expand markets for Alaska fishing resources and to restore commercial fishing injured by the spill.

The Cordova Center will also house a museum which will assure that the public has easy access to information regarding the spill and its impact upon the region, to exhibits on oil spill history and the advances in science, technology and industry that were stimulated by the spill. Portions of the acclaimed educational exhibit, *Darkened Waters: Profile of an Oil Spill*, created by the Pratt Museum in Homer, Alaska will form the basis for the new *Prince William Sound: Region in Transition* exhibit being designed as a key display for the Cordova Museum. *Prince William Sound: Region in Transition* will tell not only the story of what happened as a result of the 1989

Cordova Center Proposal

tragedy, but also will offer a comprehensive story of oil transportation safety advances in Prince William Sound, the development of oil spill response, the interrelationship of the local fishermen and fishing industry with the oil industry, and the US Coast Guard's role during an oil spill. The new exhibit will also encompass the expansion and enrichment of research in the science of the Sound since the 1989 oil spill, including findings of research funded by the EVOS Trustee Council, Prince William Sound Science Center and the Oil Spill Recovery Institute. This exhibit responds to the continual questions of many visitors regarding the oil spill and its impacts on our region and what has changed since the oil spill.

Expected results and benefits of success to EVOSTC

Building a facility that provides information about and promotes stewardship of Gulf ecosystem resources, serves local and regional residents, and visitors, will be an important contribution to stable and sustainable economic recovery. The variety of interdisciplinary programs and services that will be provided in this new multi-use facility will meet the needs to support research, disseminate EVOS-related information, and reach out to people around the world and inform them of the research findings and progress to date.

Together, the partners will increase access to information, educational opportunities, and the overall understanding of the effects of oil spills and the best practices of response. The Cordova Center will provide the means for transmitting this information to all those who find it interesting, valuable or crucial to their work.

PROJECT DESIGN

Sustainability: A key factor in the initial building concept for the Cordova Center was the attempt to consolidate many Cordova facilities from old, inefficient facilities into one modern facility. This promotes effective operation and staffing, and drives down the cost of operating several uneconomical buildings. To further reduce future operating costs, the design team carefully reviewed life-cycle costs of building systems, and recommended material quality to minimize future maintenance costs. The building design aggressively utilizes the highest levels of insulation and energy efficiency, adopting several cutting edge systems for minimized operation cost, such as displacement ventilation and passive cooling using water reservoirs integrated in the building foundation space. Architects worked with staff and maintenance personnel to solicit important input to the design with a high priority given to environmental responsiveness. The facility was registered and will seek certification status with the U.S. Green Building Council through the Leadership in Energy and Environmental Design rating system.

The community supports this new mixed-use facility because it provides the opportunity for cost effective operation, with shared resources, minimized building volume, and common centralized services, including mechanical and electrical systems.

Facility operation management: The City anticipates dedicating to the operation of the Cordova Center a part-time Marketing Director, a full-time Facility Manager, a full-time custodian and full-time maintenance position to be responsible for the tasks associated with the operations of the facility. Each of these staff members will report directly to their department head or the City Manager. The operation and maintenance of the facility will be the responsibility of the City Manager who will work closely with the Information Services Director, Facility Manager and Director of Public Works to assure that marketing, scheduling, maintenance and janitorial duties are carried out in a timely, efficient and effective manner. City Information Services staff will

Cordova Center Proposal

offer direct assistance to meeting planners. All operational and maintenance costs will be borne by the City of Cordova.

EVOSTC project related management: The Director of Information Services will be responsible for coordinating the transfer of the archival materials from the Alaska State Library. The Director and staff will accession, catalog and provide research assistance to members of the public needing access to the materials.

Staff will also work closely with the Science Discovery Program to implement educational displays related to the Prince William Sound region. Whenever possible they will cooperate in providing science programs for all ages to increase learning opportunities in the community.

Objectives

The first objective of this project is to achieve full funding for the construction of the Cordova Center. The current estimate for total construction of the project is \$17.2 million based on a cost estimate developed by HMS Engineering, experts in cost estimating in the State of Alaska. This funding is an investment in local and regional assets that creates the physical infrastructure to diversify the economy and provide essential benefits to the community and to the region.

Once the primary objective is achieved, the objectives listed below for the uses of designated spaces in the center will be pursued. These objectives accord with EVOSTC goals.

Conference Center – A venue for sharing of EVOS research

1. Host EVOS-related workshops, marine research conferences and symposiums;
2. Show films produced with EVOS funds in the auditorium;
3. Provide space for government agency and resource management meetings;
4. Facilitate communication between scientific community and stakeholder user groups in Prince William Sound;
5. Make available space for Eyak tribal members to share traditional ecological knowledge and to hold tribal meetings.

Library – Providing access to EVOS-related information

1. Inform the public about the status of restoration efforts in the spill region;
2. Become a repository and dissemination source of EVOS and GEM publications and related research reports for scientific communities, resource managers, policy makers, and members of the public;
3. Expand library collection of materials relating to scientific research needs, commercial fishing, oil spill history, oil spill response, fisheries management related to the spill, its impact and its restoration and recovery;
4. Support oil spill and related marine researchers' needs through online sources and interlibrary loans, such as providing computer access to the ARLISS library for reference literature on oil spill research;
5. Present educational programs for all ages regarding research results; provide online links and access to EVOS Trustee Council related educational materials;
6. Share resources for research needs of Prince William Sound Science Center, Native Village of Eyak, and Prince William Sound Community College.

Cordova Center Proposal

Science Discovery Room – *Educating environmental stewards*

1. House the Science Discovery Room for the Prince William Sound Science Center and U.S. Forest Service sponsored Science Discovery Program to facilitate study and monitor the ecosystem of the Sound;
2. Enhance community involvement with Science Discovery Room;
3. Conduct programs related to health and sustainability of marine resources;
4. Exhibit science displays for public education;
5. Educate youth through hands-on stewardship and monitoring activities
6. Facilitate student involvement in EVOS and other research projects.

Museum – *Documenting the past and looking to the future*

1. Create and display the new core exhibit *Prince William Sound: Region in Transition* that will expand the interpretation of the oil spill event to provide a comprehensive story of oil transportation safety advances in Prince William Sound, the development of oil spill response, the interrelationship of the local fishermen and fishing industry with the oil industry, the US Coast Guard's role in oil spill response, and the expansion and enrichment of science research in the Sound since the 1989 oil spill;
2. Serve as an accessible repository for all the EVOS documents currently stored at the State of Alaska Archives in Juneau;
3. Disseminate information on restoration activities;
4. Expand exhibits on history of resource development in the Copper River Region;
5. Respond to visitor questions on EVOS and the PWS region.

Oil Spill Response Center – *Oil spill prevention and response training*

1. Provide space for oil spill response training (Members of Cordova fishing fleet were and are first responders to a spill in Prince William Sound);
2. Educate community members in oil spill prevention and clean-up techniques;
3. Build partnerships between resources-dependent community members and state and federal resource agencies;
4. House an Oil Spill Response Emergency and Communications Center.

Visitors' Center – *Promoting the recovery of Cordova's outdoor recreation, tourism, and commercial fishing industries*

1. House Visitor Center to promote opportunities for outdoor recreation and tourism in the Prince William Sound region;
2. Serve as stimulus for restoration of injured services of recreation and tourism in the region;
3. Provide seafood marketing and availability information in a kiosk at the Cordova Center, helping to expand markets for Alaska fishing resources and to restore commercial fishing economy that was injured by the spill.

Procedure

1. Ensure community involvement – The Cordova Center project has been under way since 2001, starting with community meetings to ascertain general needs and high-priority features. A strong consensus was achieved for the vision of a multi-purpose community center incorporating the library, museum, science discovery center, auditorium, and offices in a single facility with a marine resource theme.

Cordova Center Proposal

2. Build collaboration – Cordova Center planners met with EVOS Trustee Council members to initiate a dialog about how the Center can best serve EVOS Trustee Council outreach needs. The City initiated a strong partnership between members of related institutions including the Prince William Sound Science Center, United States Forest Service, Native tribe of Eyak, Community College, public schools, federal agencies, nonprofit Cordova Historical Society, service and civic groups and the community as a whole to collaborate on the planning and implementation of the Cordova Center project.
3. Retain design team – The firm of Minch Ritter Voelckers, Inc. was retained as project architects in February 2002. Detailed programming analysis of spaces was initiated. Community forums focusing on site, materials and features were organized to build broad support and consensus for the project, and to provide information to the design team as ideas were formulated. The Cordova Center architectural and engineering drawings are bid-ready. They represent the culmination of three years of community discussion and design review.
4. Secure the site – The City of Cordova purchased the preferred site .
5. Plan capital campaign – A strategic plan has been developed for the capital campaign. A working fundraising plan has been formulated, with a tactical development plan for carrying out each strategy.
6. Secure state and federal appropriations – Appropriations have been requested and received for project planning and initial stages. Federal funds have been dedicated to the project from the Economic Development Administration, USDA Rural Economic Development Administration and appropriations from HUD. The Alaska State Legislature has provided funding and Governor Murkowski included an appropriation in his 2005 budget.
7. Initiate public fundraising – A public fundraising campaign has been launched and will be on-going throughout the duration of the project. These local contributions show support for the project and will stimulate funding from non-local sources.
8. Submit grant applications – Proposals have been submitted to various prospective funding sources for grants to support the Cordova Center project.
9. Apply to the Trustee Council for funds – Previous applications have been submitted to the EVOSTC for partnership in funding the Cordova Center project. Feedback was received and the application has been modified in response to more clearly identify the services to EVOSTC that the Cordova Center will support. **EVOSTC funding is a critical component in building a coalition of funders for construction of the Cordova Center. It is the keystone to the success of the project.**
10. Submit additional funding applications - **Once EVOSTC funding is committed to the Cordova Center project**, grant requests will continue to be submitted to foundations, corporations with a local presence, and businesses. Additional funding requests will be made to the Alaska Congressional delegation and to the state for budget appropriations for top-off funding.

Cordova Center Proposal

Project site

The City of Cordova, incorporated in 1909, is located at the southeastern end of Prince William Sound in the Gulf of Alaska. The community was built on Orca Inlet, at the base of Eyak Mountain. It lies 52 air miles southeast of Valdez and 150 miles southeast of Anchorage. Cordova is a rural community accessible by air or water. Alaska Airlines provides federally subsidized daily jet service to the state airport. Access to the community is also available by smaller planes. The Alaska Marine Highway provides ferry service.

A home rule municipality with a Council-Manager form of government and a volunteer elected mayor and city council, Cordova has a year-round population of 2,298 residents (DCED 2004) including its federally recognized Native Tribe (The Native Village of Eyak). With 15% of the population Native American, the cultures of the Alutiiqs, Eyaks and Tlingits play an important role in the community. Most Eyak tribal members reside within the community of Cordova.

Gateway to the Copper River Delta, a 60-mile arc of wetlands, Cordova relies heavily on the marine and river ecosystems for its economy. Nearly half of all households are involved in the commercial fishing industry. For 17 years, the community has worked to re-group from the devastating effects to the economy in this region from the Exxon Valdez oil spill. Cordova continues to experience economic difficulties as fluctuations occur in the fishing industry.

Since 1989, work with the tourism industry has been underway to develop the community as a desirable destination. Visitation to Cordova has been slowly increasing in the past ten years primarily from the independent traveler via AMHS or air service. Passengers also arrive each week from Memorial Day to Labor Day on small ships operated by Alaska Sightseeing Cruise West. The Iceworm Festival, the Shorebird Festival, the Copper River Wild Salmon Celebration and musical events draw additional visitors. Sport fishermen arrive in the community in late summer for the returning silver salmon sport fishing season.

Coordination and Collaboration

Cordova Center planners have met with EVOS Trustee Council members several times to discuss how best to utilize space in the new facility to meet EVOS Trustee Council outreach needs and EVOS related research dissemination goals. As noted in the Procedure section, numerous stakeholders have been involved in the planning the Cordova Center. The Prince William Sound Science Center, U.S. Forest Service, Native Village of Eyak, PWS Community College, public schools, federal agencies, nonprofit Cordova Historical Society, service and civic groups and community members are collaborating on the planning and implementation of the Cordova Center project and have a stake in its success. Attached letters show support for the project. By partnering, the Center will provide cultural, educational and recreational opportunities and facilitate activities that foster the sharing of traditional ecological knowledge.

The project is structured to continually reinforce this collaboration as the interrelated services provided at the new facility complement and build upon each other. Continual public planning to identify new ways in which the facility can creatively be utilized to serve EVOS Trustee Council, the region and the state will enable the Cordova Center to maintain its role of disseminating information on restoration to a broad audience. This is an investment that will have long-term and far-reaching outcomes for EVOS Trustee Council while providing an array of benefits to the community of Cordova and the Prince William Sound region.

Cordova Center Proposal
SCHEDULE

Project Milestones

- Objectives To secure funding to construct the Cordova Center
 To let the construction bid in 2007/2008
 To begin construction in 2008
 To implement EVOSTC related services upon completion of construction

Measurable Project Tasks

FY'07, 1st quarter (October 1, 2006-December 31, 2006)

- Project funding approved by Trustee Council
- Input sought from Trustee Council on outreach and information dissemination spatial requirements
- Community involvement and traditional ecological knowledge plan developed with tribal and community members
- Grant applications to foundations, corporations and government sources
- Requests for state and federal appropriations
- New phase of local fundraising campaign initiated

FY'07, 2nd quarter (January 1, 2007-March 31, 2007)

- Grant applications to foundations, corporations and government sources
- Lobby to support funding requests for state and federal appropriations
- Ongoing fundraising
- Design new *Prince William Sound: Region in Transition* museum display
- Begin implementing community involvement and traditional ecological knowledge plan

FY'07, 3rd quarter (April 1, 2007-June 30, 2007)

- Final construction grant applications for top-off funding
- Ongoing fundraising
- Contact State Archives in Juneau re housing the EVOS documents at the Cordova Center
- Move to development phase of community involvement and traditional ecological knowledge plan

FY'07, 4th quarter (July 1, 2007-September 30, 2007)

- Prepare RFP's and bid documents
- Groundbreaking ceremony
- Plan for accessioning and cataloging of archival materials
- Coordinate with Native Village of Eyak to develop Technical Ecological Knowledge program for new facility

FY'08, 1st quarter (October 1, 2007-December 31, 2007)

- Construction bids advertised
- Develop publicity to market conference facility for professional meetings
- Construction contract awarded

Cordova Center Proposal

FY'08, 2nd quarter (January 1, 2008-March 31, 2008)

- Contractor mobilizes
- Construction begins as soon as weather permits
- Annual EVOS Workshop
- Finalize management plan for new facility
- Solicit and commission art with gulf ecosystem themes for new facility

FY'08, 3rd quarter (April 1, 2008-June 30, 2008)

- Construction continues
- Work with educators to design opening display for Science Discovery Room
- Submit final report

Upon completion of construction of the Cordova Center the partner departments and agencies will move into the facility. A Grand Opening celebration will be held to welcome the public into the new facility, to showcase its offerings, and to celebrate the successful partnerships and collaborations that have resulted in the completion of this important project.

During the first year of operation the services and activities that relate to EVOSTC goals and objectives will be implemented. The *Prince William Sound: Region in Transition* exhibit will be on display in the museum. The Archival materials will be catalogued and museum and library staff will assist the public in accessing the materials. Science education activities for youth will be offered at the Science Discovery Center. Educational displays will be created and assembled throughout the Cordova Center facility. Emergency oil response training sessions will be held. Marine science research symposia on PWS and events such as the annual EVOS workshop can be held at the center.

Statistics will be maintained on the use of these services and the attendance at the various events/activities. The Director of Information Services and the Mayor of Cordova will provide an update to the EVOSTC after the first year of operation to report on the initial outcomes of the EVOSTC's investment in the Cordova Center.

RESPONSIVENESS TO KEY TRUSTEE COUNCIL STRATEGIES

Community Involvement and Traditional Ecological Knowledge (TEK) – (Please see attached letters and resolutions of support.)

The Cordova Center Project developed and matured through a successful series of public meetings providing the opportunity for all residents to have input into the planning process. Since 2002, a dozen open forum meetings have been held to discuss aspects of the Cordova Center project from site to building components to financial plans. Boxholder mailings, local surveys, and a series of articles in the *Cordova Times* have offered opportunities for education and queries. Radio talk shows since 2002 have allowed residents to comment and have questions answered. Many of the features of the Cordova Center were specifically designed to address a need that was identified or addressed in the series of public forums held early in the process. This collaboration from an early stage has allowed the project to move forward with strong support from the community. Public meetings and project progress updates continue even into this stage of the project.

Cordova Center Proposal

The community of Cordova has determined that sustainable design is good citizenship, good economics and good public service. All the partners of the Cordova Center have made an organizational commitment to creating a sustainable facility. There is resolve to construct a multi-use public building that uses innovative techniques to be on the cutting edge environmentally and technologically. From the beginning of the planning process, this project has depended on the joint efforts of broad-based and diverse groups. All community members are invited to contribute their input to the planning process. This continual information sharing will remain a function of the Cordova Center once it is constructed.

Cordova Center Partners: The **City of Cordova** offers the many varied public services that municipal governments are responsible for in small rural communities including museum, library, water, sewer, road maintenance, public health and safety.

Established in 1967 as a centennial museum by the **Cordova Historical Society**, the **Cordova Museum** is operated under the auspices of the City of Cordova while the Cordova Historical Society owns the collection. The museum offers exhibitions, programs, publications and other activities that engage, enlighten, educate and entertain both community residents and visitors of all ages.

The **Cordova Public Library** provides services to patrons throughout the community of Cordova and surrounding areas from Icy Bay to hatcheries in remote areas of Prince William Sound. The library also serves as the elementary school library for 200 pre-kindergarten to sixth grade children. In addition, the library provides Internet access and on-site use of its resources to visitors throughout the year.

The **U.S. Forest Service** in partnership with the **Prince William Sound Science Center** provides the **Science Discovery Program**, offering a variety of education programs and demonstrations for youth. These programs provide an important connection to the marine environment for people of all ages and are directly related to EVOS Trustee Council concerns.

Cordova Center Project Proposal

Budget Narrative:

The EVOS Trustee Council goals to "Provide information to communities regarding data and scientific research performed by the Trustee Council science program" and to "Improve communication of findings and results of restoration efforts to spill area residents, village councils, and the appropriate regional organizations" will be directly addressed by the proposed Cordova Center project.

The proposed EVOSTC Outreach & Information Sharing Venue -- The Cordova Center includes a conference center, library, museum, Oil Spill and Emergency Response Center, visitor's center and municipal government offices. More than 43% of the facility will be used for EVOS related functions. The building has been designed to maximize energy efficiency and maintain low operating expenses. Several features have been incorporated to minimize mechanical system expenses. This funding application is *not* for operating expenses or maintenance of the facility. The City of Cordova will own and operate the Cordova Center. The entire center will be ADA accessible, and will use sustainable design precepts.

EVOSTC funding is being requested only to contribute toward construction of specific spaces within the Cordova Center with functions that relate directly to carrying out EVOSTC objectives.

Square footages of Cordova Center spaces to be used to meet EVOSTC objectives:

<u>Square feet</u>	<u>EVOS Space Use Designation</u>
4,075	Conference Center: A venue for sharing GEM produced & other EVOS research
1,225	Library: Providing access to EVOS related information and research support
1,040	Science Discovery Room: Educating environmental stewards
1,825	Museum: Exhibit and Archives
3,410	Oil Spill Response Center: Training and Emergency Communication Center
1925	Visitors' Center: Restoration and development of regional outdoor recreation, tourism and commercial fishing industries

Of the \$17.2 million estimated project costs, more than \$3.75 million has been secured. Project design and construction drawings are complete, the site has been acquired and some funds are available for the construction phase.

<u>Funds awarded to date: Source</u>	<u>Amount</u>
Economic Development Administration (EDA)	\$ 200,000
Federal Financial Assistance Grant USFS	\$ 300,000
Appropriations Bill FY03, S.2708	\$ 994,000
Appropriations Bill FY04	\$ 994,100
Municipality – site acquisition and cash match to EDA grant,	\$ 225,000
State of Alaska Appropriation FY05	\$ 25,000
State of Alaska - FY06 Governor's Capital Project Budget Appropriation	\$1,000,000
Local fundraising campaign	\$ 19,501
<i>Total</i>	\$ 3,757,601

Cordova Center Project Proposal

In addition, the City has provided staff support valued at \$78,392 to date for the planning and development of the project, other in-kind and cash support including covering all legal fees required by the project

We are requesting \$6.8 million from the EVOS Trustee Council which is directly proportional to the cost per square foot of the 13,500 square feet included in the above listed areas of the Cordova Center that will help meet EVOSTC objectives

All EVOSTC funds will be expended during the construction phase to pay for the services and materials included in the construction contract for the Cordova Center.

No indirect costs are being requested. No funds for operating expenses or maintenance are being requested. The city will provide funding for operation and maintenance costs for the new facility from a variety of sources including income from use of the center, auditorium and leased space.

An active local fundraising campaign is underway to raise funds for the Cordova Center. As evidence of the strong stakeholder support for this project, the goal for pledged contributions to the capital campaign from members of Cordova Center organization boards, museum and library staff and the City Council is 100%. In-kind support will be provided during the construction phase with time and equipment of the public works department; planning department and water/sewer department. The remainder of the funds for this project will be raised from a public/private fundraising partnership made up of local contributions, government appropriations and grants from foundations, corporations and government agencies.

PROJECT EXPENSES		PROJECT REVENUES	
Land	\$ 140,000	Municipal to date	\$ 225,000
Architect & Engineering	\$ 900,000	State & Federal to date	\$3,513,000
Administration/Inspection	\$ 320,000	Total Funding Secured	\$3,738,000
Construction	\$ 13,009,86	Municipal Projected	\$ 775,000
Exhibit Design/Installation	\$ 500,000	State & Federal Projected	\$2,960,000
Equipment/Furnishings/Art	\$ 381,618	Foundations/Corporations Projected	\$2,680,000
Landscaping	\$ 30,000	Local Fundraising Projected	\$ 200,000
Contingency & Inflation Proofing	\$ 1,091,000	<i>EVOSTC funding</i>	\$6,831,000
		Total Funding Projected	\$13,446,000
Total Funding Needs	\$17,189,621	Total Secured & Projected	\$17,184,000

EVOS Trustee Council funding is a critical component to project success. As well as providing valuable financial support, it will allow Cordova to leverage funds from other sources to make the Project a reality.

FRANK H. MURKOWSKI
GOVERNOR

GOVERNOR@GOV.STATE.AK.US



STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU
July 6, 2004

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The Honorable Tim Joyce, Mayor
City of Cordova
P.O. Box 1210
Cordova, AK 99574

Dear Mayor Joyce:

I was pleased to finally meet you in Juneau earlier this year. Your willingness to work for your community and address some of the economic problems it is now facing is commendable. I was glad to offer the aid of my office and my special assistant, Alan Austerman, in the effort that led to successfully securing a lease with a new processor for the upcoming season in the old North Pacific processing plant. Hopefully, the fishermen as well as the folks who are employed in the industry in Cordova and Prince William Sound will enjoy a fruitful fishing season.

I would also like to commend you on the work your community has completed to date on the Cordova Center. I know this multi-purpose economic development and community facility has been a priority of the city for many years and continues to occupy a prominent role in the economic diversification plan for Cordova. The 1989 oil spill put Cordova at "the economic and emotional ground zero of the spill." I am glad to see the community come together behind a project like the Cordova Center. This facility can serve as an economic, cultural, and quality-of-life stimulus for your community, which has struggled through so much in recent years.

This also may be the perfect time to secure funding from the Exxon Valdez Oil Spill (EVOS) Trustee Council. As I said in my meeting with you, I feel the trustees should begin re-focusing their efforts from primarily restoration and habitat acquisition to community and economic restoration projects and facilities in the communities of the EVOS affected region. The Cordova Center could be the first of the 'brick and mortar' projects I've referred to in the past, which can be partially constructed by these funds. I understand you have had a series of positive meetings with the trustees, and I wish you great luck in that effort.

I also support your efforts to secure funds from other sources including federal, private foundations, and the state. I realize that the Cordova Center, in conjunction with the new fast vehicle ferry, the *M/V Chenega*, will play a major role in the economic rejuvenation, diversification, and development of a sustainable economy in Cordova.

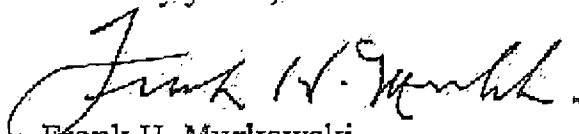
The Honorable Tim Joyce

Page 2

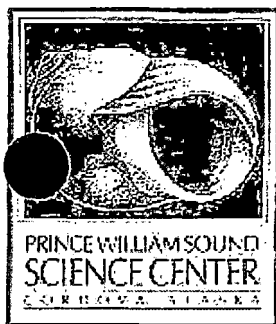
July 6, 2004

Please let me know if my administration can be of further assistance as you develop this community project

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Frank H. Murkowski". The signature is fluid and cursive, with a large initial "F" and a long, sweeping underline.

Frank H. Murkowski
Governor



P. O. Box 705
Cordova, Alaska 99574
(907)424-5800 (ph.)/(907)424-5820 (fax)

October 28, 2003

Cordova Center Committee
P.O. Box 391
Cordova, AK 99574

Dear Cordova Center Committee:

I am representing the Prince William Sound Science Center's education department in support of the development of the Cordova Center. The Cordova Center is a dream for Cordovans and the benefits of this proposed building are endless. My professional interest lies in the Cordova Center's education room being available to house the Discovery Room and other community education projects.

The Discovery Room science education program serves all the elementary students in Cordova from kindergarten through sixth grade. It is a partnership program run by the US Forest Service/Cordova Ranger District and the Prince William Sound Science Center. Each month every student (nearly 300 total) visits the Discovery Room to explore a new science topic. They proceed through a series of three rooms in small groups, each room with a different instructor from either the Forest Service or the Science Center and a different type of activity that relates to a common theme for the month. Currently these rooms are provided through an in-kind donation by the Prince William Sound Community College. Two rooms in the college are available for year-round use and storage and one more room is available on an as-need basis during the school year.

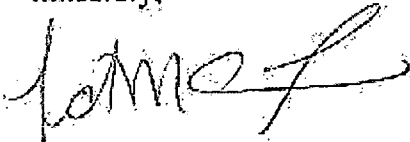
The Science Center is also pleased to offer a Community Education program series that offers weekly presentations on a variety of topics from October through May. The programs usually involve an indoor presentation complete with hands on activities and artifacts as well as an outdoor field trip component. Most recently, 22 participants gathered in the front atrium of the Science Center to learn about wolves and coyotes. This year Science Center educators are making an effort to relate Community Program topics with Discovery Room topics in order to provide enhanced learning opportunities for the elementary students in yet another setting.

Housing the Discovery Room in the Cordova Center will provide an invaluable opportunity for the above education programs to become more closely linked with the local community as well as visitors to Cordova. Not only will the proposed design provide an increased space for education programs and material storage, but it will be more accessible to all members of the community. The centralized location will allow passer-bys a glance at the projects and activities taking place in the Discovery Room. The larger educational space will also provide a better area for Community Program gatherings. Furthermore, when the topics of a community presentation and the Discovery Room are related, materials used by the elementary students or projects they create could directly benefit the community as a whole by being incorporated into the presentation or put on display.

Finally, the Cordova Center will provide a venue for the Science Center educators to create semi-permanent displays on our local region that can be visited by both community members and visitors to Cordova. It will enable resources collected by researchers and educators at the Science Center to be shared and viewed by a wider audience and help educate visitors about this wonderful place we call home.

Thank you for the opportunity to express my interest and support in the Cordova Center Project. Please contact me if I can provide any further information or assistance.

Sincerely,



Kate Alexander
Education Specialist
Prince William Sound Science Center
Phone: 907-424-5800 ext. 231
Email: kate@pwssc.gen.ak.us

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10,000 years in our Traditional Homeland, Prince William Sound, the Copper River Delta, & the Gulf of Alaska

April 15, 2004

Cordova Center Committee
City of Cordova
Box 1210
Cordova, Alaska 99574

Cordova Center Committee

The Native Village of Eyak would like to express its support of the Cordova Center Project. Of particular interest is the conference center and meeting facility. When Cordova has the capacity, the Native Village of Eyak would like to plan a regional conference.

We support the need of facilities for the Cordova Museum and Library. These services have endured and been kept a high standard in spite of the poor condition of their present facilities.

The Cordova Center as planned would accomplish much to lift the standard of life for Cordovans and provide a sparkling centerpiece for tourism.

The Traditional Council of the Native Village of Eyak

President Robert Henrichs



File Code: 1560

Date: January 23, 2004

Cordova Center Committee
PO Box 391
Cordova, AK 99574

Dear Committee Members,

I am writing to express the strong support of the Forest Service for the Cordova Center. We have been active in securing the initial federal funding for planning, design and construction, and members of my staff have participated on the planning committee for the Center. We can clearly see the benefits that such a facility will bring to the community, and look forward to using it for Forest Service sponsored events.

The community of Cordova will greatly benefit from the construction of the Cordova Center. This project will become the heart of the community on Main Street. This facility will be a key destination for visitors with the inclusion of a museum and the stylishness in its design. The people of Cordova will gravitate to this facility because of the inclusion of the city library and City Hall, and the natural connection between the harbor and Main Street.

The Cordova Center will be able to provide facilities for educational services such as the science-based Discovery Room program for elementary school children. This is a joint Forest Service/Prince William Sound Science Center program that is currently housed in very inadequate space elsewhere in town.

The local grade school will only be one block from the Cordova Center offering easy access for library services as well. High school and elementary school students will have an auditorium and a stage to conduct performances instead of the current elementary school lunch room or the high school gym. The local community theater group will also be able to use this auditorium.

The Cordova Center will help to revitalize and diversify the economy in Cordova. The inclusion of ADA accessible meeting rooms and auditorium will allow for small conventions, meetings and receptions to take place in a community that up until its construction has not had such facilities. Many organizations and agencies, including the Forest Service, have expressed an interest in holding meetings in Cordova if we had the facilities to accommodate such events. The Cordova Center will provide those facilities. Hosting events during the winter months in Cordova that 100 to 200 people attend would fill the hotel rooms and the restaurants. Visitor business in the wintertime is a necessity for many vendors to stay profitable. The Cordova Center could help provide that business.

The new building will replace two aging sheet metal buildings. These old buildings are expensive to operate because of poor construction and age. The new Cordova Center will provide an environmentally controlled space for museum displays, traveling exhibits and storage.

which would allow the museum to pursue accreditation. The community is willing to accept the responsibility of operating this new energy efficient facility especially since the old structures are planned to be removed from the city property roles.

The Cordova Center will be a source of pride for this community and provide all the benefits mentioned above. We support the construction of the Cordova Center and we hope to see the federal investment pay off with the completion of the Center.

Sincerely,

Rebecca S. Nourse

REBECCA S. NOURSE
District Ranger

**CITY OF CORDOVA ALASKA
RESOLUTION 01-03-13**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CORDOVA
ALASKA IN SUPPORT OF THE "CORDOVA CENTER" PROJECT**

WHEREAS, public meetings, surveys and informational mailings have taken place in Cordova for approximately nine months to solicit opinions from the citizenry of Cordova regarding this project; and,

WHEREAS, the City of Cordova is committed to seeking economic development for the community and continually improving the quality of life for all Cordovans; and,

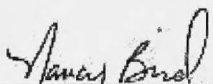
WHEREAS, funding for conceptual design and engineering drawings has been secured through appropriations and grants from the Economic Development Administration and the USDA Forest Service through the continued support and assistance of the Federal Delegation including Senator Ted Stevens; and,

WHEREAS, the City of Cordova wishes to support the Cordova Center project in its efforts to provide economic diversification and provide a state of the art facility that would benefit and improve the quality of life for year-round residents and visitors of Cordova as well as provide a unique welcoming environment for the young children and families in our community; and,

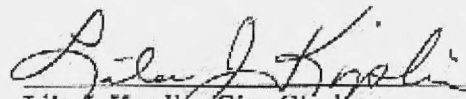
WHEREAS, the City Council is committed to continued financial contributions to the project in both construction costs and long term operation and maintenance costs.

NOW, THEREFORE BE IT RESOLVED that the City Council of the City of Cordova, Alaska does hereby support and will continue to commit to the development of the "Cordova Center" for the numerous benefits it will bring to our coastal community.

PASSED AND APPROVED THIS 22ND DAY OF JANUARY 2003.



Nancy Bird, Vice-Mayor



Lila J. Koplin, City Clerk



OILED MAYORS LTR

OILED MAYORS MAILING LIST

Cities

The Honorable Luba Eluska, Mayor
City of Akhiok
P.O. Box 5050
Akhiok, AK 99615

The Honorable Tim Joyce, Mayor
City of Cordova
P.O. Box 1210
Cordova, AK 99574

The Honorable James C. Hornaday, Mayor
City of Homer
491 East Pioneer Avenue
Homer, AK 99603

The Honorable Pat Porter, Mayor
City of Kenai
210 Fidalgo Ave., Suite 200
Kenai, AK 99611

The Honorable Carolyn Floyd, Mayor
City of Kodiak
710 Mill Bay Road, Room 220
Kodiak, AK 99615

The Honorable Roy Jones, Mayor
City of Larsen Bay
P.O. Box 8
Larsen Bay, AK 99624-0008

The Honorable James Nestic, Mayor
City of Old Harbor
P.O. Box 109
Old Harbor, AK 99643

The Honorable Richard Wyland, Mayor
City of Seldovia
Drawer B
Seldovia, AK 99663

The Honorable Vanta Shafer, Mayor
City of Seward
P.O. Box 167
Seward, AK 99664

The Honorable Bert Cottle, Mayor
City of Valdez
P.O. Box 307
Valdez, AK 99686

The Honorable Lester Lunceford, Mayor
City of Whittier
P.O. Box 608
Whittier, AK 99693

Boroughs

The Honorable John Williams, Mayor
Kenai Peninsula Borough
144 North Binkley Street
Soldotna, AK 99669

The Honorable Jerome Selby, Mayor
Kodiak Island Borough
710 Mill Bay Road
Kodiak, AK 99615

Other Organizations

Pete Kompkoff Jr., Council Chief
Native Village of Chenega IRA Council
P.O. Box 8079
Chenega Bay, AK 99574-8079

Robert Henrichs, Council President
Traditional Village of Eyak
P.O. Box 1388
Cordova, AK 99574-1388

Patrick Norman, Council Chief
Port Graham Village Council
P.O. Box 5510
Port Graham, AK 99603-5570

Gary Kompkoff, Council Chief
Village Council - Native Village of Tatitlek
P.O. Box 171
Tatitlek, AK 99677

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

DEPT. OF FISH & GAME

DEPT. OF LAW

FRANK H. MURKOWSKI, GOVERNOR

410 Willoughby Ave., Ste 303

Post Office Box 111800

Juneau, AK 99811-1800

PHONE: (907) 465-5066

FAX: (907) 465-5070

<http://www.dec.state.ak.us>

October 27, 2006

The Honorable Carolyn Floyd
Mayor
City of Kodiak
710 Mill Bay Road, Room 220
Kodiak, Alaska 99615

Dear Mayor Floyd:

As Mayors and local leaders of the communities that suffered the greatest damage from the Exxon Valdez oil spill, we want you to know what the State of Alaska is doing to complete restoration of the injured natural resources and human services. We also write to ask that you attend the upcoming November 14, 2006 meeting of the Exxon Valdez Oil Spill Trustee Council in Anchorage. This is an important meeting of the Trustee Council to vote on funding proposed restoration projects for both human services and natural resources.

The Trustee Council has completed a synthesis of all restoration work to date to determine the current status of resources and human uses injured by the 1989 spill. The findings indicate that most injured resources have substantially recovered, or are experiencing natural fluctuations that cannot be distinguished from spill impacts. We reported preliminary results from this synthesis to the public at meetings in Cordova, Valdez, Anchorage, Kodiak, Seward last spring, and at the January 2006 Annual Marine Science Symposium.

The message we heard from the public at those meetings was loud and clear. The Prince William Sound herring stocks need to be restored, the local economies of the impacted communities need help, and the unanticipated lingering oil that remains in some shorelines and the consequences from the presence of that oil must be dealt with.

To restore oiled shorelines, the federal and state Governments sent ExxonMobil a plan to remediate shorelines contaminated with lingering oil and a letter demanding that Exxon Mobil fund the plan in the amount of \$92,240,982 under the re-opener provisions of the original 1991 Settlement Agreement. It is too early to know if ExxonMobil will honor our claim, or require the Governments call upon the Court to intervene.

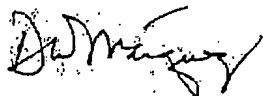
In addition to the re-opener provisions, the 1991 Settlement Agreement between Exxon, the State of Alaska, and federal government included \$900 million to restore, rehabilitate, replace, or acquire equivalent resources or human services that were injured, lost, or destroyed by the spill and to pay for response and cleanup expenses. During the last fifteen years, the Trustee Council has used the settlement fund to purchase fee title or easements for approximately 600,000 acres of land to protect the habitat of resources injured by the spill. The Council has also funded restoration studies and projects, public involvement, scientific review, and EVOS

office administrative expenses. The remaining balance of the original \$900 million settlement is approximately \$152 million.


In addition to proposals for restoring the herring stocks and other species, the Council will take action at the November 14 meeting on whether to fund a number of community economic restoration projects and facilities that have been proposed to restore the natural resources and human services injured by the spill (enclosure). Construction of the Cordova Center, Kodiak Fish and Game Research building, and Valdez Mineral Creek Boardwalk are specific facilities proposed for funding. The Department of Environmental Conservation (DEC) has also proposed using remaining settlement funds to upgrade a number of water quality protection facilities in the communities directly impacted by the spill. If the Trustee Council supports the general use of settlement funds for community water quality protection facilities, DEC will work with each of the impacted communities on the most appropriate sewage, storm water, or boat harbor improvements for the community. Decisions to fund restoration projects must have the unanimous consent of all six state and federal Trustees.

As the state's Trustee Council members, we would appreciate hearing from you on how the remaining funds should be used to restore the natural resources and human services impacted by the spill in your community. We also encourage you to attend the Council's November 14 meeting so that the full Trustee Council can learn what the communities directly impacted by the spill think about the projects proposed for funding.

Sincerely,



David Marquez
Attorney General, Department of Law



McKie Campbell
Commissioner, Department of Fish & Game



Kurt Fredriksson
Commissioner, Department of Environmental Conservation

cc: Linda Hay, Special Staff Assistant, Office of the Governor
Larry Dietrick, Director, Spill Prevention & Response, DEC
Heather Brandon, Ocean Policy Coordinator, F&G
Carol Fries, Large Project Coordinator, DNR
Rita Lovett, Assistant Attorney General, DOL
Linda Giguere, Information Officer, DEC

Proposed Human Service Restoration Projects

The Cordova Center	\$6,800,000
Valdez Mineral Creek Boardwalk and Trail System	\$1,400,100
Kodiak Fish and Game Research Center	\$5,000,000
Prince William Sound Youth Area Watch Education	\$960,400
Kodiak Youth Area Watch Education	\$387,600
Upgrade Sewage Treatment and Disposal Systems ¹	\$31,300,000
Upgrade Storm Water Collection, Treatment and Disposal Systems ²	\$900,000
Upgrade Boat Harbor Water Quality Protection Systems ³ (e.g., sewage pump outs, waste oil collection, grid designs)	\$3,000,000
	<hr/>
	\$49,748,100

¹ Chenega Bay Lift station upgrades and system extension

Chignik Lift station, septic tank, and outfall

Chignik Lake Lift stations, sewage lagoon, force main, gravity mains, and service connections

Homer Treatment plant upgrade, service extensions, sewage collection repairs/replacement

Karluk Lift station replacement

Kodiak Sewer system partial replacement

Port Graham Lift stations, force main, community septic tank, and ocean outfall

Port Lions Sewage sludge lagoon and pumper truck

Seldovia Community septic tank and pumper truck

Valdez Sewer system improvements

² Kodiak, Homer, Valdez, Seward, Cordova, Seldovia, and smaller communities in the EVOS impacted area with stormwater concerns.

³ Kodiak, Homer, Valdez, Seward, Cordova

**FY07 INVITATION
PROPOSAL SUMMARY PAGE**

Project Title: Mineral Creek Habitat Protection and Interpretation Project

Project Period: October 06 through April 15, 08

Proposer(s): Chris Degernes, Jack Sinclair, ADNR Division of Parks & Outdoor Recreation

Study Location: This project is located at the mouth of Mineral Creek, just west of the City of Valdez on 150 acres, 50 acres of which were donated by the City and 100 acres purchased using Trustee Council funds. The combined parcel is referred to as the Mineral Creek Parcel.

Abstract: In response to the City of Valdez Resolution No. 06-09, adopted 1/17/2006, and consistent with the results of a community wide survey and community supported development plan for the Mineral Creek parcel, the Division of Parks proposes to develop a boardwalk and trail system with interpretive signage with minimal support facilities on lands acquired through the Exxon Valdez Oil Spill small parcel program at the mouth of Mineral Creek.

The City of Valdez, the Valdez Parks and Recreation Commission, and the Valdez City Council have approved the plan for this project. Further, the City of Valdez requests Alaska State Parks to pursue grant funding to develop the lands at the mouth of Mineral Creek consistent with the submitted and approved plans. The Mineral Creek Parcel development plan was developed jointly by Alaska State Parks, the City of Valdez and the local State Parks Advisory Board.

The proposed project's immediate objectives are to restore or stabilize any impacted habitat and to establish public use patterns within the parcel that are compatible with protection of injured resources such as pink and sockeye salmon, bald eagles, intertidal resources, and services such as recreation and tourism. The long-term goal of this project is to protect fish and wildlife habitat, enhance recreation access, and educate the public as to the functions and values of riparian habitat and the proper use of this community resource.

Development Plan includes: Approximately 4,100 linear feet of trail, boardwalk, and viewing decks, interpretive signage, willow revegetation, native seeding, park benches, 1 latrine and limited parking.

Funding:

EVOS Funding Requested: FY07 \$ 1,400,100(must include 9%GA)

TOTAL: \$1,400,100

Non-EVOS Funds to be used: FY07 \$ 0

TOTAL: \$1,400,100

Date: August 4, 2006

CITY OF VALDEZ, ALASKA

RESOLUTION NO. 06-09

RECEIVED
FEB 08 2006

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF VALDEZ, ALASKA SUPPORTING THE EFFORTS OF ALASKA STATE PARKS TO SEEK GRANT FUNDING TO DEVELOP WEST MINERAL CREEK STATE PARK (BLONDEAU PROPERTY) IN ACCORDANCE WITH THEIR SUBMITTED PLANS

WHEREAS, the City of Valdez approved Resolution 97-16, on February 18, 1997 supporting the purchase of lands at the mouth of Mineral Creek by the Exxon Valdez Trustee Council for recreational and natural resource protection purposes and approved Resolution 97-75 on November 3, 1997, effectively donating 50 acres to include as an addition to the above property; and

WHEREAS, the City of Valdez and its citizens have a vested interest in seeing that the parklands are made accessible for the enjoyment of all residents and visitors; and

WHEREAS, the City of Valdez has worked closely with the State Parks Advisory Board and Alaska State Parks to create a development plan that the residents of Valdez supported; and

WHEREAS, the Valdez Parks and Recreation Commission and the Valdez City Council approved the development plan submitted by Alaska State Parks after hearing much public comment; and


WHEREAS, Alaska State Parks will require outside funding for the development of the parklands.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF VALDEZ, ALASKA, that

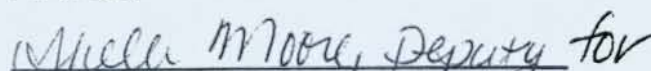
The City of Valdez lends its full and enthusiastic support of Alaska State Parks in their pursuit for grant funding to develop the parklands at the mouth of Mineral Creek in accordance of their originally submitted plans.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF VALDEZ, ALASKA, this 17th day of January, 2006

CITY OF VALDEZ, ALASKA


Bert Cottle, Mayor

ATTEST:


Sheri L. Pierce, CMC, City Clerk








HABITAT PROTECTION SMALL PARCELS PRINCE WILLIAM SOUND, ALASKA

Parcel: PWS1056

0 1.0 2.0 miles

Universal Transverse Mercator Projection

LEGEND

-  Public Lands (Federal and State)
-  Private or Municipal Lands
-  Native Selected

SOURCES:
Land status provided by the
US Forest Service, 1995, and the
ADNR, Division of Land, 1997.



City Location
50 Acres +/-

PWS1056

PORT VALDEZ

Valdez

Mineral Creek

Valdez
Airport

Richardson Highway



Exxon Valdez Oil Spill Trustee Council

FY 2007 Invitation for Proposals

Trustee Council Use Only

Project No.

Date Received:

**FY07 INVITATION
PROPOSAL SUMMARY PAGE***(to be filled in by proposer)***Project Title:** Integrated Statistically Valid Assessment of Status and Trends of Intertidal Ecological Conditions and Oiled Conditions.**Project Period:** Initial status – 2008 to 2009. Trends – 2013, 2018, 2023, and 2028.**Proposer(s):** Douglas Dasher, Doug_Dasher@dec.state.ak.us, Alaska Department of Environmental Conservation and Drs. John Kelley and Stephen Jewett, University of Alaska Fairbanks School of Fisheries and Ocean Science, in collaboration with Sue Saupe of Cook Inlet Regional Citizens Advisory Council and U.S. Environmental Protection Agency.**Study Location:** The target population is all known oiled intertidal zones.

Project Abstract – This project idea proposes the utilization of a probabilistic stratified random sampling design providing for an integrated comprehensive assessment of the status and trends, within known confidence limits, of intertidal ecological conditions, including the extent and degree of remaining oil of known regions impacted by the Exxon Valdez oil spill. This assessment would be coupled with common set of survey indicators, though they may have to be modified for the different ecological habitats, to provide for a statistically unbiased, objective assessment of the overall environmental condition of total overall original oiled intertidal zone.

This work builds on the previous DEC Environmental Monitoring and Assessment Program (EMAP) status assessment conducted in 2002 with the Cook Inlet Regional Citizens Advisory Council (CIRCAC). See <http://www.dec.state.ak.us/water/wqamp/emap.htm> for more information on this previous work.

Repeat assessments every five years provide critical information on trends for resource managers to determine the success of restoration efforts.

Funding:**EVOS Funding Requested: FY08** \$325.0 (must include 9% GA)**EVOS Funding Requested: FY09** \$325.0**TOTAL:** \$650.0**Non-EVOS Funds to be used: FY08** \$125.0**Non-EVOS Funds to be used: FY09** \$125.0**TOTAL:** \$250.0**TOTAL:** \$900.0**Date:** August 7, 2006



Exxon Valdez Oil Spill Trustee Council

FY 2007 Invitation for Proposals

Trustee Council Use Only

Project No.

Date Received:

**FY07 INVITATION
PROPOSAL SUMMARY PAGE**
(to be filled in by proposer)

Project Title: Assessment Of Water Quality In Harbors And Marinas In Five Communities Impacted By Exxon Valdez Spill

Project Period: 2007-2008

Proposer(s): Kent Patrick-Riley, kent_patrick-riley@dec.state.ak.us. Alaska Department of Environmental Conservation, Division of Water

Study Location: Marine harbors and marinas in Cordova, Homer, Kodiak, Seward and Valdez.

Project Abstract – This project will help accomplish the EVOS goal to reduce threats to marine environment in spill impacted areas. The project will consist of three (3) phases:

Phase I – Evaluation Study (see discussion below).

Phase II – Install prevention measures based on phase I, estimate \$500K/harbor. Prevention measures may include activities as sewage pump outs, waste oil collection, move grids to upland locations, etc.

Phase III – Clean up contaminated harbors. Estimates developed after completion of Phase I.

Phase I of this project will compile and evaluate existing water quality data, develop a sampling plan and associated Quality Assurance Project Plan (QAPP) to fill data gaps, and conduct an assessment of surface water quality at marine harbors and marinas in five (5) communities in the communities impacted by the 1989 Exxon Valdez spill: Kodiak, Homer, Valdez, Seward, and Cordova. The parameters of concern are petroleum, oil and grease, debris, fecal coliform bacteria, nutrients, selected metals and common water quality parameters (pH, dissolved oxygen, and temperature).

In reviewing the current status of Exxon Valdez impaired waters, ADEC noted that several heavily-used harbors and marinas exist in the area; and these may cause water quality problems of local and areal scope similar to the current beach impaired areas. Activities that may cause water pollution at harbors and marinas include improper disposal of sewage waste, fish and seafood processing waste, boat maintenance (fuel delivery, painting and depainting; petroleum fueling and motorboat operation), improper used oil and trash disposal, and stormwater discharges that may carry pollutants from these and other activities.

Deliverables: Report that compiles and evaluates existing water quality data in the 5 harbors, sampling plan, QA project plan, interim report with preliminary analysis of sampling results, draft final report on water quality in the five harbors. All drafts will be circulated for review.

Funding:

EVOS Funding Requested: FY07 \$500.0 (must include 9% GA)

EVOS Funding Requested: FY08 \$2,500.0

TOTAL: \$3,000.0

Non-EVOS Funds to be used: FY07-08 \$0

TOTAL: \$3,000.0

Date: August 4, 2006



Exxon Valdez Oil Spill Trustee Council

FY 2007 Invitation for Proposals

Trustee Council Use Only

Project No.

Date Received:

**FY07 INVITATION
PROPOSAL SUMMARY PAGE***(to be filled in by proposer)***Project Title:** Evaluate And Upgrade Storm Water Pollution Prevention Infrastructure Of EVOS Impacted Communities.**Project Period:** 2007-2008**Proposer(s):** James Rypkema, james_rypkema@dec.state.ak.us. Alaska Department of Environmental Conservation, Division of Water**Study Location:** The communities of Kodiak, Homer, Valdez, Seward, Cordova, Seldovia, and smaller communities in the EVOS impacted area with stormwater concerns.**Project Abstract –** This project will help accomplish the EVOS goal to reduce threats to marine environment in spill impacted areas.

The purpose of this request is to evaluate and upgrade the storm water pollution prevention infrastructure for the impacted EVOS communities. The economy for many of these communities is based on fishing, seafood processing, seasonal tourism, ship services and repairs, oil and gas development, and subsistence living. These communities have various activities and facilities, such as marinas and harbors, that may cause storm water pollution, ranging from sewage or seepage from septic tanks, fish and seafood processing waste, boat maintenance activities such as fuel delivery, painting and depainting; petroleum - oil/grease, trash debris, etc. that impact the communities' runoff and receiving waters.

This project is composed of two primary phases:

Phase-I will be a needs assessment to address storm water pollution prevention for the affected communities, identifying potential sources of pollution and evaluating current storm water pollution prevention infrastructure and existing best management practices (BMP), with an outcome of recommendations and cost estimates of best management practices alternatives to achieve pollution prevention goals for each community.

Phase-II will be to implement recommendations identified in the needs assessment. This may be accomplished through the development of improved storm water infrastructure, best management practices, and local government and public outreach programs.

Funding:

EVOS Funding Requested: FY07	\$100.0	(must include 9% GA)
EVOS Funding Requested: FY08	\$700.0	
TOTAL:	\$800.0	

Non-EVOS Funds to be used: FY07-08 \$0**TOTAL:** \$800.0**Date:** August 4, 2006



Exxon Valdez Oil Spill Trustee Council

FY 2007 Invitation for Proposals

Trustee Council Use Only

Project No.

Date Received:

**FY07 INVITATION
PROPOSAL SUMMARY PAGE**
(to be filled in by proposer)

Project Title: Address Wastewater Infrastructure Deficiencies in EVOS Communities**Project Period:** 2007-2011**Proposer(s):** Bill Griffith, Bill_Griffith@dec.state.ak.us Alaska Department of Environmental Conservation, Division of Water**Study Location:** Chenega Bay, Chignik, Chignik Lake, Homer, Karluk, Kodiak, Port Graham, Port Lions, Seldovia, and Valdez.**Project Abstract** – This project will help accomplish the EVOS goal to reduce threats to marine environment in spill impacted areas.

The purpose of this request is to reduce stress on the marine environment surrounding spill impacted communities by correcting deficiencies associated with the collection, treatment, and disposal of sewage.

Water pollution abatement projects are needed in ten of the EVOS communities as outlined below. These include projects to improve wastewater treatment, water body protection, and infiltration/inflow. The estimated cost of addressing these needs is \$31.3 million.

Chenega Bay	Lift station upgrades and system extension	\$480,500
Chignik	Lift station, septic tank, and outfall	\$675,000
Chignik Lake	Lift stations, sewage lagoon, force main, gravity mains, and 20 service connections	\$2,793,000
Homer	Treatment plant upgrade, service extensions, sewage collection repairs/replacement	\$9,850,000
Karluk	Lift station replacement	\$240,000
Kodiak	Sewer system partial replacement	\$2,400,000
Port Graham	Lift stations, force main, community septic tank, and ocean outfall	\$1,211,000
Port Lions	Sewage sludge lagoon and pumper truck	\$750,000
Seldovia	Community septic tank and pumper truck	\$800,500
Valdez	Sewer system improvements	\$12,100,000
Total		\$31,300,000.00

Funding:

EVOS Funding Requested: FY07	\$ 6,260.0	(must include 9% GA)
EVOS Funding Requested: FY08	\$ 9,390.0	
EVOS Funding Requested: FY09	\$ 6,260.0	
EVOS Funding Requested: FY10	\$ 6,260.0	
EVOS Funding Requested: FY11	\$ 3,130.0	
TOTAL:	\$31,300.0	

Non-EVOS Funds to be used: FY07-11 \$0**TOTAL:** \$31,300.0**Date:** August 4, 2006

PROPOSAL SIGNATURE FORM

THIS FORM MUST BE SIGNED BY THE PROPOSED PRINCIPAL INVESTIGATOR AND SUBMITTED ALONG WITH THE PROPOSAL. If the proposal has more than one investigator, this form must be signed by at least one of the investigators, and that investigator will ensure that Trustee Council requirements are followed. Proposals will not be reviewed until this signed form is received by the Trustee Council Office.

By submission of this proposal, I agree to abide by the Trustee Council=s data policy (*Trustee Council Data Policy**, adopted July 9, 2002) and reporting requirements (*Procedures for the Preparation and Distribution of Reports***, adopted July 9, 2002).

PROJECT TITLE: Preliminary proposal: Assessment of exposure of black oystercatchers to lingering oil in western Prince William Sound

Printed Name of PI: Dr. Brenda Ballachey

Signature of PI: _____ Date 8/03/06

Printed Name of co-PI: James Bodkin

Signature of co-PI: _____ Date 8/03/06

* Available at <http://www.oilspill.state.ak.us/pdf/admin/datapolicy.pdf>

** Available at <http://www.oilspill.state.ak.us/pdf/admin/reportguidelines.pdf>

Trustee Council Use Only

Project No: _____

Date Received: _____

PROPOSAL SUMMARY PAGE

Project Title: Preliminary proposal: Assessment of exposure of black oystercatchers to lingering oil in western Prince William Sound

Project Period: FY 07

Proposer(s): Brenda E. Ballachey and James L. Bodkin, USGS Alaska Science Center
brenda_ballachey@usgs.gov, james_bodkin@usgs.gov

Study Location: Prince William Sound

Abstract: Black oystercatchers are fully dependent on intertidal areas for their prey, and thus are at risk of exposure to oil remaining on shorelines. In 2004, black oystercatchers in western PWS had elevated levels of the cytochrome P4501A biomarker, indicating persistent exposure to lingering EVOS oil. We propose to repeat the capture and sampling of black oystercatchers in 2007, using methods applied in 2004, to determine whether or not there is evidence that exposure continues.

Funding: EVOS Funding Requested: FY 07 \$ 55,045.00

Date: August 3, 2006

FY2007

Preliminary proposal: Assessment of exposure of black oystercatchers to lingering oil in western Prince William Sound

Submitted by: B. Ballachey and J.L. Bodkin

USGS Alaska Science Center

1011 East Tudor Road, Anchorage, AK 99503

brenda_ballachey@usgs.gov, james_bodkin@usgs.gov

August 3, 2006

Statement of Problem

Black oystercatchers were initially recognized as an injured species following the spill, but were later classified as recovered. However, because they are fully dependent on intertidal areas for their prey (primarily mussels, limpets, clams and other shellfish), they are at risk of exposure to oil lingering on shorelines of western PWS (Short et al. 2004). After the spill, black oystercatchers were the subject of several studies which indicated that exposure had affected their behavior and physiology (Sharp et al. 1996, Andres 1998a,b), but measurement of cytochrome P4501A as an indicator oil exposure was not attempted until 2004 (Ballachey et al. 2006). At that time, on average, black oystercatchers in oiled areas (northern Knight and western Green islands) exhibited higher levels of CYP1A than birds in the unoiled area (Montague), suggesting exposure to lingering oil on shorelines continues (Ballachey et al. 2006). However, there was no indication of lower body weights for birds with higher CYP1A values, or of lower body weights of birds on oiled shorelines, as earlier reported by Andres (1998a), and we do not know if there are any population level consequences from chronic exposure. Irons et al. (2000) found that the spill had negatively affected numbers of oystercatchers in oiled areas, and population densities remain relatively low in oiled areas through 2005 (McKnight et al. 2006).

Proposed Statement of Work

In early summer of 2007, we propose to re-evaluate the cytochrome P4501A biomarker in black oystercatchers, replicating capture, sampling and analysis (EROD assays on liver biopsies) methods utilized in 2004 (Ballachey et al. 2006). We plan to coordinate efforts with work currently proposed by T. Dean and J. Bodkin (*Data Base Development and Implementation of Long Term Monitoring for Evaluation of Recovery and Restoration of Nearshore Resources*, submitted to EVOSTC August 2006), including coordination of the vessel charter to reduce costs. We would also collaborate with personnel from the US Fish and Wildlife Service who were previously involved in capture and sampling of black oystercatchers. We anticipate captures would be completed by July 15, 2007; laboratory analyses completed by November 1, 2007 and a final report would be delivered by January 31, 2008.

Budget

Technician salary (logistics & preparation, capture; 3 months @5500/mo):	\$16,500
Veterinary services and supplies (16 days at \$500/day):	8,000
Supplementation of charter (10 days at 1800/day):	18,000
EROD assays for CYP1A (40 @\$150 each):	6,000
Miscellaneous equipment and supplies:	<u>1,000</u>
Subtotal:	\$50,500
9% Overhead:	<u>4,545</u>
Total:	\$55,045

References

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- Andres, B. 1998b. Black oystercatcher. Restoration Notebook, *Exxon Valdez* Oil Spill Trustee Council, Anchorage, Alaska. 8 pp.
- Ballachey, B.E., J.L. Bodkin, and D. Irons. 2006. Oil exposure biomarkers and population trends of Prince William Sound marine vertebrates (Draft Final Report, Restoration Project //774), US Geological Survey, Alaska Science Center, Anchorage, Alaska.
- Irons, D.B., S.J. Kendall, W.P. Erickson, L.L. McDonald, and B.K. Lance. 2000. Nine years after the *Exxon Valdez* oil spill: Effects on marine bird populations in Prince William Sound, Alaska. *The Condor* 102:723-737.
- McKnight, A., K. M. Sullivan, D. B. Irons, S. W. Stephensen, and S. Howlin. 2006. Marine bird and sea otter population abundance of Prince William Sound, Alaska: trends following the *T/V Exxon Valdez* oil spill, 1989-2005. *Exxon Valdez* Oil Spill Restoration Project Annual Report (Restoration Project 050751), U. S. Fish and Wildlife Service, Anchorage, Alaska.
- Sharp, B. E., M Cody and R. Turner. 1996. Effects of the *Exxon Valdez* oil spill on the black oystercatcher. *American Fisheries Society Symposium* 18:748-756.
- Short, J.W., M. R. Lindeberg, P. M. Harris, J. M. Maselko, J. J. Pella, and S. D. Rice. 2004. Estimate of oil persisting on the beaches of Prince William Sound 12 years after the *Exxon Valdez* oil spill. *Environmental Science and Technology* 38:19-25.

**FY07 INVITATION
PROPOSAL SUMMARY PAGE**

Project Title: **Barrow's Goldeneye Population Recovery: Dispersal, Survival, and Exposure to Lingering Exxon Valdez Oil**

Project Period: FY07-09

Proposer(s): Dr. Dan Esler

Study Location: Prince William Sound, including oiled and unoled study areas used during previous studies of sea duck population recovery.

Abstract: Like other intertidal species, Barrow's goldeneyes were particularly vulnerable to acute and chronic effects of the *Exxon Valdez* oil spill. Although some work has been conducted on this species, through surveys (McKnight et al. 2005), research (Esler et al. 2000), or monitoring of cytochrome P4501A (CYP1A) as a measure of oil exposure (Trust et al. 2000, Ballachey et al. 2006), the demographic processes underlying injury and recovery have never been evaluated (Esler 2000). This is in stark contrast to harlequin ducks, for which demographic data have proven invaluable for understanding the mechanisms of injury and the process of recovery (Esler et al. 2002). Therefore, I propose to conduct a research program in which critical demographic parameters are quantified, allowing for a fuller understanding of Barrow's goldeneye population responses to the spill, including a retrospective consideration of how measured demographic parameters might have influenced the ability to detect injury and recovery in the species.

Specifically, I propose to use satellite telemetry to document dispersal (both within and between years) and survival rates of Barrow's goldeneye that winter in Prince William Sound. These parameters have never been documented in the species, and are critical for understanding how injury and recovery would have occurred. Further, the use of satellite telemetry allows for documentation of breeding areas of goldeneyes that winter in Prince William Sound; this has never been determined, and is important for identifying the geographic scale at which injuries related to the oil spill would be expressed.

Finally, the degree of exposure to lingering oil can be conducted in conjunction with these studies. In March 2005, Barrow's goldeneyes showed significantly higher CYP1A induction in oiled areas relative to unoled, indicating continued exposure to oil. It seems prudent to continue to monitor CYP1A until exposure is no longer evident.

Funding and logistics are detailed on the next page. I am happy to produce a full proposal if this idea is determined to be worthy of consideration for EVOSTC funding.

Funding:

EVOS Funding Requested: FY07: \$ 152.9K

FY08: \$ 232.6K

FY09:\$ 238.0K

TOTAL: \$ 623.5K

Date: 4 August 2006

Logistics:

This is proposed as a 3-year program, in which 30 Barrow's goldeneyes in each winter would be marked with satellite transmitters. In studies in British Columbia, Barrow's goldeneyes have proven to be resilient to the anesthesia and radio implantation that would be required for this work. Also, satellite telemetry has become a proven methodology for quantifying demographic properties of waterfowl, and obviates the need for expensive and weather-dependent field monitoring via boat or aircraft. In addition, satellite radios have been developed with battery lives of 2 years, which allows delineation of breeding sites of goldeneyes from Prince William Sound, allows collection of survival data over more than one winter for each bird, and allows unbiased estimates both intra- and inter-annual site fidelity, which are crucial demographic properties in terms of recovery.

The budget above reflects costs of personnel (PI and Research Assistant; \$26K annually), some travel, boat charter (\$30K annually), veterinarian costs, CYP1A analyses in the first and third year, satellite transmitters (30 each year @ \$3K each), satellite data acquisition (30 each year @ \$1K each), and miscellaneous consumables. Indirect costs of 10% (Simon Fraser University) and 9% (GA for USGS) are included in totals.

Note that the budget for FY07 is based on the assumption that this work could be piggy-backed with proposed work on harlequin duck CYP1A monitoring and population modeling. If the harlequin duck work is not funded, the first year of this program would require funding similar to that described for the second and third years.

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- Ballachey, B.E., J.L. Bodkin, and D. Irons. 2006. Oil exposure biomarkers and population trends of Prince William Sound marine vertebrates (Restoration Project //0774), US Geological Survey, Alaska Science Center, Anchorage, Alaska.
- Esler, D. 2000. Recovery status of Barrow's goldeneyes, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 00466), U.S. Geological Survey, Alaska Biological Science Center, Anchorage, Alaska.
- Esler, D., T. D. Bowman, C. E. O'Clair, T. A. Dean, and L. L. McDonald. 2000. Densities of Barrow's goldeneyes during winter in Prince William Sound, Alaska in relation to habitat, food, and history of oil contamination. *Waterbirds* 23:425-431.
- Esler, D., T.D. Bowman, K.A. Trust, B.E. Ballachey, T.A. Dean, S.C. Jewett, C.E. O'Clair. 2002. Harlequin duck population recovery following the *Exxon Valdez* oil spill: Progress, process, and constraints. *Marine Ecology Progress Series* 241: 271-286.
- McKnight, A., K.M. Sullivan, D.B. Irons, S.W. Stephensen, and S. Howlin. 2006. Marine bird and sea otter population abundance of Prince William Sound, Alaska: trends following the *T/V Exxon Valdez* oil spill, 1989-2005. *Exxon Valdez* Oil Spill Restoration Project Annual Report (Restoration Project 050751), U. S. Fish and Wildlife Service, Anchorage, Alaska.
- Trust, K. A., D. Esler, B. R. Woodin, and J. J. Stegeman. 2000. Cytochrome P450 1A induction in sea ducks inhabiting nearshore areas of Prince William Sound, Alaska. *Marine Pollution Bulletin* 40:397-403.

Kimberly A. Trust
Interim Science Director
Exxon Valdez Trustee Council
441 West 5th Avenue, Suite 500
Anchorage, AK 99501-2340
907-265-9326 (phone)
907-276-7178 (fax)

July 28, 2006

Dear Ms. Trust,

Please find attached a short proposal to serve as a place holder for your consideration for FY 07. I have also emailed you electronic copies. I have followed the guidelines in the Invitation for proposals Issued June 1, 2006 by the Exxon Valdez Oil Spill Trustee Council. However, if you find that I have made an error please let me know and I will remedy it.

Sincerely,

David B. Irons, Ph. D.
Seabird Coordinator
Migratory Bird Management
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503 USA
email david_iron@fws.gov
Phone 907/786-3376 Fax 907/786-3641

FY07 INVITATION
PROPOSAL SUMMARY PAGE

Project Title: Prince William Sound Pigeon Guillemot Synthesis and Restoration

Project Period: October 1st 2007 to September 30th 2011

Proposer(s): David B. Irons, Migratory Bird Management, U. S. Fish and Wildlife Service
david_iron@fws.gov, Phone (907) 786-3376

Study Location: Prince William Sound, Alaska

Abstract: The population of Pigeon Guillemots in Prince William Sound (PWS) has decreased from about 15,000 in the 1970's (Isleib and Kessel 1973) to about 5,000 in 1994 (Agler et al. 1994) and 2,000 in 2005 (McKnight et al 2006). There is some evidence (Oakley and Kuletz 1993) suggesting that this population was in decline before the *Exxon Valdez* oil spill in March of 1989. An estimated 2,000 to 3,000 Pigeon Guillemots were killed throughout the spill zone immediately after the spill (Piatt et al. 1990). Based on censuses taken around the Naked Island complex (Naked, Peak, Storey, Smith, and Little Smith Islands), pre-spill counts (ca. 2,000 guillemots) were roughly twice as high as post-spill counts (ca. 1,000 guillemots). The population has not recovered since the oil spill and continues to decline in the oiled area.

Considerable baseline data on Pigeon Guillemot populations in PWS and their reproductive and foraging ecology were collected both before and after the *Exxon Valdez* oil spill. It is clear that predation plays a role in keeping the population from recovering. Here we propose to restore pigeon guillemot populations by removing introduced predators and providing predator-free nest boxes. Additionally all information collected on guillemots after the spill will be synthesized to assess what factors other than predation are keeping the population from recovering.

Funding:	EVOS Funding Requested:	FY 07 \$290.0K, FY 08 \$300.0K, FY 09 \$310.0K, FY 10 \$321.0K. FY 11 \$333.0K TOTAL: \$1554.0K
	Non-EVOS Funds to be Used:	FY 07 \$20K, FY 08 \$21K, FY 09 \$22K, FY 10 \$23K, FY 11 \$24K TOTAL: \$110K

Date: July 28, 2006

**FY07 INVITATION
PROPOSAL SUMMARY PAGE****Project Title: Recovery of shallow subtidal communities 17 years after the *Exxon Valdez* oil spill.**

Project Period: April 2007-March 2008

Proposer(s): Brenda Konar (University of Alaska Fairbanks), Katrin Iken (University of Alaska Fairbanks), Judy Hamilton (Kachemak Bay National Estuarine Research Reserve)

Seventeen years ago the Exxon Valdez oil spill resulted in almost 42 million liters of crude oil being discharged in Prince William Sound (Spies et al. 1996). Approximately half of the oil came ashore and an estimated 13% was deposited in subtidal sediments (Wolfe et al. 1994). Impacts of the spill on abundant nearshore subtidal habitats have been examined over the years (see Peterson 2001 for review), however the recovery and current status of these communities still remain unknown.

This study proposes to examine multiple soft-sediment eelgrass beds, coarse textured substrates and rocky substrate kelp beds as the typical subtidal habitat types to determine if subtidal community structure varies between oiled and reference sites. While it is believed that there is little remaining lingering oil (Short pers comm.), the long-term effect of the oil on subtidal habitats is unknown. In brief, our experimental design would survey 10 oiled and 10 non-oiled reference sites per habitat type (totaling 60 sites). One reason that past studies have largely been inconclusive is based on limited replication, often as few as 2-3 sites, resulting in too much variation and insufficient statistical power (see critical review in Boehm et al. 2003). Another reason why past studies have largely been inconclusive is that they have compared data from large ranges of water depths (for example 2-11m). Our recent work in the oil spill region established that subtidal community structure varies significantly with depth and that data from varying depths should not be combined and then analyzed (Konar and Iken 2005). We suggest that much of the variation that has occurred in past studies will be removed if discrete water depths are sampled. As such, as part of our study plan, we will survey two discrete water depths at the coarse textured substrates and kelp beds (5 and 10m) and one water depth at the eelgrass sites (5m).

Our specific experimental design will consist of one 50m transect per site and depth. Along each transect, we will visually survey 10 1x1m² quadrats for percent cover of kelp and red algal species (or shoot counts for eelgrass), and of sessile invertebrates (ie sponges, bryozoans, etc.). Within these quadrats, we will also count larger mobile invertebrates (eg snails, crabs etc.). Along a 2m swath along each transect we will count all sea stars as they are often top predators in this environment and have been examined in past studies (Dean and Jewett 2001). One result of earlier oil spill studies has been that some kelps may have different sizes at oiled versus reference sites (Dean et al. 1996).

However, the results of that particular study was confounded by a wide range of depths sampled (2-11m). Now, 17 years after the oil spill, the species most likely to still show impacts of the spill are long-lived perennial kelps. As such, we will measure the length of 50 individual *Agarum clathratum* plants *in situ* along each transect to determine the size-frequency distribution per site and depth. In addition, we will collect 20 individuals along each transect to establish a size-biomass correlation. Overall, this will allow us to determine if differences exist between oiled and reference sites as far as density, size frequency and biomass of the dominant kelp. Lastly, as part of this study, we will conduct visual surveys of nearshore fishes along each transect. Many nearshore fishes are top predators and as such would be most impacted by long-term oil effects.

This study will provide conclusive information on the recovery of Prince William Sound shallow subtidal communities that could not be obtained from past studies. The strengths of this study are the experimental design with large sample size (for sites and replicates per site) and well-defined depths and species that will allow for a strong statistical comparison between oiled and reference sites.

Boehm PD, JM Neff and DS Page. 2003. Letter to editor. Marine Environmental Research 55:459-461.

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Dean TA, MS Stekoll and RO Smith. 1996. Kelps and oil: the effects of the *Exxon Valdez* oil spill on subtidal algae. American Fisheries Society Symposium 18:412-423.

Konar B and K Iken 2005. Alaska Natural Geography In Shore Areas: An Initial Field Project for the Census of Marine Life. Gulf Ecosystem Monitoring and Research Project 040666 Final Report.

Peterson CH. 2001. The *Exxon Valdez* oil spill in Alaska: acute, indirect, and chronic effects on the ecosystem. Advances in Marine Biology 39:1-103.

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Wolfe DA, MJ Hameedi, JA Galt, G Watabayashi, J Short, C O'Clair, S Rice, J Michel, JR Payne, J Braddock, S Hanna and D Sale. 1994. The fate of the oil spilled from the *Exxon Valdez*. Environmental Science and Technology 28:561-568.

Funding:

EVOS Funding Requested: FY07 \$ 95,000 (must include 9%GA)

TOTAL: 95,000

Non-EVOS Funds to be used: FY07 \$ 0

TOTAL: 0

Date: August 2, 2006

Kimberly A. Trust
Interim Science Director
Exxon Valdez Trustee Council
441 West 5th Avenue, Suite 500
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907-265-9326 (phone)
907-276-7178 (fax)

August 3, 2006

Dear Ms. Trust,

Please find attached a short proposal to serve as a place holder for your consideration for FY 07. I have also emailed you electronic copies. I have followed the guidelines in the Invitation for proposals issued June 1, 2006 by the Exxon Valdez Oil Spill Trustee Council.

Sincerely,

Kathy Kuletz, Ph.D.
Migratory Bird Management
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503 USA
email david_iron@fws.gov
Phone 907/786-3376 Fax 907/786-3641

FY07 INVITATION PROPOSAL SUMMARY PAGE

Project Title: Assisting recovery of species injured in the *Exxon Valdez* Oil Spill by reducing incidental take of marine birds in gillnet fisheries of Alaska.

Project Period: January 1st 2007 to September 30th 2011

Proposer(s): Kathy Kuletz, Migratory Bird Management, U. S. Fish and Wildlife Service
kathy_kuletz@fws.gov, Phone (907) 786-3453

Study Location: Gillnet fishery management areas of Alaska, particularly within the spill zone.

Abstract: Seven species of marine birds that are not recovered (common loon, harlequin duck, three species of cormorants, marbled murrelet, pigeon guillemot) or are of unknown status (Kittlitz's murrelet), and at least 10 other species of marine birds common in the spill zone, are subject to incidental take in gillnet fisheries. NOAA studies have estimated that, depending on the location, a few hundred to more than a thousand birds may be taken in each of several gillnet fisheries annually. This proposed project would assist recovery of multiple species of diving marine birds by 1) describing the spatial / temporal extent of gillnet bycatch using available data, 2) forming a working group to gather information and facilitate information exchange, and 3) testing fishing gear or methods that may reduce incidental take of marine birds.

The first phases would use funds to access existing data (bycatch studies, fishery effort, bird distribution) and contract statistical assistance for a comprehensive summary and analysis of this issue. This might include assisting in the collection of bycatch data where it is currently lacking, by collaborating with NOAA observer programs for gillnet bycatch studies. Concurrently, it would convene a working group of 'stakeholders', including integrating the expertise and concerns of fishers into the project at its inception. The later phases would involve development and testing of fishing methods and gear types with the goal of reducing incidental take of birds. This program could follow previously successful programs to address gillnet bycatch in other states and longline bycatch in Alaska. The program would conduct outreach and support continued development of methods and gear. It should also include a component for monitoring effectiveness of methods in reducing overall bycatch rates.

This project could be a joint effort of the US Fish & Wildlife Service (trust agency for marine birds), ADF&G (manages state gillnet fisheries), Alaska Sea Grant (a funded partnership between government, academia, industry, and private citizens), various local fisher's co-ops, and NOAA-Fisheries (conducts gillnet bycatch studies on a limited basis).

Funding:	EVOS Funding Requested:	FY07 \$200K, FY08 \$300K, FY09 \$400K, FY10 \$300K, FY11 \$200K TOTAL: \$1400.0K
	Non-EVOS Funds to be Used: (USFWS est. only)	FY07 \$20K, FY08 \$21K, FY09 \$22K, FY10 \$23K, FY11 \$24K TOTAL: \$110.0K

Date: August 3, 2006

I. FY07 Invitation: Narrative Forms for Proposals**PROPOSAL SIGNATURE FORM**

THIS FORM MUST BE SIGNED BY THE PROPOSED PRINCIPAL INVESTIGATOR AND SUBMITTED ALONG WITH THE PROPOSAL. If the proposal has more than one investigator, this form must be signed by at least one of the investigators, and that investigator will ensure that Trustee Council requirements are followed. Proposals will not be reviewed until this signed form is received by the Trustee Council Office.

By submission of this proposal, I agree to abide by the Trustee Council's data policy (*Trustee Council Data Policy**, adopted July 9, 2002) and reporting requirements (*Procedures for the Preparation and Distribution of Reports***, adopted July 9, 2002).

PROJECT TITLE: Assessing and Predicting the Population Level Effects of Environmental Contaminants in Sea Otter and Harlequin Ducks

Printed Name of PI: Kathrine R. Springman

Signature of PI: _____ Date 3 August 2006

Printed Name of co-PI: John M. Emlen

Signature of co-PI: _____ Date 3 August 2006

Printed Name of co-PI: _____

Signature of co-PI: _____ Date _____

* www.evostc.state.ak.us/Policies/data.htm

** www.evostc.state.ak.us/Policies/Downloadables/reportguidelines.pdf

Trustee Council Use Only

Project No. _____

Date Received: _____

<p style="text-align: center;">FY07 INVITATION PROPOSAL SUMMARY PAGE <i>(to be filled in by proposer)</i></p>
<p>Project Title:</p>
<p>Project Period: October 1, 2006-September 30, 2007</p>
<p>Proposer(s): Kathrine R. Springman, UC Davis John M. Emlen, USGS</p>
<p>Study Location: Seattle, Washington; Littleriver, California</p>

Abstract: In this study, we propose to synthesize existing data sets from sea otter, harlequin ducks, and SPMD/EROD analysis and model effects using INTASS. Interaction Assessment (INTASS) is a modeling platform that utilizes spatially-specific field data to construct population dynamics models. These models describe the population growth rate, r , of a target species as an explicit function of environmental variables, physical, chemical and biotic (Emlen et al. 2006). In the context of this proposal, INTASS will be used to elucidate the effects of contaminants, in particular PAHs on populations of harlequin ducks and sea otters. That is, the constructed model equations will be such that the impact of a contaminant on r can be directly read. INTASS permits two alternate approaches. In the first, more information-intensive of these, data consist of information on target species numbers and other environmental variables (numbers of predators or competitors, availability of food, and physical environmental factors) collected in sample areas of a size encompassing individual animal's spheres of sensory input and direct experience; that is, the area within which an individual draws on environmental (and social) information to decide whether to remain or leave its immediate surroundings. A number of such "quadrats" are characterized for any given site. Several such sites, with whole-site-characterizing information, are incorporated into the analysis. The site differences, including information on contaminants, are thereby incorporated into the final expressions for r . Details are provided in Emlen et al. (2006), and Emlen and Springman (in press). The second approach can be used when the spatially-detailed data described above are not available, and only site characterizing data are available. If population estimates exist for the different sites over at least two years, site-specific r values can be directly calculated, and then regressed on the site-specific environmental values to provide the desired information on contaminant effects. While the statistical approach to model building used in INTASS differs somewhat from standard multivariate tools (See Emlen et al. 2006; Emlen and Springman, in press), the manner in which contaminant levels are characterized also differs. Using data on concentrations in the environmental medium or from animal tissues presents problems ranging from exposure-vs-uptake uncertainty, to variations in organismal defense levels, to unknown interactions in contaminant effects. Other difficulties from this approach include synergies both between constituent chemicals and between chemicals and other environmental circumstances such as temperature or social stress. To avoid these problems, we go directly to the physiological response systems (EROD, heat shock proteins, etc., whatever might be appropriate for the nature of the contaminants involved). These physiological markers act as integrators of all the complications listed above and, thus, largely, circumvent them. As the values of these markers are characteristic of site, they are used as site-characterizing environmental variables. Of course, using this approach, if we wish to predict the effect of a cleanup or change in contaminant level, we must have a means to predict the physiological reaction to a possibly novel mix of chemicals. To deal with this issue, semi-permeable membrane devices (SPMD) can be deployed such as those placed in Prince William Sound (Project 040740). These samplers serve as sinks for hydrocarbons in the environment in a manner resembling uptake by biological organisms, and injection of their extracts into an organism permits a study of one response to the complex mixture as it is encountered by biota, with no confounding effects. Vertebrate P450 enzyme systems are similar in many ways, and data on duck and otter P450 induction in sites where SPMDs were placed exists. Existing data for both the harlequin duck and sea otter are appropriate for INTASS analysis. We intend to use these existing data sets with SPMD data to apply both INTASS approaches in an attempt to obtain a clear picture as to the impacts of contaminants on these two species in the Sound.

Funding:

EVOS Funding Requested: FY07 \$ 64,669.00 (must include 9%GA)

TOTAL: \$64,669.00

Non-EVOS Funds to be used: FY07 \$

TOTAL: \$67,382.00

Date: 2 August 2006

(NOT TO EXCEED ONE PAGE)

PROPOSAL SUMMARY

Project title: *EVOSTC Outreach & Information Sharing Venue – The Cordova Center*
Project period: 10/1/2006-06/30/2008
Proposers: City of Cordova Mayor Tim Joyce, timothyjoyce@yahoo.com
Director of Information Services Cathy Sherman,
infoservices@cityofcordova.net
Project location: Cordova, Alaska

The Cordova Center will be a 34,000 square foot, ADA accessible multi-use facility designed to address the following EVOSTC, community, and regional needs:

- public outreach and information sharing center for EVOS Trustee Council
- research sharing venue for Gulf of Alaska Ecosystem Monitoring and Research Program
- diversification of Cordova's injured fishing and tourism-based economy
- economic revitalization locally and regionally

Upon completion of construction the Center will provide

- venue to host symposia, workshops, classes
- library supporting scientific research and offering online access to EVOS program reports
- repository for EVOS documents
- Science Discovery Room
- museum exhibit on oil spill history and advances in science, technology and industry stimulated by the spill
- Oil Spill Response Emergency and Communications Center
- EVOS research, SEA, and GEM research findings educational displays, restoration effort results, art representing Delta and Sound ecosystems
- Visitor Center promoting PWS tourism, outdoor recreation, seafood marketing

Total estimated project cost: \$17.2 million
EVOSTC funding requested: \$6,831,000
Non-EVOSTC funds to be used: \$10,369,000

Cordova Center Proposal
PROJECT PLAN

NEED FOR THE PROJECT

Statement of problem

The Prince William Sound region has a strong need for a facility whose mission includes providing the venue and means for education of citizens, students, scientists, resource managers and stakeholders about the Prince William Sound and Gulf ecosystems and how best to manage its natural resources.

The EVOS Trustee Council's goals of outreach, sharing research and providing educational opportunities correspond with needs of the City of Cordova.

Cordova has no centrally located community center providing the facilities and amenities necessary to meet all the population's needs. While there are public and private facilities that are used for meetings and conferences in the community, none provides adequate space, equipment and services to meet Cordova's needs. The existing facilities in Cordova for science education programs, meeting rooms, museum, library, auditorium/theater and emergency response are inefficient and do not meet ADA standards. The present visitor center is not adequate; yet diversifying Cordova's injured tourism and fishing-based economy depends increasingly on the expanding of tourism and outdoor recreation-based industries.

The existing municipal building functions as emergency dispatch and communications center in case of tsunami, oil spill and other emergencies. The current location has serious problems which need to be remedied in order to provide emergency services and respond to disasters:

- absence of backup electrical power would greatly hinder emergency response personnel's ability to communicate with others in the region, state or nation
- location of existing facility within the tsunami zone requiring equipment and personnel to be relocated to higher ground for actual events
- lack of space for oil spill training response leaves responders unprepared

Background and history

The community of Cordova was heavily impacted by the devastating effects of the 1989 Exxon Valdez oil spill to the region's economy. Commercial fishing, passive use, recreation and tourism are services that were reduced because of the spill. Cordova's dependence on commercial fishing has resulted in an economy that is cyclical in nature and very specialized. This reliance on one industry has led to economic difficulties as fluctuations occur in fishing and fishing related ventures. The community recognizes the need for economic diversification to promote long-term sustainability.

Lack of economic diversity has led to the following problems:

- long-term impact of the oil spill on fishing families and community businesses that relied on those families for a sizeable portion of their income;
- economic difficulties during low fishing cycles leading to increased hardship for over half the households in Cordova;
- seasonal influx of workers for fishing industry who leave at the end of the season taking their income with them instead of spending it in the community;

Cordova Center Proposal

- business closures during the off season due to reduced population, leaving locals with fewer choices and opportunities;
- employee lay-off during the off season resulting in a high unemployment rate;
- decrease in raw fish tax revenues from a high of 1,294,704 in 1989 to 448,958 in 2004;
- decrease in local sales tax revenue.

The City of Cordova is seeking funding to construct the Cordova Center, a 34,000 square foot, fully ADA accessible multi-use facility. The Center will combine a number of functions for the community of Cordova including **conference center, library, Science Discovery Room, museum, Oil Spill Response Center and visitors' center**. Throughout the building there will be educational displays of: the results of SEA, GEM and other EVOS related research findings; restoration efforts and their results; and of art representative of the ecosystems on the Delta and in the Sound. These displays will ensure that any visitor to the Center will have exposure to educational materials about the natural resources of the region and the progress of restoration efforts related to the EVOS.

As well as providing a solution to the problems noted above, the Cordova Center offers many exciting opportunities. **The Cordova Center is strategically positioned to be a centerpiece of EVOS Trustee Council information sharing in the region.** The new facility will enhance and expand scientific research services and the regional visitor industry.

Relevance to 1994 Restoration Plan Goals and Scientific Priorities

The EVOSTC FY 07 invitation for proposals states that the Council is interested in local community based proposals that would address community revitalization restoration objectives. The Cordova Center Project is an important part of Cordova's efforts to model the original mission of the Trustee Council's Restoration Program, by taking into account the importance of the quality of life and the need for viable opportunities to establish and sustain a reasonable standard of living.

As an integrated community facility, the Cordova Center is designed to address all of the following objectives. The Center will provide a venue from which personnel can:

- provide access to SEA, GEM and other EVOS related data through **library** services;
- offer citizen training and support in oil spill response through the **emergency response center**;
- provide citizen training and support environmental monitoring activities through the **science discovery program**;
- manage a data/local knowledge **archive**;
- make available **educational programs**;
- publicize **community involvement opportunities**;
- provide a **forum** to identify important community and region-wide issues and concerns that could be addressed by EVOS related monitoring and research;
- provide **information** to communities regarding data and scientific research performed by the Trustee Council science program;
- improve **communication** of findings and results of restoration efforts to spill area residents, village councils, and the appropriate regional organizations;

Cordova Center Proposal

The new Cordova Center will provide an oil spill response training and incident command and communications center, as well as an emergency administrative response and communications center. The Oil Spill Prevention and Response Center will: conduct oil spill response training (members of Cordova's fishing fleet were and are first responders to a spill in Prince William Sound); instruct community members in oil spill prevention and clean-up techniques; build partnerships between resources-dependent community members and state and federal resource agencies; house an Oil Spill Response Emergency and Communications Center; and serve as a repository for EVOS related documents currently stored at the State of Alaska archives in Juneau.

Cordova is one of five community response centers that have been established in Prince William Sound where the oil industry has stockpiled spill containment and removal equipment. Local fishing vessels are part of Alyeska's planned nearshore response. They are used, among other things, to transport response equipment, deploy and tend boom, and mobilize pre-staged equipment to protect fish hatcheries. Twice yearly, Alyeska provides response training to hundreds of fishing boat crews. The fishing vessels, based in communities in Prince William Sound, the Kenai Peninsula, and Kodiak Island are under contract with Alyeska to respond to spills if willing and available at the time of an incident.

The Center will function as a repository for data generated by EVOS projects that will make this information readily available to the scientific communities, resource managers, resource dependent people and their communities, policy makers, EVOS staff and contractors, GEM committees and working groups, state and federal resource agencies, and concerned members of the public. By providing easy access to well-organized materials the Cordova Center will increase the long-term value of the projects' research.

The new facility will offer information in easily accessible formats, including displays, exhibits and art, thereby fulfilling the Trustee Council's goal of disseminating information on restoration to the broadest audience possible.

We are glad to see in the EVOSTC FY 07 invitation for proposals the statement that "the Council believes that the human population can not be separated from the ecosystem and the components that comprise human use." The Cordova Center project will address the EVOS Trustee Council objectives for human services that depend on natural resources. The Visitors' Center will serve as a focus to restore and develop Cordova's outdoor recreation, tourism and commercial fishing industries. It will promote opportunities for outdoor recreation and tourism in the Prince William Sound region; serve as stimulus for restoration of injured services of recreation and tourism in the region; and provide for seafood marketing and availability information in a kiosk at the Cordova Center, helping to expand markets for Alaska fishing resources and to restore commercial fishing injured by the spill.

The Cordova Center will also house a museum which will assure that the public has easy access to information regarding the spill and its impact upon the region, to exhibits on oil spill history and the advances in science, technology and industry that were stimulated by the spill. Portions of the acclaimed educational exhibit, *Darkened Waters: Profile of an Oil Spill*, created by the Pratt Museum in Homer, Alaska will form the basis for the new *Prince William Sound: Region in Transition* exhibit being designed as a key display for the Cordova Museum. *Prince William Sound: Region in Transition* will tell not only the story of what happened as a result of the 1989

Cordova Center Proposal

tragedy, but also will offer a comprehensive story of oil transportation safety advances in Prince William Sound, the development of oil spill response, the interrelationship of the local fishermen and fishing industry with the oil industry, and the US Coast Guard's role during an oil spill. The new exhibit will also encompass the expansion and enrichment of research in the science of the Sound since the 1989 oil spill, including findings of research funded by the EVOS Trustee Council, Prince William Sound Science Center and the Oil Spill Recovery Institute. This exhibit responds to the continual questions of many visitors regarding the oil spill and its impacts on our region and what has changed since the oil spill.

Expected results and benefits of success to EVOSTC

Building a facility that provides information about and promotes stewardship of Gulf ecosystem resources, serves local and regional residents, and visitors, will be an important contribution to stable and sustainable economic recovery. The variety of interdisciplinary programs and services that will be provided in this new multi-use facility will meet the needs to support research, disseminate EVOS-related information, and reach out to people around the world and inform them of the research findings and progress to date.

Together, the partners will increase access to information, educational opportunities, and the overall understanding of the effects of oil spills and the best practices of response. The Cordova Center will provide the means for transmitting this information to all those who find it interesting, valuable or crucial to their work.

PROJECT DESIGN

Sustainability: A key factor in the initial building concept for the Cordova Center was the attempt to consolidate many Cordova facilities from old, inefficient facilities into one modern facility. This promotes effective operation and staffing, and drives down the cost of operating several uneconomical buildings. To further reduce future operating costs, the design team carefully reviewed life-cycle costs of building systems, and recommended material quality to minimize future maintenance costs. The building design aggressively utilizes the highest levels of insulation and energy efficiency, adopting several cutting edge systems for minimized operation cost, such as displacement ventilation and passive cooling using water reservoirs integrated in the building foundation space. Architects worked with staff and maintenance personnel to solicit important input to the design with a high priority given to environmental responsiveness. The facility was registered and will seek certification status with the U.S. Green Building Council through the Leadership in Energy and Environmental Design rating system.

The community supports this new mixed-use facility because it provides the opportunity for cost effective operation, with shared resources, minimized building volume, and common centralized services, including mechanical and electrical systems.

Facility operation management: The City anticipates dedicating to the operation of the Cordova Center a part-time Marketing Director, a full-time Facility Manager, a full-time custodian and full-time maintenance position to be responsible for the tasks associated with the operations of the facility. Each of these staff members will report directly to their department head or the City Manager. The operation and maintenance of the facility will be the responsibility of the City Manager who will work closely with the Information Services Director, Facility Manager and Director of Public Works to assure that marketing, scheduling, maintenance and janitorial duties are carried out in a timely, efficient and effective manner. City Information Services staff will

Cordova Center Proposal

offer direct assistance to meeting planners. All operational and maintenance costs will be borne by the City of Cordova.

EVOSTC project related management: The Director of Information Services will be responsible for coordinating the transfer of the archival materials from the Alaska State Library. The Director and staff will accession, catalog and provide research assistance to members of the public needing access to the materials.

Staff will also work closely with the Science Discovery Program to implement educational displays related to the Prince William Sound region. Whenever possible they will cooperate in providing science programs for all ages to increase learning opportunities in the community.

Objectives

The first objective of this project is to achieve full funding for the construction of the Cordova Center. The current estimate for total construction of the project is \$17.2 million based on a cost estimate developed by HMS Engineering, experts in cost estimating in the State of Alaska. This funding is an investment in local and regional assets that creates the physical infrastructure to diversify the economy and provide essential benefits to the community and to the region.

Once the primary objective is achieved, the objectives listed below for the uses of designated spaces in the center will be pursued. These objectives accord with EVOSTC goals.

Conference Center – A venue for sharing of EVOS research

1. Host EVOS-related workshops, marine research conferences and symposiums;
2. Show films produced with EVOS funds in the auditorium;
3. Provide space for government agency and resource management meetings;
4. Facilitate communication between scientific community and stakeholder user groups in Prince William Sound;
5. Make available space for Eyak tribal members to share traditional ecological knowledge and to hold tribal meetings.

Library – Providing access to EVOS-related information

1. Inform the public about the status of restoration efforts in the spill region;
2. Become a repository and dissemination source of EVOS and GEM publications and related research reports for scientific communities, resource managers, policy makers, and members of the public;
3. Expand library collection of materials relating to scientific research needs, commercial fishing, oil spill history, oil spill response, fisheries management related to the spill, its impact and its restoration and recovery;
4. Support oil spill and related marine researchers' needs through online sources and interlibrary loans, such as providing computer access to the ARLISS library for reference literature on oil spill research;
5. Present educational programs for all ages regarding research results; provide online links and access to EVOS Trustee Council related educational materials;
6. Share resources for research needs of Prince William Sound Science Center, Native Village of Eyak, and Prince William Sound Community College.

Cordova Center Proposal

Science Discovery Room – *Educating environmental stewards*

1. House the Science Discovery Room for the Prince William Sound Science Center and U.S. Forest Service sponsored Science Discovery Program to facilitate study and monitor the ecosystem of the Sound;
2. Enhance community involvement with Science Discovery Room;
3. Conduct programs related to health and sustainability of marine resources;
4. Exhibit science displays for public education;
5. Educate youth through hands-on stewardship and monitoring activities
6. Facilitate student involvement in EVOS and other research projects.

Museum – *Documenting the past and looking to the future*

1. Create and display the new core exhibit *Prince William Sound: Region in Transition* that will expand the interpretation of the oil spill event to provide a comprehensive story of oil transportation safety advances in Prince William Sound, the development of oil spill response, the interrelationship of the local fishermen and fishing industry with the oil industry, the US Coast Guard's role in oil spill response, and the expansion and enrichment of science research in the Sound since the 1989 oil spill;
2. Serve as an accessible repository for all the EVOS documents currently stored at the State of Alaska Archives in Juneau;
3. Disseminate information on restoration activities;
4. Expand exhibits on history of resource development in the Copper River Region;
5. Respond to visitor questions on EVOS and the PWS region.

Oil Spill Response Center – *Oil spill prevention and response training*

1. Provide space for oil spill response training (Members of Cordova fishing fleet were and are first responders to a spill in Prince William Sound);
2. Educate community members in oil spill prevention and clean-up techniques;
3. Build partnerships between resources-dependent community members and state and federal resource agencies;
4. House an Oil Spill Response Emergency and Communications Center.

Visitors' Center – *Promoting the recovery of Cordova's outdoor recreation, tourism, and commercial fishing industries*

1. House Visitor Center to promote opportunities for outdoor recreation and tourism in the Prince William Sound region;
2. Serve as stimulus for restoration of injured services of recreation and tourism in the region;
3. Provide seafood marketing and availability information in a kiosk at the Cordova Center, helping to expand markets for Alaska fishing resources and to restore commercial fishing economy that was injured by the spill.

Procedure

1. Ensure community involvement – The Cordova Center project has been under way since 2001, starting with community meetings to ascertain general needs and high-priority features. A strong consensus was achieved for the vision of a multi-purpose community center incorporating the library, museum, science discovery center, auditorium, and offices in a single facility with a marine resource theme.

Cordova Center Proposal

2. Build collaboration – Cordova Center planners met with EVOS Trustee Council members to initiate a dialog about how the Center can best serve EVOS Trustee Council outreach needs. The City initiated a strong partnership between members of related institutions including the Prince William Sound Science Center, United States Forest Service, Native tribe of Eyak, Community College, public schools, federal agencies, nonprofit Cordova Historical Society, service and civic groups and the community as a whole to collaborate on the planning and implementation of the Cordova Center project.
3. Retain design team – The firm of Minch Ritter Voelckers, Inc. was retained as project architects in February 2002. Detailed programming analysis of spaces was initiated. Community forums focusing on site, materials and features were organized to build broad support and consensus for the project, and to provide information to the design team as ideas were formulated. The Cordova Center architectural and engineering drawings are bid-ready. They represent the culmination of three years of community discussion and design review.
4. Secure the site – The City of Cordova purchased the preferred site .
5. Plan capital campaign – A strategic plan has been developed for the capital campaign. A working fundraising plan has been formulated, with a tactical development plan for carrying out each strategy.
6. Secure state and federal appropriations – Appropriations have been requested and received for project planning and initial stages. Federal funds have been dedicated to the project from the Economic Development Administration, USDA Rural Economic Development Administration and appropriations from HUD. The Alaska State Legislature has provided funding and Governor Murkowski included an appropriation in his 2005 budget.
7. Initiate public fundraising – A public fundraising campaign has been launched and will be on-going throughout the duration of the project. These local contributions show support for the project and will stimulate funding from non-local sources.
8. Submit grant applications – Proposals have been submitted to various prospective funding sources for grants to support the Cordova Center project.
9. Apply to the Trustee Council for funds – Previous applications have been submitted to the EVOSTC for partnership in funding the Cordova Center project. Feedback was received and the application has been modified in response to more clearly identify the services to EVOSTC that the Cordova Center will support. **EVOSTC funding is a critical component in building a coalition of funders for construction of the Cordova Center. It is the keystone to the success of the project.**
10. Submit additional funding applications - **Once EVOSTC funding is committed to the Cordova Center project**, grant requests will continue to be submitted to foundations, corporations with a local presence, and businesses. Additional funding requests will be made to the Alaska Congressional delegation and to the state for budget appropriations for top-off funding.

Project site

The City of Cordova, incorporated in 1909, is located at the southeastern end of Prince William Sound in the Gulf of Alaska. The community was built on Orca Inlet, at the base of Eyak Mountain. It lies 52 air miles southeast of Valdez and 150 miles southeast of Anchorage. Cordova is a rural community accessible by air or water. Alaska Airlines provides federally subsidized daily jet service to the state airport. Access to the community is also available by smaller planes. The Alaska Marine Highway provides ferry service.

A home rule municipality with a Council-Manager form of government and a volunteer elected mayor and city council, Cordova has a year-round population of 2,298 residents (DCED 2004) including its federally recognized Native Tribe (The Native Village of Eyak). With 15% of the population Native American, the cultures of the Alutiiqs, Eyaks and Tlingits play an important role in the community. Most Eyak tribal members reside within the community of Cordova.

Gateway to the Copper River Delta, a 60-mile arc of wetlands, Cordova relies heavily on the marine and river ecosystems for its economy. Nearly half of all households are involved in the commercial fishing industry. For 17 years, the community has worked to re-group from the devastating effects to the economy in this region from the Exxon Valdez oil spill. Cordova continues to experience economic difficulties as fluctuations occur in the fishing industry.

Since 1989, work with the tourism industry has been underway to develop the community as a desirable destination. Visitation to Cordova has been slowly increasing in the past ten years primarily from the independent traveler via AMHS or air service. Passengers also arrive each week from Memorial Day to Labor Day on small ships operated by Alaska Sightseeing Cruise West. The Iceworm Festival, the Shorebird Festival, the Copper River Wild Salmon Celebration and musical events draw additional visitors. Sport fishermen arrive in the community in late summer for the returning silver salmon sport fishing season.

Coordination and Collaboration

Cordova Center planners have met with EVOS Trustee Council members several times to discuss how best to utilize space in the new facility to meet EVOS Trustee Council outreach needs and EVOS related research dissemination goals. As noted in the Procedure section, numerous stakeholders have been involved in the planning the Cordova Center. The Prince William Sound Science Center, U.S. Forest Service, Native Village of Eyak, PWS Community College, public schools, federal agencies, nonprofit Cordova Historical Society, service and civic groups and community members are collaborating on the planning and implementation of the Cordova Center project and have a stake in its success. Attached letters show support for the project. By partnering, the Center will provide cultural, educational and recreational opportunities and facilitate activities that foster the sharing of traditional ecological knowledge.

The project is structured to continually reinforce this collaboration as the interrelated services provided at the new facility complement and build upon each other. Continual public planning to identify new ways in which the facility can creatively be utilized to serve EVOS Trustee Council, the region and the state will enable the Cordova Center to maintain its role of disseminating information on restoration to a broad audience. This is an investment that will have long-term and far-reaching outcomes for EVOS Trustee Council while providing an array of benefits to the community of Cordova and the Prince William Sound region.

Cordova Center Proposal
SCHEDULE

Project Milestones

- Objectives To secure funding to construct the Cordova Center
 To let the construction bid in 2007/2008
 To begin construction in 2008
 To implement EVOSTC related services upon completion of construction

Measurable Project Tasks

FY'07, 1st quarter (October 1, 2006-December 31, 2006)

- Project funding approved by Trustee Council
- Input sought from Trustee Council on outreach and information dissemination spatial requirements
- Community involvement and traditional ecological knowledge plan developed with tribal and community members
- Grant applications to foundations, corporations and government sources
- Requests for state and federal appropriations
- New phase of local fundraising campaign initiated

FY'07, 2nd quarter (January 1, 2007-March 31, 2007)

- Grant applications to foundations, corporations and government sources
- Lobby to support funding requests for state and federal appropriations
- Ongoing fundraising
- Design new *Prince William Sound: Region in Transition* museum display
- Begin implementing community involvement and traditional ecological knowledge plan

FY'07, 3rd quarter (April 1, 2007-June 30, 2007)

- Final construction grant applications for top-off funding
- Ongoing fundraising
- Contact State Archives in Juneau re housing the EVOS documents at the Cordova Center
- Move to development phase of community involvement and traditional ecological knowledge plan

FY'07, 4th quarter (July 1, 2007-September 30, 2007)

- Prepare RFP's and bid documents
- Groundbreaking ceremony
- Plan for accessioning and cataloging of archival materials
- Coordinate with Native Village of Eyak to develop Technical Ecological Knowledge program for new facility

FY'08, 1st quarter (October 1, 2007-December 31, 2007)

- Construction bids advertised
- Develop publicity to market conference facility for professional meetings
- Construction contract awarded

Cordova Center Proposal

FY'08, 2nd quarter (January 1, 2008-March 31, 2008)

- Contractor mobilizes
- Construction begins as soon as weather permits
- Annual EVOS Workshop
- Finalize management plan for new facility
- Solicit and commission art with gulf ecosystem themes for new facility

FY'08, 3rd quarter (April 1, 2008-June 30, 2008)

- Construction continues
- Work with educators to design opening display for Science Discovery Room
- Submit final report

Upon completion of construction of the Cordova Center the partner departments and agencies will move into the facility. A Grand Opening celebration will be held to welcome the public into the new facility, to showcase its offerings, and to celebrate the successful partnerships and collaborations that have resulted in the completion of this important project.

During the first year of operation the services and activities that relate to EVOSTC goals and objectives will be implemented. The *Prince William Sound: Region in Transition* exhibit will be on display in the museum. The Archival materials will be catalogued and museum and library staff will assist the public in accessing the materials. Science education activities for youth will be offered at the Science Discovery Center. Educational displays will be created and assembled throughout the Cordova Center facility. Emergency oil response training sessions will be held. Marine science research symposia on PWS and events such as the annual EVOS workshop can be held at the center.

Statistics will be maintained on the use of these services and the attendance at the various events/activities. The Director of Information Services and the Mayor of Cordova will provide an update to the EVOSTC after the first year of operation to report on the initial outcomes of the EVOSTC's investment in the Cordova Center.

RESPONSIVENESS TO KEY TRUSTEE COUNCIL STRATEGIES

Community Involvement and Traditional Ecological Knowledge (TEK) – (Please see attached letters and resolutions of support.)

The Cordova Center Project developed and matured through a successful series of public meetings providing the opportunity for all residents to have input into the planning process. Since 2002, a dozen open forum meetings have been held to discuss aspects of the Cordova Center project from site to building components to financial plans. Boxholder mailings, local surveys, and a series of articles in the *Cordova Times* have offered opportunities for education and queries. Radio talk shows since 2002 have allowed residents to comment and have questions answered. Many of the features of the Cordova Center were specifically designed to address a need that was identified or addressed in the series of public forums held early in the process. This collaboration from an early stage has allowed the project to move forward with strong support from the community. Public meetings and project progress updates continue even into this stage of the project.

Cordova Center Proposal

The community of Cordova has determined that sustainable design is good citizenship, good economics and good public service. All the partners of the Cordova Center have made an organizational commitment to creating a sustainable facility. There is resolve to construct a multi-use public building that uses innovative techniques to be on the cutting edge environmentally and technologically. From the beginning of the planning process, this project has depended on the joint efforts of broad-based and diverse groups. All community members are invited to contribute their input to the planning process. This continual information sharing will remain a function of the Cordova Center once it is constructed.

Cordova Center Partners: The **City of Cordova** offers the many varied public services that municipal governments are responsible for in small rural communities including museum, library, water, sewer, road maintenance, public health and safety.

Established in 1967 as a centennial museum by the **Cordova Historical Society**, the **Cordova Museum** is operated under the auspices of the City of Cordova while the Cordova Historical Society owns the collection. The museum offers exhibitions, programs, publications and other activities that engage, enlighten, educate and entertain both community residents and visitors of all ages.

The **Cordova Public Library** provides services to patrons throughout the community of Cordova and surrounding areas from Icy Bay to hatcheries in remote areas of Prince William Sound. The library also serves as the elementary school library for 200 pre-kindergarten to sixth grade children. In addition, the library provides Internet access and on-site use of its resources to visitors throughout the year.

The **U.S. Forest Service** in partnership with the **Prince William Sound Science Center** provides the **Science Discovery Program**, offering a variety of education programs and demonstrations for youth. These programs provide an important connection to the marine environment for people of all ages and are directly related to EVOS Trustee Council concerns.

Cordova Center Project Proposal

Budget Narrative:

The EVOS Trustee Council goals to "Provide information to communities regarding data and scientific research performed by the Trustee Council science program" and to "Improve communication of findings and results of restoration efforts to spill area residents, village councils, and the appropriate regional organizations" will be directly addressed by the proposed Cordova Center project.

The proposed EVOSTC Outreach & Information Sharing Venue -- The Cordova Center includes a conference center, library, museum, Oil Spill and Emergency Response Center, visitor's center and municipal government offices. More than 43% of the facility will be used for EVOS related functions. The building has been designed to maximize energy efficiency and maintain low operating expenses. Several features have been incorporated to minimize mechanical system expenses. This funding application is *not* for operating expenses or maintenance of the facility. The City of Cordova will own and operate the Cordova Center. The entire center will be ADA accessible, and will use sustainable design precepts.

EVOSTC funding is being requested only to contribute toward construction of specific spaces within the Cordova Center with functions that relate directly to carrying out EVOSTC objectives.

Square footages of Cordova Center spaces to be used to meet EVOSTC objectives:

<u>Square feet</u>	<u>EVOS Space Use Designation</u>
4,075	Conference Center: A venue for sharing GEM produced & other EVOS research
1,225	Library: Providing access to EVOS related information and research support
1,040	Science Discovery Room: Educating environmental stewards
1,825	Museum: Exhibit and Archives
3,410	Oil Spill Response Center: Training and Emergency Communication Center
1925	Visitors' Center: Restoration and development of regional outdoor recreation, tourism and commercial fishing industries

Of the \$17.2 million estimated project costs, more than \$3.75 million has been secured. Project design and construction drawings are complete, the site has been acquired and some funds are available for the construction phase.

<u>Funds awarded to date: Source</u>	<u>Amount</u>
Economic Development Administration (EDA)	\$ 200,000
Federal Financial Assistance Grant USFS	\$ 300,000
Appropriations Bill FY03, S.2708	\$ 994,000
Appropriations Bill FY04	\$ 994,100
Municipality – site acquisition and cash match to EDA grant,	\$ 225,000
State of Alaska Appropriation FY05	\$ 25,000
State of Alaska - FY06 Governor's Capital Project Budget Appropriation	\$1,000,000
Local fundraising campaign	\$ 19,501
<i>Total</i>	\$ 3,757,601

Cordova Center Project Proposal

In addition, the City has provided staff support valued at \$78,392 to date for the planning and development of the project, other in-kind and cash support including covering all legal fees required by the project

We are requesting \$6.8 million from the EVOS Trustee Council which is directly proportional to the cost per square foot of the 13,500 square feet included in the above listed areas of the Cordova Center that will help meet EVOSTC objectives

All EVOSTC funds will be expended during the construction phase to pay for the services and materials included in the construction contract for the Cordova Center.

No indirect costs are being requested. No funds for operating expenses or maintenance are being requested. The city will provide funding for operation and maintenance costs for the new facility from a variety of sources including income from use of the center, auditorium and leased space.

An active local fundraising campaign is underway to raise funds for the Cordova Center. As evidence of the strong stakeholder support for this project, the goal for pledged contributions to the capital campaign from members of Cordova Center organization boards, museum and library staff and the City Council is 100%. In-kind support will be provided during the construction phase with time and equipment of the public works department; planning department and water/sewer department. The remainder of the funds for this project will be raised from a public/private fundraising partnership made up of local contributions, government appropriations and grants from foundations, corporations and government agencies.

PROJECT EXPENSES		PROJECT REVENUES	
Land	\$ 140,000	Municipal to date	\$ 225,000
Architect & Engineering	\$ 900,000	State & Federal to date	\$3,513,000
Administration/Inspection	\$ 320,000	Total Funding Secured	\$3,738,000
Construction	\$ 13,009,86	Municipal Projected	\$ 775,000
Exhibit Design/Installation	\$ 500,000	State & Federal Projected	\$2,960,000
Equipment/Furnishings/Art	\$ 381,618	Foundations/Corporations Projected	\$2,680,000
Landscaping	\$ 30,000	Local Fundraising Projected	\$ 200,000
Contingency & Inflation Proofing	\$ 1,091,000	EVOSTC funding	\$6,831,000
		Total Funding Projected	\$13,446,000
Total Funding Needs	\$17,189,621	Total Secured & Projected	\$17,184,000

EVOS Trustee Council funding is a critical component to project success. As well as providing valuable financial support, it will allow Cordova to leverage funds from other sources to make the Project a reality.

FRANK H. MURKOWSKI
GOVERNOR

GOVERNOR@GOV.STATE.AK.US



STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU
July 6, 2004

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The Honorable Tim Joyce, Mayor
City of Cordova
P.O. Box 1210
Cordova, AK 99574

Dear Mayor Joyce:

I was pleased to finally meet you in Juneau earlier this year. Your willingness to work for your community and address some of the economic problems it is now facing is commendable. I was glad to offer the aid of my office and my special assistant, Alan Austerman, in the effort that led to successfully securing a lease with a new processor for the upcoming season in the old North Pacific processing plant. Hopefully, the fishermen as well as the folks who are employed in the industry in Cordova and Prince William Sound will enjoy a fruitful fishing season.

I would also like to commend you on the work your community has completed to date on the Cordova Center. I know this multi-purpose economic development and community facility has been a priority of the city for many years and continues to occupy a prominent role in the economic diversification plan for Cordova. The 1989 oil spill put Cordova at "the economic and emotional ground zero of the spill." I am glad to see the community come together behind a project like the Cordova Center. This facility can serve as an economic, cultural, and quality-of-life stimulus for your community, which has struggled through so much in recent years.

This also may be the perfect time to secure funding from the Exxon Valdez Oil Spill (EVOS) Trustee Council. As I said in my meeting with you, I feel the trustees should begin re-focusing their efforts from primarily restoration and habitat acquisition to community and economic restoration projects and facilities in the communities of the EVOS affected region. The Cordova Center could be the first of the 'brick and mortar' projects I've referred to in the past, which can be partially constructed by these funds. I understand you have had a series of positive meetings with the trustees, and I wish you great luck in that effort.

I also support your efforts to secure funds from other sources including federal, private foundations, and the state. I realize that the Cordova Center, in conjunction with the new fast vehicle ferry, the *M/V Chenega*, will play a major role in the economic rejuvenation, diversification, and development of a sustainable economy in Cordova.

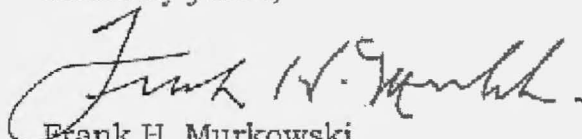
The Honorable Tim Joyce

Page 2

July 6, 2004

Please let me know if my administration can be of further assistance as you develop this community project

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Frank H. Murkowski". The signature is fluid and cursive, with a long horizontal stroke at the end.

Frank H. Murkowski
Governor



P. O. Box 705
Cordova, Alaska 99574
(907)424-5800 (ph.)/(907)424-5820 (fax)

October 28, 2003

Cordova Center Committee
P.O. Box 391
Cordova, AK 99574

Dear Cordova Center Committee:

I am representing the Prince William Sound Science Center's education department in support of the development of the Cordova Center. The Cordova Center is a dream for Cordovans and the benefits of this proposed building are endless. My professional interest lies in the Cordova Center's education room being available to house the Discovery Room and other community education projects.

The Discovery Room science education program serves all the elementary students in Cordova from kindergarten through sixth grade. It is a partnership program run by the US Forest Service/Cordova Ranger District and the Prince William Sound Science Center. Each month every student (nearly 300 total) visits the Discovery Room to explore a new science topic. They proceed through a series of three rooms in small groups, each room with a different instructor from either the Forest Service or the Science Center and a different type of activity that relates to a common theme for the month. Currently these rooms are provided through an in-kind donation by the Prince William Sound Community College. Two rooms in the college are available for year-round use and storage and one more room is available on an as-need basis during the school year.

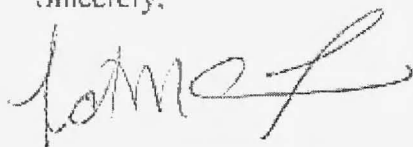
The Science Center is also pleased to offer a Community Education program series that offers weekly presentations on a variety of topics from October through May. The programs usually involve an indoor presentation complete with hands on activities and artifacts as well as an outdoor field trip component. Most recently, 22 participants gathered in the front atrium of the Science Center to learn about wolves and coyotes. This year Science Center educators are making an effort to relate Community Program topics with Discovery Room topics in order to provide enhanced learning opportunities for the elementary students in yet another setting.

Housing the Discovery Room in the Cordova Center will provide an invaluable opportunity for the above education programs to become more closely linked with the local community as well as visitors to Cordova. Not only will the proposed design provide an increased space for education programs and material storage, but it will be more accessible to all members of the community. The centralized location will allow passer-bys a glance at the projects and activities taking place in the Discovery Room. The larger educational space will also provide a better area for Community Program gatherings. Furthermore, when the topics of a community presentation and the Discovery Room are related, materials used by the elementary students or projects they create could directly benefit the community as a whole by being incorporated into the presentation or put on display.

Finally, the Cordova Center will provide a venue for the Science Center educators to create semi-permanent displays on our local region that can be visited by both community members and visitors to Cordova. It will enable resources collected by researchers and educators at the Science Center to be shared and viewed by a wider audience and help educate visitors about this wonderful place we call home.

Thank you for the opportunity to express my interest and support in the Cordova Center Project. Please contact me if I can provide any further information or assistance.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Kate Alexander', written in dark ink.

Kate Alexander
Education Specialist
Prince William Sound Science Center
Phone: 907-424-5800 ext. 231
Email: kate@pwssc.gen.ak.us

509 1st Street
P.O. Box 1388
Cordova, Alaska 99574-1388
Ph (907) 424-7738 * Fax (907) 424-7739



10,000 years in our Traditional Homeland, Prince William Sound, the Copper River Delta, & the Gulf of Alaska

April 15, 2004

Cordova Center Committee
City of Cordova
Box 1210
Cordova, Alaska 99574

Cordova Center Committee

The Native Village of Eyak would like to express its support of the Cordova Center Project. Of particular interest is the conference center and meeting facility. When Cordova has the capacity, the Native Village of Eyak would like to plan a regional conference.

We support the need of facilities for the Cordova Museum and Library. These services have endured and been kept a high standard in spite of the poor condition of their present facilities.

The Cordova Center as planned would accomplish much to lift the standard of life for Cordovans and provide a sparkling centerpiece for tourism.

The Traditional Council of the Native Village of Eyak

President Robert Henrichs

**CITY OF CORDOVA ALASKA
RESOLUTION 01-03-13**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CORDOVA
ALASKA IN SUPPORT OF THE "CORDOVA CENTER" PROJECT**

WHEREAS, public meetings, surveys and informational mailings have taken place in Cordova for approximately nine months to solicit opinions from the citizenry of Cordova regarding this project; and,

WHEREAS, the City of Cordova is committed to seeking economic development for the community and continually improving the quality of life for all Cordovans; and,

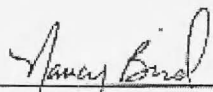
WHEREAS, funding for conceptual design and engineering drawings has been secured through appropriations and grants from the Economic Development Administration and the USDA Forest Service through the continued support and assistance of the Federal Delegation including Senator Ted Stevens; and,

WHEREAS, the City of Cordova wishes to support the Cordova Center project in its efforts to provide economic diversification and provide a state of the art facility that would benefit and improve the quality of life for year-round residents and visitors of Cordova as well as provide a unique welcoming environment for the young children and families in our community; and,

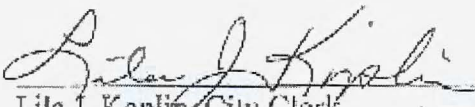
WHEREAS, the City Council is committed to continued financial contributions to the project in both construction costs and long term operation and maintenance costs.

NOW, THEREFORE BE IT RESOLVED that the City Council of the City of Cordova, Alaska does hereby support and will continue to commit to the development of the "Cordova Center" for the numerous benefits it will bring to our coastal community.

PASSED AND APPROVED THIS 22ND DAY OF JANUARY 2003.



Nancy Bird, Vice-Mayor



Lila J. Koplin, City Clerk



File Code: 1560

Date: January 23, 2004

Cordova Center Committee
PO Box 391
Cordova, AK 99574

Dear Committee Members,

I am writing to express the strong support of the Forest Service for the Cordova Center. We have been active in securing the initial federal funding for planning, design and construction, and members of my staff have participated on the planning committee for the Center. We can clearly see the benefits that such a facility will bring to the community, and look forward to using it for Forest Service sponsored events.

The community of Cordova will greatly benefit from the construction of the Cordova Center. This project will become the heart of the community on Main Street. This facility will be a key destination for visitors with the inclusion of a museum and the stylishness in its design. The people of Cordova will gravitate to this facility because of the inclusion of the city library and City Hall, and the natural connection between the harbor and Main Street.

The Cordova Center will be able to provide facilities for educational services such as the science-based Discovery Room program for elementary school children. This is a joint Forest Service/Prince William Sound Science Center program that is currently housed in very inadequate space elsewhere in town.

The local grade school will only be one block from the Cordova Center offering easy access for library services as well. High school and elementary school students will have an auditorium and a stage to conduct performances instead of the current elementary school lunch room or the high school gym. The local community theater group will also be able to use this auditorium.

The Cordova Center will help to revitalize and diversify the economy in Cordova. The inclusion of ADA accessible meeting rooms and auditorium will allow for small conventions, meetings and receptions to take place in a community that up until its construction has not had such facilities. Many organizations and agencies, including the Forest Service, have expressed an interest in holding meetings in Cordova if we had the facilities to accommodate such events. The Cordova Center will provide those facilities. Hosting events during the winter months in Cordova that 100 to 200 people attend would fill the hotel rooms and the restaurants. Visitor business in the wintertime is a necessity for many vendors to stay profitable. The Cordova Center could help provide that business.

The new building will replace two aging sheet metal buildings. These old buildings are expensive to operate because of poor construction and age. The new Cordova Center will provide an environmentally controlled space for museum displays, traveling exhibits and storage,

which would allow the museum to pursue accreditation. The community is willing to accept the responsibility of operating this new energy efficient facility especially since the old structures are planned to be removed from the city property roles.

The Cordova Center will be a source of pride for this community and provide all the benefits mentioned above. We support the construction of the Cordova Center and we hope to see the federal investment pay off with the completion of the Center.

Sincerely,

Rebecca S. Nourse

REBECCA S. NOURSE
District Ranger

Comments on the FY 07 Draft Work Plan funding recommendations by project

Continuous Plankton Data Recorder

Philip C. Reid
Director, SAHFOS

Alexander Bychkov
Executive Secretary, PICES

PWS Youth Area Watch

Sheryl Salasky
Coordinator, PWS YAW

PWSSC Herring Research Program Proposals

Catherine Crawford
Executive Director, CDFU

Ashley Williams (handwritten unable to OCR)
Student

Salmon Sharks Preying on Aggregated Herring and Salmon in PWS

Bruce Wright

Biophysical Observations Aboard AMHS Ferries

John Devens
Executive Director, RCAC

Oiled Mayors letter

Carolyn Floyd, Mayor
City of Kodiak

John Williams, Mayor
Kenai Peninsula Borough

Pat Lavin
PAC Vice-chair

Cherri Womac

From: Chris Reid [pcr@sa hfos.ac.uk]
Sent: Thursday, October 19, 2006 7:37 AM
To: Cherri Womac
Subject: EVOSTC FY 2007 Batten proposal
Attachments: EVOSTC FY 2007 Batten proposal .doc

Dear Sir,

I would be grateful if you forward the attached document to the Science Director and Executive Director of EVOS and also place it before your Trustee Council for their consideration at their November meeting.

Yours faithfully,

Philip C. Reid

Director SAHFOS

10/25/2006

To the Science Director and Executive Director of EVOS

EVOS FY 2007 Draft Work Plan, Part 1: Pacific Herring 10/02/2006

Project: Batten-Continuous Plankton Data Recorder

I wish to comment on the recommendation that the above proposal should not be funded as part of the project complement of the EVOS TC 2007 financial year. My comments are being made on the basis of my scientific experience, since I am retiring as Director of SAHFOS in January 2007 and will not have a direct interest in the project. The transect made by the CPR as part of this proposal provides the only measure of plankton from the open Alaskan shelf and Gulf of Alaska on a synoptic monthly basis that is starting to develop a time series. In my view to stop the time series now would be foolhardy at a time when throughout the world there is an increasing recognition of the importance of long-term sustained observations. The fact that the data is not currently taken in Prince William Sound does not mean that it does not bear relevance to this area of high importance to EVOS TC. What is happening further out in the Gulf of Alaska is highly likely to have an impact on Prince William Sound and to the variability of herring populations in the Sound.

To reinforce my message I attach two figures. One shows the sampling coverage of the CPR survey in the North Atlantic to contrast with your single route in the Northeast Pacific. One other route is occupied three times a year between Vancouver and Japan. In the North Atlantic all routes are occupied every month. The EVOS route could also be seen as a contribution to the strategic plan of the Coastal Ocean Observing Panel (http://ioc.unesco.org/goos/docs/GOOS_125_COOP_Plan_en.pdf), which recommends the adoption of CPR programmes globally.



Figure 1. Routes occupied in the North Atlantic by the Continuous Plankton Recorder survey

My second figure is based on a measure of chlorophyll from the CPR filtering mesh that has now been calibrated with SeaWiFS satellite data. This contoured plot of monthly averages based on all data from the central North Sea since 1946 demonstrates the huge change that has taken place in the coastal seas of North West Europe since 1988. The CPR survey was closed down in 1989 by the UK Natural Environment Research Council and if a rescue package had not been put in place by international donors we would not have known about this stepwise change in the marine ecosystem. Subsequent work has demonstrated that the event is evident in all trophic levels and that it has led to major changes in fish stocks. The event has also impacted near shore waters including the Wadden Sea and it seems that oceanic inflow is an important factor in the change. A similar marked change has taken place further north in Icelandic waters since 1996 that is again highly related to changes in the fisheries. For example landings of capelin have dropped from ~2 million tonnes per year prior to 1996 to only 200,000 tonnes this year.

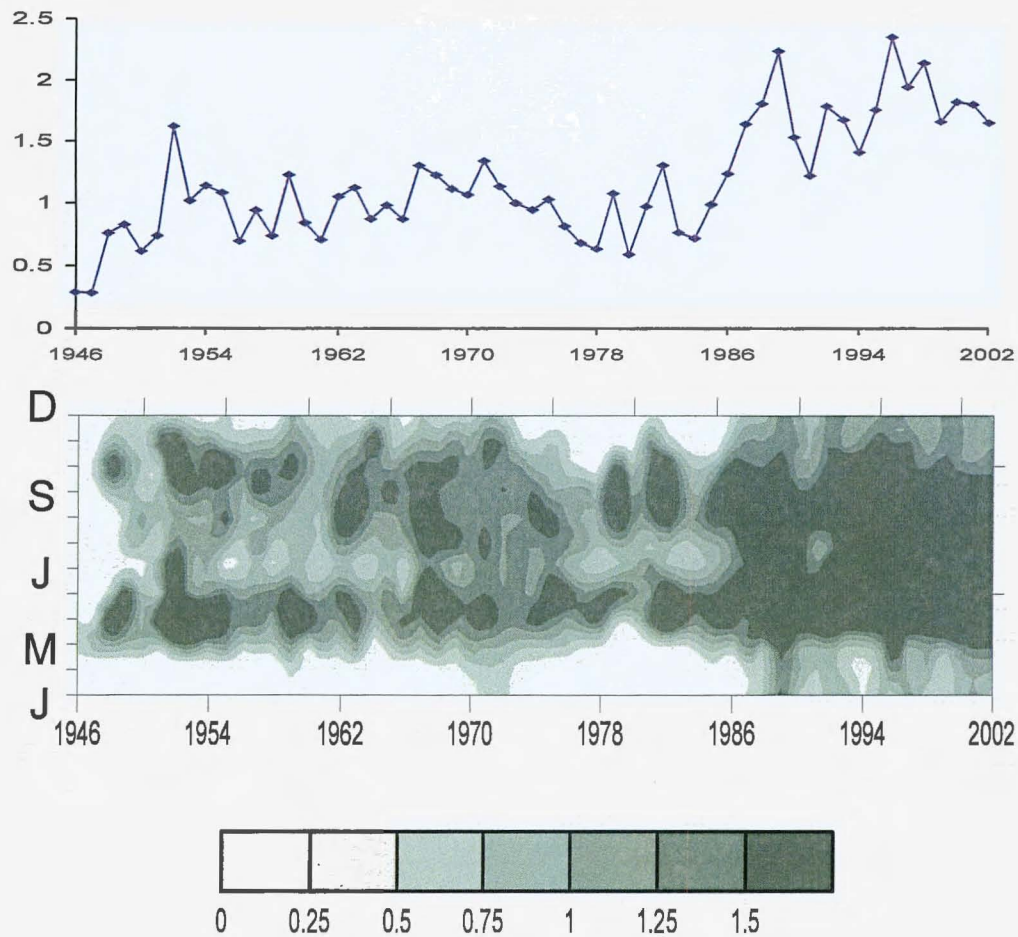


Figure 2. A contour plot of a mean monthly chlorophyll index from the CPR survey averaged for the central North Sea with months vertically and years horizontally. Above is a graph of the annual mean. Calibrations with SeaWiFS satellite data show that the annual increase averaged 60% over the whole of the Northeast Atlantic and 80% in winter months.

I hope that this information may be of value to the review process of the 2007 EVOS work plan and that you might reconsider the funding recommendation for the above programme. It is worth noting also that the Science review panel recognised the relevance of the CPR programme to Alaskan issues in its recommendation to fund. I would be very happy to come to Alaska from January 2007 to brief the Executive Director, Science Director and other EVOS members on aspects of the exciting science from the Atlantic that I feel has relevance to Alaska should you wish.



October 24, 2006

Mr. Michael Baffrey
Executive Director
Exxon Valdez Oil Spill Trustee Council
441 W 5th Ave., Suite 500
Anchorage, AK 99501

Re: Submitted as public testimony regarding Continuous Plankton Recorder

Dear Mr. Baffrey:

We would like to suggest that continued funding of the EVOS-supported CPR (continuous-plankton-recorder) study in the Gulf of Alaska is one of the best investments in marine science that the Trustee Council could make for 2007. The project was developed under the auspices of the North Pacific Marine Science Organization (PICES), and it has been financially supported for the period from 2000 to 2006 by the EVOS Trust. The results are already extraordinary in respect to duration among marine ecosystem observations, and the scientific payoff has been excellent. Like all time-series studies, the longer it continues, the more informative it becomes. From this project we now know with certainty that the plankton community of the Gulf of Alaska (the food-chain base for Alaskan fisheries like pollock, salmon and herring) varies strongly from year-to-year. With the CPR data, we begin to see how these variations are caused. We also begin to have a clear picture of the shift in life-cycle seasonality between higher and lower latitudes. The principle investigator, Dr. Sonia Batten, can take pride in generating these ecological insights, and PICES takes credit in having fostered the project. Dr. Batten has been quick to publish and share the project results at the annual Alaska Marine Science Symposium. The EVOS Trustees can take great pride in having supported this accomplishment from the beginning. PICES strongly urges that EVOS support be continued for at least 2007. The likelihood that other financing can be found is at best modest, given the circumstances of marine research agencies in the United States and Canada. The EVOS Trustee Council could make no other scientific investment with better certainty of success.

Concern was expressed in the publicly available, EVOS Science Director's comments on Dr. Batten's proposal that relevance of a transect that did not include Prince William Sound (PWS) was not made clear. We are aware that PWS is the area for which herring stocks are the main concern of the EVOS 2007 call for proposals. However, we call your attention to the fact that plankton stock levels all along the shelf from PWS to the eastern Aleutians are closely coupled by the Alaska Coastal Current, (which this proposal samples), and that year-to-year and month-to-month variations will be much the same at both longitudes. Moreover, early EVOS-supported work on the plankton-salmon and plankton-herring relationships in PWS showed that influx to PWS from plankton stocks on the shelf is critical to the food supply in the Sound for herring and other fish. Supply of shelf plankton to the Sound also determines the degree of predation by pollock on juvenile pink salmon. Ending the continuous plankton survey project will leave all the funded herring projects without a vital piece of data.

Let us say it one more time. The continuous-plankton-recorder survey in the Gulf of Alaska is among the best scientific projects that EVOS funds have supported. Funding should be continued to obtain the longest possible time-series and, thus, the maximum possible benefit to the preservation and management of Alaska's living marine resources.

Secretariat
c/o Institute of Ocean Sciences
P.O. Box 6000,
Sidney, B.C.,
Canada, V8L 4B2
Phone: (250) 363-6366
Fax: (250) 363-6827
E-Mail: secretariat@pices.int
Internet: www.pices.int

Chairman
Vera Alexander

Vice-Chairman
Tokio Wada

Executive Secretary
Alexander S. Bychkov

Sincerely yours,

Alexander Bychkov
PICES Executive Secretary

Dear Trustees,

November 6, 2006

I am writing this letter since I am unable to attend the Nov 14 meeting where the current round of proposals will be discussed.

I urge you to approve funding for the PWS Youth Area Watch (YAW) program, not only for the one year recommended in the Draft Work Plan, but a 5 year period, (as requested in the proposal plan).

The federal fiscal year and the school year budget cycle are not aligned in a way that facilitates easy implementation of the YAW program, especially in years when the EVOS Invitation to Bid is delayed. Due to this misalignment, it is difficult to maintain a consistent program each autumn without a funding source whose term is longer than one year. In order to provide consistency to the participating communities' schools, this proposal is for five years, and is reflected in the budget forms. The five-year term could be extended to ten or more, should the Trustee Council wish to provide fiscal stability to the YAW program for a longer period. Long-term stability will be necessary in order to provide continuity and a long-term role for middle and high school students in research and restoration projects.

During this time of federal agency funding reductions, budget cuts and increased competition for research dollars, student contributions to research projects will become more important. The past 11 years have allowed us to demonstrate that students can offer a cost effective and reliable means of scientific data collection for existing projects, as they are trained to become the next generation of Alaska scientists. The many relationships we have built within the research community will serve us well in the next chapter of the Youth Area Watch program.

The PWS YAW program has been in operation since 1995. We've had a great deal of success in training students to work with scientists conducting research throughout PWS. Often these students continue their education to study marine science in college or become involved in local ecosystem issues. The program provides a direct link for interested students to pursue science under the guidance of professionals they meet through YAW.

Since its inception, YAW coordinators have established many research contacts and agencies with which to partner our students. Those various professionals have committed to working with our students repeatedly over the years. This kind of consistency is most valuable to students learning about research in a "real world".

A break in funding often causes a break in keeping our contacts current and committed. Having to reapply each year for uncertain funding takes valuable time away from planning meaningful training activities between students and scientists.

Please consider funding the YAW application for another 5 years, as proposed, so we do not have to "reinvent" our YAW "wheel" each year.

We've worked hard to establish high expectations and consistency with our students and community members. It has taken several years to get them used to the yearly expectations of our YAW program (and to find scientists continually committed to working with our students).

The following timeline illustrates our need to have secured funding to conduct student recruitment each May, allowing us to be ready to start the program at the beginning of school each fall.

1. YAW recruitment begins May 1
2. Application period closes May 30 (*in the past we've had as many as 90 applicants for 20-30 positions*)
3. Acceptance notices go out mid June
4. 4-day YAW Orientation/Training occurs during September's low tides (Sept 6-10, 2006)
5. Students design community survey at training in September and deliver it immediately upon return to school sites
6. Long term monitoring project begins asap after community survey results are compiled
7. Monthly monitoring occurs throughout school year, as conditions permit
8. YAW Monitoring projects are due May 1
9. Current YAW students (who have successfully completed #8) participate in long term whale monitoring project with North Gulf Coast Oceanic scientists in Resurrection Bay, May 19-22. This partnership has been ongoing for many years.

The difficulties that occur when funding is interrupted are:

1. notifying students in June of acceptance to a program that may or may not exist when they return to school lacks the credibility that has taken years to establish
2. scheduling a facility (science center) and personnel for the Fall Orientation (this event requires a great deal of advanced planning-- beginning in May-- to transport, feed, house and educate 20-30 students from 5 different villages)
3. arranging scientists for this training (their calendars are often booked months in advance with field season considerations)
4. getting students trained and started on their long term monitoring projects before winter conditions prevent outdoor sampling

(Sampling often continues throughout the winter, however students are much more motivated to begin & continue their projects when they can work out the sampling "kinks" in the fall, when weather is milder.)

While each of these conditions seems easily mitigated when considered separately...the **pivotal point for the success of this program is to conduct the 4**

day YAW Orientation at the beginning of the school year, when students are just returning, when tides are low and optimum for training purposes, and when weather is still hospitable for outdoor field trips.

Not only are the low tides a terrific opportunity for training students on sampling techniques, there is still enough daylight in September to ensure visibility during one of those daily low tides; in October and November this is not the case. Given the long distances that students must travel to get to the various training facilities (PWS Science Center, Center for Alaskan Coastal Studies, Seward SeaLife Center, UAF Marine Sciences Lab) the 4 day Orientation consists of 2 days travel and 2 days training.

In past years YAW Orientation was conducted during October and November. In addition to minimal daylight hours at that time of year, weather and travel conditions are not reliable or safe. Students, parents and teachers have all requested that plan be discontinued.

While the community involvement component can be addressed year round, the student involvement (which is critical to the community involvement) will wane if Orientation is held any later than the September low tides. If that were to happen, the program may be set back for another year. We experienced that drop in student involvement in 2003 when our funding was delayed by several months, and are now just getting reestablished in the minds of our students and their communities.

YAW currently has the momentum in place to continue drawing interested students to the program; each year their project expectations are raised and students are trained and motivated to collect quality data and produce useful results.

While this program does not directly affect science and decision making in the spill area, it trains young local residents to study the science in their own backyards and gives them ownership to understanding the ecosystems in which they live. With those 'trained scientific eyes' students have the ability (and opportunity) to become the next generation of marine issues experts. Indirectly, with the support of local teachers, scientists, parents and elders the YAW program prepares students to eventually become the scientists and decision makers of the near future.

Thank you,
Sheryl Salasky
PWS Youth Area Watch Corrdinator
070210



Cordova District Fishermen United
P.O. Box 939 | Cordova AK 99574
Ph: (907) 424 3447 Fax: (907) 424 3430
Email: cdfu@ak.net Website: www.crsalmon.org

November 03, 2006

Michael Baffrey, Executive Director
Exxon Valdez Oil Spill Trustee Council
441 West 5th Avenue, Suite 500
Anchorage AK 99501

RE: Prince William Sound Science Center Herring Research Program Proposals

Dear Mr. Baffrey:

The Cordova District Fishermen United (CDFU), represent the interests of over 800 fishing families in the area fisheries of Prince William Sound, and we are committed to promoting and perpetuating environmental conservation, and resource recovery and management.

The members of our organization are very supportive of the work done by the Prince William Sound Science Center (PWSSC), the sustained monitoring and ongoing efforts to understand the ecology of Prince William Sound, and the community outreach which educates and draws us together. Our industry is acutely aware of the interdependence of the biology and our regional economy.

We would like to express our support for the five scientific proposals put forward by PWSSC, which are currently under consideration for funding by the Trustee Council. The center's current expansion of their investigations into herring resource intervention, and restoration efforts, will provide intensive, biologically significant studies that will enhance our knowledge and move the recovery of this resource forward.

Sincerely,

Catherine Crawford
Executive Director

Catherine Crawford

11/3/2006

RECEIVED

NOV - 6 2006

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL

3822 Hampton Drive
Columbus, GA 31909
October 18, 2006

Exxon Valdez oil spill
Trustee Council
441 W. 5th Ave., Ste. 500
Anchorage, Alaska 99501

Dear Trustee Council

I am writing to let
you know that I believe there
are still problems with the
Pacific Herring and the salmon
in the waters after the Exxon
Valdez oil spill. Research shows there
are still fish born with deformities
many years after the oil spill.
The spill effected all the
habitat of these fish, in my
opinion it will take many years
for there to be healthy
populations of fish. The spill
not only effected the fish
but everything they eat
and all the surroundings.

I believe your council
is working hard to fix
these problems. Everyone
would agree they hope there
is never another accident
like the Valdez. Your council
must continue to research
to bring the area and its
marine life back to normal.

Thank you for your time
and keep up the good work.

Yours Truly,
Ashley William
Ashley William

Cherri Womac

From: Bruce Wright [brucew@apiai.org]
Sent: Tuesday, October 17, 2006 3:54 AM
To: Cherri Womac
Subject: RE: comments on Draft Fiscal Year 2007 Work Plan

Hi Cherri,

I just learned today that in Russia they call the salmon shark the herring shark. So, I would like to add that to my letter. Can you replace letter I sent with the one below?

Thanks,
Bruce
projects@evostc.state.ak.us
comments on Draft Fiscal Year 2007 Work Plan

The draft FY07 work plan justification for not funding the salmon shark project (**Project: Wright/Heintz-Salmon Sharks and Herring, Project Title: Salmon Sharks Preying on Aggregated Herring and Salmon in Prince William Sound**) states, "Recent work on the diet of salmon sharks has been completed, and information on the quantity of herring consumed as part of their diet has been reported." Of course we wouldn't have proposed this work if it had already been done; the Science Panel comments are wrong.

The salmon shark tagging and diet work accomplished thus far in the North Pacific Ocean does not reveal the complete salmon shark diet in the region and especially how it relates to herring spawning events. Most of the Alaska salmon shark work has taken place in Prince William Sound, Alaska. Goldman worked out of Resurrection Bay and Prince William Sound on feeding rates, Wright and Hulbert did the first Alaska salmon shark captures, tagging and releases, also in Prince William Sound, Wright, Block and Hulbert deployed the first pop-up tags on salmon sharks and Wright deployed the first SPOT tags in Alaska (Prince William Sound). Weng, Block, et al, tagged salmon sharks in Prince William Sound and is getting some interesting return data, some of which indicates the sharks are finding and using hot spots in the North Pacific Ocean, including herring spawning events. Some of the salmon sharks tagged in the northern Gulf of Alaska have been tracked to False Pass and the southern Bering Sea. Some of this data has been published (Goldman 2002, Hulbert et al. 2005, Weng et al. 2005) and some has not been published. The proposed study will reveal new information about salmon sharks' diet and focus on herring spawning events, information that may be of particular interest to fishers and fishery managers.

Pacific herring populations found in Prince William Sound (PWS) have experienced an extended period of depressed numbers. During this same period the salmon shark population has increased in PWS. Salmon sharks have been observed at PWS spring herring spawning events. Our work on salmon sharks at salmon spawning locations reveals the sharks consuming large numbers of salmon. This project will investigate if salmon sharks are also taking large numbers of Pacific herring in PWS. We propose to investigate the diets of salmon sharks to determine if they feed on herring, track salmon sharks as they move from herring spawning to salmon spawning events and examine stomach contents to identify the primary energy sources consumed by sharks.

Fish and marine mammal diet work in the region is increasingly using information from fatty acid analysis of triacylglycerols. Validation of this technique is needed and necessary. The Salmon Sharks Preying on Aggregated Herring and Salmon in Prince William Sound proposal will confirm the validity of using fatty acid analysis of triacylglycerols.

10/17/2006

In conclusion, I disagree with the justification for not supporting the salmon shark proposal, Salmon Sharks Preying on Aggregated Herring and Salmon in Prince William Sound. There is no information on quantity of herring consumed as part of Alaska salmon sharks' diet. However, in Russia they call the salmon shark the herring shark because of its primary prey is herring. There is no information on salmon shark diet in the spring near herring spawning events, outside of Russia. Accordingly, I request you provide me with the basis for coming to your conclusion that, "work on the diet of salmon sharks has been completed, and information on the quantity of herring consumed as part of their diet has been reported." Finally, I would like to know why the reviewers appear to have missed commenting on a particularly important aspect of this proposal, validation of the fatty acid analysis technique.

Regards,
Bruce Wright

Bruce Wright
Science Advisor
APIA/AIA

10/17/2006



Regional Citizens' Advisory Council / "Citizens promoting environmentally safe operation of the Alyeska terminal and associated tankers."

In Anchorage: 3709 Spenard Road / Suite 100 / Anchorage, Alaska 99503 / (907) 277-7222 / FAX (907) 277-4523
In Valdez: P.O. Box 3089 / 130 South Meals / Suite 202 / Valdez, Alaska 99686 / (907) 834-5000 / FAX (907) 835-5926

November 2, 2006

MEMBERS

Alaska State
Chamber of
Commerce

Exxon Valdez Oil Spill Trustee Council
441 W 5th Ave., Suite 500
Anchorage, AK 99501

Alaska Wilderness
Recreation & Tourism
Association

Comments on Exxon Valdez Oil Spill Trustee Council (EVOSTC) "Draft Work Plan, FY07, Part 1: Pacific Herring."

Chugach Alaska
Corporation

Dear Trustee Council Members:

City of Cordova

City of Homer

City of Kodiak

City of Seldovia

City of Seward

City of Valdez

City of Whittier

The Prince William Sound Regional Citizens' Advisory Council (PWSRCAC) would like to express our support for the "Biophysical Observations Aboard Alaska Marine Highway System Ferries" proposal to the EVOSTC as proposed for the Draft Work Plan, FY07, Part 1: Pacific Herring. The proposal continues oceanographic monitoring on the Alaska ferry *Tustumena* in the Gulf of Alaska and adds monitoring on the ferry *Aurora* in Prince William Sound (PWS). To date this project has done a good job of collecting and synthesizing valuable data such as temperature and salinity. Its incorporation of PWS specific data can increase the accuracy of models in PWS that provide information on herring spawning and disease susceptibility. It has already been shown in PWS that a numerical model that is periodically corrected to temperature and salinity observations is superior to one that is not corrected.

Community of
Chenega Bay

Community of
Tatitlek

Cordova District
Fishermen United

Kenai Peninsula
Borough

Kodiak Island
Borough

Kodiak Village Mayors
Association

Oil Spill Region
Environmental
Coalition

The first year of the proposal includes non-recurring instrument purchase costs for the *Aurora* and shipyard costs to plumb and wire the ship including the passenger data display system. Once these expenses are dealt with in that first year, the costs of maintaining the proposed program are reasonable. We understand from the proposal that the Alaska Marine Highway System reports that the *Aurora* will run in PWS for the foreseeable future, which should allay concerns about its reliability as a vessel of opportunity for the monitoring system.

Thank you for the opportunity to comment on the EVOSTC Draft Work Plan, FY07, Part 1: Pacific Herring. If you have any questions, please contact our Environmental Monitoring Program Project Manager, Joe Banta at 277-7222

Sincerely,

John S. Devens, Ph.D.
Executive Director

Prince William Sound
Aquaculture
Corporation



Office of the Mayor and Council

710 Mill Bay Road, Room 220, Kodiak, Alaska 99615

November 9, 2006

Via Fax: (907) 276-7178

Trustee Council Members
Exxon Valdez Oil Spill Trustee Council
441 W. 5th Ave.
Anchorage, AK 99501

Re: Use of Remaining Settlement Funds

Dear Trustee Members:

As Mayor of a community that suffered significant social, cultural, and economic damage as a result of the *Exxon Valdez* oil spill, the City Council and I have watched with interest as the Exxon Valdez Oil Spill Trustee Council has worked to restore natural resources in the spill-impacted area. The City of Kodiak appreciates the efforts of the Trustee Council to date; however, we believe that it is long past time for the Council to focus on human service restoration projects.

This is an important issue for our community, but neither City staff nor I are able to attend your November 14, 2006, meeting to reiterate our position. It is my understanding that Kodiak Island Borough Mayor Jerome Selby will be attending your meeting. Please know that he also represents the City of Kodiak and the regional Kodiak Island Mayor's Conference on this important issue. The Mayor's Conference is convened annually as a forum to address issues of concern to individual communities, as well as broad regional issues. The Kodiak Island Mayor's Conference met on November 3, 2006, and passed a resolution in support of the Trustee Council using the majority of the remaining balance of the settlement funds to support human service restoration projects in the spill impacted area. This is a policy direction that all the communities in the Kodiak region support.

The City of Kodiak urges the Trustee Council to approve funding, at your November 14, 2006, meeting, for the "Proposed Human Service Restoration Projects" identified in the letter dated October 27, 2006, from the State members of the Trustee Council. The City of Kodiak further urges the Trustee Council to allocate the remaining settlement funds to additional human service projects in the spill-impacted area.

If you have any questions about the City of Kodiak's position on this issue, please contact City Manager Linda L. Freed at 486-8640.

Sincerely,


Carolyn L. Floyd, Mayor

Telephone (907) 486-8636 / Fax (907) 486-8633
clerk@city.kodiak.ak.us

**A RESOLUTION OF THE KODIAK MAYORS CONFERENCE
URGING THE EVOS TRUSTEE COUNCIL TO FULFILL
THE PURPOSE OF THE EVOS SETTLEMENT**

WHEREAS, the State of Alaska and the United States of America entered into a settlement agreement with Exxon after the Exxon Valdez Oil Spill that established the Exxon Valdez Oil Spill Trustee Council and provided \$900 million to address the injuries and damage resulting from the Exxon Valdez Oil Spill; and

WHEREAS, the EVOS Trustee Council has wisely and carefully managed the use of the settlement funds to address a wide variety of injuries and damage throughout the spill area for 15 years; and

WHEREAS, habitat acquisition, restoration studies and projects, public involvement, scientific review and EVOS administrative expenses have all been funded in the Trustee Council success story; and

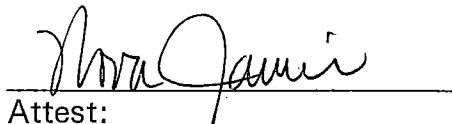
WHEREAS, the economic and human services damage done to the communities in the spill area have never been addressed by Exxon or the EVOS Trustee Council; and

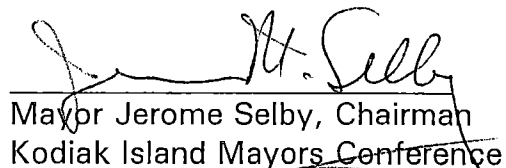
WHEREAS, the communities have identified several projects included in a Proposal Human Service Restoration Projects list totaling almost \$50 million; and

NOW; THEREFORE, BE IT RESOLVED BY THE KODIAK ISLAND MAYORS CONFERENCE THAT the EVOS Trustee Council is urged to address the largest remaining damage in the spill area of community human service projects by using a significant amount of the remaining \$152 million for these projects; and

BE IT FURTHER RESOLVED THAT after the completion of these projects and the \$92 million reopener projects, the remaining funds be endowed into the research facilities in the three sub areas of the spill area to continue research and enhancement of damaged species far into the future.

PASSED AND APPROVED on this 3rd day of November, 2006.


Attest:


Mayor Jerome Selby, Chairman
Kodiak Island Mayors Conference

11/09/06
Date:

**KENAI PENINSULA BOROUGH**

Office of the Borough Mayor

144 North Binkley Street • Soldotna, Alaska 99669-7599

Toll-free within the Borough: 1-800-478-4441, Ext. 2150

PHONE: (907) 714-2150 • **FAX:** (907) 714-2377www.borough.kenai.ak.us**JOHN J. WILLIAMS
BOROUGH MAYOR**

VIA FACSIMILE

November 13, 2006

David Marquez
Attorney General, Department of Law
• Fax 465-2075

McKie Campbell
Commissioner, Department of Fish & Game
• Fax 465-2332

Kurt Fredriksson
Commissioner, Department of Environmental Conservation
• Fax 465-5070

State of Alaska
Juneau, AK 99811

Re: Exxon Valdez Oil Spill Trustee Council Community Economic Restoration Projects

Gentlemen:

I am writing you today in response to your letter dated October 27th, 2006 regarding proposals to construct several community public works projects pending before the Exxon Valdez Oil Spill Trustee Council (EVOS) that will be addressed at the November 14th meeting of the EVOS Council. These community economic restoration projects and facilities target several communities within the Kenai Peninsula Borough, including Homer, Port Graham, Seldovia and Seward. These projects will address sewage treatment, storm water collection, and boat harbor water quality to name a few issues. These projects are part of a proposed \$49.8 million disbursement of funds from EVOS to communities impacted by the Exxon Valdez oil spill.

On behalf of the Kenai Peninsula Borough, I wish to offer my full support for this proposal. These communities were significantly impacted by the Exxon Valdez oil spill. These projects will help to further improve water quality and further protect and restore the ocean habitat surrounding these communities. The EVOS trust funds should be used in a manner that provides a maximum benefit to the communities directly impacted by the 1989 oil spill and these projects

EVOS Trustee Council

November 13, 2006

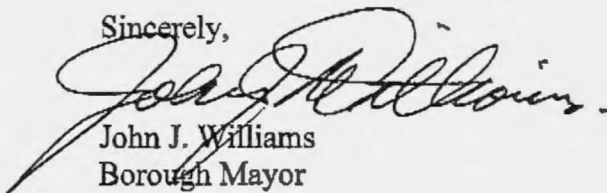
Page Two

are excellent opportunities to further rehabilitate the aquatic regions impacted by the oil spill. Mitigating the cumulative impacts resulting from the 1989 oil spill, combined with on-going human impacts, to these regions is an excellent use for these funds and I believe the EVOS Trustee Council should support these proposed uses.

I would offer one point for consideration by the Council. In discussions today with the City of Seward, there is a more pressing need in their community than the small boat harbor water quality protection project identified by the Department of Environmental Conservation. The City of Seward has identified upgrades to key sewage lift stations within the City as a pressing need to address increased demand on the City's sewage treatment system. The City of Seward estimates this upgrade will cost \$520,000. If this project can be added to the total list of projects, this would serve to improve and protect the water quality of Resurrection Bay to an even greater degree than under the current proposal. I ask that the Council give full consideration and support for this additional project within this overall proposal.

Thank you for the opportunity to comment on this proposal. I believe that this is an excellent use for these funds and should be approved for immediate use by the communities affected in the coming years.

Sincerely,



John J. Williams
Borough Mayor

cc: • The Honorable Governor Frank Murkowski, Fax 465-3147
• The Honorable Governor-Elect Sarah Palin, Fax 339-7935
Michael Baffrey, Executive Director, EVOSTC, Fax 276-7178
Mr. Walt Wrede, Manager, City of Homer, Fax 235-3148
Ms. Kris Erchinger, Finance Director, City of Seward, Fax 224-4038
Mr. Kurt Reynertson, Manager City of Seldovia, Fax 234-7430
Senator Gary Stevens, Fax 486-5264
Rep. Paul Seaton, Fax 235-4008

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BOROUGH MAYOR**

VIA FACSIMILE

November 13, 2006

David Marquez
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• Fax 465-2075

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Commissioner, Department of Fish & Game
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State of Alaska
Juneau, AK 99811

Re: Exxon Valdez Oil Spill Trustee Council Community Economic Restoration Projects

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EVOS Trustee Council

November 13, 2006

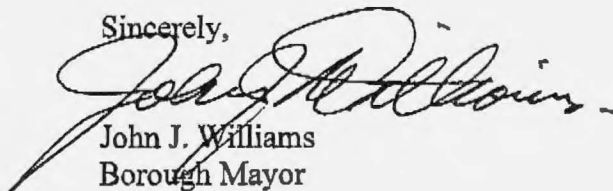
Page Two

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Sincerely,



John J. Williams
Borough Mayor

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Mr. Kurt Reynertson, Manager City of Seldovia, Fax 234-7430
Senator Gary Stevens, Fax 486-5264
Rep. Paul Seaton, Fax 235-4008

Cherri Womac

From: Pat Lavin [Lavin@nwf.org]
Sent: Monday, November 13, 2006 12:48 PM
To: Kurt Fredriksson; Larry Dietrick; Carol Fries; Cherri Womac; Michael Baffrey; Heather Brandon; McKie Campbell; Joe Meade; Maria Lisowski; Steve Zemke; Jenifer Kohout; Drue Pearce; Hans Neidig; Jennifer Thomson; Craig Tillery; David W. Marquez; Rita Lovett; Craig O'Connor; Jim Balsiger; Peter Hagen; Ronald McClain; Gina Belt; Dede Bohn
Cc: Robert J. (RJ) Kopchak; Stacy Studebaker; Vern McCorkle; Jason Brune; Ron Peck; Gary Fandrei; Ed Zeine; Mark King; Claire Fishwick-Leonard; Molly Hicks; Kathryn Hughes; Mary Schlosser; Debbie Hallek; Kurt Eilo; seldovia.marine@gmail.com; Larry Evanoff; Ann_Jurva@ios.doi.gov; Douglas L. (Doug) Mutter; nancy_korting@law.state.ak.us; Tracy Gould; Carol Schirmer; Torie Baker; Martin Robards; Martha Vlasoff
Subject: Open and honest government

Dear Trustee Council Members,

As you prepare for an important Council meeting tomorrow, I want to call to your attention the Public Advisory Committee's strong objection to the lack of public process and transparency associated with a number of projects that are apparently up for funding consideration.

Specifically, the October 27 letter from the state trustees to the mayors of communities in the oil spill region identifies various projects totaling about \$50 million for a potential funding decision on November 14 that have had no opportunity for public input or PAC review.

Since the PAC has not seen descriptions for these projects, it has not and cannot assess their consistency with the 1991 settlement agreement, or the 1994 Restoration Plan, or evaluate them in context with the other projects submitted in response to the FY07 Invitation. Judging from the titles, however, several appear to be capital construction projects which, while perhaps otherwise meritorious, have been proposed entirely outside of the established public review process for expenditures of Council restoration funds.

The failure of the state trustees to inform the PAC of this highly unusual solicitation or provide any information for the PAC's review about projects totaling \$50 million or more violates the public trust in an open Council process, and once again the PAC finds itself objecting to a stunning lack of transparency in Trustee Council actions. Our unanimous resolution noting this objection is included in your meeting packet.

I urge the Council to uphold principles of open and honest government tomorrow and refrain from funding projects in amounts far in excess of the common practice, particularly when those projects are brought forward with no public input or review. If the Council is potentially interested in funding any of these projects, I suggest that it invite the principal investigator or community leader to submit a full proposal for evaluation in the next (FY08) funding cycle.

Sincerely,

Patrick Lavin
PAC Vice Chair

Comments on the Draft 2006 Update to Injured Resources and Services

Update to Injured Resources and Services

Riki Ott

Riki Ott, PhD

Author • Public Speaker • Marine Toxicologist

P.O. Box 1271 • Cordova, Alaska 99574 • 907.424.3915

www.soundtruth.info • info@soundtruth.info

Exxon Valdez Oil Spill Trustee Council
441 W. 5th Avenue, Suite 500
Anchorage, AK 99501
Attn: Draft Update

November 10, 2006

Re: Comments on 2006 Update on Injured Resources and Services (IRS)

Dear EVOS Trustee Council,

Thank you for the opportunity to comment on the 2006 IRS Update.

In general, I support the status listings proposed in the Update—and not the ones proposed by Integral—for the following reasons.

From 1993 to 2000, the EVOS Trustee Council conducted a series of ecosystem studies to determine the reason(s) for the delayed recovery of wildlife, post-spill. During the 1990s, the Auke Bay Lab conducted a series of ecotoxicity studies with young salmon and herring to determine if low levels of oil, measured as PAHs or polycyclic aromatic hydrocarbons, impacted fish survival.

These studies were initiated when scientists and the public (specifically the fishermen of Prince William Sound) began to suspect the old models and theories that oil only caused short-term harm were not matching the reality of what was going on in Prince William Sound, what I call "Sound Truth." The scientists thought about the theory; the fishermen thought about the 1992 and 1993 fishery collapses and demanded answers.

By August 1993, the status of the Sound was, in the words on one of the banners used in the infamous fishermen's blockade of Valdez Narrows, "a Dead Zone." The host of maladies included increasing egg mortality of pink salmon in wild streams, decreased adult populations of wild salmon in oiled streams and hatcheries, a disease-plagued and hugely diminished stock of herring, high mortality of sea otter weanlings in oiled areas, missing seals, missing AT1 orcas, missing and strangely behaving AB pod orcas, high mortality of over-wintering harlequin ducks in oiled areas, high levels of oil in mussel beds and buried under beaches in oiled areas, and general absence of bird busy-ness, among other things. In short, the Sound was gravely ill.

But from what? In 1989, fishermen had asked scientists what to expect. Fishermen had families to support and they needed to know if the Sound was going to be ruined forever. Scientists told fishermen that oil only caused short-term effects to wildlife and that the Sound should recover rapidly. Fishermen stayed. But the Sound did not recover quickly. In fact, it got worse before it started to get better—witness the status in 1993.

Riki Ott

The ecosystem studies and the ecotoxicity studies set out to find if new models and theories could explain the status of the Sound from 1989–1993 and beyond. Was oil more toxic than previously thought? Or was food somehow connected to the wave of illness in the Sound?

The upshot of the suite of focused inquiry was that, indeed, oil was more toxic than previously thought. The new models and theories held that PAHs, a fraction of oil essentially ignored under the old science, caused long-term harm to vertebrates. The old science focused on the water-soluble fraction, which acted outside of cells to produce a quick-acting narcotic effect. PAHs acted within cells to jam intricate cellular function. Expression of these subtle effects manifested as unfit individuals (deformed embryos, stunted growth, impaired reproduction, starvation through increased energy demands) and population-level declines.

In short, the suite of studies conducted in the 1990s “discovered” a paradigm shift in oil ecotoxicology; i.e., that oil is more toxic than previously thought. The new models and theories match the reality of what we are seeing in Prince William Sound. Sound Truth shows a slow, ongoing, uneven recovery of species injured by Exxon’s spill.

The 2006 Update proposed by the EVOS Trustee Council staff, I believe, accurately reflects Sound Truth, the current status of the Sound as best explained by the new oil paradigm. I support its adoption.

That said, I wish to share a concern—not with the science—but with the political nature of the EVOS Trustee Council. There have been three major political regime changes since the 1989 spill. Unfortunately, political philosophies of each regime have influenced the quality of science produced during the tenure of that regime. The Clinton-Knowles regime came the closest to supporting pure science: it was during this era that the new oil ecotoxicity paradigm was discovered. The bookend regimes, Bush I-Hickel and Bush II-Murkowski, have demonstrated a tendency to block or ignore the science indicating long-term effects from oil (except around elections).

My point is that I urge the Trustees to do what is “right” by the Sound and what may not be politically expedient. I urge the Trustees to acknowledge that the Sound has not completely recovered (as Integral concluded) and adopt the proposed status listings in the 2006 Update. This Update actually reflects the reasons behind the recent request of the United States and State of Alaska to reopen the 1991 settlement based on unanticipated injury to wildlife and land. But that’s another story.

The EVOS Trustee Council staff should be commended for their assessment, independent of Integral. It’s a mountain of information to wade through and a lot of tangled “facts,” courtesy of Exxon. It took me three years to digest it all when I wrote my book, *Sound Truth and Corporate Myth*. I especially appreciate the listing of herring, pigeon guillemots, and the AT orca stocks as

Riki Ott

not recovering, which I recognize in *Sound Truth*. And the sea otters and harlequin ducks do seem to be generally "recovering," albeit not so yet in areas that were once heavily oiled.

There is one specific change I would like to see in the text of the 2006 Update before it is adopted. Under Pacific Herring, there is a statement on page 27 (first full paragraph) that reads, "... the population exhibited a density-dependent reduction in size of individuals..." Further, on page 28, the third paragraph, starting with "Other factors may have contributed..." mentions food, but not oil as a factor contributing to the herring demise. This is one of Exxon's tangles. Exxon alone insists that the 1993 population crash of herring was due to too many fish or not enough food—or anything other than oil.

Given the weight of evidence from the Sound and the oil "ecotox" paradigm shift, it is much more likely that oil weakened the surviving 1989-year class and resulting recruitment of unhealthy fish into a healthy spawning biomass triggered a disease outbreak. A paradigm shift applies to all creatures within the ecosystem, not to everything except herring.

In support of oil as the main factor contributing to the initial crash of the Prince William Sound herring population, I have attached two 2006 papers by former ADF&G fishery biologists in Prince William Sound that the staff may have missed and one paper by PWS Science Center researcher that the staff most likely has seen.

I don't know if the next two comments are appropriate in the context of commenting on the 2006 Update, but since I'm on a roll, I shall continue.

When Michael Bafferty visited Cordova, we discussed the continued existence of the Restoration Reserve and projects supported from this fund. I would like to reiterate what I believe was the consensus on the Restoration Reserve: the Cordova community strongly supports the continued existence of this reserve to support restoration of Prince William Sound and other oiled areas until the Sound has fully recovered from the spill or until oil stops flowing down the pipeline—whichever happens last.

We also discussed use of Restoration Reserve funds to support the Cordova Community Center (CCC). While there was broad and unanimous support for the CCC, there was some concern expressed that the Restoration Reserve may not be the appropriate source of funding for the CCC and the other pre-proposal projects including the water quality protection facility upgrades.

I, for one, questioned the use of funds for this project. In speaking to Michael after the workshop, In reflecting more on this topic, I now support use of some Restoration Reserve funds for the Cordova Community Center for the following reasons.

There seems to be a perception among the EVOS Trustees that the money for the Shepard Point Road took care of Cordova's share of funds allocated for capital construction during the Bush I-

Riki Ott

Hickel era. The perception in town is that each of the three Native villages in the Sound—Eyak, Tatitlek, and Chenega—were given funds for construction.

Unfortunately, in Cordova, use of funds to build this road was and is still not broadly supported within the larger community. So, while Chenega and Tatitlek were able to complete their projects, Eyak has not. Yet anyway. Proposed use of funds for the Shepard Point Road actually created more community division and exacerbated the social disruption from the spill.

Sociologist Steve Picou and his colleagues made Cordova a case study of chronic stress from man-made disasters. It's the longest running such study in the world. Besides the study, he also developed and tested mitigating strategies to reduce chronic stress. The Peer Listening Circle is now widely used and Picou received national recognition for his work.

The point is that all the oiled communities are likely suffering some degree of emotional trauma and chronic stress from the spill, because such stress was not recognized by spill responders and left untreated. The degree of stress is linked with degree of continuing harm—or perceived harm—to the natural environment, which in Cordova is considerable. The degree of stress is also linked to secondary spill disasters such as the litigation, which is shared by all the oiled communities.

Picou found that stress could be mitigated by getting people together to listen and share their stories. This rebuilds trust, the basic fabric of community. Once trust is rebuild, people can work together again on projects that support values held in common by the community. One such project that emerged from this trust-building is the community center. Unlike the contentious Shepard Point Road, the center is broadly supported by the community.

While I generally do not support use of Restoration Reserve funds for capital construction projects or routine must-do projects, such as the water facility upgrades, I do support use of some of these funds for the Cordova community center. The center would be a positive legacy from the spill, one that has as its foundation renewal of relationships and rebuilding community shattered in the wake of the *Exxon Valdez*.

Thank you for the opportunity to share my concerns and comments.

Sincerely,

Riki Ott

attachments

Position Paper: Long term effects of the Exxon Valdez Oil Spill on Prince William Sound Herring

by

**Dr. Evelyn D. Brown, Institute of Marine Science, University of Alaska Fairbanks,
Fairbanks, AK 99775-7220**

1 February 2005

Background

That Prince William Sound (PWS) herring were injured by the Exxon Valdez Oil Spill (EVOS) is an established fact. Numerous studies were conducted by both sides of the litigation. From the civil side (academic and government), over 20 papers have been published documenting and discussing various aspects of the injury (3, 4, 6, 7, 8, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 37, and 38). Most individuals with a vested interest in injury to fish and wildlife are familiar with the images of twisted and deformed larvae, chromosomal damage, and tissue lesions from oil exposure or disease. The existing point of contention is the presence, severity, and longevity of long-term damage resulting from the initial exposure to oil (8). Part of the controversy arises in establishment of the level of oil exposure to the various life stages of herring (8, 37).

It is impossible to know the exact numbers of eggs, larvae, juvenile or adults affected by oil, the length of time exposed, or the range of exposure levels. The spill occurred as adult herring migrated in large aggregations toward their spawning beaches (4). Adult herring swimming through oil suffered external and internal lesions and bleeding, migrations of gut parasites into their muscle tissue, and a possible initial breakout of the Viral Hemorrhagic Septicemia virus (VHSV; a virus with a history of linkage to oil spills) (8, 23, 24). Approximately 52% of the eggs deposited were on beaches lightly to moderately oiled (4). Eggs incubating on oiled beaches were exposed multiple times each day by the toxic surface microlayer as sheens of oil leaching from the cobble or gravel beds rose and fell with the diurnal tides (6, 15, 19). Larvae hatched and floated with surface waters guided by the same forces guiding floating oil, oiled kelp and carcasses, and subsurface oiled particulate matter suffering further injury (16, 29). Thus, PWS larval drift overlapped with the drifting oil trajectory to a greater degree than the incubating eggs (16, 29). The small numbers of surviving larvae (from the 1989 year class) underwent metamorphosis nearshore and entered their nursery bays, some heavily oiled (see timing, 41). Over the next two years, the juvenile herring remained in these bays venturing out as age-2 immature adults by late summer of 1991 (see timing, 41). Many of the nursery beaches within, near and upstream (of the prevailing ocean current) were cleaned with hot water, experimental dispersants, and beach substrate removal/washing during the juvenile herrings' residence time in late summer 1989, spring through fall 1990, and spring through late summer 1991 (37). These voracious juvenile planktivores certainly ingested oil by preying on oiled plankton and absorbed oil through the gills from dissolved oil and particulates caught on the gill plates, as did the juvenile pink salmon overlapping in distribution with the young herring (37). Ingesting oiled prey impairs growth, increases metabolic stress, and probably results in increase losses by predation because of smaller sizes and weaker conditions (37).

Pollutants, including oil, also act as immunosuppressants increasing the risk of disease, especially in fish stressed by food limitations, aging, and density-dependent predation pressure. Laboratory research confirmed the increased susceptibility in juvenile over healthy adult herring (7, 8, 17, 20). During this same period (1989-1991), adult herring continued their seasonal migration within and immediately adjacent to PWS encountering oily patches of water or plankton. Their eggs were laid and larvae hatched drifting and overlapping with patches of oil that escaped cleaning operations or that leached from oiled beaches. The adult herring population continued to spawn in years following 1989, not obviously diminished by oil exposure, and was joined in 1992 by a large 1988 recruiting class spawning for the first time in 1992. Given the large population size and recruitment, many doubted any long term oil exposure effects lingered and assumed the PWS herring population had weathered the spill effects. The disease event in 1993 changed all of that.

In 1993, adult spawners trickled in with approximately 75% of the anticipated biomass missing (24, 28). Fishermen and ADFG biologists observed herring with white lesions swimming in circles near the surface. Gulls, whales and sea lions were gorging on the weakened adult herring near the surface and the commercial fishery was severely hampered. The immediate question asked, and one that is still relevant today, was "did EVOS cause this and if so how?" For 10 years following the disease event, fish pathologists were tasked with studying the disease and monitoring disease occurrence in the remaining herring survivors. However, because the disease studies were focused on adults at spawning sites, tracking the disease across year classes and through life stages was not possible. Partly in response to the herring population crash, a herring ecosystem study (part of the larger Sound Ecosystem Assessment or SEA studies) was initiated in 1994 (3, 9, 10, 11, 18, 31, 32, 22, 34, 35, 41, 42, 43, 44, 46, 48, 49, 53, 55). The SEA herring studies (31), along with historical analyses of environmental effects on PWS herring and stock modeling (56), provided windows into life stages (larval and juvenile) that had not been examined before or after the 1989 spill. These windows allow a re-evaluation of the possible connection between EVOS, the disease event, and the continuing depression of the herring population in PWS.

Evidence and Modeling of Long-Term Injury

There are two main pieces of evidence that indicate a link between the oil spill and the population crash. Information derived from the historic studies, the modeling exercises and the SEA studies provide an explanation of how that link occurred and the mechanisms involved.

The first piece of evidence is the link between PWS and other herring populations in the Gulf of Alaska. Because some environmental factors affecting or "forcing" processes that affect herring growth and survival occur on a large scale, there is often coherence between herring populations occurring within that scale (51, 52). Sitka Sound, Southern Southeast Alaska, and PWS are three coherent populations that show similar recruitment, age structure, and population trends (Figure 1). The correlation of recruitment between any two of the three is highly significant ($p < 0.0001$) (data from 51). Prior to 1989, Sitka Sound was most closely correlated to PWS with a squared correlation coefficient (R^2) of 0.944; include years beyond 1989, the correlation is still strong but R^2 decreases to 0.878 (i.e. the correlation is weaker). Using the pre-oil spill relationship between Sitka and PWS, PWS recruitment was predicted for 1989 through

1993. Since 1991, the actual PWS recruitment has fallen well below the predicted recruitment (Figure 1). Although recruitment in PWS has fallen well above (see 1972) or below Sitka (1980) in the past, it has never done so for more than a single year. The drop in expected recruitment in PWS has fallen below expected for most of the last decade. The lower than expected recruitment explains why the PWS population never recovered after the disease crash in 1992. This “divergence” from the long-term environmental connection with Sitka has been apparently severed for no good reason. In addition, the coherence among other Pacific herring populations continues and only PWS seems to be divergent. What is unique about PWS besides the fact that it was hit by one of the world’s largest oil spills?

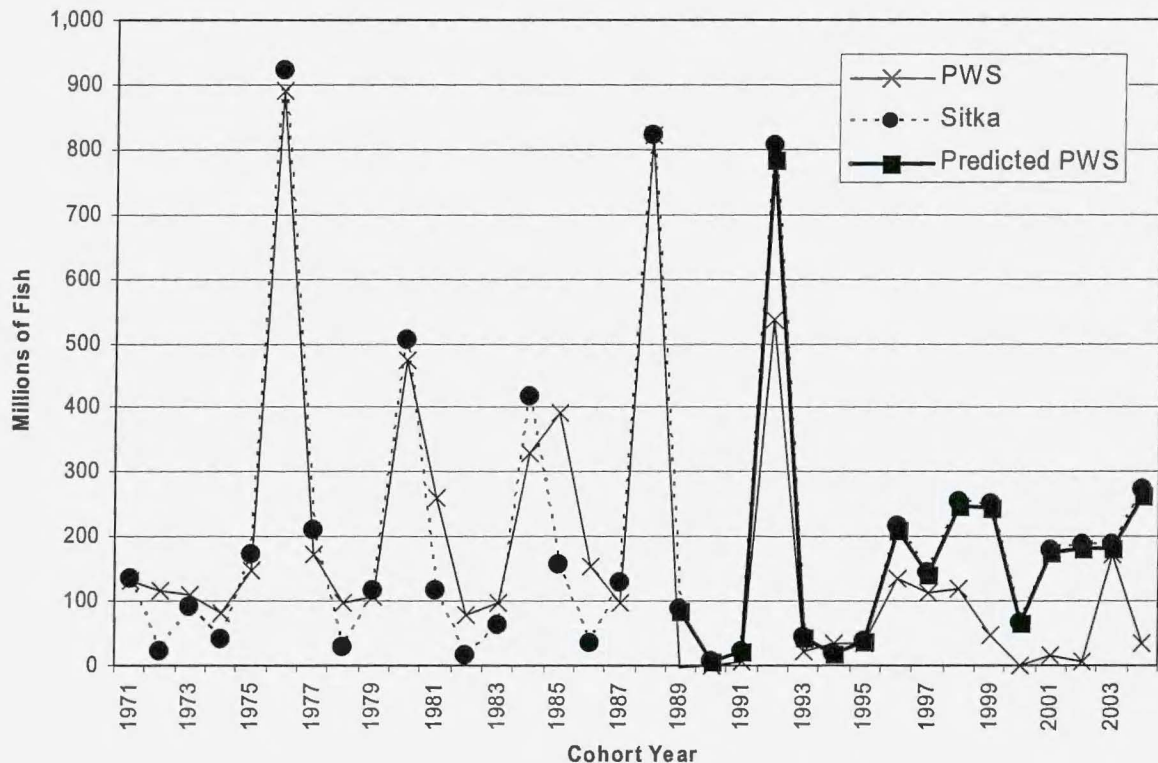


Figure 1. The recruitment time line for Prince William Sound (PWS) and Sitka Sound herring populations as well as the predicted recruitment for PWS based on the pre-spill correlation with Sitka. Numbers used in figures is available by request.

The second piece of evidence is from the historic relationship of the PWS herring population to trends in climate. As with many other herring populations in the Pacific, the PWS population appears to track with trends in climate. Especially significant were the relationships of herring population trend to the Atmospheric Forcing Index (AFI), the Aleutian Low Pressure Index (ALPI), and the winter months (Dec., Jan., and Feb.) of the Pacific Decadal Oscillation (PDO) out of 20 climate variables tested (56) (data examples in Table 1). In addition, the size-at-age of PWS herring was found to be oscillatory (cyclic) over approximately 14 years and highly correlated with an annual index of zooplankton biomass derived from the plankton watch program sponsored by the PWS Aquaculture Corporation (56) (Figure 2). Although the size-at-age relationship to zooplankton continued to be significant after 1989 (most recent data not

shown), the relationship of the population with the winter PDO did not (Figure 3). The relationship to climate has continued for other Pacific herring populations and such a divergence has not been observed elsewhere. Why has the population in PWS alone stopped responding to climate signals?

Table 1. Herring and some environmental data for references. The zooplankton data is from the PWS Aquaculture Corp. watch program. The time series of data was normalized (adjusted to zero); the average represents the annual density over the six week period for the net sampling and the peak density is the highest value observed over that period. The climate indices are from Brown, 2003 (56) and are based on various atmospheric pressure, surface temperature, and sea level pressure differences among regions.

Year	Aerial Survey Biomass Estimates (tons)		Aerial Survey Extent of Spawn Estimates		Age-Structured Analysis (ASA) Model Outputs		Zooplankton Density Anomaly		Climate Indices		
	Peak Aerial	Max Aerial	Miles	Mile-days	ASA Escape-ment	ASA Run Biomass	Ave.	Peak	AFI	ALPI	Winter PDO
1989	56,915	186,708	98.4	185.8	89,818	100,016	3.26	1.98	-1.31	-2.72	-0.73
1990	57,900	145,013	94.1	144.4	62,092	76,261	-0.94	-2.37	-0.27	-0.92	-1.06
1991	42,765	141,375	58.0	64.8	64,648	83,901	-1.17	-2.78	-0.49	0.36	-1.04
1992	53,835	130,569	74.7	99.5	29,249	31,389	-1.14	-3.29	0.62	2.09	0.30
1993	20,725	109,865	20.4	40.8	15,371	15,371	-1.01	-2.86	-0.20	-1.10	0.44
1994	19,640	154,008	14.6	20.0	16,448	16,448	-0.28	0.88	0.29	-0.64	0.00

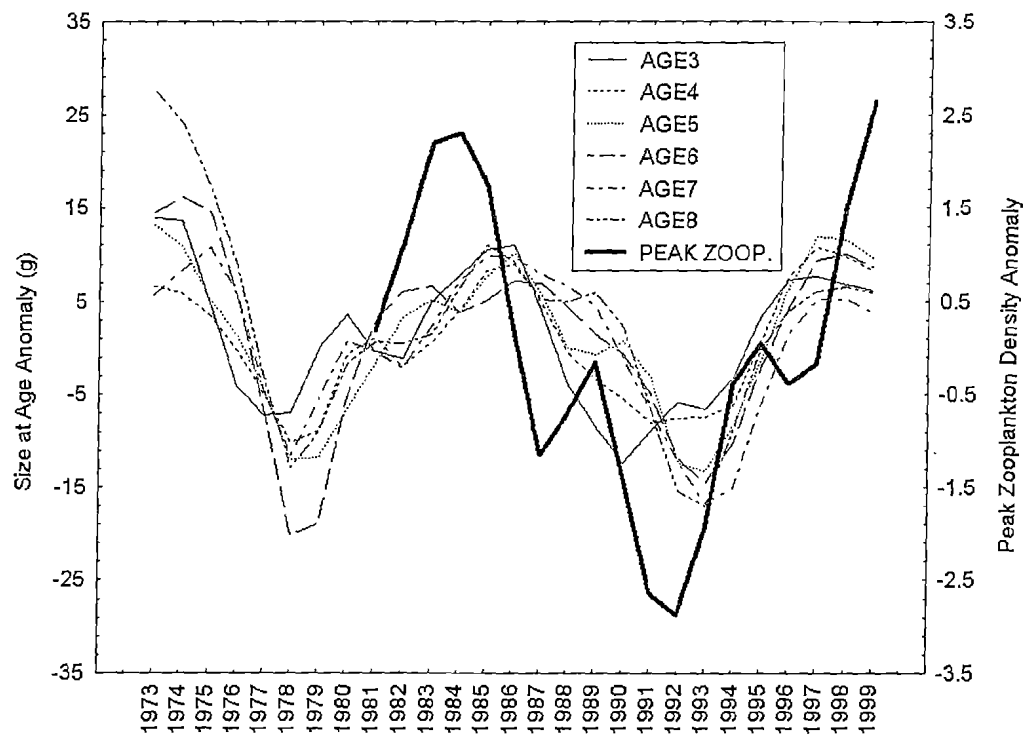


Figure 2. A time series of size-at-age or average weight of individual herring of a given age from ADFG AWL sampling and the peak zooplankton biomass from the plankton watch program sampling in southwestern PWS.

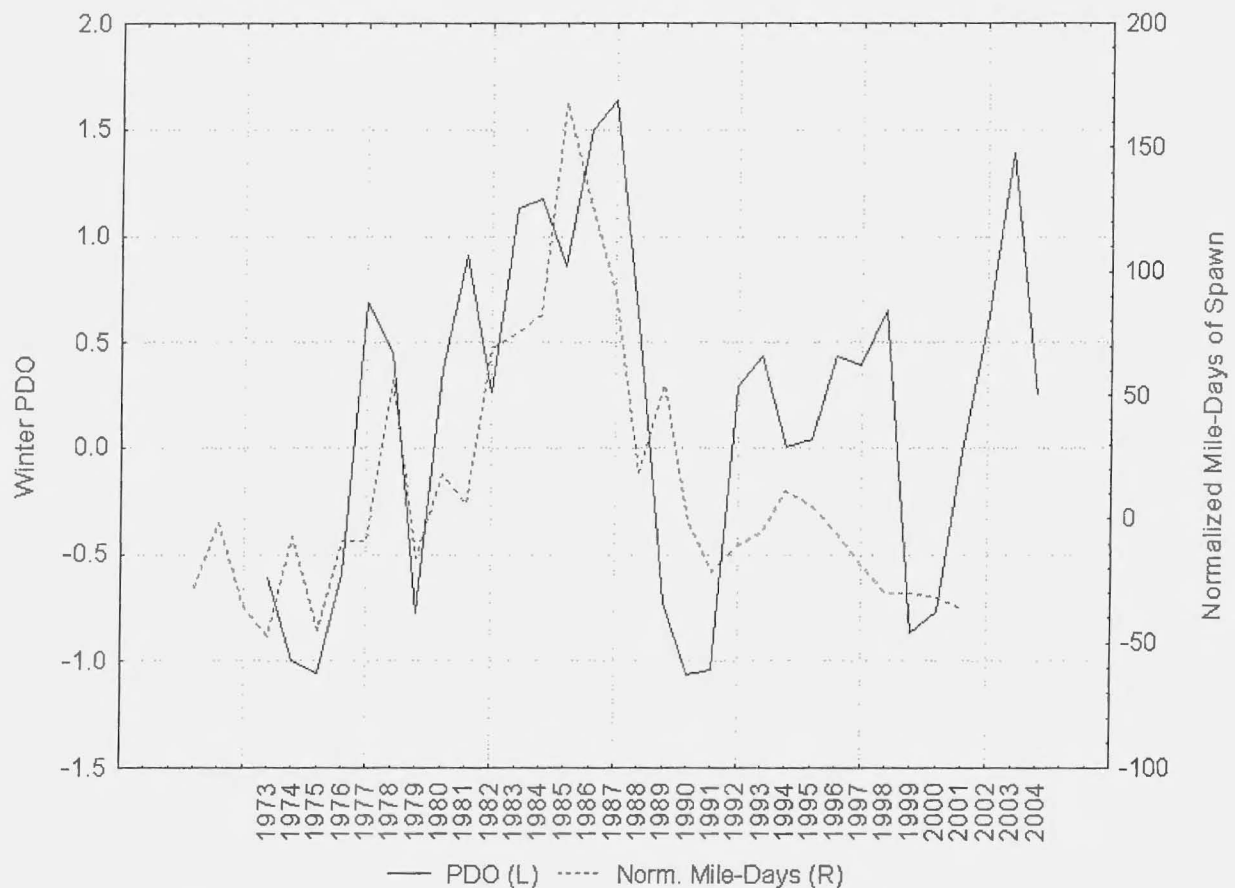


Figure 3. A time series of the normalized annual PWS mile-days of spawn with the winter PDO index; since 1991, the relationship appears to have disintegrated and the population level no longer tracks with the index.

It has been determined that recruitment remains a problem, following the oil spill and the 1993 disease event and therefore early life history mortality of herring must continue to be high. The population is no longer responding to climate signals historically present and appears to be in a maintained state of depression. The stock structure, life history, and migration dynamics of the PWS population can be used to propose how initial oil exposure, in concert with environmental conditions, could precipitate the massive disease event that affects the population today.

In ecological modeling, the forces are generally considered bottom-up (e.g. density of prey and water temperature) or top-down (predation pressure). Although disease should be considered a "bottom-up" variable, it should be in its own special class since it can cause direct mortality, like predation, or affect the condition of the fish, like food, that in turn affects predation rates. The occurrence of disease requires a triad of conditions: the pathogen (e.g. VHSV), the organism (e.g. a group of herring), and an environment conducive or initiating for the pathogen (e.g. immunosuppressant substance like oil, poor fish body condition, and high fish densities). Using the spatial life history model developed for PWS (56), I have developed a simplified sequence of events and environmental circumstances that can explain why, when and where the disease (VHSV) may have initiated, how it was transported through the population, and why the disease effect was delayed until 1993.

The first step is to define the generalized spatial life history of Alaskan Pacific herring, then specify it for PWS. Figure 4 shows this generalized life history and Figure 5 shows the spatial definition of the metapopulation structure in PWS. The herring metapopulation is a collection of local populations that may not be genetically distinct from one another, because of larval drift among them, but are spatially distinct by defined regions encompassing the seasonal migration pathways. Migrational pathways may overlap during some life history stages but areas of population concentration (spawning and overwintering) are generally distinct.

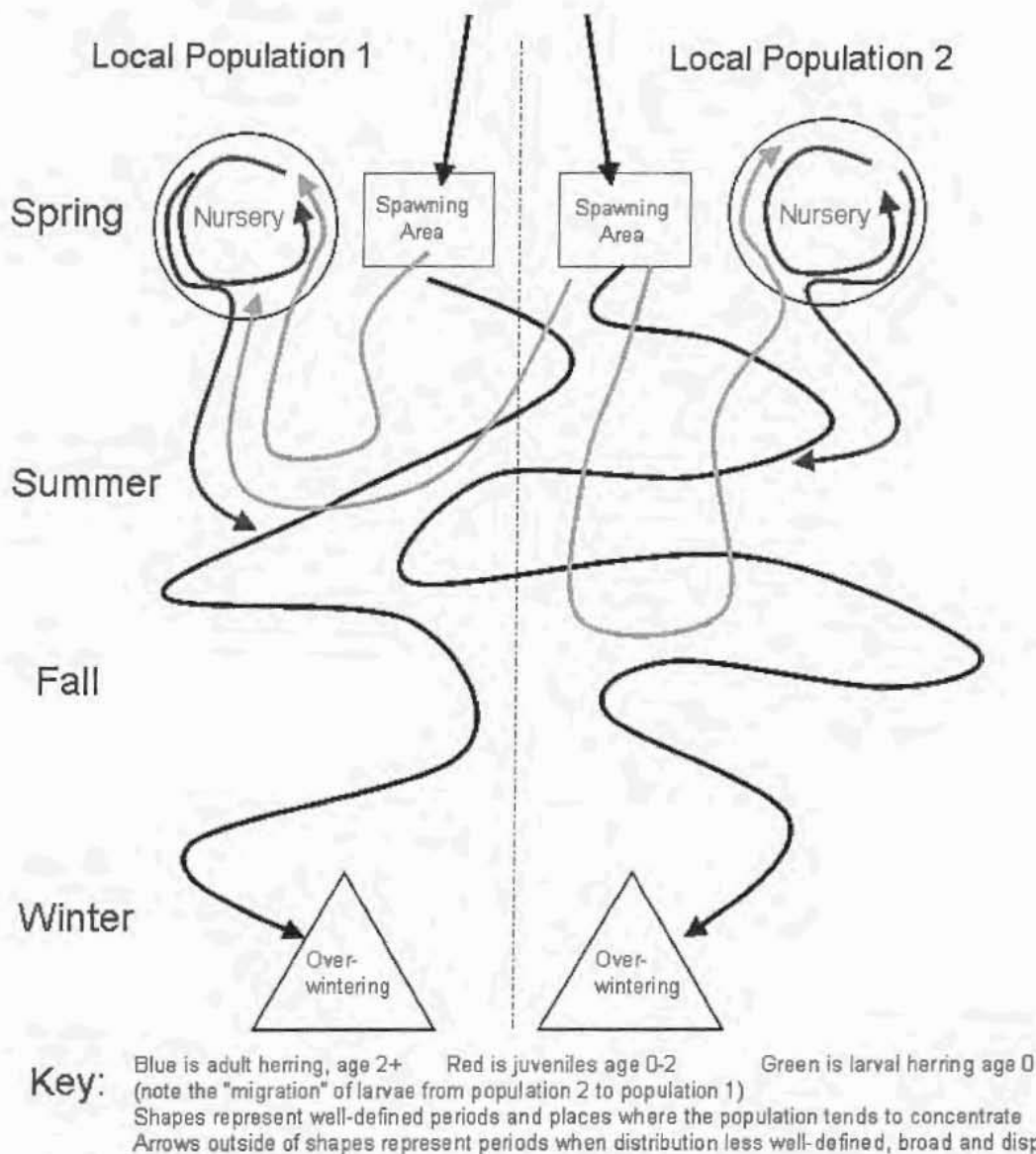
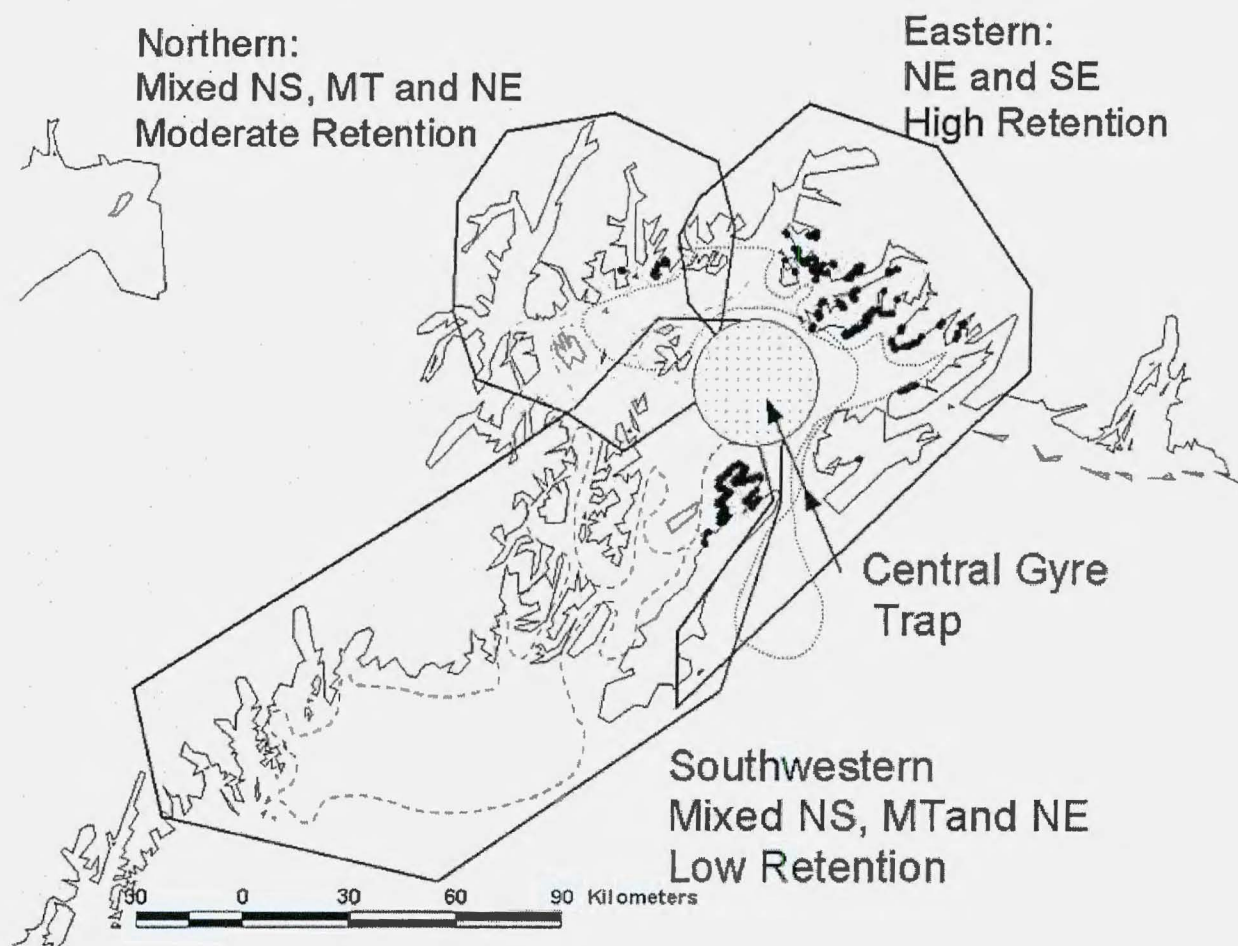


Figure 4. The generalized spatial life history of herring showing a metapopulation consisting of 2 local populations. Note that within the nursery areas, there are up to three cohorts or year classes at any given time; this is important in understanding the dynamics of the population crash in PWS. The migration of larvae from population 2 to 1 demonstrates how genetic mixing can occur. The key to the maintenance of the local population is the presence of adults who possess the "spatial memory" of the spawning, feeding and overwintering regions. In order to have recruitment to the local population, juveniles must "join" adults from that population along

their seasonal migration path. Thus the juveniles are "taught" the locations for spawning and overwintering. This process of spatial learning is very different from the process of chemical



homing by salmon but similar to the process in Atlantic cod that create the huge seasonal migrations across George's Bank.

Figure 5. PWS metapopulation structure showing the three local populations and the corresponding potential migrational routes (colored lines) for the adults from each. The blackened areas on the coast indicate the cumulative spawning grounds (since 1973) within each region. The four main spawning areas listed by ADFG are the Southeast (SE), the Northeast (NE), the North Shore (NS), and Montague (MT). Each local population is categorized by its retention of larvae originating from its local spawning areas; high retention means most larvae are retained within the region; moderate retention means that about half of the larvae ending drift there are local and half are migrants; low retention means that most of the local larvae are advected from the region and recruitment to local nursery areas is dependent on migrants from other local populations. The central trap indicates an oceanographic feature within the sound that tends to trap drifting herring larvae away from suitable nursery habitat; larvae ending drift here do not survive.

The specific timing for PWS herring life history is representing in Figure 6. Important periods for disease transmission occur when the population is concentrated and stressed (spawning and overwintering), when there is temporary overlap between feeding adults and juveniles in the nursery areas, or when juveniles join adult aggregations for the first time (late summer).

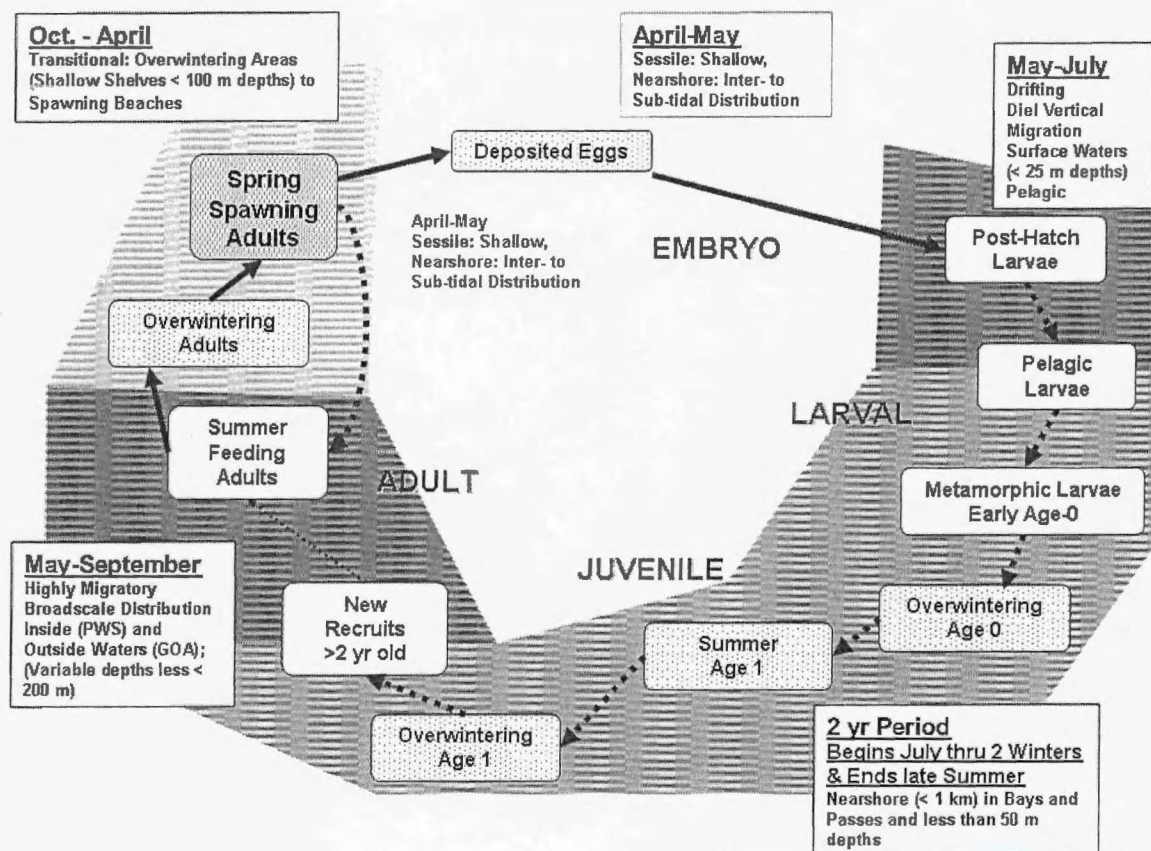


Figure 6. Timing of life history processes for Pacific herring in PWS.

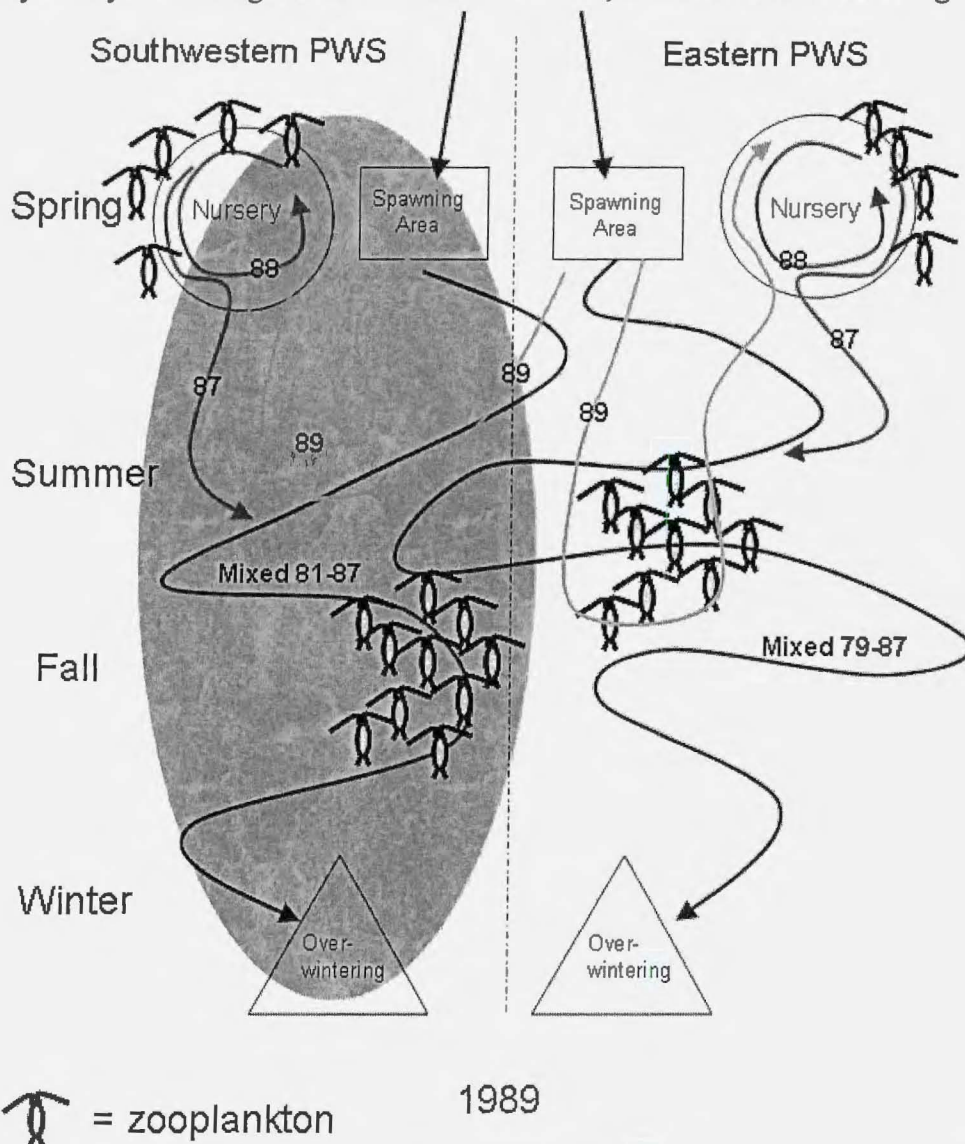
Given all of the above information plus environmental conditions (Table 1) and the following table of size at age anomalies (Table 2), an annual scenario can be created for each year from 1989 to 1993, when the disease occurred.

Table 2. The size (by weight) at age anomalies, from 1973 to 1999, for PWS herring.

Year	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Mean
1989	33.47	1.02	-4.46	-0.34	0.79	9.39	9.22	11.14	7.53
1990	11.50	-24.81	-1.82	0.92	-0.35	-4.35	4.35	6.76	-0.97
1991	-4.61	-4.44	-13.54	6.08	-1.62	-5.24	-6.47	0.09	-3.72
1992	-9.25	-2.77	-4.95	-23.74	-14.90	-12.23	-17.10	-15.05	-12.50
1993	1.32	-10.40	-6.53	-11.75	-17.49	-18.75	-25.01	-32.08	-15.09

In 1989, a portion of the migrating adults traverse oil on their way to spawning (Figure 7). This exposure most certainly stressed the fish and caused the observed tissue damage

resulting in a disease outbreak. However, zooplankton was abundant that year and size at age was anomalous high for most age classes as a result. Adults surviving the minor disease event were now carriers of the VHSV virus. Very few of the 1989 year class survived to recruit to bays, but those surviving exposure to oil entered the nursery areas in weakened condition very likely with tissue damage and impaired immune systems. Fortunately, feeding conditions in the nursery areas were optimal in terms of prey resources, growth rates were high, and the age-1 1988 was in prime condition to survive winter and produce a strong year class. Good condition and survivorship occurred despite the high densities and crowding within the nursery bays. Evidence of this is the large size at age of the 88 cohort observed in 1990 as age-2 herring. Certainly some nursery areas were oiled and in these bays, disease probably did break out especially in bays receiving the 1989 cohort. However, most of the fish were in good condition



and many survived as carriers of the virus. Because the spill affected many of the avian and mammalian predators of herring, further enhancement for survival of the 87 and 88 cohorts occurred from reduced predation pressure. The 1987 cohort left the nursery bays in late summer, also in good condition, with a few carriers of the virus. Within the population, expression of the VHSV virus was largely suppressed.

Figure 7. Life history scenario for PWS in 1989, characterized by a large overlap of oil (brown oval) with all life stages, but with abundant prey (zooplankton) resources available, high growth rates, and large size at ages. The year classes are denoted by the 2 digit numbers overlapping the colored arrows.

In 1990, a large number of adults appeared to have survived the spill probably because of optimal feedings conditions (Figure 8). However, feeding conditions had deteriorated. Size-at-age was reduced and adults returned to the spawning regions at fair to average conditions compared to the large sizes and high body fat reserves in 1989. Had the oil spill occurred this year, the consequences may have been more severe for herring with their reduced condition. The resulting 1990 year class was small compared to the 1988 year class, in part because oiled adult herring experienced reproductive impairment. Within the nursery areas, low densities of juveniles (after the departure of the large 1988 cohort) counterbalanced reduced prey resources. Continued suppression of predation rates continued in part to the increased human activity from beach clean up activities that disturbed avian and mammal predators. Disease most likely continued to affect a portion of the juveniles with the age-0 1990 cohort being particularly vulnerable.

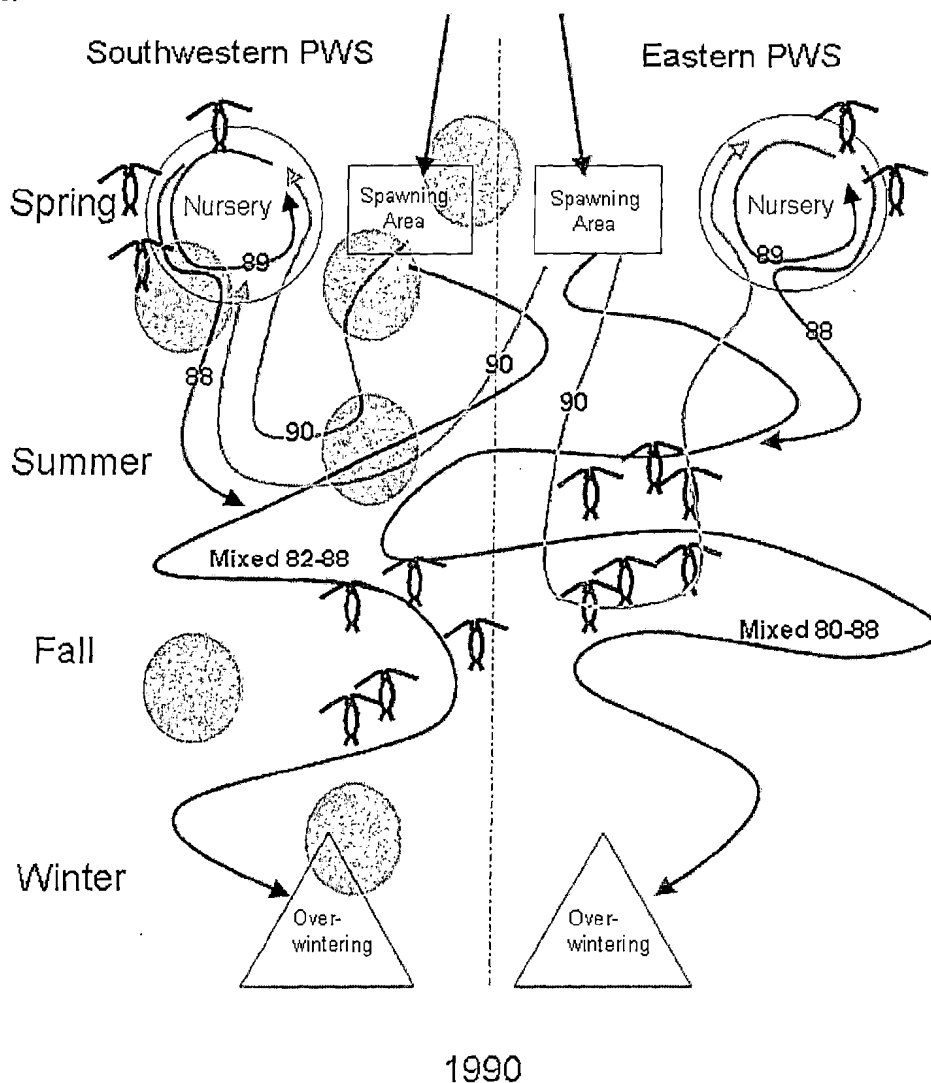


Figure 8. Life history scenario for PWS in 1990, characterized by a much smaller overlap with patchy weathered oil (brown ovals) with only a small proportion of all life stages. Plankton was anomalously low but closer to average values than in 1989. Despite reduced prey fields in the nursery areas, lowered densities of juveniles (due to the small 1989 and 1990 cohorts) helped remove density-dependent suppression of growth and competition.

In 1991, reduced survivorship of previously affected adult herring occurred because of deteriorating feeding conditions and reduced body sizes. However, the strong 1988 year class was making its first entry into the spring spawning population as age-3 herring, many as VHSV carriers. This buoyed the overall population size from the 1990 level. Poor adult condition, continued reproductive impairment, and small prey fields resulted in poor survival of 1991 eggs and larvae; high egg mortalities were observed and very few entered the nursery areas as age-0 fish later that summer. Within the nursery areas, conditions were worsening as well. Despite low densities of juvenile herring from the relatively small 89 and 90 cohorts, survival was affected by sparse prey fields, poor body condition, increased mortality from disease, and an increasingly normal number of predators and predator activities. The 1991 year class was, according to the ASA model output, the smallest year class recorded in 20 years.

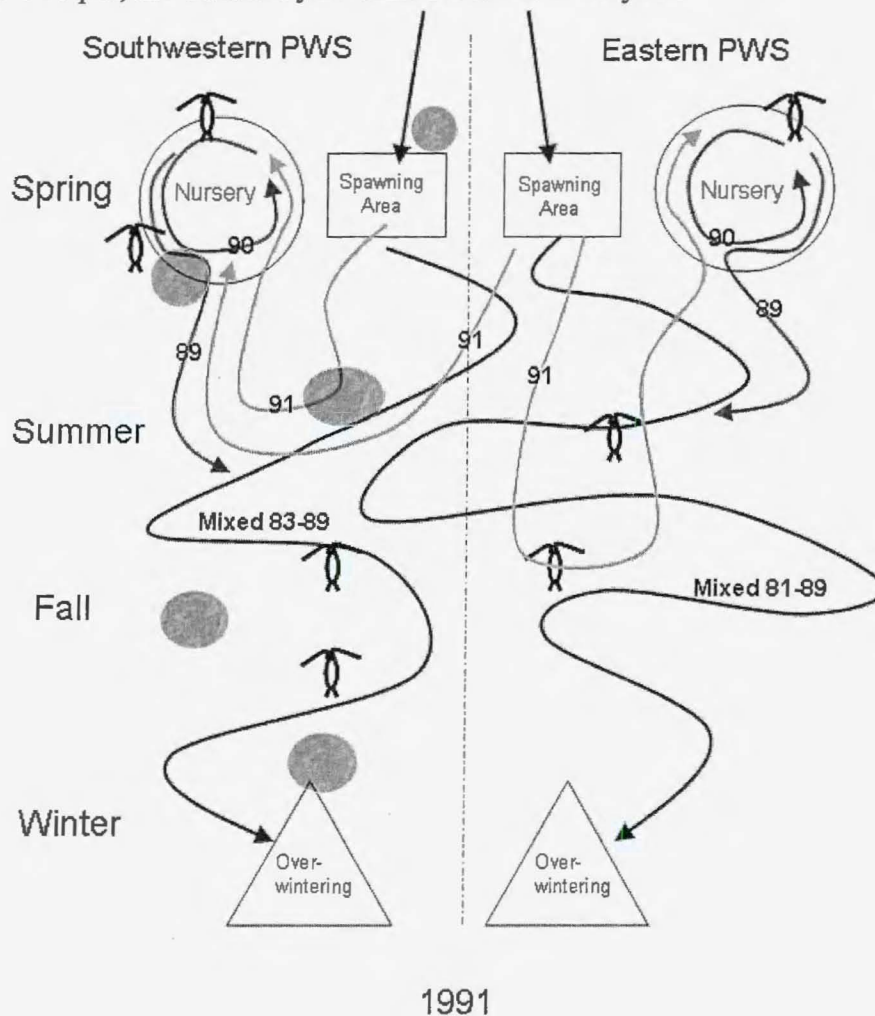


Figure 9. By 1991, oil was patchier and reduced and few herring were probably exposed. Plankton was further reduced from 1990 along with reduced individual herring weights. Juvenile survival was reduced and the 89 year class, including large numbers of VHSV carriers, joined adult aggregations.

By 1992, the deteriorating environmental conditions was evident in lower than predicted returning adult population and apparent reduction on survival rates of adults. Feeding conditions remained suboptimal and herring body size was further reduced. The population was now composed mainly of the 1988 and 1984 year classes. Unfortunately, the 1988 year class had been in the nursery areas as age-1 fish at the time of the spill and many had been exposed significantly affecting reproductive output and ultimately recruitment of the 1992 year class. The very small 1991 year class did not help boost the population level.

Finally in 1993, the situation culminated in the perfect conditions for a population level outbreak. This was the fourth year in a row for poor feeding conditions and the average size-at-age of the adults, along with the fish condition, reached an all time low for the period. The now fully recruited 1989 year class, with the largest proportion of disease carriers of all the cohorts, mixed with stressed, weak adults. Because most of the immune adults present in 1989 were now out of the population, a large number had not been previously exposed. The crowding, weakened condition, and presence of virus shedding from the 1989-1991 resulted in an outbreak that spread quickly through the population. Because the Montague Island region received the bulk of the oil exposed and viral carrying herring, the disease broke out there first. However, the disease did affect fish from the eastern region as well. This was possible because of the overlap in summer feeding areas between the two local populations. In addition, despite high larval retention, the eastern region almost certainly received some oiled larvae from 1989 and some affected juveniles through the process of joining along the migration paths.

This exercise demonstrates how the effects of a large environmental perturbation, such as EVOS, can interact with environmental conditions to result in complex and unpredictable outcomes. Had zooplankton production remained high along with herring body condition and growth, would the disease have affected the population to this degree? The answer is probably not. If no juvenile herring had been exposed to oil, would the VHSV virus and ultimate outbreak been transferred through the population? Again, the answer is probably not since no other herring population along the Gulf of Alaska, despite small size-at-age and poor body condition, had a VHSV disease outbreak. It was the unique combination of conditions in PWS, including EVOS, which led to this disaster.

Finally, it is my opinion that the PWS herring population is now in, what is called, a "predator pit". This occurs when replacement through recruitment cannot exceed losses from predation when the population of predators is constant or increasing. Herring is an r-selected species which produces extremely large numbers of offspring given with extremely high early life history (egg and larval) mortality and continued high mortality throughout its life. Herring are evolved to deal with this loss. However, when the main predator of herring, in terms of sheer biomass, is the humpback whale, things are more difficult. A small herring population means smaller numbers of herring aggregations (the main biological unit for herring since they always occur in schools). Smart predators with sonar can locate these aggregations even when the numbers are low due to the predictability of the spatial life history and migratory pathways. Herring are ultimately victims of their own automated spatial learning process and the whales

can easily take advantage of this. When adult spawning numbers are reduced below replacement level, no matter how optimal survival of a recruiting class is, the resulting juvenile aggregations that swim out to join adults cannot out number the feeding potential of these whales. This is especially true with young whale populations that include large numbers of bachelor whales that do not migrate to Hawaii with the reproducing adults. Unfortunately, this problem is almost impossible to fix and can prolong population recovery without a string of extraordinary events.

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**Prevented Volumes of Pacific Herring in Prince William Sound fisheries resulting
from the Exxon Valdez oil Spill.**

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Prevented Volumes of Pacific Herring in Prince William Sound fisheries resulting from the Exxon Valdez oil Spill.

Introduction

Once the flag ship of the Gulf of Alaska herring fisheries, the PWS herring biomass changed dramatically after the Exxon Valdez oil spill. While the Gulf of Alaska herring fisheries in Kodiak and in Southeast Alaska continue to support healthy fisheries, PWS herring are now an anomaly. The PWS herring stock has suffered sublethal damage to embryos and larvae (Hose et. al. 1996), repeated disease outbreaks (Kocan, Marty & Kennedy. 1999), poor survival rates and a population crash that have caused the sac roe fisheries to be closed for 10 of the past 12 years (Gray, et. al. 2003). Researchers speculate that the depressed stock is in a predator pit which prevents it from recovering to its historic healthy size (Brown, 2005). In this paper, I develop a model to estimate the annual volumes of herring that might have been harvested in PWS, by the various fisheries, had there not been an Exxon Valdez oil spill.

Background

Herring fisheries have a long and rich history in Prince William Sound. The first significant commercial utilization of herring was for reduction to herring oil. For forty years, starting around 1920, the Prince William Sound herring reduction fishery harvested on average 17,000 tons of herring annually (Figure 1.) During this period, the Prince William Sound herring fishery accounted for nearly 1/3 of the state's total reduction harvest. The PWS fishery was not regulated under modern sustainable management policies, yet it remained robust despite exceptionally high harvest levels. A decline in the market for herring oil caused by the development of Puruvuan reduction fisheries in the late 1950's diminished and ultimately ended herring reduction fisheries statewide by the early 1960's.

In the late 1960's fisheries for herring sac roe were developed throughout much of the state. In the Gulf of Alaska the major fisheries were located in Southeast Alaska, Prince William Sound, Cook Inlet and Kodiak. For the initial twenty years (1969-1988), the Prince William Sound fishery contributed 39% of the combined Gulf of Alaska herring sac roe harvest. Prince William Sound's herring fisheries were among the first to be limited to entry by the Commercial Fisheries Entry Commission. The abundance of herring also supported bait fisheries, and wild roe on kelp fisheries. The first roe on kelp in pounds fishery in Alaska was developed in Prince William Sound the early 1980's.

Following the Exxon Valdez oil spill in March of 1989, the Prince William Sound herring stocks started a catastrophic decline. Although fishing was permitted in the first years following the spill, the fish were stressed and prone to disease outbreaks. During the winter of 1992-1993, the stock size crashed below the minimum threshold to permit any commercial utilization. The stock showed modest signs of recovery in 1997 and 1998 only to once again fall below the fishery harvest threshold. The commercial herring sac

roe fisheries in Prince William Sound have been closed for 10 of the past 12 years. Given the current age structure of the population and the infrequency of strong brood years it is unlikely that recover will be seen over the next 6 years.

Theory of damage

Over 20 papers have been published documenting and discussing various aspects of the injury to Prince William Sound herring as a result of the Exxon Valdez Oil Spill (EVOS). The theory of damage is complex and subject to scientific debate, however one fact remains clear; that since the Exxon Valdez Oil Spill the long history of Prince William Sound's herring stocks, supporting vibrant fisheries came to an abrupt end. While Alaska's other major herring stocks in Togiak, Kodiak and Sitka Sound continue to thrive, Prince William Sound is now an anomaly.

The timing of the oil spill was particularly bad for herring. Each spring during the month of April adult herring aggregate in large numbers near Prince William Sound shorelines in preparation for spawning. With the oil spill occurring in late March, adult herring were repeatedly exposed to oil. These fish suffered internal lesions, external bleeding, migrations of gut parasites into their muscle tissue, and a possible initial breakout of the Viral Hemorrhagic Septicemia virus (VHSV; a virus with a history of linkage to oil spills) (Carls et. al. 2001).

Most of the traditional spawning locations in the Sound were impacted by the oil spill. Approximately 52% of the eggs deposited were on beaches lightly to moderately oiled (Brown, Norcross & Short. 1996). Eggs incubating on oiled beaches were exposed multiple times each day by the toxic surface micro layer as sheens of oil leaching from the cobble or gravel beds rose and fell with the diurnal tides (Brown, et.al. 1996).

After hatching, herring larvae are not mobile and drift with prevailing currents and surface winds, the same forces guiding floating oil, oiled kelp, carcasses, and subsurface oiled particulate matter. Thus, larval drift overlapped with and followed the oil trajectory extending the exposure.

Juvenile herring certainly ingested oil by preying on oiled plankton and absorbed oil through the gills from dissolved oil and particulates caught on the gill plates. Ingesting oiled prey impairs growth, increases metabolic stress, and probably results in increase losses by predation because of smaller sizes and weaker conditions (Peterson. 2001).

Pollutants, including oil, can act as an immunosuppressant increasing the risk of disease, especially in fish stressed by food limitations, aging, and density-dependent predation pressure. These factors contributed to the population crash that occurred in the winter of 1992-93. Disease factors remain present in the population. The failure of the population to recover suggests that it is in a predator pit (Brown. 2005). Thus the reproductive capacity of the Prince William Sound herring stock, can not overwhelm predation and other mortality factors that it is subjected to.

Estimating Prevented Volumes

To estimate the annual volume of herring that might have been harvested had Prince William Sound not suffered from the Exxon Valdez oil spill, I developed a model based on the correlation between the Prince William Sound and Sitka Sound herring biomass trends.

It is logical to look at performance of other Gulf of Alaska herring fisheries to find a proxy for Prince William Sound. Owing largely to climate, coastal currents and other shared environmental factors, Gulf of Alaska herring fisheries have many similarities to one another. Herring recruitment events provide a strong illustration this relationship. Recruitments are sporadic. Typically a strong age class appears in only one of every four or five years. When environmental conditions favor a strong recruit year class, that brood year is strong in all Gulf of Alaska herring stocks. Figure 3, illustrates this relationship for Prince William Sound and Southeast Alaska stocks. The relationship from 1971 - 1989 is highly significant. ($R^2 = 0.94$) (Brown. 2005).

Kodiak, Cook Inlet and Sitka Sound herring fisheries were evaluated to identify the best proxy for Prince William Sound. The Sitka Sound fishery was chosen for a number of reasons.

First, the Sitka Sound herring stock size is similar in the magnitude to the size of the Prince William Sound stock. Secondly, Sitka Sound is a contained system protected from the open ocean by islands, similar to Prince William Sound. Finally the quality of the biomass and age data for Sitka Sound is high. Both Prince William Sound and Sitka Sound have biomass estimation techniques based on spawn deposition and age structured analysis.

Spawn deposition techniques are a widely accepted method of estimating herring spawning biomass. This method takes an estimate of the volume of eggs deposited during the spawning event, and then using known parameters of fecundity and age structure, to back calculate the biomass of fish that deposited the eggs. Sitka Sound has a long history of spawn deposition surveys. SCUBA divers swim shoreline transects, systematically spaced along the coastlines where spawning is observed. The divers estimate the density of eggs that were deposited during the spawning event. These estimates are expanded to a total estimate. In Prince William Sound egg deposition has been estimated by two techniques, diver surveys similar to those conducted in Sitka, and a daily aerial mapping of spawn. The daily aerial spawn mapping techniques, produces an annual index "Mile-Day's of spawn". The Mile-Day technique has been predominately used in Prince William Sound (Biggs, Haley & Gilman. 1992). Diver surveys were conducted in Prince William Sound for a limited number of years following the oil spill in conjunction with the damage assessment work (Biggs & Baker. 1993). Because it is a longer time series, the Mile-Day index is accepted as the best annual index of biomass.

Prince William Sound herring biomass data was obtained from ADF&G (Gray et. al. 2003), (Moffitt, 2005). The annual PWS Mile-Day spawn index was expanded to generate a estimate in the form of tons of herring by multiplying the Mile-Day index by an expansion factor (*MDEF*) of 734 tons of herring/Mile-Day of spawn. This expansion factor is a mean of the annual expansion factors based on the aerial survey biomass estimates, for the years 1976 – 1992.

MDEF = Mile-Day Index expansion factor

MDI = Mile-Day spawn index

PAI = Peak Aerial Survey Index

MAI = Maximum Aerial Survey Index

y = year

$$MDEF = \frac{\sum_{y=1}^n \left(\frac{PAI_y + MAI_y}{2} \right) / MDI_y}{n}$$

MDPWSBM = Prince William Sound Herring Biomass (tons)

$$MDPWSBM = MDI * MDEF$$

Using the method described above, the annual biomass estimates from Prince William Sound herring are plotted on top of the annual biomass estimates for Sitka Sound herring in Figure 4, upper graph. Prior to the 1993 population crash in Prince William Sound there is an obvious correlation ($R^2 = 0.545$), lower graph in Figure 4.

A similar comparison was performed from annual age structured analysis (ASA) biomass estimates. These data are plotted in Figure 5, upper graph. Although the correlation is still apparent in the years prior to the 1993 PWS crash, the relationship is less significant ($R^2 = 0.210$), lower graph, Figure 5.

The stronger relationship between spawn depositions estimates was used to build the regression for predicting Exxon Valdez Oil Spill prevented volumes for Prince William Sound herring fisheries. The linear regression between Sitka and Prince William Sound is plotted in Figure 4 lower graph. Based on this relationship, annual Prince William Sound herring biomass estimates are made using the following regression equation:

PPWSBM_y = Predicted Prince William Sound Herring Biomass (tons) absent EVOS, for year "y".

SSHBM_y = Sitka Sound Herring Biomass (tons) for year "y".

$$PPWSBM_y = 1.9457 SSHBM_y + 30,953$$

The results from this analysis are presented in Table 1. The Sitka Sound herring biomass from spawn deposition surveys (*SSHBM*) (Gordon, 2005) and the measured Prince William Sound herring biomass based on expanded mile-day spawn index (*MDPWSBM*) are presented in the second and third columns. The predicted Prince William Sound herring biomass absent the Exxon Valdez Oil Spill (*PPWSBM*) is presented in the fourth column.

Prince William Sound herring fisheries are managed under the regulatory management plan found in the Alaska Administrative Code, 5 AAC 27.365. This plan specifies that the management year runs from July 1 through June 30. When the biomass is greater than 42,500 tons, the maximum exploitation rate of 20% is permitted. Because the annual biomass predicted in the model is greater than 42,500 tons, the potential harvest (for all fisheries combined) is thus calculated as:

PH_y = Potential Harvest for year "y".

$$PH_y = PPWSBM_y * 20\%$$

The annual harvest for Prince William Sound herring fisheries is allocated among the five fisheries in 5 AAC 27.365, as follows:

Purse Seine Fishery	58.1 %
Gill Net Fishery	3.4 %
Food and Bait Fishery	16.3 %
Wild Harvest roe on kelp	8.0 %
Pound roe on kelp	14.2 %

The roe on kelp (ROK) fisheries are each allocated a specific amount of herring, although what they actually harvest is herring roe on kelp. The harvest objectives for these fisheries (in terms of roe on kelp) are set based on the assumption that 8 tons of herring are required to produce one ton of Wild harvest roe on kelp and 12.5 tons of herring are required to produce one ton of Pound roe on kelp. Table 2 allocates the potential harvest (PH_y) to the various Prince William Sound fisheries in accordance with the management plan.

In Table 3, the reported commercial harvest numbers in tons of herring are presented for the years 1989 – 2004. The Prevented Volume, by fishery by year (PV_{fy}) is calculated as the difference of the potential harvest (PH_{fy}) and the actual harvest (AH_{fy}).

AH_{fy} = Actual reported herring harvest in Prince William Sound, by fishery by year

PV_{fy} = Prevented Volume, by fishery, by year

$$PV_{fy} = PH_{fy} - AH_{fy}$$

Prevented Volumes by fishery, by management year are provided in Table 4.

On March 2, 2005, the Alaska Department of Fish and Game announced that The Prince William Sound herring fisheries will remain closed through the 2005 fishing season (ADF&G. 2005).

Herring surveys were conducted by ADF&G and the Prince William Sound Science Center in March 2004. Age composition of the Prince William Sound herring stock was determined to be 77% age 5 fish (brood year 1999). A majority of the remaining fish were in the 4 year old age class. *Ichthyophonus hoferi*, a pathogen contributing the 92-93 population crash was observed to still be prevalent, particularly in 1999 brood year (ADF&G. 2005).

Given the current status of Prince William Sound herring, as outlined by ADF&G, it is reasonable to assume that the stock will not recover to its historic population size for many years. The most optimistic case would require a minimum of two significant recruitment events to bring about full recovery. Given that recruitment events occur only once out of every four or more years, even if an exceptionally strong recruit class appeared in the spring of 2006 as three year olds (Brood year 03), it would take a additional four years for a second strong recruit class to become established. Assuming the most optimistic case, full recovery would not occur until 2010. In Tables 1 and 4 for the years 2005 – 2010, prevented volumes are thus projected by proportionately reducing the 2004 value to zero by the year 2010.

Table 1. Measured Prince William Sound herring biomass based on expanded mile-day index, predicted Prince William Sound biomass absent EVOS based on regression with Sitka Sound herring biomass, and the potential Prince William Sound harvest (all fisheries combined) based on a 20% exploitation rate, for the years 1991 – 2010. (All units in tons of herring, 1 ton = 2,000 lbs.)

Year	Sitka Sound Biomass <i>SSHBM</i>	Measured PWS Biomass <i>MDPWSBM</i>	Predicted PWS Biomass <i>PPWSBM</i>	Potential Harvest <i>PH</i>
1991	23,450	47,584	76,580	15,316
1992	48,600	73,036	125,514	25,103
1993	35,500	29,975	100,025	20,005
1994	14,026	14,686	58,243	11,649
1995	40,169	23,726	109,110	21,822
1996	36,372	28,712	101,722	20,344
1997	27,126	41,122	83,732	16,746
1998	34,943	35,578	98,942	19,788
1999	44,610	27,757	117,751	23,550
2000	54,399	18,064	136,797	27,359
2001	58,756	12,337	145,275	29,055
2002	39,719	16,889	108,234	21,647
2003	54,875	21,002	137,723	27,545
2004	73,425	25,481	173,816	34,763
2005 ¹				28,969
2006 ¹				23,175
2007 ¹				17,382
2008 ¹				11,588
2009 ¹				5,794
2010 ¹				0

1. It is assumed that a minimum time frame for the PWS herring population to recover to historical levels would be 6 years (1.5 recruitment cycles). For the future years 2005 – 2010, the 2004 prevented volume is proportionately reduced to zero. The Alaska Department of Fish and Game announced the closure of all Prince William Sound herring fisheries for the 2005 fishing season on March 2, 2005.

Table 2. Potential Harvest (*PH*) of Prince William Sound herring in tons, for the years 1989 – 2010, allocated to the five Prince William Sound commercial fisheries, as prescribed by regulation in 5AAC 27.365.

Year	TONS OF HERRING						Tons of Roe on KELP	
	Total Potential Harvest	Purse Seine 58.1%	Gill Net 3.4%	Food & Bait 16.3%	Wild ROK 8.0%	Pound ROK 14.2%	Wild ROK 8:1	Pound ROK 12.5:1
1989	16,775	9,746	570	2,734	1,342	2,382	167.75	190.57
1990	15,044	8,740	511	2,452	1,203	2,136	150.44	170.89
1991	15,316	8,899	521	2,496	1,225	2,175	153.16	173.99
1992	25,103	14,585	853	4,092	2,008	3,565	251.03	285.17
1993	20,005	11,623	680	3,261	1,600	2,841	200.05	227.26
1994	11,649	6,768	396	1,899	932	1,654	116.49	132.33
1995	21,822	12,679	742	3,557	1,746	3,099	218.22	247.90
1996	20,344	11,820	692	3,316	1,628	2,889	203.44	231.11
1997	16,746	9,730	569	2,730	1,340	2,378	167.46	190.24
1998	19,788	11,497	673	3,225	1,583	2,810	197.88	224.80
1999	23,550	13,683	801	3,839	1,884	3,344	235.50	267.53
2000	27,359	15,896	930	4,460	2,189	3,885	273.59	310.80
2001	29,055	16,881	988	4,736	2,324	4,126	290.55	330.06
2002	21,647	12,577	736	3,528	1,732	3,074	216.47	245.91
2003	27,545	16,003	937	4,490	2,204	3,911	275.45	312.91
2004	34,763	20,197	1,182	5,666	2,781	4,936	347.63	394.91
2005	28,969	16,831	985	4,722	2,318	4,114	289.69	329.09
2006	23,175	13,465	788	3,778	1,854	3,291	231.75	263.27
2007	17,382	10,099	591	2,833	1,391	2,468	173.82	197.46
2008	11,588	6,732	394	1,889	927	1,645	115.88	131.64
2009	5,794	3,366	197	944	464	823	57.94	65.82
2010	0	0	0	0	0	0	0.00	0.00

Table 3. Reported commercial harvests of herring in Prince William Sound, by fishery, for the years 1989 – 2004. Data from ADF&G (Gray et. al., 2002).

Year	TONS OF HERRING						Tons of Roe on KELP	
	Total Herring ¹	Purse Seine	Gill Net	Food & Bait ²	Wild ROK	Pound ROK	Wild ROK	Pounded ROK
1986	12,837	9,828	449	1,276	381	903	48	72
1987	8,175	4,982	533	1,189	706	765	88	61
1988	11,985	7,977	353	1,335	779	1,541	97	123
1989	646			646	-	-		
1990	13,069	8,362	505	2,016	950	1,235	118.8	98.8
1991	20,222	11,831	742	4,259	861	2,530	107.6	202.4
1992	26,479	16,592	941	3,900	2,018	3,028	252.3	242.2
1993	4,748		1,030	1,087	1,301	1,330	162.6	106.4
1994	-			-	-	-		
1995	-			-	-	-		
1996	934			934	-	-		
1997	6,198	4,703	176	680	211	429	26.4	34.3
1998	5,084	3,393	415	1,003	138	134	17.3	10.7
1999	78					78		6.2
2000								
2001								
2002								
2003								
2004								

¹ Total tons of herring utilized by all fisheries.

² Food and Bait harvests are assigned to the year when the fishery opened.

Table 4. Prevented Volumes¹ (PV_{fj}) of Prince William Sound commercial herring, by fishery, for the years 1989 – 2010, based on the Sitka Sound/PWS regression model.

Year	TONS OF HERRING						Tons of Roe on KELP	
	Total Prevented Harvest	Purse Seine 58.1%	Gill Net 3.4%	Food & Bait 16.3%	Wild ROK 8.0%	Pound ROK 14.2%	Wild ROK 8:1	Pound ROK 12.5:1
1989	16,129	9,746	570	2,088	1,342	2,382	168	191
1990	1,975	378	6	436	253	901	32	72
1991	-- ²	-- ²	-- ²	-- ²	364	-- ²	46	-- ²
1992	-- ²	-- ²	-- ²	191	-- ²	537	-- ²	43
1993	15,257	11,623	(350)	2,174	300	1,511	37	121
1994	11,649	6,768	396	1,899	932	1,654	116	132
1995	21,822	12,679	742	3,557	1,746	3,099	218	248
1996	19,411	11,820	692	2,382	1,628	2,889	203	231
1997	10,548	5,027	394	2,050	1,129	1,949	141	156
1998	14,705	8,104	258	2,222	1,445	2,676	181	214
1999	23,473	13,683	801	3,839	1,884	3,267	236	261
2000	27,359	15,896	930	4,460	2,189	3,885	274	311
2001	29,055	16,881	988	4,736	2,324	4,126	291	330
2002	21,647	12,577	736	3,528	1,732	3,074	216	246
2003	27,545	16,003	937	4,490	2,204	3,911	275	313
2004	34,763	20,197	1,182	5,666	2,781	4,936	348	395
2005	28,969	16,831	985	4,722	2,318	4,114	290	329
2006	23,175	13,465	788	3,778	1,854	3,291	232	263
2007	17,382	10,099	591	2,833	1,391	2,468	174	197
2008	11,588	6,732	394	1,889	927	1,645	116	132
2009	5,794	3,366	197	944	464	823	58	66
2010	0	0	0	0	0	0	0	0

¹ Prevented Volume is harvest volume that might have occurred absent the Exxon Valdez Oil Spill.

² No prevented volume for this fishery in this year.

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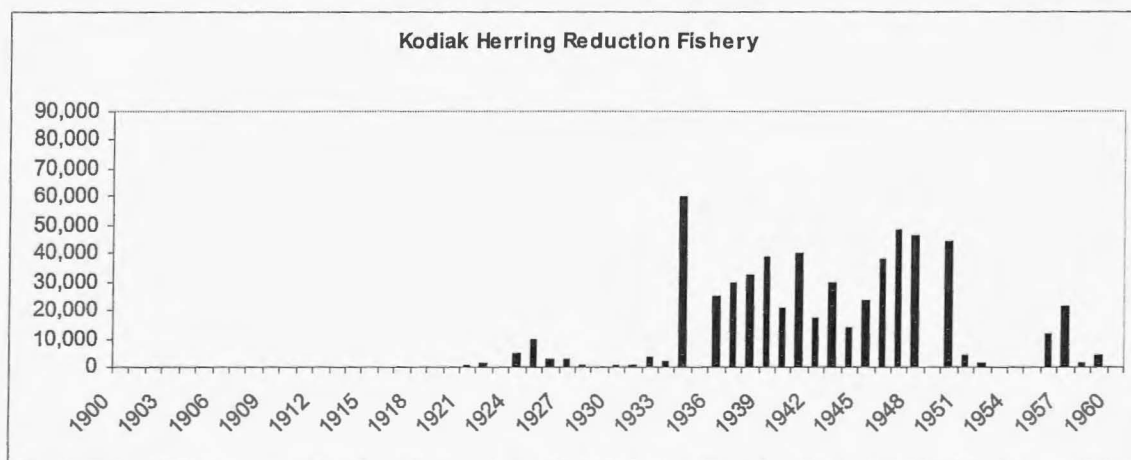
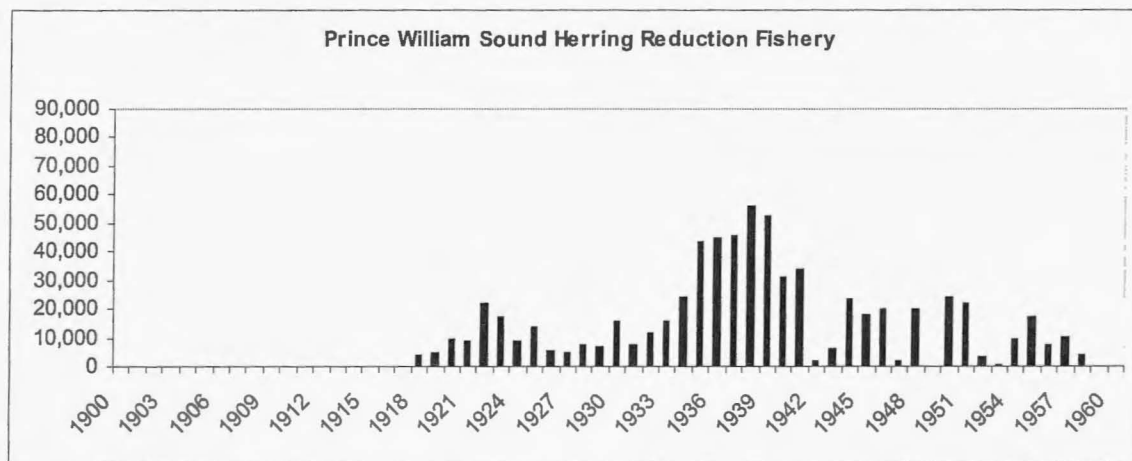
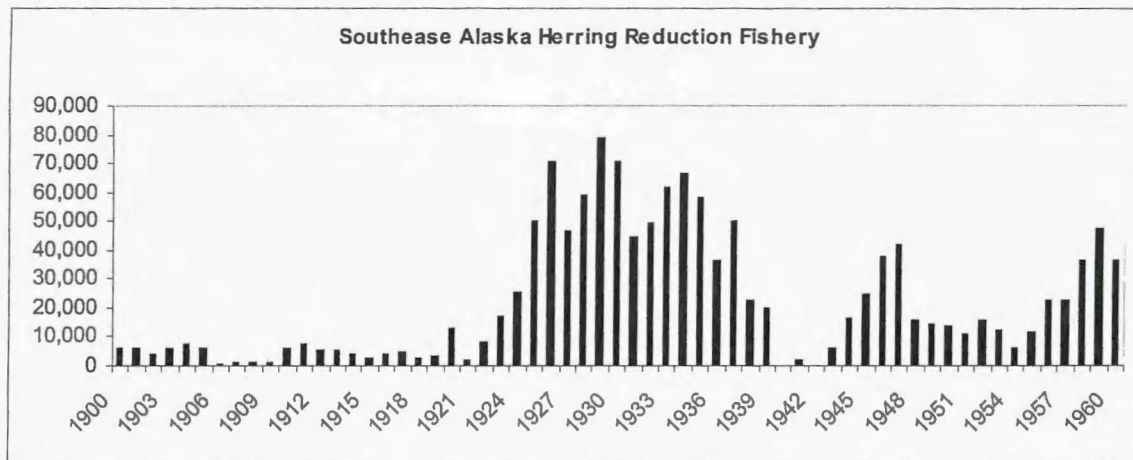


Figure 1 Historic herring reduction fishery harvests from Southeast, Prince William Sound and Kodiak Alaska, 1900 – 1960.

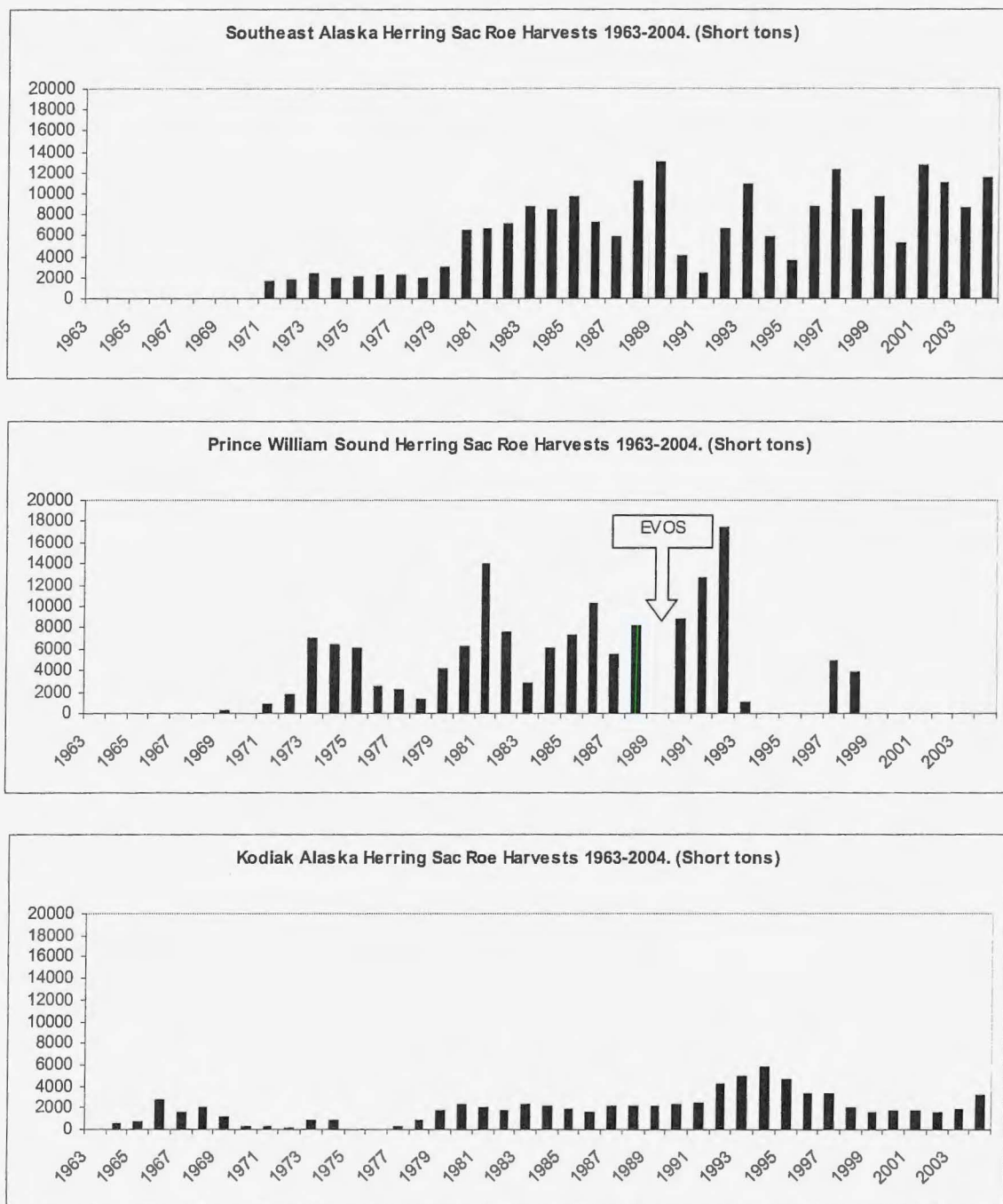


Figure 2 Alaska herring sac roe fishery commercial harvests from Southeast, Prince William Sound and Kodiak, Alaska, 1963 – 2004.

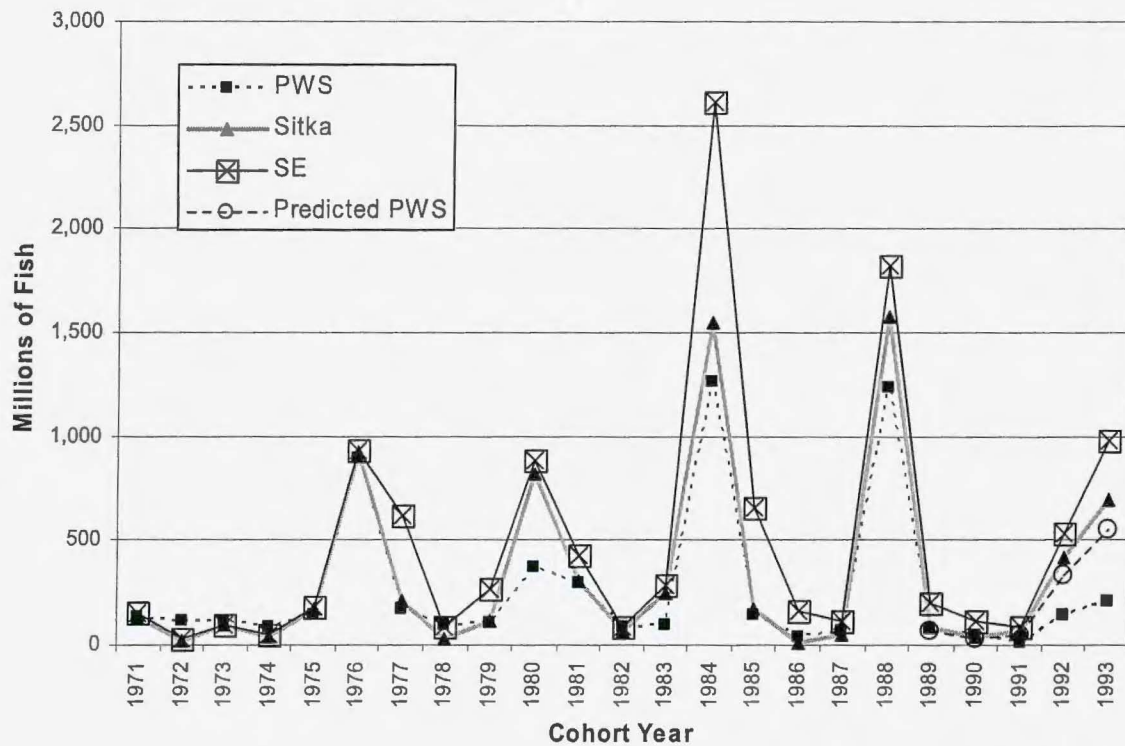


Figure 3 The recruitment time line for Prince William Sound (PWS), Sitka Sound, and southern Southeast Alaska (SE) herring populations as well as the predicted recruitment for PWS based on the pre-spill correlation with Sitka. Numbers used in figures is available by request.

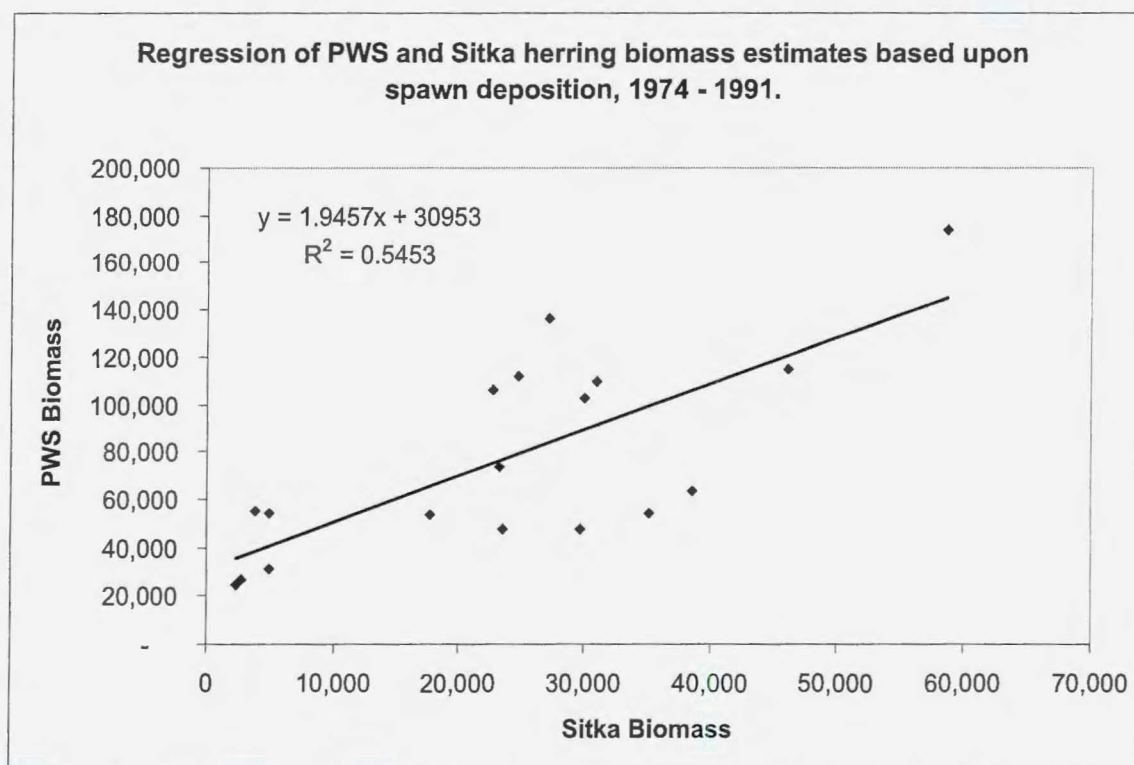
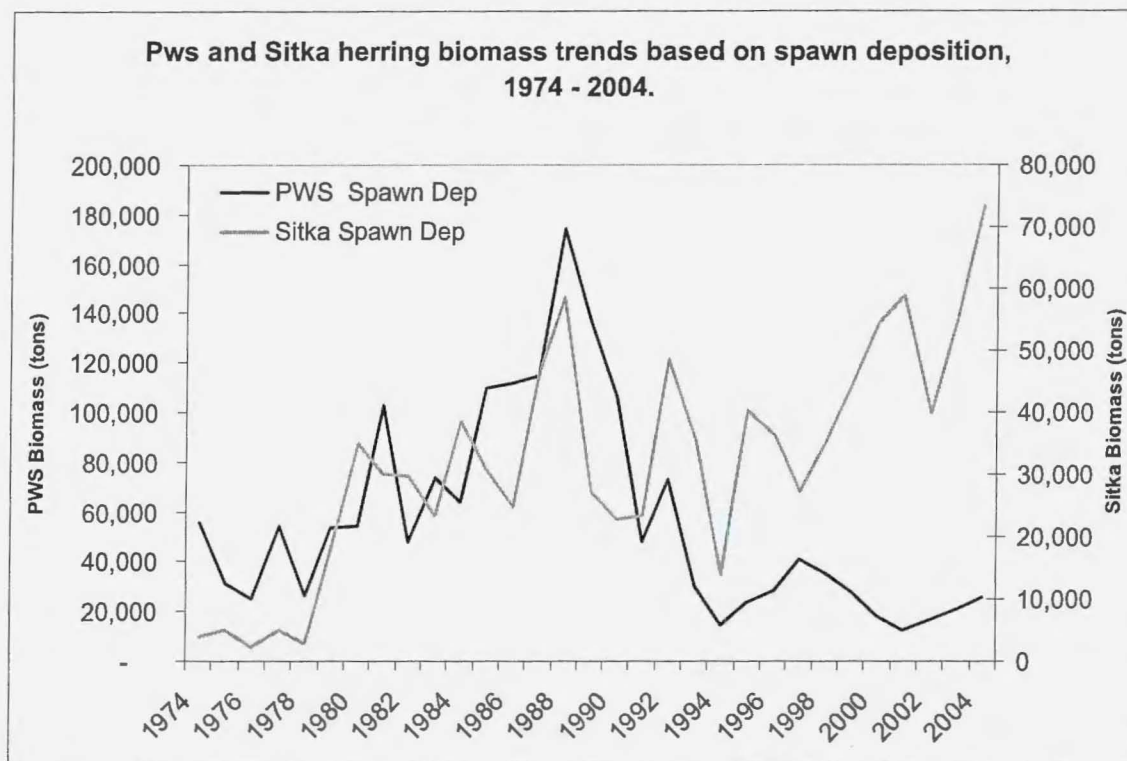


Figure 4. Prince William Sound herring biomass trends based on spawn deposition plotted against Sitka Sound herring biomass trends from spawn deposition, 1974 – 2004. (upper graph) Regression of Sitka Sound herring biomass trends (x variable) and Prince William Sound herring biomass trends (y variable), for the years 1874 – 1991. (lower graph)

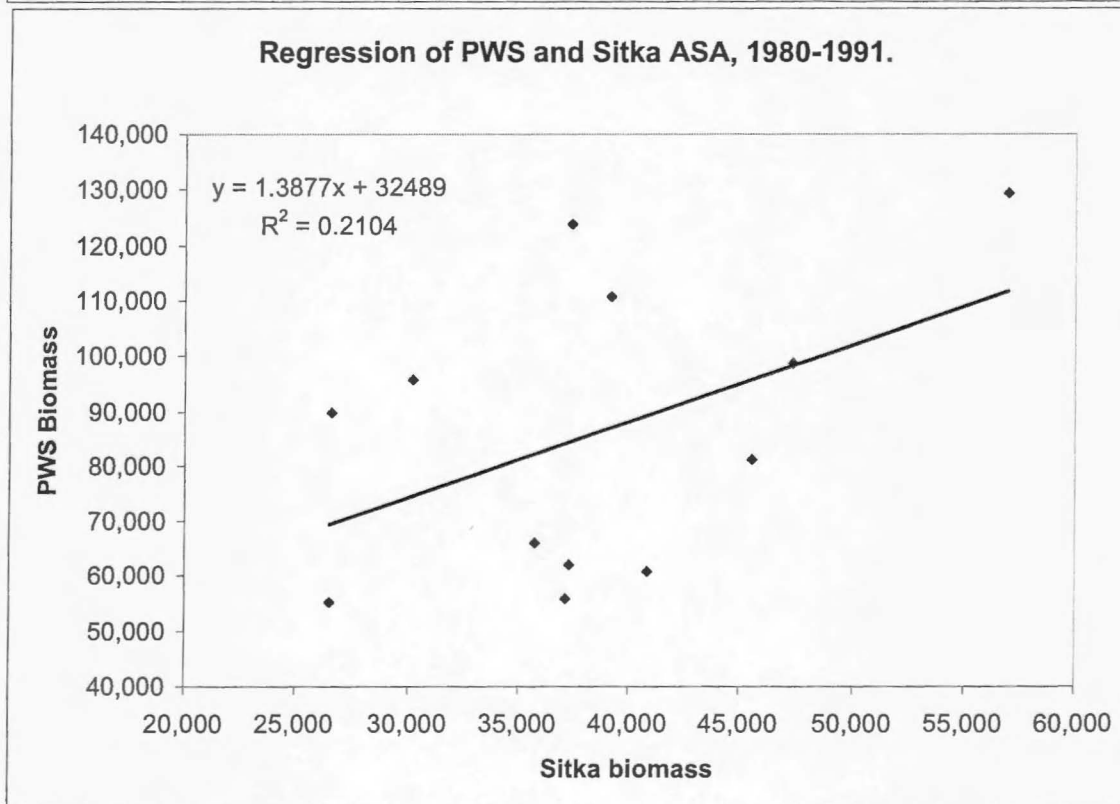
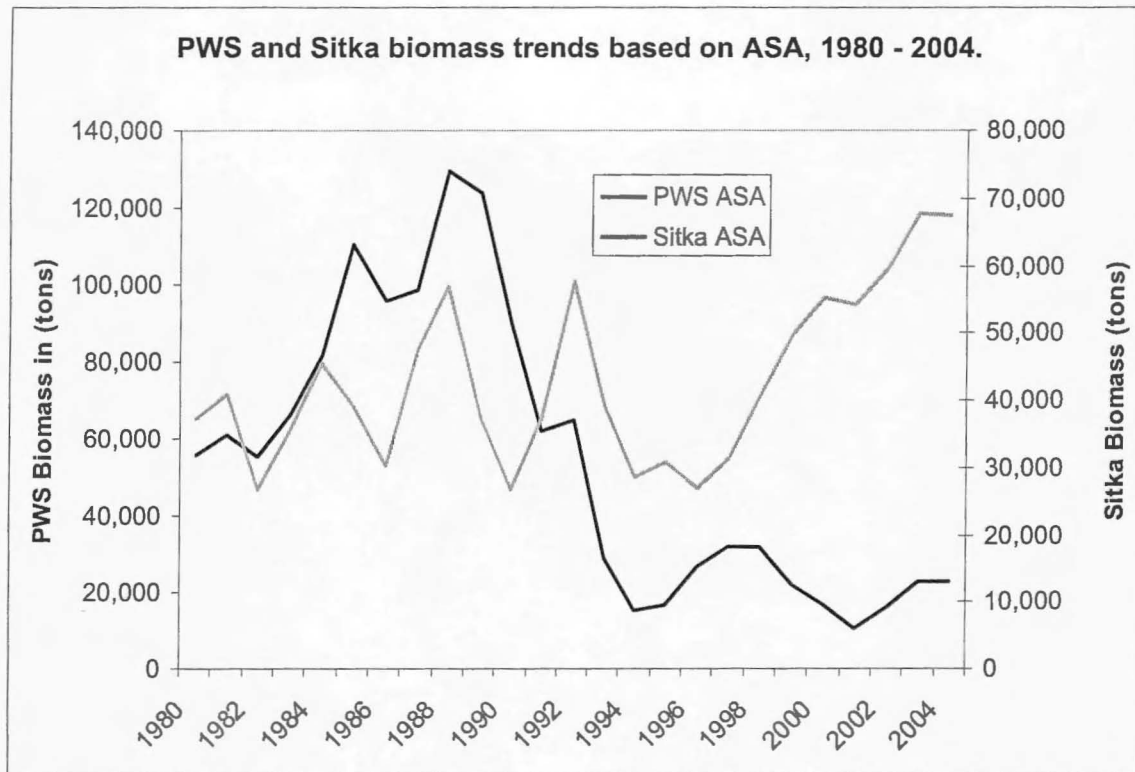


Figure 5. Prince William Sound herring biomass trends based on Age Structured Analysis (ASA) plotted against Sitka Sound herring biomass trends from ASA, 1974 – 2004. (upper graph) Regression of Sitka Sound herring biomass trends (x variable) and Prince William Sound herring biomass trends (y variable), for the years 1874 – 1991. (lower plot)

Monitoring Pacific Herring Abundance with Combined Acoustic and Optical Technologies

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Abstract - The Prince William Sound Science Center has monitored the abundance of Pacific herring in Prince William Sound, Alaska, since 1993. The effort has expanded in the past three years because of the critical role of herring as winter-period forage for the endangered Steller sea lions. The new effort includes more seasonal coverage in Prince William Sound and expansion to herring populations around Kodiak Island. While acoustic applications for Pacific herring are well developed, species information has required expensive direct capture techniques. In the past three years, underwater cameras have been used for species identification. This application has become very effective both for identification and information on school structure and behavior.

I. INTRODUCTION

There is increasing recognition of the failure of single-species models, and the corresponding need to change to an "ecosystem-based fisheries management". This recognition has been embodied in the recent reports of the US Commission on Ocean Policy and the PEW Oceans Commission [1] [2]. However, it is also clear that even these commissions do not adequately understand what "ecosystem-based fisheries management" is, and too many people view this as simply a mandate to go from single-species models to multi-species models. That is not the answer. The fundamental weakness of current fisheries management is the lack of fishery-independent observational data [3].

The vast extent of the marine environment makes direct sampling, or direct observation, very difficult. That difficulty is one of the main reasons why fisheries managers have neglected this approach in favor of fishery-dependent information such as catch data. However, the scales are not insurmountable with the correct approach [4]. That approach includes both application of high speed observational tools and optimized sampling strategies. In this paper, I use the acoustic monitoring program for Pacific herring in Prince William Sound (PWS), Alaska, to demonstrate how an ecosystem-focused observational program can address the deficiencies of historic fisheries management.

II. METHODS

It is well understood by experts in undersea warfare and by most commercial fishermen that underwater acoustics is an extremely powerful tool for detecting and quantifying objects in the ocean, whether fish, submarines, or even zooplankton. However, fisheries managers, with

rare exceptions, have not adequately used this powerful tool. There are several reasons for this deficiency. One is the historic stress by management on fishery catch data. Why make the effort to actually look at what is in the ocean, when fishermen will bring them back to you. However, history is making it increasingly clear that this approach has failed. Another limitation to acoustics is its complexity, which intimidates many biologists [5]. However, methods and equipment have become very standardized over the past decade. We use BioSonics digital echosounders at PWSSC, a legacy of my several years working for that company. We deploy the transducers on towing vehicles for flexibility, and typically use chartered commercial fishing vessels for our surveys. Our experience shows that acoustic methods are very precise. The precision (95%) of pollock population estimates in PWS is $\pm 10\%$, that of herring $\pm 20\%$.

One disadvantage of acoustic techniques is limited biological information including species and size/age structure [6]. Direct sampling using nets is typically required to overcome this limitation. We use both purse seines and midwater trawls. Direct capture is relatively expensive. When the herring survey effort was expanded to the Kodiak Archipelago in 2001, we developed underwater video cameras for species identification [7]. These proved to be very effective and have been expanded to all our acoustic surveys. More recently we have begun to explore the use of cameras and lasers to obtain size information. We also added infrared scanning technology to our night-time surveys to collect additional biological data on associated marine mammal and bird abundance along our acoustic transects [8].

High speed sampling techniques alone are not the total solution for fish assessment. The vast extent of the marine environment mandates the application of efficient survey designs. The optimal survey condition for an organism is a contracted, stable distribution [4]. For herring, we take advantage of a highly contracted overwinter distribution. As a result, instead of needing to address all of PWS, a sampling area of 10,000 sq. km, we can normally focus on 1% of that. In addition, while scientific acoustics provides a relatively high speed sampler, but we improve that efficiency with aerial and sonar surveys and we also incorporate community observations from fishermen and hunters transiting PWS and community observations of spawn. Finally, we verify and update our procedures each year to make sure nothing has changed or been missed.

Acoustic surveys of herring in PWS were initiated 1993 after a collapse of the herring stock became apparent.

Previously, the stock had been managed using an age-structured model [9]. Acoustic surveys have been conducted annually since 1993.

III. RESULTS

The PWS herring population in 1988 was estimated by the age-structured model to be above 100,000 mt [9]. The initial acoustic survey in 1993 resulted in an estimate of only 17,000 mt, thus verifying that a collapse had occurred. The population has remained far below the levels that occurred prior to the EXXON VALDEZ Oil Spill (EVOS) in 1989 (Fig. 1). Although all the acoustic surveys have been conducted after the population crash, we were able to compare the acoustic survey estimates from 1993 to 2002 with other measures of abundance [4]. We found a good correlation ($r = 0.78$) with the annual observations of mile-days of spawn from aerial surveys (Fig. 2). We used the correlation to hind-cast the herring abundance to 1973. The hind-cast suggests that the herring population gradually increased to a peak in 1988. During this period, the acoustic-based hind-cast and age-structure model estimates were virtually identical (Fig. 3). However, the hind-cast indicates that a precipitous decline began in 1989, the year of the spill. In contrast, the age-structured model estimates indicated continuing high population levels through 1992, followed by a catastrophic collapse.

IV. DISCUSSION

Age-structured models like the one used for PWS herring typically assume a constant natural mortality [9]. If natural mortality increases for some reason, the model will overestimate abundance. The deviation of the age-structured model estimates from that of the acoustic-based hindcast after 1988 suggests a substantial change in natural mortality synoptic with EVOS.

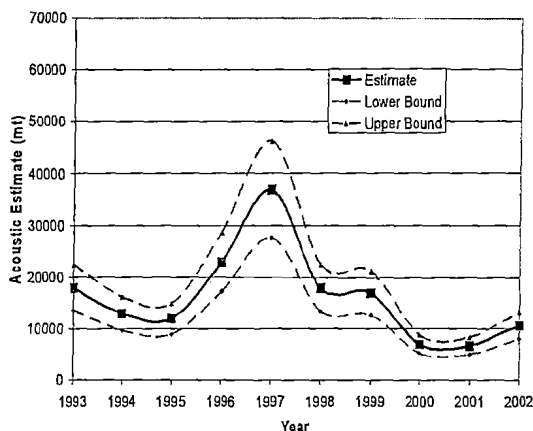


Fig. 1. Estimates of herring biomass from acoustic surveys from 1993 to 2002.

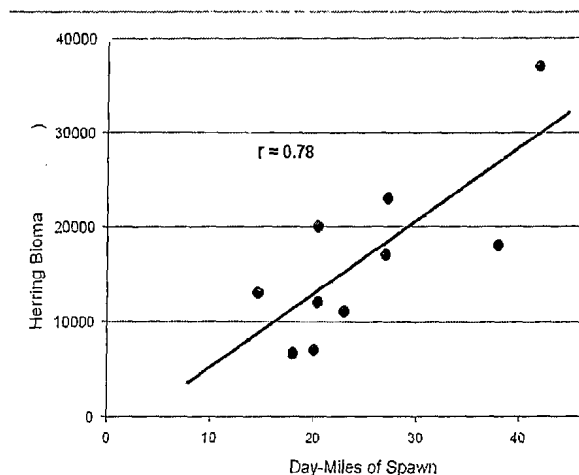


Fig. 2. Relation between acoustic estimates of herring biomass (mt) and aerial surveys of herring spawn (milt), 1993-2002

Research by Thorne and Thomas has documented that herring come to the surface to gulp air on a nightly basis [10]. This behavior provides a direct mechanism for contamination by a surface oil spill. Outbreaks of viral hemorrhagic septicemia, ichthyofanus, and other disease factors were observed in herring after EVOS [11] [12] [13]. It is very likely that predator-induced natural mortality on herring increased subsequent to the oil spill as a result of their impaired condition.

Additional evidence that the herring population decline began immediately after EVOS is provided by parallel collapses of marine birds and mammals that depend on herring for critical overwinter forage. The Steller sea lion trends provide the best evidence for two reasons. First, previous studies concluded that they were not directly impacted by the oil spill itself, unlike many seabird populations [14]. Second, Steller sea lions have been shown to migrate into PWS during winter in proportion to the abundance of herring [4] [7]. Comparison of SSL counts in PWS with herring abundance shows high correlation with the estimates from the acoustic-based hindcast, but poor correlation with the estimates from the age-structured model (Fig. 4).

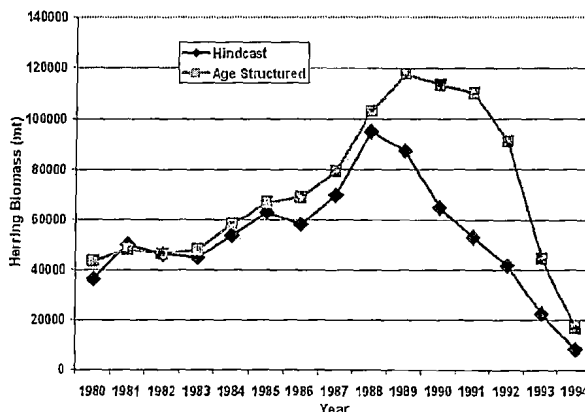


Fig. 3. Comparison of estimates from age-structured model and acoustic-based hindcast, 1980-1994.

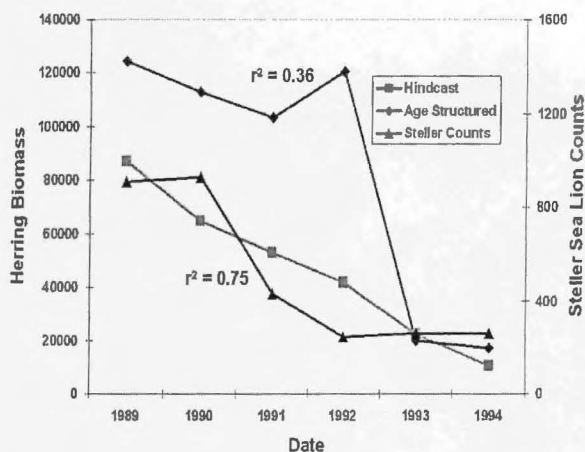


Fig. 4. Comparison of herring biomass estimates in PWS from age-structured model and hindcast with counts of Steller sea lions, 1989-1994

An examination of the geographic distribution of Steller sea lion declines throughout the Gulf of Alaska in the decade following EVOS shows that the focal point of the decline was PWS. It is apparent that the catastrophic loss of critical over-winter forage associated with the herring population crash caused impacts well beyond the geographic boundaries of PWS itself.

V. CONCLUSIONS

Past fisheries management practices have generally failed because of the reliance on fishery-dependent data, single-species focus and lack of independent observational data. It is clear from the recent report of the U.S. Commission on Ocean Policy, that the need for "ecosystem-based fisheries management" is recognized. However, without corresponding recognition of the need for effective long-term fishery-independent observational data, we will continue to mismanage commercial fisheries and be unable to understand ecosystem changes and their consequences.

Acoustic techniques are the well suited for aquatic applications because of their high sampling power. However, the techniques need to be used in combination with efficient survey designs that take full advantage of the distributional characteristics of the target organisms. Optical and capture techniques have limited sampling power, but can add to observational capability when used in conjunction with acoustics.

Use of this approach has allowed us to document both immediate and long-term damage to the herring population in PWS from EVOS, as well as indirect impacts of EVOS that resulted from the subsequent herring population crash, including previously undetected damage to the endangered Steller sea lion population.

Acknowledgments

This research has been supported by the Oil Spill Recovery Institute, the University of Alaska, Fairbanks through the Cooperative Institute for Arctic Research (CIFAR), and the National Marine Fisheries Service under Award Number NA04NMF4390161.

The contribution of my colleague, Professor Gary Thomas of the Rosenstiel School of Marine and Atmospheric Sciences, Miami, FL, is gratefully acknowledged.

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Good Morning Trustee Council members and staff.
My name is Tim Joyce, I am the Mayor of Cordova.

I am here today to speak to you about injured resources and their state of recovery as well as provide a method for the Trustee Council to restore an injured service in Cordova - that being tourism. Since the oil spill, the Trustee Council has spent hundreds of millions of dollars in an effort to restore the many injured resources. Some of those resources have recovered while others have not. In the definitions of the Exxon Valdez Restoration Plan the words "Restore" or "Restoration" means "any action that endeavors to restore to their pre-spill condition any natural resource injured, lost, or destroyed as a result of the Oil Spill and the services provided by the resource, or that replaces or substitutes for the injured, lost or destroyed resource and affected services. Restoration includes all phases of injury assessment, restoration, replacement, and enhancement of natural resources, and acquisition of equivalent resources and services."

Replacement or acquisition of the equivalent means "compensation for an injured, lost or destroyed resource by substituting another resource that provides the same or substantially similar services as the injured resource." In addition to restoring natural

resources, "funds may be used to restore reduced or lost services (including human uses) provided by injured resources. Humans use the services provided by resources injured by the spill in a variety of ways: subsistence, commercial fishing, recreation, and tourism."

The restoration plan goes on to say that "restoration activities may be considered for any injured resource or service." That "restoration will focus upon injured resources and services and will emphasize resources and services that have not recovered. Restoration actions may address resources for which there was no documented injury if these activities will benefit an injured resource or service." And "priority will be given to restore injured resources and services which have economic, cultural and subsistence value to people living in the oil spill area..." On your agenda today is an updated list of injured resources and the list of lost or reduced services. That list indicates that tourism has not recovered.

Our request for funding the Cordova Center will go a long way to restore the reduced or lost service of tourism. Once again the restoration plan states that "Some commercial recreation and tourism businesses were injured by the reduction in visitors and visitor spending as a result of the spill.... The quality of

recreation experiences decreased as a result of the spill.... The oil spill caused injury to the way people perceive recreational opportunities in the spill area."

Tourism was a budding industry in Cordova prior to 1989. However, after the oil spill, people ~~no longer~~^{couldn't} ~~put~~ Cordova and PWS ~~on the list of places to go~~^{with the oil spill}. It is only recently after years of work and thousands of dollars of advertising by cities, chambers of commerce and private individuals that people are starting to return to the area. Tourism was and still is a reduced and damaged service that has not recovered.

An attempt was made in Seward to address some of the injured resources and human services with the construction of the Seward Sealife Center. A similar attempt was made in Kodiak with the construction of the Alutiiq Heritage Center. Cordova has a proposal before you to address the restoration of the injured human service of tourism with the Cordova Center.

Several years ago, then Senator Frank Murkowski called Cordova the Ground Zero of the oil spill. Cordova has suffered terribly since the oil spill as you all know. The herring fishery was a valuable economic stimulus to Cordova in the 1980's and early 1990's. After the herring crash in 1993 that

spring time economy disappeared. Even now, the Trustee Council is struggling to develop a recovery strategy for herring. In the mean time, Cordova has lost millions of dollars in economic activity related to herring. So not only has Cordova suffered from the loss of a herring fishery that has not been restored, but we have also lost the tourism economy that has not been restored.

Cordova has the support of the community, the state government and the federal delegation to construct the Cordova Center. The city has already invested over \$1/2 million in this project, the state has allocated over \$1 million to this project and the federal delegation has provided over \$2.5 million. I have with me a petition signed by approximately 150 people in Cordova requesting the EVOS TC to fund the portions of the Cordova Center that will work to restore injured human services. I am here representing those people. ~~We~~^a have letters of support *signed by* ~~from~~ both Senator Albert Kookesh and Representative Bill Thomas, to have EVOS fund the Cordova Center. The Alaska delegation in Washington DC has also indicated ~~that they would also supply, in writing, support for the EVOS TC~~ to fund projects like the Cordova Center. All of these people understand how important the Cordova Center

is to the recovery of the injured and still recovering human services in Cordova.

It is time for the EVOS TC to address the injured human service of tourism that has not recovered. If they do, the TC could add one more item to the list of recovered injured or lost resources and services ~~and~~ that ~~would be~~ ⁱⁿ tourism in Cordova. We were injured and have not recovered and we are asking you now to show that you truly are trying to restore injured resources and services by funding the Cordova Center.



State Capitol

Juneau AK, 99801-1182

SENATOR ALBERT M. KOOKESH
REPRESENTATIVE BILL THOMAS
SENATE DISTRICT C, HOUSE DISTRICT 5

November 13, 2006

The Honorable Tim Joyce
Mayor of Cordova
P.O. Box 1210
Cordova, AK 99574

Dear Mayor Joyce:

We would like to extend our continued support for the Cordova Center. This project will benefit Cordova, its residents and visitors in so many ways while directly affecting the human services restoration of a community deeply affected by the Exxon Valdez Oil Spill.

We certainly acknowledge the importance of continuing the outstanding scientific research conducted by the Prince William Sound Science Center and the independent researchers in Cordova and elsewhere in Prince William Sound. We know that many of the Trustees have been briefed on this project over the past two years, and we feel that the request of funds for construction of portions of the Cordova Center that have a nexus to the Exxon Valdez Oil Spill is justified and long overdue.

The City of Cordova has shown us that it is committed to funding the long-term operations and maintenance of this important facility and the City has done an excellent job of surveying the community about its needs while planning this project. Although many agree that the 1989 oil spill impacted humans and human services, it is more difficult to come to a consensus on tangible methods for restoration of those impacts. We concur with the City and the outgoing state administration that the Cordova Center can accomplish this restoration goal.

The Cordova Center will diversify and strengthen Cordova's local economy which is currently based on the fishing industry. It will provide space for scientific symposiums, and oil spill response training sessions. It will serve as an emergency response center, provide meeting space and will serve as the archive repository for historical oil spill documents.

Mayor Tim Joyce
November 13, 2006
Page 2

The Cordova Center will be a 34,000 square foot, ADA accessible multi-use facility designed to address the following EVOSTC, community, and regional needs:

- public outreach and information sharing center for EVOS Trustee Council;
- research sharing venue for Gulf of Alaska Ecosystem Monitoring and Research Program;
- diversification of Cordova's injured fishing and tourism-based economy;
- economic revitalization locally and regionally.

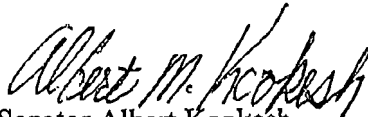
Upon completion of construction the Center will provide


- venue to host symposia, workshops, classes;
- library supporting scientific research and offering online access to EVOS program reports;
- repository for EVOS documents;
- Science Discovery Room;
- museum exhibit on oil spill history and advances in science, technology and industry stimulated by the spill;
- Oil Spill Response Emergency and Communications Center;
- GEM research findings educational displays, restoration effort results, art representing Delta and Sound ecosystems;
- Visitor Center promoting PWS tourism, outdoor recreation, seafood marketing.

The Cordova Center has been under intense scrutiny from the community, the legislature and state government for the past 4 years, and all have agreed that this is the right project to forward the human services restoration so lacking in our community since March 24, 1989. It is time to make our Alaskan coastal communities whole again.

We strongly urge the Trustees to make this project a reality. The Exxon Valdez Oil Spill Trustee Council can play a very major role in the economic turn-around of this oiled community. Your actions can leave a lasting legacy that will serve and teach generations of Alaskans about the lessons learned from this catastrophic event.

Sincerely,


Senator Albert Kookesh
Senate District C


Representative Bill Thomas
House District 5

**PETITION TO THE EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
TO SERIOUSLY CONSIDER THE PROPOSAL FOR FUNDING FOR THE
CORDOVA CENTER PROJECT, CITY OF CORDOVA, ALASKA**

**We the undersigned, request the Exxon Valdez Trustee Council fund associated
portions of the Cordova Center Project that will work to RESTORE the
HUMAN SERVICES of the community of Cordova INJURED in the
1989 EXXON VALDEZ OIL SPILL.**

We acknowledge the importance of the ongoing and excellent scientific research
conducted by the Prince William Sound Science Center and the independent researchers
in our community and elsewhere in Prince William Sound.

This request is for construction of portions of the Cordova Center that have a nexus to the
Exxon Valdez Oil Spill. The City of Cordova is committed to long term operations and
maintenance of this important facility.

The Cordova Center will diversify and strengthen Cordova's local economy, currently
based on the fishing industry. It will provide space for scientific symposiums, oil spill
response training sessions; serve as an emergency response center, provide meeting space
and store historical oil spill documents.

We the undersigned, feel this is an **appropriate** and **just** use of the Exxon Valdez Oil
Spill Restoration funds and will provide a vital impact in the restoration of our
community to pre-spill economy and wholeness.

PRINTED NAME	SIGNATURE	ADDRESS
Sylvia Lange	<i>Sylvia Lange</i>	One Cannery Row, Cordova
Billie Thomson	<i>Billie Thomson</i>	#33 McLaughlin, Cordova
Teddy King	<i>Teddy King</i>	Cordova AK
John Asp	<i>John Asp</i>	407 Railroad Ave Cordova
Greg Meyer	<i>Greg Meyer</i>	1 Cannery Row CDV
MAE LANGE	<i>Mae Lange</i>	707 RAILROAD NE Cordova
Heather WestGatton	<i>Heather WestGatton</i>	Box 1061 Cordova
Lane Dickerson	<i>Lane Dickerson</i>	Box 2206 cordovak
Kara Hostetka	<i>Kara Hostetka</i>	Box 2206
ATAVEN TIMBLIN	<i>Ataven Timblin</i>	P.O. Box 876
Paula Sudano	<i>Paula Sudano</i>	P.O. 2746
Dixon Sherman	<i>Dixon Sherman</i>	P.O. 1186
Bob Baughart	<i>Bob Baughart</i>	Box 241023 99824

**PETITION TO THE EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
TO SERIOUSLY CONSIDER THE PROPOSAL FOR FUNDING FOR THE
CORDOVA CENTER PROJECT, CITY OF CORDOVA, ALASKA**

We the undersigned, request the Exxon Valdez Trustee Council fund associated portions of the Cordova Center Project that will work to RESTORE the HUMAN SERVICES of the community of Cordova INJURED in the 1989 EXXON VALDEZ OIL SPILL.

PRINTED NAME	SIGNATURE	ADDRESS
Danny Ackmann	<i>Danny Ackmann</i>	2357
MIKE NAK	<i>Mike Nak</i>	1572
BRAD STOSTEDT	<i>Brad Stostedt</i>	2066
Majel E. Smith	<i>Majel Smith</i>	975
Glenna Woodruff	<i>Glenna Woodruff</i>	Box 975
Karen Swartzbart	<i>Karen Swartzbart</i>	Box 233
Misa Laird	<i>Misa Laird</i>	Box 2003
NICHOLE PHILLIPS	<i>Nicole Phillips</i>	Box 1165
Matt Kemans	<i>Matt Kemans</i>	# 796
Snell Brown	<i>Snell Brown</i>	Box 2347
Ria Hill	<i>Ria Hill</i>	Box 1184
E Pudwill	<i>E Pudwill</i>	Box 1748
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Guy Beedle	<i>Guy Beedle I</i>	Box 2234
ROBERT J. PUDWILL	<i>Robert J. Pudwill</i>	Box 1748
Cindy Appleton	<i>Cindy Appleton</i>	Box 1745
SCOTTE MCKENZIE	<i>Scott McKenzie</i>	Box 2071
Karla Herdan	<i>Karla Herdan</i>	Box 514
Zebie Z. Hurst	<i>Zebie Z. Hurst</i>	PO Box 632
E Beedle	<i>E Beedle</i>	Box 1023
Tason Barer	<i>Tason Barer</i>	2631 Sp. Anchor Dr. Anch AK
Sasha Schen	<i>Sasha Schen</i>	3700 First Rd Anch AK
Lynn R. West	<i>Lynn R. West</i>	415 Cordova, AK 99574
Linda Grant	<i>Linda Grant</i>	Box 1342
Kate Wergel	<i>Kate Wergel</i>	Box 525 Cdv.
Donna Platt	<i>Donna Platt</i>	Box 1604
Sheri Burella	<i>Sheri Burella</i>	Box 1604
Geri Lynn Pirtle	<i>Geri Lynn Pirtle</i>	Box 2282 Cdv, AK

**PETITION TO THE EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
TO SERIOUSLY CONSIDER THE PROPOSAL FOR FUNDING FOR THE
CORDOVA CENTER PROJECT, CITY OF CORDOVA, ALASKA**

We the undersigned, request the Exxon Valdez Trustee Council fund associated portions of the Cordova Center Project that will work to RESTORE the HUMAN SERVICES of the community of Cordova INJURED in the 1989 EXXON VALDEZ OIL SPILL.

PRINTED NAME	SIGNATURE	ADDRESS
Melina Meyer	<i>Melina Meyer</i>	Che Cannery row
Lisa Jones	<i>Lisa Jones</i>	Box 293, CORDOVA
Jon BRANSHAW	<i>Jon Branshaw</i>	Box 2241 COV
Thea Thomas	<i>Thea Thomas</i>	Box 1566 COV.
Monika Reghetti	<i>Monika Reghetti</i>	Box 685
Jan D. Johnson	<i>Jan D. Johnson</i>	Eagle River, Alaska
Matt SENA	<i>Matt Sena</i>	802 E 10th Ave #28 99501
John Hesse	<i>John Hesse</i>	8541 Rainier Circle 99507
Phil Geraer	<i>Phil Geraer</i>	16935 Yuma Dr 99577
Brooklin Koembildt	<i>Brooklin Koembildt</i>	Mile 16 Copper River Hwy
Phong Bui	<i>Phong Bui</i>	1727 F. W. L. Blvd 99501
Christophe de los Santos	<i>Christophe de los Santos</i>	4835 Ridgestone Houston, TX 77053
Erik T. Rommestad	<i>Erik T. Rommestad</i>	Box 1496 Cordova, AK 99501
KAY ASHTON	<i>KAY ASHTON</i>	1526 D ST ANCHORAGE AK 99501
JANET STERNICK	<i>Janet Sternick</i>	306 Amundt Oregon City, OR 97130
Jacqueline A. Campbell	<i>Jacqueline A. Campbell</i>	2040 S. Cedar Dr. Wasilla, AK 99683
COLLEEN BRIDGE	<i>Colleen Bridge</i>	PO Box 231087 Anchorage 99523
Josephine Simmons	<i>Josephine Simmons</i>	4591 N. Charley Dr. Wasilla, AK 99683
RICKI BERTHEAD	<i>Ricki Berthead</i>	1000 N. KENYON ST. ANCHORAGE AK 99501
VERN JENKINS	<i>Vern Jenkins</i>	POB 221 ST. ANTHONY ID 83445
Brenda K Jager	<i>Brenda K Jager</i>	21178 Boulder Chugiak AK 99567
Boguslaw Wierzbicki	<i>Boguslaw Wierzbicki</i>	6001 Roughed Circle Palmer 99645
John Hutton	<i>John Hutton</i>	P.O. Box 1354
Almut KOOKAK	<i>Almut Kookak</i>	Box 91 Amborn, AK 99820
KRAVIN MOOREHEAD	<i>Kravin Moorehead</i>	Box 34 HOSLIA AK 99437
William A Thomas Jr	<i>William A Thomas Jr</i>	Box 912 Anchorage 99507
Marilyn Leland	<i>Marilyn Leland</i>	1032 Potwade Circle Anchorage 99503
MARTIN MOE	<i>Martin Moe</i>	Box 99, CORDOVA 99501

SEN, *

REP. *

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PRINTED NAME	SIGNATURE	ADDRESS
SALLY CAMPBELL	<i>Sally Campbell</i>	Box 826 Cordova, ALc. 99574
Joann Thomas	<i>Joann Thomas</i>	PO Box 284 - 99574-0284
Florencio Espejo	<i>Florencio Espejo</i>	PO Box 134 99574
Susan E. Kesti	<i>Susan E Kesti</i>	PO Box 2683 99574
Loral Elshoff	<i>Loral Elshoff</i>	PO Box 1216 99574
Kim Brales	<i>Kim Brales</i>	PO Box 252 99574
Carmen Smallwood	<i>C. Smallwood</i>	Box 453 99574
John F Thomas	<i>John F Thomas</i>	Box 284 99574
BARBARA Beedle	<i>Barbara Beedle</i>	Box 819 99574
KARL BECKER	<i>Karl Becker</i>	Box 1185 99574
Pendora S. Oswald	<i>Pendora S Oswald</i>	1303 99574
Rita Hernandez	<i>Rita Hernandez</i>	Box 686 99574
Andrea Vathas	<i>Andrea Vathas</i>	Box 1801 Cordova
Molly Mulvaney	<i>Molly Mulvaney</i>	Box 1033 Cordova

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PRINTED NAME	SIGNATURE	ADDRESS
CATHY SHERMAN	<i>Cathy Sherman</i>	POB 1186 99574
Paula Payne Barcham	<i>Paula Payne Barcham</i>	Box 2511 CDV 99574
Sarah A Petersen	<i>Sarah A Petersen</i>	Box 1065 CDV 99574
Jan E. Richardson	<i>Jan Richardson</i>	Box 1574 CDV 99574
Sharon Ermold	<i>Sharon Ermold</i>	Box 746 CDV 99574
John Chancy Harmon	<i>J Chancy Harmon</i>	Box 231 CDV 99574
Shirley Cain	<i>Shirley Cain</i>	Box 1225 CDV 99574
Jeff Phillips	<i>Jeff Phillips</i>	Box 1565, CDV 99574
Frances Samuelson	<i>Frances Samuelson</i>	Box 593, CDV 99574
DAN GAGNON	<i>Dan Gagnon</i>	Box 792, CDV 99574
Pete Mickelson	<i>Pete Mickelson</i>	Box 325, CDV 99574
Linda McConnell	<i>Linda McConnell</i>	Box 888 CDV 99574
Nancy DiNapoli	<i>Nancy DiNapoli</i>	Box 1174
PATIENCE ANDERSEN FAULKNER	<i>Patience A Faulkner</i>	Box 2574

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PRINTED NAME	SIGNATURE	ADDRESS
Debra Arvidson	Debra Arvidson	1923 Cordova AK 99574
Charles D. Branch	Charles D. Branch	Box 1692 Cordova
FRANCES A. Mallory	Frances A. Mallory	P.O. Box 1383 Cordova AK 99574
ROBERT D. DOTSON	Robert D. Dotson	P.O. Box 1054
CAROLYN S. DOTSON	Carolyn S. Dotson	P.O. Box 1054
Emily Branch	Emily Branch	PO BOX 1781 Cordova
ALVIN B FULTON	Alvin B Fulton	P.O. Box 272 Cordova
DIXIE LAMBERT	Dixie Lambert	Box 614 Cordova
Tina E Charles	Tina E Charles	Box 1695 Cordova
Gael Hahn	Gael Hahn	Box 1470 Cordova
Mildred Hodges	Mildred Hodges	Box 141 Cordova
Martha K. Nichols	Martha K. Nichols	Box 235, Cordova, AK 99574
Donita Belcher	Donita Belcher	Box 1215 Cordova AK
Darlene Madsen	Darlene Madsen	Box 1941 Cordova, AK 99574
Kay Adams	Kay Adams	Box 961 Cordova AK
Kristin Korkborg	Kristin Korkborg	Box 1754 Cordova, AK
Glen Anderson	Glen Anderson	Box 1615 CDV AK
JOE Cook	Joe Cook	Box 215 CDV AK
VIRGINIA THOMAS	Virginia Thomas	P.O. BOX 623 CDV AK
S. RICHARD THOMAS	Steve Thomas	P.O. Box 623 CDV AK
Trudy Bondzak	Trudy Bondzak	PO BOX 86 CDV AK
Jerry Bondzak	Jerry Bondzak	PO BOX 86 CDV AK
Linda Jonsson	Linda Jonsson	PO Box 85 CDV AK
Lisa Carroll	Lisa A. Carroll	PO Box 1071 Cordova, AK 99574
STEVE UJIDKA	Steve Ujodka	PO Box 932 CORDOVA, AK 99574
Mike Arvidson	Mike Arvidson	P.O. 1923 Cordova
LaRue Barnes	LaRue Barnes	Box 925 Cordova
Toni Godes	Toni Godes	Box 1711 CDV

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[illegible]

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PRINTED NAME	SIGNATURE	ADDRESS
Judy M. Fulton	<i>Judy M. Fulton</i>	Box 272, Cordova, AK
inene wulden		Box 850, Cordova, AK
Nicole D. Bean	<i>Nicole D. Bean</i>	Box 1235, Cordova AK
melissa Bryant	<i>melissa Bryant</i>	Box 2462 Cordova, AK
William T. Kenyon	<i>William T. Kenyon</i>	Box 1269 Cordova, AK
L. B. A. P. P. A.		Box 639, Cordova, AK
Arteene D. Olsen	<i>Arteene D. Olsen</i>	Box 2042
Gaule Groff Belgarde	<i>Gaule Groff Belgarde</i>	Box 1632 Cordova, AK
Kay A. Groff	<i>Kay A. Groff</i>	Box 911 Cordova, AK
Michele Fisher	<i>Michele Fisher</i>	Box 2255 Cordova, AK
Piper Harding	<i>Piper Harding</i>	Box 856 Cordova AK 99574
Shannon Mallory	<i>Shannon L. Mallory</i>	Box 1551, CDV AK 99574
Laura Hanson	<i>Laura Hanson</i>	Box 2575 CDV AK 99574
Jill Torpy	<i>Jill Torpy</i>	Box 1590, CDV

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[illegible]

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PRINTED NAME	SIGNATURE	ADDRESS
Tim Joyce	<i>Tim Joyce</i>	P.O. Box 585, Cordova
Tanya Zastrow	<i>Tanya Zastrow</i>	P.O. Box 1702, Cordova
Nancy O'Brien	<i>Nancy O'Brien</i>	P.O. Box 2056, Cordova
Kirsti Tunica	<i>Kirsti Tunica</i>	Box 754 CdV
Suan Farzen	<i>Suan Farzen</i>	PO Box 1198
DANA SMYKE	<i>Dana Smyke</i>	P.O. Box 2022
Jason Fode	<i>Jason Fode</i>	P.O. Box 1382
PAUL MEYERS	<i>Paul Meyers</i>	PO Box 1571
Dirk LANG	<i>Dirk Lang</i>	PO Box 2072
David Smith	<i>David Smith</i>	PO Box 1471
Bruce Campbell	<i>Bruce Campbell</i>	P.O. Box 226
Christene Dunlap	Christene Dunlap	P.O. Box 1835
CHRISTENE DUNLAP	<i>Christene Dunlap</i>	P.O. Box 1835
Debra D. Srb	<i>Debra D. Srb</i>	PO Box 1069, Cordova

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[illegible]

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[illegible]



City of Homer

City Manager
491 East Pioneer Avenue
Homer, Alaska 99603
907-235-8121, X-2222

Fax: (907) 235-3148 E-mail: wwrede@ci.homer.ak.us Web Site: www.ci.homer.ak.us

November 13, 2006

Exxon Valdez Oil Spill Trustee Council
441 W. 5th Avenue, Suite 500
Anchorage, AK 99501

RE: Support for Funding Water Quality Protection Projects

Trustee Council Members:

I am writing to you in support of the use of remaining settlement funds to upgrade water quality protection facilities in communities directly impacted by the spill (including Homer).

The environmental protection of Kachemak Bay is critical to the citizens and businesses of this community. Our lifestyle and livelihoods depend on a healthy bay.

We appreciate the Council considering the use of some of the remaining settlement funds to help us protect the bay from impacts from the City's sewer system, the drainage collection system and the harbor.

At your November 14th meeting, we encourage you to vote in favor of using funds to construct the proposed economic restoration projects and upgrade water quality protection facilities in communities affected by the spill.

Sincerely,

CITY OF HOMER

Carey Meyer (for)
Walt Wrede

City Manager

Cherri Womac

From: Sylvia Lange [sylvial@alaska.com]
Sent: Wednesday, November 15, 2006 1:32 PM
To: Cherri Womac
Subject: EVOS testimony 11/14/06, attachment

Attachments: EVOS 11_14_06.rtf



EVOS 11_14_06.rtf
(6 KB)

Hello Cherri,

As requested, I am forwarding a copy of my public testimony on behalf of the Cordova Center Committee, regarding support and justification for the Cordova Center. Please forward it to members of the EVOS TC. Our thanks for the opportunity to present testimony.

Best Regards,
Sylvia Lange
Cordova, Alaska

EVOS TC, 11/14/06
Sylvia Lange
Cordova, Alaska

Greetings Trustee Council members and staff.....My name is Sylvia Lange. I am a lifelong Cordovan, Alaska Native and until recently, spent every summer of my life on boats in Prince William Sound and the Copper River Delta as a commercial fisherman. I now own and operate, along with my husband a hotel in Cordova, where we are raising our three children. I come before you today to speak in favor of the Cordova Center Project.

The economic effects of the oil spill on the community of Cordova are well documented and I will not revisit them here. We are doing what we can to restore our lives and livelihoods. Due to the long term nature of restoration of natural resources such as herring stocks and other effected resources, and the cyclical nature of fishing stocks, as well as market swings, we realize we must diversify from the single industry of fishing and fish related enterprises. Cordova has always had a small tourism and visitor industry, but it never received much attention due to the focus of the community on commercial fishing. The EVOS, and it's aftermath was a major distraction to our community and it's ability to focus on economic diversification for several years. The time has come to give the tourism and visitor industry attention, and provide for Cordova a more diverse and stable economy. We need to make sure our community survives to reap the benefits if and when a restored and healthy commercial herring fishery returns.

In the past several years, our community began a series of discussions on how to revitalize and diversify the economic structure of Cordova. One of the pivotal aspects of the long term plan for restoration of our economy & tourism is the construction of the Cordova Center, a 34,000 square foot, fully ADA accessible multi-use facility. The Center will combine a number of functions for the community of Cordova including **Conference Center, Library, Science Discovery Room, Museum, Oil Spill Response Center, EVOS Document Archive and Visitors' Center.** Partnerships & endorsements for the Cordova Center extend throughout the community including the U.S. Forest Service, U.S. Coast Guard, Native Village of Eyak, Tatitlek Corporation, Eyak Corporation and the Prince William Sound Science Center. The facility has received financial support from the City of Cordova, the Federal Government, State of Alaska, and individual contributions from community members and various civic organizations. **Our request submitted to the EVOS TC is a *one time request* for funding of a *portion* of the Center, the use of which will be directly linked to the restoration of the Sound and our community.**

The Cordova Center offers many exciting opportunities. **We believe it is strategically positioned to be a centerpiece of EVOS Trustee Council information sharing in the region.** The Cordova Center is poised to partner with and be a vehicle for the scientific community. It will be a showcase for the science of the Sound and can only enhance Cordova as the center of scientific research for the Sound. Throughout the building there will be educational displays of: the results of SEA, GEM and other EVOS related research findings; restoration efforts and their results; and of art representative of the ecosystems on the Delta and in the Sound. These displays will ensure that any visitor to the Center will have exposure to educational materials about the natural resources of the region and the progress of restoration efforts related to the EVOS. We also propose to be the repository for the archived EVOS materials now in storage, and burdening, the State of Alaska's archives. In the more central location of the Cordova Center, these materials can be digitized and made available for the study of the EVOS.

Everyone in Cordova and each one of us working on the Cordova Center project acknowledges and recognizes the vital importance of the recovery and restoration of the herring fishery to our community and Prince William Sound. We do not, and I emphasize, **do not** in any way, wish to discourage continued investment in this aspect of the Exxon Valdez Oil Spill Trustee Council's mission to restore this injured resource.

We do however, **request support for the Cordova Center project as a way to restore and aid in the recovery of the human services injured in the 1989 oil spill as well as providing needed augmentation to the study of the EVOS and related science.** The Cordova Center is key to restoration of a community that supports the herring and other fisheries of Prince William Sound. We, as a community need to strengthen our foundations so that when the herring industry recovers, as we all hope and pray it will, our community will be poised to offer the services necessary to the industry, that our community will be prepared to accentuate the industry and help it sustain a long and profitable future.

The Cordova Center is key to the full and complete restoration of Cordova. I strongly and wholeheartedly urge the Trustee Council to recognize this opportunity before you in which you can fulfill **your mission to restore human services** in an injured oiled community.

COMMENTS BY STACY STUDEBAKER
Chair – EVOS Public Advisory Committee
November 14th, 2006
EVOS TC Meeting

Good Morning Members of the Trustee Council,

I am Stacy Studebaker, the newly elected chairwoman of the EVOS PAC, former vice-chair, and 11 year PAC member. I was deeply honored by the unanimous vote of the PAC to give me my promotion. I am here today as the "face of the public" to report the highlights of the recent PAC meeting held on Nov. 2. I hope you have had a chance to review the minutes of our meeting, as it was a very productive one with more unanimous motions passed per hour than any group I've ever worked with.

The new PAC, recently appointed by the Secretary of the Interior to represent the public on all restoration matters, includes 15 representatives from communities all around the spill region. 14 out of the 15 were present at the meeting that lasted from 8:30 am until 6:00 pm as we had a very full agenda.

The PAC membership includes a very wide spectrum of the public with varied constituencies and political backgrounds representing local government, tribal government, scientists, sport hunting/fishing, subsistence users, and commercial tourism to name a few. This hardworking group and the motions and resolution they passed deserve consideration and respect today as the trustees make some important decisions.

In just 10 short months, Michael Baffrey has gotten the Restoration program back on track after a 2-3 year hiatus of chaos. He and his great staff are experts on restoration in many respects including restoring the public trust and participation as mandated in the Policies Common to All Action Alternatives in the 1994 Record of Decision Plan, which reads, "Restoration **must** include meaningful public participation at all levels – planning, project design, implementation, and review." The key word in that sentence is "must". Michael and his staff have also managed to restore the scientific integrity of the restoration program as well. The PAC is deeply appreciative of his openness and willingness to make our participation meaningful.

UPDATE TO INJURED RESOURCES AND SERVICES LIST

Michael and his staff presented the PAC with their update on the Injured Resources and Species List that had not been updated since 2002 and long overdue. The PAC commends EVOS staff, especially Kim Trust, for her excellent report.

Although there was a little good news in the updated report on the Injured Resources and Services List with 9 species and services out of the original 31 now determined as Recovered, including the encouraging comeback of common loons, the status of most everything else is still in the Recovering status (14), Not Recovering (3) or Unknown (5). The PAC recognizes that there is still a great deal of restoration work to be done on these injured species and resources and the current and future science should be focused on them.

The PAC supports the following proposed changes: Splitting the killer whale AB pod and Transient pod into two items, moving common loons, and Dolly Varden into recovered status, adding to the recovering status black oystercatchers, harbor seals, and harlequin ducks, and adding to the non-recovering status the killer whale AT1 (transient) pod. Also adding marbled murrelets to recovery unknown status.

It was the sense of the PAC that the movement of cormorants (3 species) from non-recovering to Recovered was premature as the numbers used for this change are on the low end of the range listed as recovered.

It was also the sense of the PAC to recommend a review of the recovery objectives for the injured species and resources as well as consideration of subdividing some of the definitions such as separating commercial fishing components by species rather than lumping them all together and determining them all recovering when the PWS herring stocks have virtually disappeared and the fishery is nonexistent.

Another suggestion was made that separating different types of tourism and recreation as well as subsistence by species would more accurately reflect reality.

The PAC unanimously voted to endorse the Trustee Council use of the October 25, 2006, Update to Injured Resources and Services list and recommends the list be updated annually.

OILED MAYORS LETTER of Oct. 27th, 2006

The PAC had a lengthy discussion on the Oiled Mayors letter that was distributed by the state trustees on October 27th with no public notice or input from the Public Advisory Committee, no review by the federal trustees or the EVOS staff for that matter. In other words, everyone was blindsided by this very inappropriate unilateral action.

The sense of the PAC member's reaction to this letter from the State Trustees to the Oiled Mayors was mostly extreme outrage at this circumvention of the proposal review process. The PAC agreed that while it may be appropriate for the oiled mayors to collaborate and submit proposals, this was not an appropriate way for making spending decisions. Some of the proposed projects appeared to be outside the scope of the settlement and the legally questionable. Though some of the projects may be meritorious, it was the objectionable way the public process was violated that was the issue.

The PAC unanimously passed the following resolution: READ verbatim.

PRE-PROPOSALS

This list of 12 pre-proposals also came as a surprise to most of the PAC members as this option was a last minute addition to the '07 Invitation with no public input or published guidelines. The PAC unanimously recommends that if the Trustee Council is going to entertain pre-proposals now or in the future, that a review process that includes the public be developed by the EVOS staff and put into place prior to the invitation.

2007 WORK PLAN, PARTS 1 & 2

Kim Trust made an excellent presentation to the PAC on the '07 Work Plan. She reviewed each of the 53 proposals (Herring and non herring) and answered our questions before we made our funding recommendations.

The sense of the PAC is that project work should stay within the budget means (not taking from the reserve principal) unless a particularly good project or opportunity arises that justifies spending some of the principal. Our recommendations are included on the spread-sheet and mostly concur with those of the Science Director, the Science Panel, and the Executive Director. Our total estimated costs for the "yes" proposals are about \$2.9 million.

HERRING

The public wants to see some action on herring!

The PAC supports the commitment of the council to develop a long-term Herring Recovery Plan that will identify activities needed to achieve recovery of herring stocks in PWS. This process began with the April Herring Workshop and will continue with the Herring Recovery Team that will meet soon. The PAC encourages the team to put together a draft plan with clear goals and objectives that the public can respond to in a series of meetings in the oil spill communities. When finalized, this plan will serve as the road map to guide future restoration work on herring, one of the most Non-Recovering and highly publicized of the injured species.

The PAC also recognized the unfortunate situation of not having this plan in place before the '07 Herring Proposal Invitation but supports the funding recommendations of EVOS staff and Science Panel to go ahead with some of the projects that would be needed no matter what form the plan takes. Also in the absence of a guiding science or herring plan, the PAC felt it was prudent to use previous funding levels as guidance. The PAC believes that herring predator studies in particular, while certainly very important, could be delayed.

OTHER DISCUSSION

PAC members discussed the present Community Involvement / Environmental Education program as administered primarily through the Youth Area Watch programs in Kodiak and PWS. PAC members recognized the value of such programs to students in remote villages and communities but questioned the very high price tags for each program considering how few children are actually served.

The sense of the PAC is that this should be the last year that our education program be funded in this manner (at '06 funding levels) and that we need to develop a more equitable way to administer community involvement/environmental education that embraces a larger number of students of all ages in all the oil spill area communities. PAC members would like to have a draft concept proposal for this program presented at their January 25th meeting and have the final plan incorporated into the '08 Invitation. PAC members volunteered to work on this in the interim.

FINAL COMMENTS

It is the unanimous sense of the PAC that the unilateral action of the State Trustees with the Oiled Mayors letter was not only a violation of public process but also an undermining of the positive progress that has been made by Michael Baffrey and his staff in the last 10 months. It is also rather obvious what the motives of the state are with this action. The public sees this as a move to spend down the restoration reserve in one swell swoop – or otherwise, “Cut and Run”.

I ask you, how can you even contemplate this when the state has acknowledged the long-term impacts of the EVOS by filing for the reopener? Likewise, how can you justify this when only 9 of the original 31 injured resources and services have recovered?

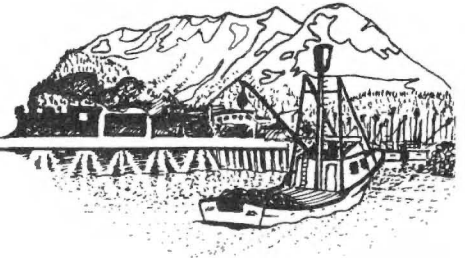
The PAC is opposed to shutting down the restoration program until there is full recovery of the majority of injured resources and services.

“Cut and Run” is certainly the easy way out rather than facing the complex responsibilities and opportunities at hand. The remaining restoration reserve fund is a one-time opportunity to gain a

deeper understanding of long-term oil spill impacts on marine ecosystems. How can you throw that opportunity away? Cutting and running also declares to the world that Alaska didn't face up to their full responsibility to hold the oil industry accountable.

The public is counting on the balance of power here today and hope that the federal trustees don't let them down.

CITY OF CORDOVA



November 7, 2006

EVOS Trustee Council

Dear members of the EVOS Trustee Council:

I am writing to voice my support of funding five proposals submitted to the Exxon Valdez Oil Spill Trustee Council for FY07. I think the five proposals listed below have merit and will provide information useful in restoring herring populations in Prince William Sound.

1. Seabird Predation on Juvenile Herring in PWS. (*Project Number 070814*). Dr. Mary Anne Bishop.
2. Characterization of Pacific Herring Nursery Habitat in PWS. (*Project Number 070815*). Dr. Richard Crawford.
3. Physical Oceanographic Factors Affecting Juvenile Pacific Herring Nursery Habitats. (*Project Number 070817*). S. M. Gay.
4. PWS Herring Forage Contingency. (*Project Number 070811*). Dr. Richard Kline.
5. Trends in Adult and Juvenile Herring Distribution and Abundance in PWS. (*Project Number 070830*). Dr. Richard Thorne.

The Prince William Sound Science Center and Oil Spill Response Research Institute are well respected research organizations with world class scientists overseeing these projects. Most of these projects are multiyear projects. All of them have a very high probability of success in providing information crucial in the EVOS TC goal of restoring herring in PWS. As Mayor of Cordova, I support funding of these five projects submitted by the Prince William Sound Science Center.

Respectfully,

Timothy L. Joyce, Mayor
City of Cordova

TLJ:lk



November 13, 2006

Exxon Valdez Oil Spill Trustee Council
441 West Fifth Avenue, Suite 500
Anchorage, AK 99501

Dear Commissioner Fredriksson, Dr. Balsiger, Commissioner Campbell, Ms. Pearce, Mr. Meade and Attorney General Marquez,

I am writing to urge your support of two projects (070811 and 070814) included in the proposed FY07 work plan. These projects focus on juvenile herring's ability to survive their first winter and on predation of juvenile herring in winter by seabirds. Both are recommended for funding by the Science Panel and, in one case, also by the Science Director and Public Advisory Committee. They are not included in the Executive Director's recommendation for funding.

I was very pleased that a request for proposals was issued early last summer and that it focused on Pacific herring. The PWS Science Center began its herring research program in 1993, the first year that the serious reduction of the population was observed. We have continued herring population assessments, in conjunction with the Alaska Department of Fish and Game, every year since then and we were very active in the Sound Ecosystem Assessment program.

More recently, several of our staff participated in the April 2006 planning workshop which, thanks in large part to the efforts of Michael Baffrey and Kim Trust, served as an excellent vetting of ideas among those involved in past herring research programs. That workshop resulted in a broad spectrum of well-defined research areas, including predation, disease, mapping, modeling, oceanographic and otolith studies.

I agree with your Executive Director's actions to convene a steering committee as a follow-up to last April's workshop with the goal of developing a herring recovery plan for Prince William Sound. Concurrent with that planning effort must be the collection of data necessary to any recovery plan. It will only set us further back to delay another year.

The April workshop participants agreed that predation and disease issues were the two most important processes currently impacting herring. Integral Consulting's recent report to the EVOS Trustee Council recommends herring research "toward defining the relative contribution of predation and disease as limiting factors in recovery."

We know that recruitment of herring is critical for the population to recover and we also know that recruitment is variable. Currently, we have to wait until a given herring population year class reach their third year of life in order to confidently assess the size or strength of that year class. Dr. Tom Kline's project proposes to investigate the variability of the juvenile herring earlier, through a comparison of current and past (using data from the SEA program) whole body energy content and the natural stable isotope abundance. Without the proposed data from Kline's project, we will not have a way to assess how well the herring are doing until they reach year three.

The project "Seabird Predation on Juvenile Herring in Prince William Sound" is the only project in both the herring and restoration work plans that will investigate winter food resources (in particular juvenile herring) for seabirds, including for marbled and Kittlitz's murrelets (both of which are "unknown recovery"), as well as pigeon guillemot ("not recovering"). The co-principal investigators of this project, Dr. Mary Anne Bishop and Dr. Kathleen Kuletz, represent two organizations (the PWS Science Center and the US Fish and Wildlife Service), and are both very experienced and proven EVOS researchers.

Finally, I encourage you to give a green light to these two projects because of the opportunity in FY07 to share vessel charters with the ongoing Steller sea lion and herring program at the Science Center (headed by Dr. Richard Thorne). This program provides both vessel opportunities and a monitoring framework that will result in detailed information on the abundance and distribution of both adult and juvenile herring. Any concurrent research project on herring would be greatly facilitated by knowledge of these factors. Furthermore, continuity of data collection in conjunction with the Steller sea lion project will limit data gaps.

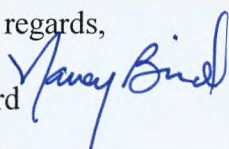
In addition to proposals by Kline and Bishop/Kuletz, others from the University of Alaska Fairbanks (Bickford/Norcross) and Auke Bay Laboratory (Rice/Heintz/Moran) propose to collaborate in this field effort. All of these research efforts would cost considerably more if funded in future years without the vessel opportunities the PWS Science Center is offering to provide to the EVOS Trustee Council program over the next two years.

On a separate topic, I want to commend the Executive Director's work on the revised list of injured resources. We, in Cordova, appreciate the time Michael Baffrey took to visit and explain this report. He received some excellent comments which were generally very supportive of the report's results.

Thank you for this opportunity to comment. I will be present Tuesday to present a summary of these comments; please also see a short list of additional notes attached below on the Kline and Bishop/Kuletz proposals.

With best regards,

Nancy Bird
President



Additional notes regarding projects 070811 (Dr. Thomas Kline) and 070814 (Drs. Mary Anne Bishop and Kathy Kuletz)

- **Both projects were recommended for funding by the Science Panel and** Kline's project was also recommended by the Public Advisory Committee. The Bishop/Kuletz project was recommended for funding earlier (10/31) by the EVOS Executive Director
- The PWSSC currently has an ongoing \$2 million project related to herring and Steller sea lions which **provides unique opportunities for projects to share vessel time and concurrently collect data.** The seabird project (Bishop and Kuletz) goes hand-in-hand with Thorne's juvenile herring project and is also important the modeling work (Drs. Keifer and Evelyn Brown); both of those projects are recommended for funding by all parties.
- **Predation and disease issues were the two most important processes impacting herring,** as agreed at the April 2006 workshop. Predation studies should begin immediately and can receive recommendation for revisions as further planning on a herring recovery plan proceeds.
- **To enable interactions with other projects in terms of sample collection as well as context of combining multiple data sets.** Without the support from other projects, Thorne's in particular, it will be more expensive to collect the samples for this project. There will be losses in terms of the context of data from the multiple projects. Project synergism is critical.
- **Context for intervention.** Understanding the root cause of variability of herring condition and its spatial context may enable a more rational intervention program should the Trustees go in that direction. Some areas in Prince William Sound may be better intervention candidates than others.



Office of the Mayor and Council

710 Mill Bay Road, Room 220, Kodiak, Alaska 99615

November 9, 2006

Via Fax: (907) 276-7178

Trustee Council Members
Exxon Valdez Oil Spill Trustee Council
441 W. 5th Ave.
Anchorage, AK 99501

Re: Use of Remaining Settlement Funds

Dear Trustee Members:

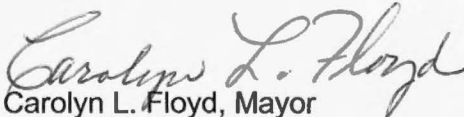
As Mayor of a community that suffered significant social, cultural, and economic damage as a result of the *Exxon Valdez* oil spill, the City Council and I have watched with interest as the Exxon Valdez Oil Spill Trustee Council has worked to restore natural resources in the spill-impacted area. The City of Kodiak appreciates the efforts of the Trustee Council to date; however, we believe that it is long past time for the Council to focus on human service restoration projects.

This is an important issue for our community, but neither City staff nor I are able to attend your November 14, 2006, meeting to reiterate our position. It is my understanding that Kodiak Island Borough Mayor Jerome Selby will be attending your meeting. Please know that he also represents the City of Kodiak and the regional Kodiak Island Mayor's Conference on this important issue. The Mayor's Conference is convened annually as a forum to address issues of concern to individual communities, as well as broad regional issues. The Kodiak Island Mayor's Conference met on November 3, 2006, and passed a resolution in support of the Trustee Council using the majority of the remaining balance of the settlement funds to support human service restoration projects in the spill impacted area. This is a policy direction that all the communities in the Kodiak region support.

The City of Kodiak urges the Trustee Council to approve funding, at your November 14, 2006, meeting, for the "Proposed Human Service Restoration Projects" identified in the letter dated October 27, 2006, from the State members of the Trustee Council. The City of Kodiak further urges the Trustee Council to allocate the remaining settlement funds to additional human service projects in the spill-impacted area.

If you have any questions about the City of Kodiak's position on this issue, please contact City Manager Linda L. Freed at 486-8640.

Sincerely,


Carolyn L. Floyd, Mayor

Telephone (907) 486-8636 / Fax (907) 486-8633
clerk@city.kodiak.ak.us



**A RESOLUTION OF THE KODIAK MAYORS CONFERENCE
URGING THE EVOS TRUSTEE COUNCIL TO FULFILL
THE PURPOSE OF THE EVOS SETTLEMENT**

WHEREAS, the State of Alaska and the United States of America entered into a settlement agreement with Exxon after the Exxon Valdez Oil Spill that established the Exxon Valdez Oil Spill Trustee Council and provided \$900 million to address the injuries and damage resulting from the Exxon Valdez Oil Spill; and

WHEREAS, the EVOS Trustee Council has wisely and carefully managed the use of the settlement funds to address a wide variety of injuries and damage throughout the spill area for 15 years; and

WHEREAS, habitat acquisition, restoration studies and projects, public involvement, scientific review and EVOS administrative expenses have all been funded in the Trustee Council success story; and

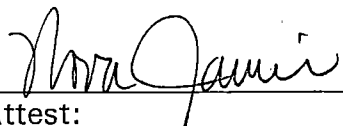
WHEREAS, the economic and human services damage done to the communities in the spill area have never been addressed by Exxon or the EVOS Trustee Council; and

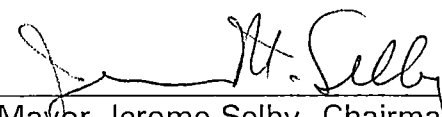
WHEREAS, the communities have identified several projects included in a Proposal Human Service Restoration Projects list totaling almost \$50 million; and

NOW; THEREFORE, BE IT RESOLVED BY THE KODIAK ISLAND MAYORS CONFERENCE THAT the EVOS Trustee Council is urged to address the largest remaining damage in the spill area of community human service projects by using a significant amount of the remaining \$152 million for these projects; and

BE IT FURTHER RESOLVED THAT after the completion of these projects and the \$92 million reopener projects, the remaining funds be endowed into the research facilities in the three sub areas of the spill area to continue research and enhancement of damaged species far into the future.

PASSED AND APPROVED on this 3rd day of November, 2006.


Attest:


Mayor Jerome Selby, Chairman
Kodiak Island Mayors Conference

11/09/06
Date: