11.22.03

Exxon Valdez Oil Spill Trustee Council

April 19, 2011

12:30 – 4:30 p.m.

800.315.6338 / code: 8205

Hartig, Lawrence L (DEC)

From: Fishwick, Claire (DEC)
Sent: Thursday, April 28, 2011 1:13 PM
To: Hartig, Lawrence L (DEC)
Cc: Fishwick, Claire (DEC)
Subject: FW: EVOS Trustee Council Delegation

Importance: High

Commissioner,

Cherri Womac has requested a signature for Dan's delegation. A signature on this email would suffice. Could you please sign this email and give it to Carla to put in the mail? Thanks, Claire

Delegation approved.

Larry Hartig, Commissioner, Department of Environmental Conservation

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From: Fishwick, Claire (DEC)
Sent: Tuesday, April 19, 2011 1:16 PM
To: Womac, Cherri G (EVOSTC)
Cc: Fishwick, Claire (DEC)
Subject: EVOS Trustee Council Delegation
Importance: High

Good Afternoon Cherri,

Commissioner Hartig directed me to send this email delegating Deputy Commissioner Dan Easton to act on his behalf for the April 19, 2011 Trustee Council Meeting. The Commissioner delegates Dan the authority to act on any matters brought before the Trustee Council members. Thank you. Claire

Claire Fishwick
Executive Secretary
Office of the Commissioner
Department of Environmental Conservation
Post Office Box 111800
410 Willoughby Avenue, Suite 303
Juneau, Alaska 99811-1800

Email: Claire.Fishwick@alaska.gov
Tel: (907) 465-5066
Fax: (907) 465-5070

Hartig, Lawrence L (DEC)

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Fax: (907) 465-5070

Womac, Cherri G (EVOSTC)

From: Schorr, Jennifer L (LAW)
Sent: Wednesday, April 20, 2011 10:39 AM
To: Hsieh, Elise M (EVOSTC); Womac, Cherri G (EVOSTC)
Subject: Follow up from Commissioner Hartig

Hi –

It occurred to me that it might be helpful to have Commissioner Hartig confirm under his signature that he asked Dan Easton to serve as his alternate and vote during yesterday's meeting. That way we have something in the files signed by him in case it ever comes up.

Thanks,
Jen

Jennifer L. Schorr
Assistant Attorney General
Department of Law
1031 West 4th Avenue, Suite 200
Anchorage, Alaska 99501-1994
Phone: (907) 269-5274
Fax: (907) 278-7022
Jennifer.Schorr@alaska.gov

Womac, Cherri G (EVOSTC)

From: Fishwick, Claire (DEC)
Sent: Tuesday, April 19, 2011 1:04 PM
To: Womac, Cherri G (EVOSTC)
Cc: Easton, Dan (DEC); Hartig, Lawrence L (DEC)
Subject: EVOS Trustee Council Delegation

Importance: High

Good Afternoon Cherri,

Deputy Commissioner Dan Easton will be acting on behalf of Commissioner Hartig for the April 19, 2011 Trustee Council Meeting. Dan is delegated the authority to act on any matters brought before the Trustee Council members. Thank you. Claire

Motions

DRAFT 4/19/2011

Motions for April 19, 2011 Trustee Council meeting

Agenda Item 2, Agenda and February 11, 2011 Meeting Notes:
I move we approve the April 19, 2011 meeting agenda.
I move to approve February 11, 2011Trustee Council meeting notes as prepared.

Agenda Item 5, IT RSA:
I move we authorize the Executive Director to enter into a RSA for Information Technology (IT) support services with the Alaska Department of Fish and Game for the remainder of FFY 2011 to commence on July 1, 2011, through FFY 2012 ending September 30, 2012, plus applicable General Administration (GA) in the amount of $87,200.

Agenda Item 6, Amendment to Conservation Easement National Wildlife Refuge Lands:
I move we approve the amendment to the Conservation Easement on National Wildlife Refuge Lands as detailed in the Resolution.

Agenda item 7:

Project 1010839 Hollmen/Springman HADU Amendment:
I move to approve additional funds in the amount of $46,216 which includes 9% GA for project 10100839, Evaluating Injury to Harlequin Ducks.

FFY 2012 Proposals:
I move that we request EVOS staff to work with the following identified lead proposers including developing additional information in the areas recommended by the Council. Project Harbor Protection and Marine Restoration

PWS Herring Research and Monitoring

Long-Term Monitoring of Marine Conditions and Injured Resources and Services

Stormwater
- City of Seward
- NOAA

Marine Debris
- Gulf of Alaska Keeper
- NOAA
- Eyak

Response
- PWSSC

Lingering Oil
- Synthesis: Nixon/Michel/Ballachey/Bodkin/Esler

Agenda Item 8, Data Plan for Long-Term Monitoring and Herring Programs
I move to approve

Agenda

DRAFT 4/15/2011

Exxon Valdez Oil Spill Trustee Council

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

AGENDA
EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
April 19, 2011, 12:30 – 4:30 p.m.
Anchorage, Alaska

Trustee Council Members:

JEN SCHORR
Trustee Alternate/Attorney General
Alaska Department of Law

LARRY HARTIG
Commissioner
Alaska Department of
Environmental Conservation

CORA CAMPBELL
Commissioner
Alaska Department of Fish and Game

CRAIG O'CONNOR
General Counsel
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

KIM ELTON
Senior Advisor to the Secretary for Alaska Affairs
Office of the Secretary
U.S. Department of the Interior

STEVE ZEMKE
Trustee Alternate
Chugach National Forest
U.S. Department of Agriculture

Meeting in Anchorage, Trustee Council Office 441 West 5th Avenue, Suite 500
Teleconference number: 800.315.6338. Code: 8205
State Chair: _____

1. Call to Order – 12:30 p.m.

2. Consent Agenda
   - Approval of Agenda*
   - Approval of Meeting Notes*
     February 11, 2011

3. Public comment – 12:45 p.m. (3 minutes per person)

4. PAC Chairperson Report — Kurt Eilo, PAC Chairperson

5. Executive Director's Report *(5 minutes)* — Elise Hsieh, Executive Director
   RSA for IT services from ADF&G*

6. Amendment to Conservation Easement — Joe Darnell, Solicitor's Office
   National Wildlife Refuge Lands* *(15 min.)*

7. Project Amendment 10100839 *(10 min.)* — Catherine Boerner, Science Coordinator
   Harlequin Ducks- Springman/Hollmen*

   Review of FFY 2012 Proposals*

   A. Herring- PWSSC- Pegau *(40 min.)*
   B. Long-Term Monitoring- PWSSC, NOAA, AOOS – Pegau/McCammon/Bird *(45 min.)*
      - Lingering Oil monitoring under Long-Term Monitoring Program
   C. Harbor Protection and Marine Restoration *(40 min.)*
      i. Stormwater, Wastewater and Harbor Projects
         1. City of Seward
         2. NOAA
      ii. Marine Debris
         1. Gulf of Alaska Keeper
         2. NOAA
         3. Eyak
      iii. Response, Damage Assessment and Restoration Implications
         1. PWSSC- Pegau
   D. Lingering Oil – *(15 min.)*
      -Synthesis: Nixon/Michel/Bellachey/Bodkin/Esler

8. Support to facilitate Data Plan for *(5 min.)* — Elise Hsieh, Executive Director
   Long-Term Monitoring and Herring Programs*

8. Executive Session, as needed

Adjourn – by 4:30 p.m.

* Indicates action items

Feb 11, 2011
TC Mtg Notes

DRAFT 3/3/2011

Exxon Valdez Oil Spill Trustee Council

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

TRUSTEE COUNCIL MEETING NOTES

Anchorage, Alaska

February 11, 2011

Chaired by: Kim Elton
Trustee Council Member

Trustee Council Members Present:

Steve Zemke, USFS *
• Kim Elton, USDOI
Craig O'Connor, NOAA **
Jennifer Schorr, ADOL ***
Cora Campbell, ADF&G
Larry Hartig, ADEC

- • Chair
- * Steve Zemke alternate for USFS
- ** Craig O'Connor alternate for James Balsiger
- *** Jennifer Schorr alternate for John J. Burns

The meeting convened at 10:02 a.m., February 11, 2011 in Anchorage at the EVOS Conference Room.

1. Approval of the Agenda

APPROVED MOTION: Motion to modify the February 11, 2011 agenda

Motion by Hartig, second by Zemke

2. Approval of November 3, 2010 meeting notes

APPROVED MOTION: Motion to approve the November 3, 2010 meeting notes

Motion by Hartig, second by Schorr

Public comment opened at 10:06 a.m.

One public comment was offered.

Public comment closed at 10:12 a.m.

There were no Public Advisory Committee (PAC) comments.

3. 2010 Agreed-Upon Services Contract

APPROVED MOTION: Motion to approve entering into an Agreed-Upon Procedures Contract for a 2010 audit with Elgee, Rehfeld and Mertz for an amount not to exceed $16,187 which includes 9 percent General Administration

Motion by Zemke, second by Hartig

4. FFY 2011 Work Plan

APPROVED MOTION: Move to approve funding $1,586,785 which includes 9 percent General Administration for Project 11100836, Boufadel – Pilot Studies of Bioremediation of *Exxon Valdez* Oil in Prince William Sound Beaches

Motion by O'Connor, second by Schorr

APPROVED MOTION: Motion to re-allocate the total amount of funds authorized in Resolution 08-10, designating $50,000 (which includes General Administration) to fund a NOAA analysis of the 1994 EVOS Restoration Plan Environmental Impact Statement (EIS), to fund a NEPA review of Project 11100836, Boufadel – Pilot Studies of Bioremediation of Exxon Valdez Oil in Prince William Sound Beaches

Motion by Hartig, second by Zemke

APPROVED MOTION: Motion to approve funding $178,200 which includes 9 percent General Administration for Project 11100112, Irvine – Lingering Oil on Boulder-Armored Beaches

Motion by Zemke, second by Hartig

APPROVED MOTION: Motion to approve funding $218,000 which includes 9 percent General Administration Phase I of Project 11100853, Irons – Pigeon Guillemot Restoration in Prince William Sound, expenditure of the funds is conditioned upon the Executive Director approving a letter of agreement among all parties involved in the Project defining the agency's responsibilities

Motion by O'Connor, second by Zemke

5. Habitat Small Parcels, Saltz, Silver and Poore

APPROVED MOTION: Move to authorize funding of $43,600 which includes 9 percent General Administration for due diligence expenses consistent with State and Trustee Council requirements in support of Kenai River habitat protection efforts for three small parcels: Saltz' Island-KEN 3009, Silver Parcel-KEN 3008, and Poore-KEN 3010

Motion by Hartig, second by Schorr

6. Adjourn — Motion by Hartig, second by O'Connor

Off the record 11:35 a.m.

Apr 13, 2011
PAC Mtg Summary

Meeting Summary D R A F T

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

B. DATE/TIME: April 13, 2011

C. LOCATION: Anchorage, Alaska

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

Name	Principal Interest
Torie Baker	Commercial Fishing
Amanda Bauer	Commercial Tourism
Jason Brune	Public-at-Large
Kurt Eilo	Sport Hunting/Fishing
Gary Fandrei	Aquaculture/Mariculture
Patience Andersen Faulkner	Subsistence
John French	Science/Technical
Stacy Studebaker	Recreation Users

E. NOT PRESENT:

Name	Principal Interest
Jennifer Gibbins	Conservation/Environmental
David Totemoff	Native Landowner

F. OTHER PARTICIPANTS:

Name	Organization
Elise Hsieh	Executive Director, Trustee Council
Doug Mutter	Designated Federal Official, Department of the Interior
Cherri Womac	Trustee Council Staff
Catherine Boerner (T)	Trustee Council Contractor
Barat LaPorte (T)	Patton Boggs
Pete Hagen	National Oceanic and Atmospheric Administration (NOAA)
Nancy Bird	Prince William Sound Science Center
Tom Brookover	Alaska Department of Fish and Game
Jen Schorr	Alaska Department of Law
Steve Zemke	U.S. Forest Service
Kari Anderson (T)	City of Seward
Kris Holderied (T)	NOAA

H. SUMMARY:

At 10:05 a.m. Doug Mutter, Designated Federal Official, opened the session with a welcome, introductions by all in attendance, and roll call of PAC members (a quorum was present).

The election of PAC officers for the next two-year term was held. Kurt Eilo was unanimously elected to serve as PAC Chairperson. Patience Andersen Faulkner was unanimously elected to serve as PAC Vice-Chairperson.

The July 22, 2010, PAC meeting summary was approved.

Cherri Womac distributed and reviewed the PAC Operations Handbook for this two-year term. She reviewed travel reimbursement policies. Mutter reminded the PAC members of their responsibilities as members of a committee chartered under the Federal Advisory Committee Act.

Jason Brune asked about the publication of an EVOS 2010 Annual Report. Elise Hsieh said that it was late in getting out.

The floor was open for public comment. Kari Anderson, City of Seward, commented in support of the vessel wash-down facility at Seward. Brune asked if recent litigation and/or wastewater permits would interfere with the project. She noted that all permits were in place to proceed, if the project were funded, and that the litigation was essentially settled. John French asked which side of Resurrection Bay the facility would be on. She said on the Nash Road side because the City owns the property there.

Nancy Bird and Kris Holderied spoke in support of the Herring and Long-Term Monitoring (LTM) proposals. They noted the significant effort at integrating these two projects, especially with regard to data management and synthesis. French suggested the work NOAA is doing to develop the Environmental Response Management Application (ERMA) geographic information system-based program for Arctic Alaska may be a tool for data management. Torie Baker asked about the outreach and education components of these projects. Bird responded that they will work with local fishing organizations and plan to hold public meetings. Hsieh noted that page 16 of the LTM proposal explains their outreach program.

Hsieh provided the Executive Director's report. The Invitation for Proposals for FY 2012 requested proposals covering the following major areas of continued restoration work: 1) herring, 2) lingering oil, 3) long-term monitoring of marine conditions, and 4) harbor protection and marine restoration. The Trustee Council plans to meet in September to finalize the projects and the FY 2012 work plan. Several projects will serve as five-year programs, to be annually reviewed and renewed by the Trustee Council. She noted that the Science Panel was generally pleased with the proposals that were submitted. In year three, a workshop will be held to review overall progress of the various programs.

She said that data management for the LTM and Herring projects was an issue of much discussion by the Science Panel, and was something that needed additional work. Concerns of the failure of the data management firm, Axiom, to timely deliver products in the past, and their lack of experience with a large and complex scientific database, lead the Science Panel to recommend additional assistance from the nationally-recognized National Center for Ecological Analysis and Synthesis (NCEAS) as a subcontractor on the project to assist with establishment of a data management system that includes accessible scientific data as well as public information.

The need for additional herring spawn dive surveys was suggested by the Science Panel for the herring project, so additional funds were proposed. Hsieh provided a summary, along with Science Panel comments, of the new project proposals submitted for FY 2012:

- Community based marine debris: Principal Investigator (PI) Amman
- Marine debris removal: PI Pallister
- Marine debris program: PI Whissel
- Vessel wash-down and wastewater recycling facility: PI Anderson
- PWS harbor cleanup project: PI Jennings
- PWS herring research and monitoring program: PI Pegau
- Lessons learned and implications to future spill response: PI Pegau
- Long-term monitoring of marine conditions and injured resources and services: PI McCammon
- Lingering oil distribution modeling: PI Nixon
- Evaluating injury to harlequin ducks: PI Hollmen (a project amendment)

Brune raised a question about funding marine debris cleanup when much of the debris can be attributed to international trade and not as a result of the oil spill. Hsieh stated that it adversely impacted injured species, therefore, addressing it could help with their restoration. French noted that a one-time cleanup of marine debris would not help much, since debris arrives every year—stopping it at the source would be more effective. Stacy Studebaker made a point that education and outreach should be a component of the marine debris project, and that many in Kodiak, participated in beach cleanup efforts. French agreed, and further stated that many other groups were involved in marine debris cleanup throughout Alaska, and perhaps better integration of their efforts would be of value. Mutter noted that there was an annual Marine Debris Workshop held at the Alaska Forum on the Environment, which included many marine debris cleanup organizaitons.

Baker asked if there were any closeout proposals included in the work plan. Hsieh said there was one amendment in the list (above) and 16 continuing projects, but most of these were related to herring and were not due for completion until FY 2014.

The group discussed the herring proposal and the added value of the NCEAS data management addition. Catherine Boerner stated that the data was the "gold mine" of many of these projects, and needed to be made available over the long term—and the NCEAS team will assist in making this happen. Baker raised a question about the use of "outside" consultants versus Alaskans, and how the two would work together. Hsieh said that NCEAS is experienced in working with diverse groups and it was her impression, thus far, that Axiom would also be amenable to working with NCEAS. Brune questioned past due delivery of a product by Axiom, noting the Trustee Council policy to not fund organizations which were behind in deliverables—he believes Axiom should not be awarded additional work when there are outstanding deliverables, and that this sets a dangerous precedent. Fandrei agreed that this was an issue. Hsieh said she expected the outstanding deliverable to come in May. French said it was important that data not be proprietary so it would be publicly available. Amanda Bauer asked if there were other organizations that Axiom did work for. Hsieh mentioned several State and Federal agencies that are Axiom clients.

Gary Fandrei asked if the PAC would have a voice in annual recommendations on whether to continue with a multi-year program contract. Hsieh said yes. Baker asked about the value of only two years of herring spawn deposition surveys, noting models for the Sitka area would not necessarily work in Prince William Sound. Boerner said the added information should help improve the accuracy of models.

Fandrei moved, second by Andersen Faulkner, that **the PAC supports funding the herring project proposal, noting that the PAC agrees with the Science Coordinator in that there are serious concerns regarding the data program and would encourage the Council to assist the project team by providing funding for a comprehensive review of the data program, and** (amendment moved by Baker, second by Andersen Faulkner) **further, the PAC supports additional discussions with the Alaska Department of Fish and Game on the use of the recommended dive surveys.** The motion passed, with dissent by Brune and Bauer, based on Axiom's current past due deliverables.

The group discussed the LTM project, noting it had the same data management issue as the herring project. French asked if this was funding "normal agency work." Hsieh said no, that this was work EVOS had funded in the past.

Fandrei moved, second by Andersen Faulkner, that **the PAC supports funding the LTM project proposal, noting that the PAC agrees with the Science Coordinator in that there are serious concerns regarding the data program and would encourage the Council to assist the project team by providing funding for a comprehensive review of the data program.** The motion passed, with dissent by Brune and Bauer, based on Axiom's current past due deliverables.

The group discussed the two harbor protection projects. Baker questioned why other communities were not covered, like the past region-wide project to reduce marine pollution. Hsieh responded that the Trustee Council was not pursing upgrade and maintenance of waste management equipment previously funded by the Council. She said the Trustee Council wanted to include a couple of short term projects in the work plan along with the longer term programs. Brune noted that the Seward project is sustainable without further funds for the Trustee Council.

Brune moved, second by Fandrei, that **the PAC supports funding the City of Seward vessel wash-down facility project.** Passed unanimously.

The group discussed the three marine debris cleanup project proposals. Fandrei wondered if the Gulf of Alaska Keeper project was funding existing efforts—he would rather they use the funds to purchase equipment that could be used into the future and not just do a one year project. Baker asked if this was an expansion of the ongoing effort. French said he thought their need was mostly for fuel, food, and logistics. French asked if others, such as the U.S. Forest Service, had educational programs that could be linked into this effort. Andersen Faulkner noted that other organizations had good outreach programs that could be tied in. Brune said teaching children about environmental ethics was commendable and had long-term benefits, but he could not support a one-year cleanup effort.

Baker moved, second by Studebaker, that **the PAC supports funding the Gulf of Alaska Keeper marine debris project, and encourages the project team and EVOS staff to work with Eyak and other groups to strengthen the public outreach and education component of the project.** Passed, with dissent by Brune, who questions the value of a one-time cleanup effort; and with Andersen Faulkner abstaining due to her association with Eyak.

Fandrei asked that **the Trustee Council be made aware of the PAC's concern with funding short-term projects for marine debris cleanup because they do not address the long-term problem—the source of the debris.**

The group addressed the restoration lessons learned proposal. Baker said she heard Fran Ulmer give a presentation on the recent Gulf of Mexico spill and how lessons learned could apply to the Arctic—something like that based on EVOS experiences would be useful. Hsieh stated that the U.S. Department of Justice had placed legal sideboards of this topic for the Trustee Council. French suggested perhaps the Trustee Council could sponsor a seminar at the next Alaska Marine Science Symposium on the lessons-learned topic. He also noted that there have been many Gulf of Mexico spill lessons-learned meetings going on. The group did not take action to support funding this project.

The group discussed the lingering oil proposal. It was moved by Baker, second by Brune, that **the PAC supports funding the Nixon lingering oil project.** Passed unanimously.

The group discussed the amendment for the Harlequin duck project. French moved, second by Baker, that **the PAC supports funding the Harlequin duck project amendment.** Passed, with Brune abstaining due to his association with the Alaska SeaLife Center.

It was moved by French, second by Studebaker, that **the PAC supports the Science Panel recommendation for additional funding for the LTM project to consider the affects of lingering oil.** Passed unanimously.

Eilo asked if there were other comments by PAC members:

- Eilo acknowledged the work of Stacy, Cherrie, and Elise in keeping things operating smoothly.
- Baker commented on the data management issue, saying it was important to include the views of the project PIs in the discussion and that local management agencies needed to be able to use the results of much of this work.
- Brune thanked Kurt and Patience for taking on the leadership positions for the PAC. He thought good points were made on making data available to the public.
- Fandrei said it was a good meeting.
- French said it was a good meeting, he wished more Trustee Council members could have attended. He re-emphasized that the value and preferred format of scientific data may change over time.
- Andersen Faulkner appreciated the good discussion and hearing the different viewpoints.
- Studebaker said it has been an honor to serve as the PAC Chairperson for the past several years. She likes the leaner PAC membership.

Hsieh pointed out that Carrie Holba would be working half-time on archiving records at EVOS starting next Fiscal Year. Also, the EVOS office lease is up in 2013 and they will be looking at further downsizing of space.

The meeting was adjourned at 3:05 p.m.

NOTE: during the course of the meeting, the following disclosures of potential conflict of interest were made:

- Jason Brune, on the board of the Alaska SeaLife Center (the Hollman project)
- Patience Andersen Faulkner, a member of the Eyak Native Tribal Council (Eyak project)

- John French, represents Seward on several organizations (vessel wash-down project)
- Amanda Bauer, Ship Captain for Stan Stephens Charters (vessel wash-down project)

I. FOLLOW-UP:

1. Eilo will provide an oral PAC report to the Trustee Council at their next meeting.

J. NEXT MEETINGS:

--Trustee Council (Anchorage on April 19, 2011)
--PAC (probably late August/early September 2011)

K. ATTACHMENTS (handed out at the meeting):

1. Pegau email on the Herring Research Proposal Comments
2. Whissel email on the Marine Debris – Eyak Project Review
3. National Center for Ecological Analysis and Synthesis Overview
4. Axiom Consulting & Design Overview
5. Justification for AOOS Serving as LTM and Herring Data Manager

L. CERTIFICATION:

_____ _____

PAC Chairperson **Date**

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: Evaluating injury to harlequin ducks (*Histrionicus histrionicus*) caused by sublethal hydrocarbon exposure in Prince William Sound using species-specific cell lines

Printed Name of PI: Tuula Hollmen

Signature of PI: _____ Date 4/4/11

Printed Name of co-PI: Kathrine Springman

Signature of co-PI: _____ Date 4/4/11

* 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:

FY11 INVITATION
PROPOSAL SUMMARY PAGE

(to be filled in by proposer)

Project Title: Evaluating injury to harlequin ducks (*Histrionicus histrionicus*) caused by sublethal hydrocarbon exposure in Prince William Sound using species-specific cell lines

Project Period: October 1, 2010 – September 30, 2011 (FY10-FY11)

Proposer(s):

Tuula Hollmen, DVM, PhD, Research Associate Professor, Alaska SeaLife Center and University of Alaska Fairbanks, 301 Railway Ave, PO Box 1329, Seward AK 99664-1329, tuula_hollmen@alaskasealife.org, (907) 224-6323.

Kathrine Springman, PhD, P.O. Box 2590, Corvallis, OR 97339; krspringman@gmail.com; (530) 400-4141

Study Location: Prince William Sound, Alaska SeaLife Center (Seward)

Abstract:

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

Funding:

EVOS Funding Requested: FY11 $ 38.9

TOTAL: $ 42.4 (includes 9%GA)

Non-EVOS Funds to be used: $ 0

TOTAL: $ 42.4

Date: July 15, 2009

PROJECT PLAN

NEED FOR PROJECT

Statement of Problem

Evaluation of harlequin duck (*Histrionicus histrionicus*) population trends, survival measures, and biomarker indicators of exposure through 2005 suggests that the species is recovering, but has not fully recovered from the effects of the 1989 *Exxon Valdez* oil spill (EVOS) in the Prince William Sound (PWS) (Esler et al. 2002; *Exxon Valdez* Oil Spill Trustee Council 2006). Evidence that this species has not fully recovered includes findings of proportionately lower numbers of females than males in oiled areas and higher levels of cytochrome P450 biomarker in tissues of ducks captured at oiled areas compared to unoiled areas (Trust et al. 2000; Rosenberg et al. 2005; *Exxon Valdez* Oil Spill Trustee Council 2006). In oiled areas, elevated cytochrome P450 biomarker induction has been observed in harlequin ducks as recently as November 2006 and March 2007, providing evidence of continued exposure (D. Esler, pers. comm.).

Lingering oil from the 1989 *Exxon Valdez* oil spill has proven resistant to degradation, is widely accessible to wildlife throughout western PWS, and has been found in areas used by harlequin ducks (*Exxon Valdez* Oil Spill Trustee Council 2006). Lingering oil may lead to population-level impacts particularly in species with near shore feeding habits and a high degree of site fidelity, such as harlequin ducks. Furthermore, oil stranded on PWS beaches has the potential to affect harlequin ducks for many years. In 2004, a small patch of semi-liquid fuel oil released from fuel tanks in the 1964 earthquake was encountered in the course of field studies in PWS; this fuel oil has retained the ability to trigger a strong biomarker response in exposed organisms even after four decades, providing evidence for potential of long-term effects of lingering oil on biota.

The magnitude of injury and its implications for populations of harlequin ducks caused by chronic, sublethal oil exposure and long-term induction of central enzymatic processes is unknown. Assessment of continuing exposure should link site-specific bioavailable hydrocarbons to the physiological or morphological injury they can cause. Cell lines developed from species of concern (e.g., harlequin ducks) offer a novel method to test for species-specific effects under laboratory conditions. These methods provide a tool to assess injury and physiological effects at the cellular level, and can be linked to previously measured biomarkers of P450 enzyme induction. At a later date, laboratory models may be expanded to assess oil injury at different life stages of harlequin ducks by development of *in ovo* assays, or immunological effects by the development of immune function bioassays. These methods provide tools to quantify injury, project future risks, and develop long-term remediation strategies.

Research that addresses these needs in cellular bioassays is possible due to recent advances in methods and technologies. Primary sea duck cell lines have been developed by Dr. Tuula Hollmen, and surrogate mallard (*Anas platyrhynchos*) cell lines have been used for laboratory bioassays. Existing cell lines and further development of harlequin duck and surrogate cell lines allow species-specific and high sample-volume testing of cellular damage following sublethal oil exposure at different hydrocarbon doses. This injury includes cell death, cytopathology, enzyme

induction, and DNA anomalies. Dr. Kathrine Springman has expanded the use of semipermeable membrane devices (SPMD) to include *in vivo* toxicity testing as well as analytical assessment of bioavailable nonpolar organics. The extracts of these samplers can be used for *in vitro* testing of injury from site-specific hydrocarbon exposure. Linking these methods correlates multiple endpoint assays to quantify injury resulting from exposure to the same field sample, and enables high sample volume, multiple dose testing for greater statistical strength and more reliable results.

Relevance to 1994 Restoration Plan Goals and Scientific Priorities

1. Development of cellular bioassays provides new and expanded strategies to evaluate and quantify injury due to hydrocarbon exposure. The method provides a novel tool to evaluate injury at the cellular level, and link injury at cellular level to P450 biomarker data.
2. Injury observed at the cellular level will be linked to site-specific hydrocarbon exposure of harlequin ducks. The method provides a tool to evaluate species-specific effects of site-specific contaminants.
3. This study will determine physiological effects that could have population-level implication. Validation of injury caused by hydrocarbon exposure in harlequin duck cell lines provides methods to link cellular injury to cytochrome P4501A (CYP1A) enzyme activity with the ethoxyresorufin-α-deethylase (EROD) bioassay. Data gathered from cellular-level bioassays facilitate linkage of previous studies with new approaches to injury assessment, i.e., integration of biological, chemical, and biochemical data for harlequin ducks
4. Dose-response relationships established in this study will provide a baseline for projections of anticipated injury, and establish foundations for further research on the effects of hydrocarbon remaining in PWS on reproductive success and population dynamics in harlequin ducks. Linking life stage specific effects on demographic parameters allows incorporation of laboratory results to population models.

PROJECT DESIGN

Objectives

Objective 1: *Develop harlequin duck and surrogate (mallard) cell lines to evaluate injury from site-specific hydrocarbons in harlequin ducks*

Objective 2: *Develop bioassays using harlequin duck and surrogate (mallard) cell lines to assess and quantify injury due to lingering oil in PWS*

Objective 3: *Evaluate injury due to site-specific lingering oil in PWS in harlequin ducks at the cellular level*

Objective 4: *Link analytical chemistry results from known oil-contaminated sites to injury assessments in harlequin ducks at the cellular level*

Objective 5: *Develop methods to link injury due to site-specific lingering oil in PWS in harlequin duck cell lines to harlequin duck population parameters and population level impact*

Procedural and Scientific Methods

Objective 1: Develop harlequin duck and surrogate (mallard) cell lines to evaluate injury from site-specific hydrocarbons in harlequin ducks

Primary cell lines will be developed from harlequin ducks and mallards, or domesticated breeds of mallards, and a reference duck embryo cell line will also be obtained from American Type Culture Collection (Rockville, MD, USA). Harlequin duck cell lines will provide a species-specific laboratory model, and mallard cell lines will provide a surrogate cell system. Surrogate cell lines will provide reference material for assay development, validation, and high volume testing. Preparation of cell lines involves isolation of primary cells, refinement of maintenance techniques, and characterization of isolated primary cell lines (growth rates, life span, morphology).

The source tissues for cell line development will be embryonic connective tissues (fibroblast cell lines) and liver (hepatocyte cell lines). In conjunction, additional organ tissues may be cryopreserved for potential future cell line development. The cells for primary cultures will be digested into suspensions using enzymatic treatment, and separated using centrifugation protocols (Docherty and Slota 1988, Brendler-Schwaab et al. 1994). For each stock processed, primary cultures will be initiated from fresh suspensions to determine cell morphology and viability. All remaining material will be cryopreserved as reserves for future testing. A control of each lot will be thawed after 48 hr and cultured to determine viability and recovery rate of the lot.

Cell culture media, reagents and subculturing techniques will be optimized for each cell line. Cell lines will be incubated at 37C in 5% CO_2 atmosphere, and monitored for status, health, and morphology using microscopy (described in Docherty and Slota 1988, Hollmen et al 2002). The primary cell lines will be subcultured at weekly intervals to determine the number of viable passages. For subculturing, cell layers will be dissociated into suspensions using proteolytic enzymes (such as trypsin) and chelating agents as necessary (such as EDTA). Cell morphology, yields, and growth rates will be evaluated to determine any passage-dependent effects and suitable passage number with consistent cell performance will be selected for further bioassay development. Cell counts will be performed using the hemocytometer method, and growth curves established for lag phase, log phase, and plateau phase. The passages selected for assay development will be further tested to control for any non-specific toxic effects from reagents and solvents. Cell lines will be subcultured into appropriate vessel platforms for bioassay development and high throughput testing.

Quality control protocols will follow standard laboratory operating procedures appropriate for cell culture methodology (Freshney 2000). Cell culture stocks and reagents will be assigned individual lot and tracking numbers, and aseptic techniques will be used for all cell culture protocols. Regular sterility checks will be performed to monitor for microbial contamination.

Objective 2: Develop bioassays using harlequin duck and surrogate (mallard) cell lines to assess and quantify injury due to lingering oil in PWS

Surrogate (mallard) cell lines will be used to validate appropriate molecular toxicology assays. The mixtures used for dosing will begin with those of known composition and progress to more relevant material of unknown toxicity. In order of dosing, these mixtures are:

A. Standard mixture of 16 priority pollutant polycyclic aromatic hydrocarbons (PP-PAH)
B. Standard mixture of chrysene and substituted chrysenes (CHRY)
C. Alaska North Slope Crude-intact (ANS-I)
D. Alaska North Slope Crude-laboratory weathered (ANS-W)

Semipermeable membrane devices (5) will be spiked with PP-PAH and processed as per Huckins et al. (2000). The same volume of the spiking material will be diluted in the solvent of choice as its QA/QC partner. This will be repeated with CHRY. For petroleum, 5 SPMDs will be constructed using 1 ml ANS-I for each in lieu of triolein. These will be processed as previously mentioned. This will be repeated for ANS-W. An aliquot of each extract will be sent to Auke Bay Laboratory for analysis, and the remainder processed as per Springman et al. (submitted).

Range finding studies will be performed to determine the median lethal concentration (LC_{50}) of each mixture and its partner for mallard and harlequin cell lines. Five different concentrations of each mixture and its partner below the LC_{50} will be used for each assay. These assays will include both positive/negative controls and solvent controls.

Assays will include:

A. Measures of cytotoxicity include evaluation of cytopathic effects, cell viability, and apoptosis. A test panel of bioassays will be optimized from a battery of assays (microscopy, dye exclusion and uptake, LDH enzyme release, caspase activity, and special stains to evaluate apoptosis) (Freshney 2000).
B. CYP1A activity as measured by the EROD assay in hepatocyte cultures, as per Kennedy et al. (1995).
C. A battery of assays to evaluate chromosome damage and genotoxicity will be conducted, from which the top or top two most promising assays will be selected (Poirier 1993; Fairbairn et al. 1995; Fenech 2000; Freshney 2000). This candidate list includes:
    1. Comet assay
    2. Micronuclei formation
    3. Sister chromatid exchange (SCE)
    4. PAH/DNA adduct formation

In fibroblast cell cultures some important enzymatic processes such as CYP1A will not be active, requiring the addition of a standardized external liver homogenate, or S9 fraction. Each assay using these cells will be performed for 5 doses with and without S9.

Objective 3: Evaluate injury due to site-specific lingering oil in PWS in harlequin ducks at the cellular level

Methods used in previous EVOS Trustee Council funded research (Restoration Project 060740) will be repeated to collect samples of bioavailable site-specific lingering EVOS oil in PWS. Selection of up to 10 SPMD deployment sites will be coordinated with previous studies using criteria based on harlequin duck distribution, evidence of induction of cytochrome P450 in tissues of harlequin ducks, and occurrence of oil in substrate. Site selection will be coordinated with D. Rosenberg (presence and density of harlequin ducks), D. Esler (evidence of P450 induction in harlequin ducks), and J. Rice and J. Short (presence of oil). Sites shared by chemical, biomarker, and ecological studies of PWS are central to this work, and will be prioritized in selection of field sites. In addition to sites selected based on these criteria, SPMDs will be deployed at one reference site and in McClure Bay at a site of semi-liquid 44 year old oil.

The SPMDs will be deployed as described in previous studies (Rice et al. 2006; Springman et al. (submitted)) and retrieved following a standard deployment period of 28 d. The samples will be processed at Environmental Sampling Technologies Laboratory, St. Joseph, MO, as per Huckins et al. (2000). The resulting extracts will be sent to Auke Bay Laboratory for polycyclic aromatic hydrocarbon (PAH) analysis as per Short et al. (1996). Next, the samples will be processed for *in vitro* toxicity testing as described in Springman et al. (submitted). These samples will arrive at ASLC for testing, and will be archived until ready for use.

Phase I (validation) of this study provides the procedural details necessary for the appropriate assays, and protocols for exposure times, solvent choice, and dosing details. The optimized battery of bioassays will be repeated with the SPMD extracts from the selected sites in PWS to evaluate injury due to site-specific contaminants at the cellular level. The results will be merged with the PAH analysis results.

The emphasis of this objective is to use the validated cellular endpoint bioassays to evaluate and quantify injury to site-specific hydrocarbons. Because multiple endpoint assays will be performed and correlated to quantify injury resulting from exposure to the same field sample, injury can be evaluated through a range of responses (cellular pathology, cell death, enzyme activity, and DNA damage). Furthermore, the battery of bioassays allows evaluation of relationships among response variables, particularly that of enzyme biomarker induction with cellular pathology. The laboratory protocols also enable high sample volume and multiple dose testing for greater statistical strength and more reliable results.

Objective 4: Link analytical chemistry results from known oil-contaminated sites to injury assessments in harlequin ducks at the cellular level

With SPMDs, the bioavailable fraction of nonpolar hydrocarbons can be used for toxicology testing, and these results integrated with the chemical composition of the sample used in these bioassays. This strategy has proven effective when used for *in vivo* testing (Short et al. (submitted) and with the *in vitro* EROD assay using fish hepatoma cells (PLHC-1; Parrott et al. 1999). We propose to test SPMD extracts from sites with remaining EVOS oil in a battery of

bioassays in harlequin and mallard (surrogate) duck cell lines, and compare the damage caused by lingering oil at the cellular level with the analytical chemistry results from those sites.

Alaska North Slope crude oil released from *T/V Exxon Valdez* on March 29, 1989 was of uniform composition. Since then, the oil has interacted with the environmental characteristics of the sites where it is found today. Features relating to beach geomorphology and hydrology, sediment composition, and others factored in determining its bioavailability, toxicity, and to some extent the chemical nature of what remains at these sites, as described in Springman et al. (submitted) and Short et al. (submitted). These studies clarify that oiled sites differ as a result of the characteristics of each location. Here, we evaluate the consequences of those interactions by examining the chemical profiles from the SPMDs deployed at these sites as per Short et al. (1996). The sample extracts will be analyzed chemically for suites of 2- to 5-ring PAHs (including alkyl-substituted homologues), listed in Appendix 1. Briefly, the hexane aliquot for PAH analysis will be purified by column chromatography (1 g silanol) following addition of a suite of perdeuterated PAHs used as internal standards. Purified PAHs will be measured by gas chromatography/mass spectrometry (GCMS) operated in the selected ion monitoring mode, and will be quantified on the basis of a 5-point calibration curve of the most similar PAH standard available. To evaluate these results, concentrations of PAH in the SPMD will be normalized to total PAH (TPAH) concentration of that sample. Profiles of PAH composition, useful in distinguishing PAH sources, will be assembled.

The oil in the patches at the ANS sites has previously been confirmed as remnants from the 1989 *Exxon Valdez* oil spill (Short et al. 2004). In a study by Short et al. (submitted), the Monterey Formation source of the oil at one of the proposed sites (McClure Bay) was confirmed on the basis of tricyclic and tetracyclic terpane analysis as described by Kvenvolden et al. (1995).

Curve fitting will be used to mathematically describe the relationship between the contents of the SPMD and the results observed in the battery of cellular assays (an example from Short et al. (submitted) is included in Appendix 2). For curve fitting, results of SPMD chemical analysis and the results from one bioassay with the doses used will be exported to TableCurve 2D v5.01 (SYSTAT Software Inc.), software that facilitates the fitting of data to both linear and nonlinear equations. The chemical concentrations will be entered as the independent variable (x), and mean assay results from each assay as the dependent variable (y). Model selection criteria including the number of parameters and the goodness-of-fit (as determined by adjusted R^2 and F-statistic) will be used to rank the candidate equations for each data set. As there are multiple assays from the same sample, these analyses will be nested where appropriate. Multidimensional analysis (TableCurve 3D) may be used if shows promise for these applications.

The emphasis of this objective is to uncover the interactions that different components of these site-specific complex mixtures have with the results obtained from a battery of assays. As 44 PAH will be analyzed and 5 doses used in each of the bioassays, many different associations are possible. The results will be analyzed to determine salient relationships between a site-specific contaminant and an elicited response at the cellular level.

Objective 5: Develop methods to link injury due to site-specific lingering oil in PWS in harlequin duck cell lines to harlequin duck population parameters and population level impact

This project will provide a new method to evaluate injury and will generate a large body of data. Further, the toxicological, cytological, biochemical, and chemical data are all linked to each other and to other studies performed at the same sites. These data can be used to clarify evaluations of other data and can provide information on the drivers behind toxicological effects that remain in PWS.

Results from our laboratory study will be incorporated into modeling efforts in collaboration with Dr D. Esler (Simon Fraser University). Quantifying injury at the cellular and developmental levels, and linking cellular injury to CYP1A activity provides new methods to assess effects on the host organism. Incorporating results into demographic parameters provide tools to link contaminant effects to specific life stages, and to population models under development. Model structures can be used to examine and evaluate population level effects, and the potential of individual and life stage specific injury to impact population projections.

Data Analysis and Statistical Methods

Methods used for analyzing data will depend on the nature of the data and its characteristics. For PAH analysis, methods used with the same type of data from PWS will be employed (Short et al. (submitted); Short et al., 1996). The distribution of all cellular data will be examined for normality. If distribution is normal or is normal with log transformation, parametric statistics will be employed. If distributions are not normal, robust nonparametric methods can be used to evaluate the significance of differences between two means of assay values from any two sites. First, differences between responses from different sites will be evaluated using a two-sample permutation test (Ephron and Tibshirani 1993; for further details see Appendix 3). Second, we will use the parametric Student's *t*-test following logarithmic transformation of the assay data values. We will evaluate the underlying assumption of normality by applying the Kolmogorov-Smirnov (K-S) test to the group identified by the permutation test above after log-transformation. Our application of Student's t-test to comparisons of treatment groups with the control group assumes approximate normality of the treatment groups. Other studies (Parrott et al. 1999; Kennedy et al. 1995; Kennedy et al. 1996) provide guidance for other measures of data analysis and statistical methods in studies using cell bioassay derived data. Briefly, the dose-dependent effects of PAH on EROD activity (Short et al., submitted) can be examined in cell lines, and fitted to Gaussian curves. The parameters from these curves can then be used to obtain the median effective concentration (EC_{50}) to complement the LC_{50} values obtained in the validation phase of this work.

Description of Study Area

Laboratory studies will be conducted at the Alaska SeaLife Center in Seward, Alaska. SPMDs will be deployed in Prince William Sound to obtain site-specific environmental samples for laboratory bioassays.

Coordination and Collaboration with Other Efforts

This project will complement other studies focusing on harlequin duck population status and dynamics, as well as lingering oil in PWS. We will coordinate field site selection with other investigators focusing on harlequin duck population measures and trends, biomarker indicators of exposure to oil, and occurrence of oil in PWS (D. Rosenberg, D. Esler, J. Rice, and J. Short). Results from our study will also be incorporated into modeling efforts (D. Esler). Results at cellular and developmental level incorporated into demographic parameters provide tools to link contaminant effects to specific life stages, and can be evaluated for population level implications using model structures under development.

SCHEDULE

Project Milestones

Objective 1. Develop harlequin duck and surrogate (mallard) cell lines to evaluate injury from site-specific hydrocarbons in harlequin ducks.
To be met in part by December 2008 (Year 1 cell isolation) and in part by December 2009 (Year 2 cell line isolation).
To be met in full by October 2010.

Objective 2. Develop assays using harlequin duck and surrogate (mallard) cell lines to assess and quantify injury due to lingering oil in PWS.
To be met by December 2009.

Objective 3: Evaluate injury due to site-specific lingering oil in PWS in harlequin ducks at cellular level
To be met by September 2010.

Objective 4: Link analytical chemistry results from known oil-contaminated sites to injury assessments in harlequin ducks at cellular level.
To be met by December 2010.

Objective 5: Link injury due to site-specific lingering oil in PWS in harlequin duck cell lines to harlequin duck population level impact.
To be met by December 2010.

Measurable Project Tasks

FY10, 1st quarter (October 1, 2009 – December 31, 2009)
Endpoint bioassay development
Test PWS samples in cell lines
Data analysis

FY10, 2nd quarter (January 1, 2010 – March 31, 2010)
Annual Marine Science Symposium
Test PWS samples in cell lines
Data analysis

FY10, 3rd quarter (April 1, 2010 – June 30, 2010)

Year 3 cell line isolation (potential for additional harlequin duck cell lines)
Test PWS samples in cell lines
Data analysis

FY10, 4th quarter (July 1, 2010 – September 30, 2010)

Test PWS samples in cell lines
Data analysis
Submit annual report

FY11, 1st – 2nd quarter (Oct 1, 2010 – March 31, 2011)

Annual Marine Science Symposium
Final data analysis, reports and publications

RESPONSIVENESS TO KEY TRUSTEE COUNCIL STRATEGIES

Community Involvement and Traditional Knowledge (TEK):

A community involvement plan will be developed if this proposal is funded. The plan will specify how relevant communities and other stakeholders will be informed and engaged with the project, and how ASLC public displays and exhibits can be involved in communicating more about this project and its results. Findings from this study will be presented to the scientific community and resource managers through presentations, publications, and at EVOS meetings.

Resource Management Applications

The project will develop and validate bioassays that allow dosing of cellular test models of species of concern in a controlled laboratory setting using the contents of an SPMD. The laboratory dosing will provide means to relate the toxicity of the sample to cellular injury and mechanism of toxicity in the species of concern. The injury assessment at cellular level will directly apply to the species of concern, and provides a linkage between bioavailable contaminants and host response. The bioassays also provide methodology options for monitoring of environmental conditions in response to clean up protocols, restoration and remediation via biomonitoring of field sites for site-specific and species-specific effects of bioavailable contaminants.

PUBLICATIONS AND REPORTS

Proposed Peer Reviewed Publications

Manuscripts will be prepared for publication in peer reviewed journals. Candidate target journals include Analytical Biochemistry, Environmental Toxicology and Chemistry, Environmental Health Perspectives, Journal of Aquatic Animal Health, Marine Ecology Progress Series, Aquatic Toxicology, Journal of Toxicology and Environmental Health, Part A, Marine Pollution Bulletin, Cell Biology and Toxicology, Comparative Biochemistry and Physiology.

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Abbreviated Curriculum Vitae

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Visiting Scientist, National Biological Survey, Pacific Islands Science Center, HI (1994)

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Keith Miles, US Geological Survey
John Pearce, US Geological Survey
Margaret Petersen, US Geological Survey
Abby Powell, University of Alaska Fairbanks and US Geological Survey
Nora Rojek, US Fish and Wildlife Service
Dan Rosenberg, Alaska Department of Fish and Game
Sandra Talbot, US Geological Survey
Pamela Tuomi, Alaska SeaLife Center
Markus Öst, Aronia Research Institute

Curriculum Vitae

Name: Kathrine R. Springman

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P.O. Box 2590
Corvallis, OR 97339

Phone: Mobile: (530) 400-4141

E-mail: krspringman@gmail.com

Education: B.S. *cum laude,* University of Texas, Austin
Ph.D., Texas A&M University (toxicology)

Publications:

Kathrine R. Springman, Jeffrey W. Short, Mandy R. Lindeberg, Jacek Maselko, Colin Khan, Peter V. Hodson, Stanley D. Rice. Semipermeable membrane devices link site-specific contaminants to effects: Part I – Induction of CYP1A in rainbow trout from contaminants in Prince William Sound, Alaska (in review).

Jeffrey W. Short, Kathrine R. Springman, Mandy Lindeberg, Jacek Maselko, Colin Khan, Peter Hodson, Margaret Krahn, Stanley D. Rice. Semipermeable membrane devices link site-specific contaminants to effects: Part II – a comparison of lingering *Exxon Valdez* oil with other potential sources of cytochrome P4501A inducers in Prince William Sound, Alaska (in review).

Kathrine R. Springman, Jeffrey W. Short, Mandy Lindeberg, Stanley D. Rice. Evaluation of bioavailable hydrocarbon sources and their induction potential in Prince William Sound, Alaska. *Marine Environmental Research* (in press).

John M. Emlen and Kathrine R. Springman. (2007). Developing methods to assess and predict the population and community level effects of environmental contaminants. *Integrated Environmental Assessment and Management* 3 (2): 157-165.

Jeffrey W. Short and Kathrine R. Springman. (2006). "Identification of Hydrocarbons in Biological Samples for Source Determination," Chapter 12. In: *Oil Spill Environmental Forensics - Fingerprinting and Source Identification*, Zhendi Wang and Scott A. Stout, eds. Elsevier Science.

Rice, S. D., J.W. Short, M.R. Lindeberg, J.M. Maselko, and K. R. Springman. (2006). Evaluation of lingering Exxon Valdez oil compared to other sources as the dominant

source of CYP1A inducers in Prince William Sound 15 years after the spill. Exxon Valdez Oil Spill Trustee Council Restoration Project Final Report (Restoration Projects 060740). Auke Bay Laboratory, National Marine Fisheries Service, Juneau, Alaska.

Kathrine R. Springman, Gael Kurath, James J. Anderson, John M. Emlen (2005). Contaminants as viral cofactors: assessing indirect population effects. *Aquatic Toxicology,* 71(1): 13-23.

Collaborators since 2004:

Jim Anderson: University of Washington
Gary Cherr: University of California, Davis; Bodega Marine Lab
Dave Crane: California Dept. of Fish and Game, Water Pollution Control Lab
John Emlen: USGS, Western Fisheries Research Center
Kyle Garver: USGS, Western Fisheries Research Center; University of Washington
Peter Hodson: Queen's University
Larry Holland: NOAA, Auke Bay Lab
Colin Khan: Queen's University
Margaret Krahn: NOAA, Montlake Lab
Gael Kurath: USGS, Western Fisheries Research Center
Marie Larsen: NOAA, Auke Bay Lab
Mandy Lindeberg: NOAA, Auke Bay Lab
Abdou Mekebri: California Dept. of Fish and Game, Water Pollution Control Lab
Jacek Maselko: NOAA, Auke Bay Lab
Jeep Rice: NOAA, Auke Bay Lab
Jeff Short: NOAA, Auke Bay Lab
Catherine Sloan: NOAA, Montlake Lab
Scott Stout: NewFields Environmental Forensics Practice
Carol Vines: University of California, Davis; Bodega Marine Lab
Zhendi Wang: Environment Canada, Oil Spill Research

BUDGET JUSTIFICATION

Personnel: Ann Riddle, Laboratory Research Manager, will dedicate 6 months in FY10. Responsibilities include management of laboratory operations, including sample cataloging and recordkeeping. She will also manage and participate in all laboratory procedures, including cell isolation, cell characterizations, cell production for bioassays, and laboratory bioassays. The monthly cost of $4.5k in FY10 includes an annual rate of $43.2k plus a 25% fringe benefits rate.

The PI and co-PI work with the Alaska SeaLife Center on a contractual basis, and their contributions and expenses are discussed below.

Travel: Travel to EVOS review meetings in Anchorage from Seward is included in FY10 (two one-day trips).

Travel for the PI to attend the Alaska Marine Science Symposium is included for FY10.

Co-PI Kathrine Springman will need to travel from California to Seward to conduct laboratory work. Four roundtrips are included in FY10.

Travel to an out-of-state conference is requested for the PI, co-PI and Laboratory Research Manager in FY10 to present results of the project.

The only travel requested in FY11 is for two people to attend and present at the Alaska Marine Science Symposium in Anchorage.

Contractual: The PI and co-PI are supported through contractual arrangements with ASLC. They will work together on all aspects of the project, including cell line development, bioassay development, laboratory analysis of site-specific samples in bioassays, data analysis, reporting, and manuscript preparation. Tuula Hollmen will dedicate up to 3 months in FY10 and 1 month in FY11. Kathrine Springman will dedicate up to 6 months in FY10 and 1 month in FY11.

Facilities costs are not included in the ASLC indirect rate, but rather are charged as direct costs based on actual space utilization. This project will use a dedicated isolation room (125 square feet) for all cell culture work during the entire project period and 25% of an analytical laboratory (25% of 435 square feet) for sample preparation and biochemical and DNA analysis.

Commodities: Commodities expenses for FY10 will be for lab supplies, chemicals, reagents and biological source materials to complete specific laboratory tasks. These include:

- Cell characterization and preparation for assays ($6.0k)
- Cell viability and apoptosis ($3.0k)
- Enzyme induction – EROD ($3.0k)
- DNA damage assessment ($8.0k)
- Laboratory consumables ($2.0k)

Equipment: No equipment funding is requested.

Indirect costs: The ASLC indirect rate is calculated as 26.03% of the modified total direct costs (excluding equipment greater than $5,000).

Data Management and Quality Assurance/Quality Control Statement

Data management and quality assurance/quality control will be the responsibility of the PI and Co-PI. We will use required MetaLite freeware and FGDC compliant protocols when developing metadata records for the project

1. This experimental study will be conducted under controlled laboratory conditions to analyze species-specific data as specified in the project plan. The dependent variables to be studied include a battery of bioassays to evaluate a series of endpoints to determine cellular response to contaminant exposure. Response variables include cellular pathology, cell viability, apoptosis, enzyme induction, and DNA damage.
2. Appropriate laboratory quality assurance/quality control measures will be included at all phases of testing and analysis to ensure data quality. Positive and negative controls and intra- and interassay references will be included in test panels to provide a measure of assay performance. Records of assay specifics and performance will be maintained for all laboratory analyses.
3.
    a.) Metadata will be provided if the proposal is funded.
    b.) Quantitative datasets will involve species-specific measurements. Fields associated with dataset:
        i. Cell viability and cell pathology
        ii. EROD activity
        iii. DNA damage
        iv. Chemical profile of materials eliciting responses. Other germane information (e.g. site location, oiling history, data from previous studies from same sites) will be assembled.
4. Described in project plan when applicable.
5. All samples will be collected, appropriately labeled, and frozen by personnel from the ASLC or by collaborators until analyzed. Samples will be stored -20C or -80C freezers, as appropriate, at the ASLC and catalogued to facilitate tracking and distribution. For field samples that are subsequently processed and analyzed at other locations, appropriate chain of custody forms will accompany the samples and be retained with all documentation at ASLC.
6. Calibration of analytical equipment will be performed by methods supported by the manufacturer of the equipment. For GC/MS and other analytical chemistry equipment, see Short et al. (1996)
7. Information collected from laboratory analyses is entered into Microsoft Excel or Access and stored on servers at ASLC. Statistical methods are described in the study plan. Statistical software will include SYSTAT and SAS, and TableCurve 2D will be used for curve fitting. All results will appear in annual reports and peer reviewed publications.

Proposed Amendment to Project 10100839:

Evaluating injury to harlequin ducks (*Histrionicus histrionicus*) caused by sublethal hydrocarbon exposure in Prince William Sound using species-specific cell lines

Status of Project: Major Findings

The findings have been consistent with the rationale for conducting this research. Among these is harlequin ducks' relative sensitivity to CYP1A induction compared to mallard ducks. In tests using hepatocytes from both species, the response in ethoxyresorufin-*o*-deethylase (EROD) assay (a standard biomarker of exposure for oil) from harlequins was significantly greater than that found in mallard cells. This response profile was repeated when results were compared to those obtained using cells from rainbow trout, a standard surrogate species for assessing CYP1A induction. Rainbow trout were used as the test species in previous studies with SPMD extracts obtained from EVOS-affected beaches. Other studies that are underway in Canada may indicate a genetic marker for this sensitivity (Kennedy, personal communication).

The importance of this species-specific sensitivity is connected to the metabolic pathway of oil degradation. Among the products of CYP1A-catalyzed breakdown of oil are hydroxylated, activated polycyclic aromatic hydrocarbons (PAH), many of which are known, probable or suspected carcinogens. This carcinogenicity can begin when activated PAHs cleave to susceptible sites in DNA, forming PAH/DNA adducts which can be stained and counted. We believed this could be conducted under controlled conditions in the lab with site-specific SPMD extracts and species-specific cells, and found that methods we developed in conjunction with the National Cancer Institute (NCI) were promising. The next step was a comparison between what could be obtained in the lab with results from field samples for validation. This involved testing for the presence of these adducts in biopsies taken from harlequin ducks in Prince William Sound by Dan Esler in 2009 which he generously shared with us. These samples were processed, and some were sent to NCI where they were examined for PAH/DNA adduct formation. Preliminary results suggest possible pre-neoplastic lesions in the biopsies. We hope to finish the analysis of these samples this year and compare the results with the results obtained with robust harlequin duck hepatocytes and site-specific SPMD extracts from oiled beaches in Prince William Sound.

This results could not have been obtained without rigorous method development and protocol validation of the techniques used. We have developed methods for the extraction and culture of harlequin duck hepatocytes, their maintenance and preparation for *in vitro* testing as well as the protocols for testing procedure. Consequently, the results we obtain with robust sample stock are consistent through testing seasons.

One of the greatest challenges has been the small quantity of available sample stock (viable, fertile harlequin duck eggs) from which these hepatocytes can be extracted for testing. In such a limited sample pool, the quality of the stock is paramount. In 2010, we were unable to obtain sufficient amount of source materials for reliable testing. As the source material dictates the viability and validity of the results, we prudently chose to replicate the tests performed in 2010 with additional source material.

The chemical results have been received and we have designed testing with site-specific extracts from semipermeable membrane devices (SPMD). This year, we look forward to obtaining the source material (harlequin duck eggs), extracting and culturing the cells, and finishing up the testing phase of this project.

Reasons for Requesting the Amendment

In order to complete this project salary for Kathrine Springman, research faculty at Portland State University, is requested. She asks that this amendment be approved to cover her involvement in the testing, analysis and reporting of test results as her position at PSU relies upon grant funding. This work will include the testing originally scheduled for 2010, the analysis of results in conjunction with NCI, the synthesis of the analytical chemistry results (from SPMD extracts) with the biochemical results obtained in ASLC labs, and the data analysis and interpretation.

2010-11 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 2009 - March 31, 2011

Budget Category:	Authorized FY 2008	Authorized FY 2009	Proposed FY 2010	Proposed FY 2011
Personnel				$0.0
Travel				$0.0
Contractual				$31.1
Commodities				$0.0
Equipment				$0.0
Subtotal	$0.0	$0.0	$0.0	$31.1
Indirect	$0.0	$0.0	$0.0	$7.8
Project Total	$0.0	$0.0	$0.0	$38.9
Trustee Agency GA (9% of Project Total)	$0.0	$0.0	$0.0	$3.5
Total Cost	$0.0	$0.0	$0.0	$42.4
Full-time Equivalents (FTE)	0.0	0.0	0.0	4.5
	Dollar amounts are shown in thousands of dollars.			
Other Resources				

Comments:
We have received funding for FY08-11 for this project (Agreement 10100839) and are now requesting additional funding to complete data analyses in FY11. The Budget reflected here is an estimate only, and may change pending receipt of a formal subaward budget from Portland State University.

FY 10-11

Prepared: 4/4/11

Project Number:
Project Title: Evaluating injury to harlequin ducks (*Histrionicus histrionicus*) caused by sublethal hydrocarbon exposure in PWS using species-specific cell lines
Name: Tuula Hollmen, Alaska SeaLife Center

FORM 4A
Non-Trustee
SUMMARY

2010-11 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 2009 - March 31, 2011

Personnel Costs:			Months	Monthly		Proposed
	Name	Position Description	Budgeted	Costs	Overtime	FY 2011
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
		Subtotal	0.0	0.0	0.0	
					Personnel Total	$0.0

Travel Costs:		Ticket	Round	Total	Daily	Proposed
	Description	Price	Trips	Days	Per Diem	FY 2011
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
					Travel Total	$0.0

FY11

Prepared: 4/4/11

Project Number:
Project Title: Evaluating injury to harlequin ducks (*Histrionicus histrionicus*) caused by sublethal hydrocarbon exposure in PWS using species-specific cell lines
Name: Tuula Hollmen, Alaska SeaLife Center

FORM 4B
Personnel
& Travel
DETAIL

2010-11 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 2009 - March 31, 2011

Contractual Costs:	Proposed FY 2011
Description	
Co-PI - Kathrine Springman (Portland State University) 4.5 months	31.1
Contractual Total	$31.1

Commodities Costs:	Proposed FY 2011
Description	
Commodities Total	$0.0

FY11

Prepared: 4/4/11

Project Number:
Project Title: Evaluating injury to harlequin ducks (*Histrionicus histrionicus*) caused by sublethal hydrocarbon exposure in PWS using species-specific cell lines
Name: Tuula Hollmen, Alaska SeaLife Center

FORM 4B
Contractual & Commodities DETAIL

2010-11 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 2009 - March 31, 2011

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 2011
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$0.0

Existing Equipment Usage: Description	Number of Units	

FY11

Prepared: 4/4/11

Project Number:
Project Title: Evaluating injury to harlequin ducks (*Histrionicus histrionicus*) caused by sublethal hydrocarbon exposure in PWS using species-specific cell lines
Name: Tuula Hollmen, Alaska SeaLife Center

FORM 4B
Equipment
DETAIL

FFY 2012 Draft Work Plan

Exxon Valdez Oil Spill Trustee Council

DRAFT Work Plan for Federal Fiscal Year 2012

Issued March 21, 2011
Revised April 5, 2011

Exxon Valdez Oil Spill Trustee Council
441 W. 5th Avenue, Suite 500
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FISCAL YEAR 2012

DRAFT WORK PLAN

April March 21, 2011
Revised April 5, 2011

Prepared by:
Exxon Valdez Oil Spill Trustee Council

CORA CAMPBELL
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Alaska Department of Law

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Special Assistant to the Secretary for Alaska
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US Department of the Interior

Notice

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

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.

PLEASE COMMENT

You can help the Trustee Council by reviewing this draft work plan and letting us know your priorities for Fiscal Year 2012. You can comment by:

Mail:	Exxon Valdez Oil Spill Trustee Council 441 W. 5th Avenue, Suite 500 Anchorage, AK 99501 Attn: Draft Fiscal Year 2012 Work Plan
Telephone:	1-800-478-7745 Collect calls will be accepted from fishers and boaters who call through the marine operator.
Fax:	907-276-7178
E-mail:	elise.hsieh@alaska.gov

FY12 Proposal Funding Recommendations

Project Number	Principal Investigator	Project Title (abbr.)	Total Requested	FY12 Requested	Total Approved	Science Panel	Science Coord.	PAC	Executive Director	Trustee Council
12120118	Ammann	Community-based Marine Debris Program	$1,000,000.00	$490,000.00	$0.00	Do Not Fund	Do Not Fund	Pending	Do Not Fund	**Pending**
12120115	Anderson	Vessel Wash-Down and Wastewater Recycling Facility	$739,100.00	$739,100.00	$0.00	Fund	Fund	Pending	Fund	**Pending**
10100839-A	Hollmen	Evaluating Injury to Harlequin Ducks	$42,400.00	$42,400.00	$0.00	Not Reviewed	Fund	Pending	Pending	**Pending**
12120112	Jennings	PWS Harbor Cleanup Project	$1,700,000.00	$135,000.00	$0.00	Do Not Fund	Do Not Fund	Pending	Do Not Fund	**Pending**
12120114	McCammon	LTM - Marine Conditions and Injured Resources and Services	$10,566,000.00	$2,027,000.00	$0.00	Fund	Fund	Pending	Fund	**Pending**
12120117	Nixon	Lingering oil distribution modeling	$177,400.00	$177,400.00	$0.00	Fund	Fund	Pending	Fund	**Pending**
12120116	Pallister	Marine Debris Removal	$1,015,000.00	$352,700.00	$0.00	Fund	Fund	Pending	Fund	**Pending**
12120111	Pegau	PWS Herring Research and Monitoring Program	$5,284,000.00	$913,400.00	$0.00	Fund	Fund	Pending	Fund	**Pending**
12120113	Pegau	Lessons learned and implications to future spill response	$699,700.00	$485,200.00	$0.00	Do Not Fund	Do Not Fund	Pending	Do Not Fund	**Pending**
12120119	Whissel	Maine Debris Program	$993,000.00	$993,000.00	$0.00	Do Not Fund	Do Not Fund	Pending	Do Not Fund	**Pending**
Total Funds Requested and Approved			**$22,216,600.00**	**$6,355,200.00**	**$0.00**					

Continuing Projects in FY12

Project #	Principal Investigator	Project Title (abbr.)	FY12 Funding	First Year Funded
10100132-G	Bishop	PWS Herring Survey: Top-Down Regulation by Predatory Fish	$193,400.00	FY10
10100750	Bodkin	Evaluation of Recovery and Restoration of Injured Nearshore Resources	$165,329.00	FY10
10100132-F	Brown	PWS Herring Survey: Herring, Predator, and Competitor Density	$153,055.60	FY10
10100624	Bychkov	Measuring Interannual Variability in the Herring's Forage Base	$65,100.00	FY10
10100132-A	Campbell	PWS Herring Survey: Plankton and Oceanographic Observations	$200,100.00	FY10
10100290	Carls	The Exxon Valdez Trustee Hydrocarbon Database	$9,300.00	FY10
10100132-E	Gay	PWS Herring Survey: Nursery Habitats of Juvenile Pacific Herring	$90,000.00	FY10
10100132-D	Heintz	PWS Herring Survey: Predictors of Winter Performance	$99,000.00	FY10
10100132-I	Hershberger	PWS Herring Survey: Herring Disease Program (HDP)	$295,800.00	FY10
10100132-C	Kline	PWS Herring Survey: Pacific Herring Energetic Recruitment Factors	$265,000.00	FY10
10100132-H	Kuletz	PWS Herring Survey: Seasonal & Interannual Trends in Seabird Predation	$150,900.00	FY10
10100574	Lees	Re-Assessment of Bivalve Recovery	$32,600.00	FY10
10100742	Matkin	Killer Whales in Prince William Sound/Kenai Fjords	$125,775.10	FY10
10100132	Pegau	PWS Herring Survey: Comm. Involvem., Outreach, Logistics, & Synthesis	$354,300.00	FY10
10100132-B	Thorne	PWS Herring Survey: Assessment of Juvenile Herring Abundance	$173,600.00	FY10
10100340	Weingartner	Long-Term Monitoring of the Alaska Coastal Current	$133,600.00	FY10
FY12 Continuing Project Funding Total			**$2,506,859.70**	

Descriptions of New FY12 Proposals

Project Number: 12120118

Project Title: Community-based Marine Debris Program

Principal Investigator: Erika Ammann

Affiliation: NOAA

Co-PIs/Personnel: Laurel Jennings

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY12: $490,000.00	**FY13:** $510,000.00	**FY14:** $0.00
FY15: $0.00	**FY16:** $0.00	**FY17:** $0.00

Total Funding Requested: $1,000,000.00

Abstract:

Marine debris is a persistent and continual threat to the coastal environment of Alaska. These threats range from the direct and acute impacts of ingestion and entanglement to the subtle and chronic impacts of habitat smothering and scarring. These impacts have been documented by scientists as early as 1923 (Williams and Ammann 2009), and continue to be visible in scientific literature as well as the popular press.

The sources of marine debris are as varied as its impacts – ranging from land-based improperly disposed consumer waste to ocean-based recreational and commercial fishing gear and even the contents of shipping containers lost at sea. Addressing marine debris in any area requires a holistic, collaborative and targeted approach that leverages local expertise with established best practices to achieve results. For example, a program that focuses exclusively on beach removal will reduce the amount of debris in the environment, but only for a brief time. Likewise, a program focused strictly on outreach without removal may target the wrong audiences due to a lack of understanding of debris sources, resulting in negligible long-term reduction of new debris.

The complexity of Alaska's coastlines and communities makes a coordinated and complementary approach even more critical. To achieve this result, we propose using EVOS funding to implement a focused two-year marine debris program within the spill affected area. This program will not only perform general debris removal, but will utilize survey data to maximize cost effectiveness and impact reduction by targeting areas with the highest concentrations of debris. Data on debris removal will be combined with existing information to populate an online portal with information on marine debris in Prince William Sound, enabling the public to view results of the efforts as well as gain perspective on the marine debris issue within the EVOS impacted areas. Information from this portal will be combined with existing materials to conduct targeted outreach to communities throughout the region, working to raise awareness and reduce the introduction of new debris as well as encourage active participation in volunteer cleanups, both as part of this program and in the future. Lastly, the program will work with local fishers and communities to establish a recycling program that gives a reasonable alternative to improper or unsustainable disposal practices for fishing nets and other plastics. Specialized potential partners have been consulted to form a proposed program team that will be coordinated by staff from the NOAA Restoration Center and the NOAA Marine Debris Division. These two NOAA programs have partnered since 2005 on a Community Based marine debris removal grant that has been at the forefront of marine debris activities. Through this partnership approach, the team will be able to use EVOS funding to create a program that leverages the invaluable experience of local Alaskan groups with the local experience and national perspective of NOAA staff to address marine debris impacts throughout the EVOS impacted area.

Science Panel Comments:

The panel has several key concerns regarding the proposed program. A significant portion of the funding requested will

be spent in travel costs for the Seattle, WA and Anchorage, AK based team. Also, the public outreach portion of the project appears to be a web portal for information which is not sufficient for meaningful public participation. It appears that while NOAA will be matching for personnel time that it will not be matching the projects. The NOAA staff time provided is for overhead, coordination and some technical assistance. It seems like some projects could provide matching funds. More detail for each proposed project would have to be provided for a more comprehensive review.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:
I concur with the science panel.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Pending

Executive Director Comments:
I concur with the science panel.

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **12120115**

Project Title: **Seward Marine Industrial Center Vessel Wash-Down and Wastewater Recycling Facility**

Principal Investigator: Kari Anderson

Affiliation: City of Seward

Co-PIs/Personnel: None

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY12: $739,100.00	**FY13:** $0.00	**FY14:** $0.00
FY15: $0.00	**FY16:** $0.00	**FY17:** $0.00

Total Funding Requested: $739,100.00

Abstract:

The City of Seward is requesting $739,100 from the Exxon Valdez Oil Spill Trustee Council (EVOSTC) to construct a Vessel Wash-Down and Wastewater Recycling Facility at the Seward Marine Industrial Center. The project would include a concrete pad that drains into a system that collects, treats, and recycles 100 percent of the wastewater for subsequent vessel washing. The project would involve hiring consultants to design and permit the facility and a contractor to build the facility. To engage the public, newsletters, meetings, website updates, and other activities would occur throughout the project. It is expected that the project would take two years to complete. The Vessel Wash-Down and Wastewater Recycling Facility is proposed under the Harbor Protection and Marine Restoration focus area under the Storm Water, Wastewater, and Harbor Projects subject area of the EVOSTC FY 2012 grant program. Seward was initially impacted by EVOS in April 1989. In the years following the Spill, the area has struggled to recover. The City of Seward is proposing the Vessel Wash-Down and Wastewater Recycling Facility because standard vessel wash-down procedures can release toxic metals and liquid and solid wastes from antifoulants and hull maintenance debris into the marine environment. The project would help protect Resurrection Bay from incremental pollution associated with vessel cleaning and maintenance activities, which could keep the area from recovering from Spill.

Science Panel Comments:

Marine pollution from vessel washdown is a concern in the spill area and can negatively affect the injured and recovering species. The proposal is detailed and the PIs have a high degree of experience.

The project should describe how the long term maintenance of the facility will be supported by the community or harbor operators. It is not clear if there is a long term operating and maintenance commitment by City of Seward. A 5-month timeline (including design) may not be enough time to acquire all necessary permits.

Science Panel Recommendation: Fund

Science Coordinator Comments:

I concur with the science panel and Executive Director.

Science Coordinator Recommendation: Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Pending

Executive Director Comments:

I concur with the Science Panel's recommendations. I would like more information as to whether there is a vessel washdown pad which is pre-designed and information regarding fees charged for use of the facility and the disposition of any profits.

Executive Director Recommendation: Fund

Trustee Council Comments:

Not Available

Trustee Council Decision: Pending

Project Number: **10100839-A**

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

Principal Investigator: Tuula Hollmen

Affiliation: Not Available

Co-PIs/Personnel: Kathrine Springman

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY12: $42,400.00	**FY13:** $0.00	**FY14:** $0.00
FY15: $0.00	**FY16:** $0.00	**FY17:** $0.00

Total Funding Requested: $42,400.00

Abstract:
In order to complete this project salary for Kathrine Springman, research faculty at Portland State University, is requested. She asks that this amendment be approved to cover her involvement in the testing, analysis and reporting of test results as her position at PSU relies upon grant funding. This work will include the testing originally scheduled for 2010, the analysis of results in conjunction with NCI, the synthesis of the analytical chemistry results(from SPMD extracts) with the biochemical results obtained in ASLC labs, and the data analysis and interpretation.

Science Panel Comments:
Not Applicable

Science Panel Recommendation: Not Reviewed

Science Coordinator Comments:
Not Available

Science Coordinator Recommendation: Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Pending

Executive Director Comments:
Not Available

Executive Director Recommendation: Pending

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **12120112**

Project Title: **PWS Harbor Cleanup Project**

Principal Investigator: Laurel Jennings

Affiliation: NOAA

Co-PIs/Personnel: Erika Ammann

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY12: $135,000.00	**FY13:** $476,666.00	**FY14:** $476,666.00
FY15: $476,668.00	**FY16:** $135,000.00	**FY17:** $0.00

Total Funding Requested: $1,700,000.00

Abstract:
The National Oceanic and Atmospheric Administration (NOAA) Restoration Center (RC) proposes to establish a new funding opportunity for Prince William Sound coastal communities to help them prevent small but damaging toxic releases originating from harbors and marinas. This opportunity will build upon existing resources and knowledge and provide communities with a long serving set of methods for handling small spills and re-engage an already informed group of concerned citizens to help run the program after the five years of EVOS funding is completed. This effort will review past EVOS assistance to harbors ensuring that past EVOS expenditures for equipment are utilized to the maximum efficiency, identify technology advancements that can improve current activities in the marinas, and create a local investment and ownership in the success of chosen projects. The purpose of this project will be to protect marine resources negatively affected in EVOS from future aggravation and pollution.

Science Panel Comments:
The panel has several key concerns regarding the proposed program. First, a significant portion of the funding requested will be spent in administrative and travel costs for the Seattle, WA and Anchorage, AK based team. Second, the narrative does not provide enough information to determine the potential effectiveness of the program. Finally, there is no established plan for outreach and education that would be critical for this type of effort.

There are only general descriptions of types of activities that might be included in community-specific plans. There are references other Best Management Practices (BMP) but does not commit to following any particular BMP. There seems to be overlap in scoping and assessment phases with an already existing Alaska Clean Harbor project funded for $282,615 by CIAP grant (see CIAP approved state plan, http://dnr.alaska.gov/coastal/CIAP/ciap_Fall.htm). Unless coordination is required, there may be duplication of effort with the Clean Harbor program at significantly higher expense in this project. Travel costs seem high, especially in the implementation phases that do not involve public outreach. Most of the staff is coming from Seattle which increases the cost, but there is not much justification in the proposal other than relationship building with communities. The listed project managers do not seem to have much experience with harbor operations, so technical assistance may be limited.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:
I concur with the science panel.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Pending

Executive Director Comments:
I concur with the science panel.

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **12120114**

Project Title: **Long-Term Monitoring of Marine Conditions and Injured Resources and Services**

Principal Investigator: Molly McCammon

Affiliation: Alaska Ocean Observing System

Co-PIs/Personnel: Nancy Bird, Kris Holderied

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY12: $2,027,000.00	**FY13:** $1,997,000.00	**FY14:** $2,373,000.00
FY15: $2,048,000.00	**FY16:** $2,121,000.00	**FY17:** $0.00

Total Funding Requested: $10,566,000.00

Abstract:
In the two decades following the Exxon Valdez oil spill (EVOS), and after extensive restoration, research and monitoring efforts, it has been recognized that full recovery from the spill will take decades and requires long-term monitoring of both the injured resources and factors other than residual oil that may continue to inhibit recovery or adversely impact resources that have recovered. Monitoring information is valuable for assessing recovery of injured species, managing those resources and the services they provide, and informing the communities who depend on the resources. In addition, long-term, consistent, scientific data is critical to allow us to detect and understand ecosystem changes and shifts that directly or indirectly (e.g. through food web relationships) influence the species and services injured by the spil

An integrated monitoring program requires information on environmental drivers and pelagic and benthic components of the marine ecosystem. Additionally, while extensive monitoring data has been collected thus far through EVOS Trustee Council-funded projects as well as from other sources and made publicly available, much of that information needs to be assessed holistically to understand the range of factors affecting individual species and the ecosystem as a whole. Interdisciplinary syntheses of historical and ongoing monitoring data are needed to answer remaining questions about the recovery of injured resources and impacts of ecosystem change. We propose to develop and implement a long-term monitoring program that meets the need for information to guide restoration activities, including data on the status and condition of resources, whether they are recovering, and what factors may be constraining recovery. The ultimate goal of the long-term monitoring program is to provide sound scientific data and products to inform management agencies and the public of changes in the environment and the impacts of these changes on injured resources and services.

Science Panel Comments:
This proposal is well presented and provides a thorough long-term monitoring program for the spill area. The team is experienced and well -qualified to complete the proposed work. The outreach and education strategies and partnerships are well thought-out and have the potential to provide effective means to disseminate information and engage community members in understanding the results of the integrated monitoring program. The potential future development of a citizen monitoring program would provide another effective strategy. The Science Panel was especially impressed with the section called 'cross-cutting' that showed the linkages with the Herring Program.

Gathering and making data available will be the keystone of this program. The Science Panel expressed serious concerns about past performance of some participants and that the data management team does not have sufficient expertise or scientific guidance to deliver a useable data system. In addition, it is not clear at all there is a plan for the inclusion of structurally diverse data: where and how will such data be organized so that relevant data and metadata from a broad array of disciplines can be assembled in one database. The panel viewed this as this as an informatics problem that, if not resolved at the onset, will jeopardize the long-term program. There is a very clear need to overcome critical technological impediments to accomplishing synthetic, integrative environmental science, while at the same time promoting more open access to information and data sharing. It is critical that this database be open source and be compliant with the Knowledge Network for Biocomplexity metadata compliant with Ecological Metadata Language. In

addition, there should be a plan from the outset as to how to incorporate this data into NPRB's GOAIERP program at the end of the first five-year contract cycle.

Therefore, we strongly recommend that the Council provide assistance from an organization such as the National Center for Ecological Analysis and Synthesis (NCEAS) for peer review and technical assistance to the data management team. Estimated Cost: approximately $130,000.

With regard to the separate lingering oil monitoring proposal included within the Program proposal, the Panel has no objection to the funding of this additional project.

Science Panel Recommendation: Fund

Science Coordinator Comments:

I agree with the science panel and Executive Director. I also have serious concerns regarding the data program and would encourage the Council to assist the team by providing funding for a comprehensive review of the data program.

Science Coordinator Recommendation: Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Pending

Executive Director Comments:

I concur with the Science Panel's recommendations. I suggest the additional funding for the data work with NCEAS (estimated at approximately $130,000) be drawn from the funds formerly to be allotted for the Response, Damage Assessment and Restoration Implications (Lessons Learned) portion of the FFY'12 Invitation, should the Council follow the Science Panel and ED Recommendations not to fund that proposal .

Executive Director Recommendation: Fund

Trustee Council Comments:

Not Available

Trustee Council Decision: Pending

Project Number: **12120117**

Project Title: **Spatial synthesis of lingering oil distribution modeling with population and biomarker data for recovering species**

Principal Investigator: Zachary Nixon

Affiliation: Research Planning, Inc.

Co-PIs/Personnel: Brenda Ballachey, Jim Bodkin, Dan Esler, Jacqui Michel

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY12: $177,400.00	**FY13:** $0.00	**FY14:** $0.00
FY15: $0.00	**FY16:** $0.00	**FY17:** $0.00

Total Funding Requested: $177,400.00

Abstract:

Much recent work has been carried out in Prince William Sound (PWS) to characterize the distribution and ongoing impacts of lingering subsurface oil from the Exxon Valdez Oil Spill (EVOS). The ongoing work of Bodkin et al., Esler et al., and Monson et al., (1994, 1999, 2000, 2002, 2010, in press) have provided an unprecedented understanding of the ongoing recovery status of certain recovering species via detailed population dynamics and measures of individual health: biomarker expression, contaminant concentrations, and pathological effects. In parallel, Michel et al.,(2009) and Boufadel et al., (2010) have successfully characterized, synoptically, and in spatial detail, the distribution of and factors contributing to the ongoing presence of lingering oil reservoirs within PWS and the wider EVOS impact area. We propose to synthesize these two bodies of work by rigorously examining the strength of spatial correlations between measures of recent and ongoing impact to recovering species, at both the individual and population level, and where lingering subsurface oil is specifically estimated to persist. Presence or absence of such links will provide insight into the recent and potentially ongoing nature of the impact of this oil, and could guide proposed remediation efforts with specificity not previously possible.

Science Panel Comments:

The science panel recommends this proposal for funding.

Science Panel Recommendation: Fund

Science Coordinator Comments:

Not Available

Science Coordinator Recommendation: Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Pending

Executive Director Comments:

Not Available

Executive Director Recommendation: Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **12120116**

Project Title: **Marine Debris Removal**

Principal Investigator: Chris Pallister

Affiliation: Gulf of Alaska Keeper

Co-PIs/Personnel: None

Project Location: Gulf of Alaska

Funding Requested by Fiscal Year:

FY12: $352,700.00	**FY13:** $377,300.00	**FY14:** $285,000.00
FY15: $0.00	**FY16:** $0.00	**FY17:** $0.00

Total Funding Requested: $1,015,000.00

Abstract:

GoAK is submitting a comprehensive 3-part marine debris cleanup program. We understand that the call of this grant is to provide $1,000,000 of funding for marine debris removal over a 2-year period. Immediately following are two proposed cleanup projects for 2012 and 2013 that request a total EVOSTC funding level of $730,000. The proposed projects for 2012 and 2013 have also been included as part of the marine debris proposal submitted to EVOSTC by the NOAA team. However, at the urging of Peter Murphy, NOAA's MD Regional Coordinator (see attached letter from Peter Murphy, NOAA MD Regional Coordinator, pg.54), and after consultation with EVOSTC staff, GoAK is also submitting an alternative proposal. This alternative proposal includes the proposed 2012 and 2013 removal projects, plus a request for a third year of funding for a project in 2014. We hope this proposal is considered carefully. These three projects in total request $1,015,000 in EVOSTC funding. Over a three year period, GoAK can match EVOSTC funding at more than a 1 to 1 level. Stretching the funding over three years allows GoAK to raise more matching funds to help clean another 20 miles of horribly fouled coast and remove an additional 80 to 100 tons of plastic marine debris. We submit these projects with the intention that if EVOSTC decides not to fund a third year project, then it would consider the 2012 and 2013 projects as the complete proposal. For that reason, we have submitted complete project budgets and descriptions for each individual cleanup season.

Science Panel Comments:

This long term marine debris removal program has been ongoing for the past 10 years. The costs seem to be reasonable considering the logistics, although it was unclear if they are relying on the NOAA grant to complete the work. The PI's are experienced but outreach efforts are weak and the project lead is in Anchorage. The team leader should speak with Village of Eyak team to see if there might be an opportunity for partnership.

Science Panel Recommendation: Fund

Science Coordinator Comments:

I concur with the science panel and the Executive Director.

Science Coordinator Recommendation: Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Pending

Executive Director Comments:

I concur with the Science Panel's recommendations. The proposal is extremely detailed and the PIs are already achieving a high level of debris survey and removal. Their familiarity with and effectiveness in this area is impressive.

However, to increase community outreach and education regarding marine debris, I recommend that GOAK send boxes to spill community schools with small examples of different types of marine debris , photos, and a brief narrative regarding marine debris for use in the classroom.

If EVOSTC funding is appropriate for matching or if the PI believes a longer project period has other benefits, I recommend extending the funding over the longer time period to allow for that opportunity.

Executive Director Recommendation: Fund

Trustee Council Comments:

Not Available

Trustee Council Decision: Pending

Project Number: 12120111

Project Title: PWS Herring Research and Monitoring Program

Principal Investigator: William Pegau

Affiliation: Prince William Sound Science Center

Co-PIs/Personnel: None

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY12: $913,400.00	**FY13:** $1,002,500.00	**FY14:** $1,236,100.00
FY15: $1,095,300.00	**FY16:** $1,036,700.00	**FY17:** $0.00

Total Funding Requested: $5,284,000.00

Abstract:

Robust Pacific herring (Clupea pallasii) populations, suitable for exploitation by commercial fisheries, are typically sustained by periodic recruitment of strong year classes into the adult spawning population. However, the Prince William Sound (PWS) herring population has not had a strong recruitment class since 1989, when the Exxon Valdez Oil Spill (EVOS) occurred. In the EVOS settlement herring were identified as an injured resource and they remain listed as an unrecovered species by the EVOS Trustee Council (EVOSTC). Understanding why herring have not recovered in Prince William Sound requires understanding potential bottlenecks in the herring life cycle. The identification of the limiting conditions to herring recovery requires a series of focused process studies combined with monitoring of the natural conditions that affect herring survival.

Described here are projects for a program that will enhance the current monitoring efforts of the Alaska Department of Fish and Game (ADF&G), and examine aspects of particular life stages to allow better modeling of herring populations. The long-term goal of the program is to improve predictive models of herring stocks through observations and research. While we do not anticipate that there will be a major change in our modeling ability in the next five years, we expect that the combination of monitoring and focused process studies will provide incremental changes over the next twenty years and result in a much better understanding of herring populations by the end of the program.

Science Panel Comments:

This program seeks to add to the existing body of knowledge that began under the PWS Herring Survey program in FY10. The proposed projects will provide both new and continuing information regarding the current status of herring in PWS. The data collected under this program will be made available to researchers and the public and will provide critical information for resource managers. The continuation of current outreach and education strategies from the PWS Herring Survey projects and the additional strategies in the proposal have the potential to provide effective means to disseminate information and engage the fishing community and other community members in understanding the results of the integrated monitoring program.

The Panel recommends funding most components of this proposal, but reiterates the same serious concern about the data management components. Again the science panel strongly recommends that the Council provide assistance from an organization such as the National Center for Ecological Analysis and Synthesis (NCEAS) for peer review and technical assistance to the data management team. Cost: approx. $70,000

The success of this proposal will depend on the reliability of herring spawn surveys which are not part of the present groups of proposals. Herring assessments in PWS, and everywhere else in the eastern Pacific, use spawn surveys as an essential part of the assessment. The approach currently used in PWS differs from all others in the use of mile-days, whereas all other jurisdictions use a static measure of spawn, once spawning is completed. Also, the completeness of the spawn surveys has been questioned. (Note: these comments should not be construed as criticism of ADFG or their staff because the panel recognizes the effort and dedication made by such staff. On the contrary, the comments and

recommendations related to spawn surveys should be seen as an initiative to provide assistance to field staff associated with herring assessment. The benefits of such assistance will accrue both to the science and management of PWS herring). Nearly all of the proposals are predicated on the availability of reliable herring spawning biomass assessments that are, in turn, dependent on accurate spawn surveys. To provide credible support for these proposals and for management advice future estimation of spawn must be made with a level of accuracy that consistent with that used in other jurisdictions. To provide credible management advice future estimation of spawn must be made with a level of accuracy that is required to support the assessments. There are concerns that substantial amounts of spawn may have gone undetected in some years and that some of the past spawn estimates may have been made inaccurately through error in the estimated width and density of spawn. Such concerns may not be valid but there is no way to determine this without additional work. Therefore to evaluate whether the accuracy and reliability of present and past estimation of herring spawn in PWS is accurate, we recommend developing diver-assisted surveys. The science panel noted that diver surveys, yielded different results in the past (details provided in Recommendations to Team Leader). This would also include an assessment model and biological sampling review. Estimated Cost: approx. $250,000/year funding for a two-year spawn survey ($500,000 total)

Science Panel Recommendation: Fund

Science Coordinator Comments:

I concur with the science panel. I also have serious concerns regarding the data program and would encourage the Council to assist the team by providing funding for a comprehensive review of the data program.

Science Coordinator Recommendation: Fund

Public Advisory Committee Comments:

Not Available

Public Advisory Committee Recommendation: Pending

Executive Director Comments:

I concur with the Science Panel's recommendations. I suggest the additional funding for the herring spawn surveys (approximately $250,000/year for two years for a total of $500,000) and data activities with NCEAS (estimated at approximately $70,000) be drawn from the funds formerly to be allotted for the Response, Damage Assessment and Restoration Implications (Lessons Learned) portion of the FFY'12 Invitation, should the Council follow the Science Panel and ED Recommendations not to fund that proposal.

Executive Director Recommendation: Fund

Trustee Council Comments:

Not Available

Trustee Council Decision: Pending

Project Number: **12120113**

Project Title: **EVOS twenty five years later: Lessons learned and implications to future spill response**

Principal Investigator: William Pegau

Affiliation: Prince William Sound Science Center

Co-PIs/Personnel: None

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY12: $485,200.00	**FY13:** $214,500.00	**FY14:** $0.00
FY15: $0.00	**FY16:** $0.00	**FY17:** $0.00

Total Funding Requested: $699,700.00

Abstract:
The Exxon Valdez oil spill created fundamental changes to our approach to oil spill response and recovery. It led to sweeping federal and state legislation, such as the Oil Pollution Act of 1990 and Alaska State House Bill 567. It also led to sweeping changes in our approach to spill response. Some of the lessons learned have become standard practice, such as not using high-pressure hot water washes on natural beaches, while others appear not to have become ingrained in modern spill response. Now that nearly 25 years have passed we have the opportunity to look back at the decisions that were made and see the full impact of those choices to ensure we pass on the important lessons learned from the Exxon Valdez oil spill.

It is far from the first time that we have stopped to examine the impact of the oil spill. The amount of reports, conference presentations, books, and journal articles about the Exxon Valdez oil spill is staggering. Lessons learned documents start while the spill was still being cleaned up [Skinner and Reilly, 1989]. With more published within a year of the spill [Alaska Oil Spill Commission, 1990; Steiner and Byers, 1990]. There was the Exxon Valdez Oil Spill Symposium [1993a] that examined the damages caused by the spill. Conference proceedings examining the fate and effects [1995]. There have been conferences and reviews associated with the fifth, tenth, and twentieth anniversaries [1994a; 1999; 2009]. The early reviews of the science being conducted spawned the annual Alaska Marine Science Symposium. The main body of the existing work is focused on the ecological impacts and recovery. The fifth anniversary document has the most focus on response and damage assessment aspects and even then it focuses on what occurred or programs implemented rather than the lessons learned. It remains important to document the lessons learned in response, assessment, and restoration phases for future generations. At this point much of the existing knowledge is being lost as people with experience begin to retire.

Science Panel Comments:
This proposal is motivated by a legitimate concern that management agencies have the opportunity to benefit from the experience of the responders following EVOS. A specific goal is to ensure publication of information about a summary of response actions following EVOS with regard to effectiveness and collateral injury caused unintentionally by from clean-up responses or restoration actions.

The science panel endorsed the rationale for this specific proposal but retain a number of serious concerns about a number of aspects of the proposal.

First, it is unclear that sufficient scientific analysis has been done on all the questions identified in the proposal to support a valid, rigorous analysis of benefits and costs of each. Second, NOAA HAZMAT program has extensive experience in the arena and should be consulted in the planning. Third, related data are needed from other spills in other countries, such as Norway, to provide other independent sources of data that should be incorporated into each chapter. Fourth, the authors are not identified for the chapters so it is not clear who knows the data sufficiently well to address the questions. Fifth, the science panel expressed concern about whether the PI has sufficient time available to effective

conduct this work. Sixth, we have concerns about the appropriateness of a book as opposed to publications in the literature of technical reports. Specifically books can be expensive and have limited circulation. Finally, the US Coast Guard has responsibility for oil spill response and their guidance documents need to be discussed and used to guide the project.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:
I concur with the science panel.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Pending

Executive Director Comments:
I concur with the science panel.

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

Project Number: **12120119**

Project Title: **Maine Debris Program**

Principal Investigator: John Whissel

Affiliation: Native Village of Eyak

Co-PIs/Personnel: Keith Van den Broek

Project Location: Prince William Sound

Funding Requested by Fiscal Year:

FY12: $993,000.00	**FY13:** $0.00	**FY14:** $0.00
FY15: $0.00	**FY16:** $0.00	**FY17:** $0.00

Total Funding Requested: $993,000.00

Abstract:
Marine Debris (MD) is of great concern to the Native Village of Eyak's (NVE) tribal membership, and the commercial fishing community of Cordova, Alaska where NVE is based. Cordova is located in the southeast corner of Prince William Sounds where the tanker Exxon Valdez ran aground in 1989 spilling oil into Prince William Sound (PWS) at Bligh Reef. The Exxon Valdez Oil Spill (EVOS) contaminated the western half of PWS and continued into the Gulf of Alaska (GOA) past the Alaska Peninsula impacting a huge area where recovery efforts are still underway.

Just as these currents from the east pushed EVOS oil out of PWS and into GOA to the west, the recovery area is populated with water that passes the shores of the GOA to the southeast of PWS. This area is known to NVE, its partners and the National Oceanic and Atmospheric Association (NOAA) to have high accumulation rates of MD, with plastic debris being the most prevalent. A 2010 cleanup effort on Egg Island showed that the dominant type of MD was plastic, and this finding was repeated in NOAA surveys conducted in 2008 where plastic was prevalent in the MD surveyed on Kayak and Middleton Island.

The beaches of Kayak Island, Kanak Island, Egg Island, Katalla and Okalee Spit are in this area immediately "upstream" of the EVOS recovery zone, and have all been observed to hold large amounts of MD, and several reefs in the area around the Copper River Delta are known to have derelict fishing gear. This area, therefore, is a source of MD that winter storms could easily wash off the beaches and reefs and into the GOA where dominant currents would bring the MD directly into the EVOS recovery zone

There are significant challenges in addressing MD in this part of the GOA, which is largely why MD cleanup efforts here have been minimal compared to other more accessible areas.

Science Panel Comments:
This proposal an attractive program based on its focus on local community involvement, cost matching ability, and suite of ongoing projects that the funds would serve. However, the activities suggested and current level of involvement do not suggest that this proposal will be highly effective in the removal of marine debris.

The costs of the program appear reasonable, but without a detailed breakdown it was hard to tell if the various components of the project were cost effective (e.g. how much they are spending assessing, cleaning up, or doing the recycling program). Although the proposal gives a scientific review committee, it lacks process engineer. Also, it mentions that the US Coast Guard will sling load the debris out, but this could be very costly and could significantly influence how much gets done. A single fiscal year seems tight for all the activities including planning, MD analysis, data collection, cleanup and disposal as well as recycling and public outreach events.

Science Panel Recommendation: Do Not Fund

Science Coordinator Comments:
I concur with the science panel.

Science Coordinator Recommendation: Do Not Fund

Public Advisory Committee Comments:
Not Available

Public Advisory Committee Recommendation: Pending

Executive Director Comments:
I concur with the science panel.

Executive Director Recommendation: Do Not Fund

Trustee Council Comments:
Not Available

Trustee Council Decision: Pending

OLD HARBOR
NATIVE CORPORATION

April 19, 2011

Via Fax (907) 276-7178 and Hand Delivery

Exxon Valdez Oil Spill Trustee Council

John J. Burns, Attorney General, Alaska Department of Law
Craig R. O'Connor, Special Counsel, NOAA, U.S. Department of Commerce
Larry Hartig, Commissioner, Alaska Department of Environmental Conservation
Steve Zemke, Trustee Alternate, Chugach National Forest, U.S. Department of Agriculture
Kim Elton, Special Assistant to the Secretary for Alaska, U.S. Department of Interior
Cora Campbell, Commissioner, Alaska Department of Fish and Game

441 W. 5th Ave., Suite 500
Anchorage, AK 99501

Re: Old Harbor Hydroelectric Project

Dear Members of the Trustee Council:

Thank you for taking up today consideration of a Council resolution that would facilitate the construction of a hydroelectric project near the village of Old Harbor, Alaska conditioned upon approval of a new license by the Federal Energy Regulatory Commission (FERC) and fulfillment of certain other conditions including obtaining the required approvals by pertinent local, state and federal agencies.

Background

As the Trustee Council knows, it approved a resolution in 2001 to facilitate the construction of a hydroelectric project in Old Harbor. Because of a substantial drop in diesel fuel prices for the Alaska Village Electric Cooperative's (AVEC) current power generator in Old Harbor, the prior hydroelectric project became uneconomic to pursue. Since then, Old Harbor's partner in this project, AVEC, has adjusted the original route of the water pipeline to nearby lands adjacent to the earlier route as well as relocated some of the related infrastructure so as to make the project more economically feasible and buildable as well as more environmentally benign. Since the route would change between approximately 75 and 250 yards from the original route, and since the original FERC license has expired, it became necessary for us to obtain new approval to proceed.

The Old Harbor Native Corporation, the City of Old Harbor and AVEC, the non-profit electrical utility provider in Old Harbor, are proposing to complete final design and permitting for a small 300 kw hydroelectric project in Old Harbor, Alaska. The State of Alaska FY 2010 Community Development Block Grant for design funding was recently approved for $250,000 (copy attached) by the Alaska Department of Commerce. This will greatly assist this next phase of the project.

At present, Old Harbor has a stand-alone diesel-fueled electric power generator that is not connected with other communities. The energy load is fairly constant, with the bulk of electricity consumed by residences, businesses, hunting and fishing lodges, bed and breakfasts, the fire station and health clinic, and the school.

The proposed hydroelectric project is a 300-kilowatt "run of the river" hydroelectric plant with a diversion structure, pipeline (or penstock), power house, electric line, and access road. The project involves collecting up to 7 cubic feet per second (cfs) of water year-round from the Mountain Creek tributary of Barling Bay Creek and transporting it to a tributary of Lagoon Creek. A small weir will impound water to divert it through the intake structure where leaves and sediment will be filtered out. The water will then enter the pipeline or penstock, which consists of low-pressure plastic pipe in the upper section, and steel pipe in the lower section to handle the higher pressures. The majority of the pipeline would have a diameter of 12 inches. The penstock would end at a power house where water would flow through turbines and energy would be produced. Water would flow out of the power house, through a tail race, and into a small lake. The water would then flow to a tributary of Lagoon Creek. Electricity produced in the power house would be transported to the community via overhead power lines. A one-lane access road would run the entire length (approximately 3 miles) of the project from the community to the impoundment area.

Community Need

This project is needed to decrease diesel consumption, stabilize and hopefully over time reduce energy costs, and reduce the impacts on air quality and potential impacts on the environment. The project would displace an estimated 95% of the fuel currently consumed.

Old Harbor is classified as an isolated village, and it is found in EMS Region 2G in the Kodiak Region. Local hospitals or health clinics include the Old Harbor Health Clinic. Emergency Services have coastal and air access. Emergency service is provided by volunteers and a health aide. Auxiliary health care is provided by the Old Harbor Village Response Team. Medical problems and emergencies must be relayed by telephone or by some other communication means for outside assistance. Operation of the telephone system requires electricity. Reliable telephone service needs reliable and affordable electric service.

Like all of Alaska, Old Harbor is subject to long periods of darkness. Affordable electric service is essential for the operation of home lighting, streetlights, and security lighting. Outside lighting ensures the safety of children, particularly at times of the year when there is increased possibilities of bears from the adjacent refuge entering the village.

Old Harbor practices its traditional Alutiiq culture and subsistence lifestyle. Most residents depend to some extent on subsistence activities for food sources, such as salmon, halibut, crab, deer, seal, rabbit, and bear caught near the community and stored in refrigerators and freezers. Refrigeration is essential for the extended storage of perishable food stuffs, and reliable, affordable electric service is needed for proper freeze storage of food.

With stabilized energy costs the community would be able to develop economic opportunities, including a proposed frozen fish processing plant. Increased local economic opportunities would put more people to work in the community and help alleviate the rural-urban migration occurring in many locations throughout Alaska, including Old Harbor, and help provide future incentive for people to choose to live and work in the village.

Because over 51% of the population of Old Harbor lives is low income, stabilized or reduced power costs would be directly benefit medium and low income persons. The anticipated benefits of installation of the hydroelectric project would be reducing the negative impact of the cost of energy by providing a renewable energy alternative. This project could help stabilize energy costs and provide long-term socio-economic benefits to village households.

Old Harbor residents' health and safety would benefit from the environmental benefits resulting from a reduction of hydrocarbon use, including reduced potential for fuel spills or contamination during transport, storage, or use (thus protecting vital water and subsistence food sources) and improved air quality.

Modifications of Covenants

A small modification in the 1995 restrictive covenants included in the warranty deed and easements with the U.S. and the State appear to be necessary for the project to move forward. Most of the tailraces and access road are proposed within land which OHNC conveyed to the U.S. with a conservation easement to the State. Because the currently proposed hydroelectric project would violate those covenants, they need to be addressed in order to permit the project to be constructed, maintained and operated.

The environmental impacts of the currently proposed hydroelectric project have decreased from the last effort. These changes have been well received from the various agencies. It appears that people have assessed that the project would be beneficial for the community with minimal adverse impacts. Please see the attached maps showing the previously approved route and the newly proposed route and the general project area.

On behalf of Old Harbor Native Corporation, I request the Trustee Council's consideration and authorization for amending the 2001 Amendment so as to permit the construction of this project once required conditions are met.

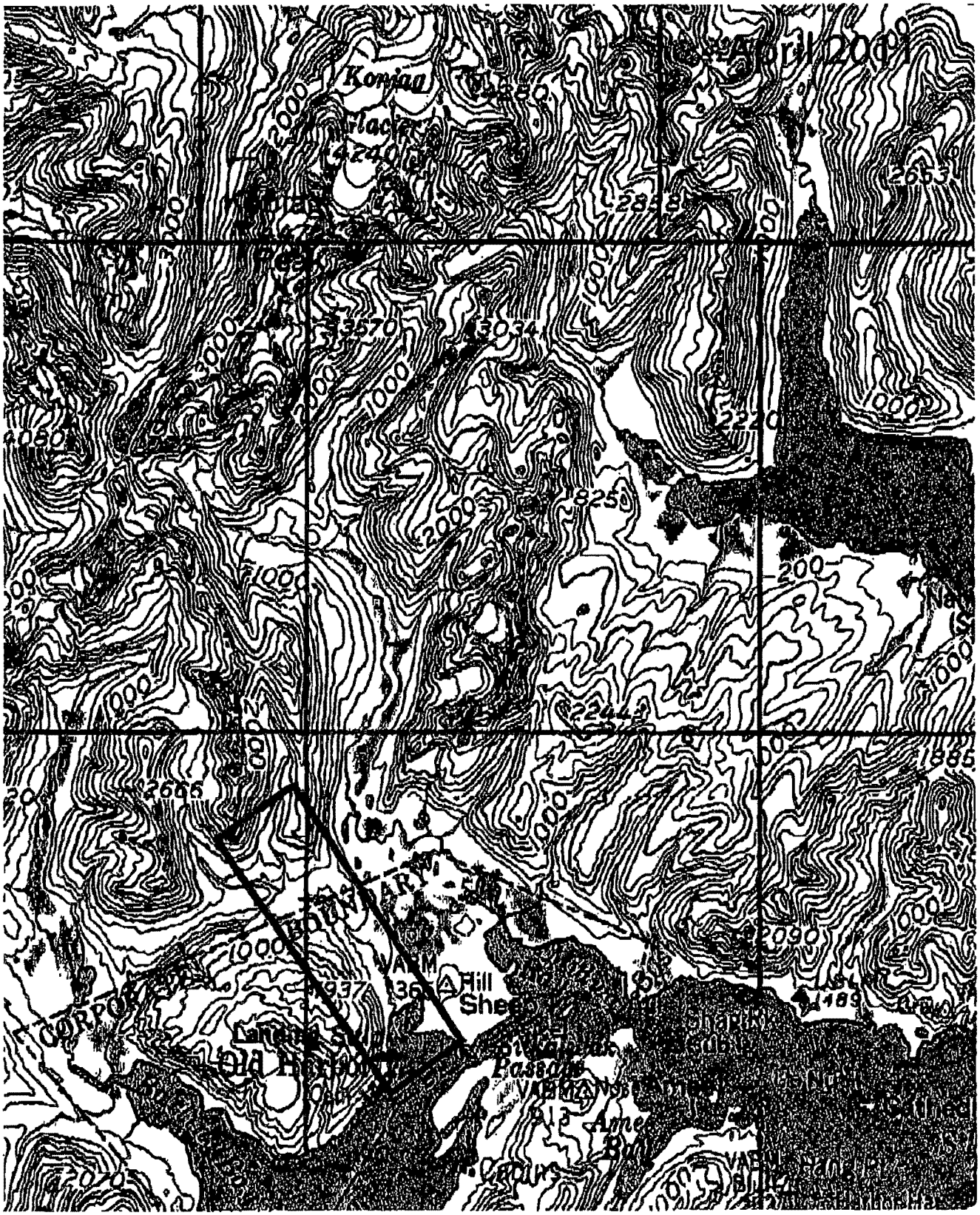
We appreciate very much your consideration of our request as this is a vital project that we believe will help, along with other initiatives currently underway by the village, to enhance our community's ability to increase economic, educational and quality of life opportunities for village residents for the future.

Sincerely,

Emil Christiansen, Sr.
President

Enclosures: (1) Map of Hydroelectric Project Area
(2) Map: Approximate depiction of the route of the water pipeline and related facilities for the former and the modified project
(3) CDBG Block Grant Approval by the Alaska Department of Commerce

cc: Meera Kohler, President and CEO, Alaska Village Electric Cooperative
Board of Directors, Old Harbor Native Corporation



Old Harbor Hydroelectric Project
General Project Area

STATE OF ALASKA

OFFICE OF THE GOVERNOR

OFFICE OF MANAGEMENT AND BUDGET

SEAN PARNELL, GOVERNOR

P.O. BOX 110020
JUNEAU, ALASKA 99811-0020
TELEPHONE: (907) 465-4660
FAX: (907) 465-3040

March 2, 2011

The Honorable Rick Berns
Mayor
City of Old Harbor
2703 Denali Street, Suite 100
Anchorage, AK 99503

Mr. Carl H. Marrs
Chief Executive Officer
Old Harbor Native Corporation
2703 Denali Street, Suite 100
Anchorage, AK 99503

Re: Old Harbor Hydroelectric Project

Dear Mayor Berns and Mr. Marrs,

Thank you for your letter to Governor Parnell and for the update on the progress the City of Old Harbor has made regarding the proposed hydroelectric project.

The coordination between the City of Old Harbor and the Alaska Village Elective Cooperative, Inc. (AVEC), to jointly apply for a state Community Development Block Grant (CDBG) to help advance this project is commendable. The Department of Commerce, Community & Economic Development, Division of Community & Regional Affairs, is currently reviewing applications for the Community Development Block Grants and will announce grant awards in March of this year.

I also understand that AVEC has made substantial progress on the preliminary engineering and environmental field studies in support of the FERC licensing and permitting of the hydroelectric project in Old Harbor with a grant from the Renewable Energy Fund (REF) awarded through the Alaska Energy Authority. The Alaska Energy Authority has also completed review and scoring of the latest round of Renewable Energy Fund grant applications and has recommended an award of $237,500 for this project which will be subject to funding for the REF grants in FY2012.

As you know, the Governor's budget is the starting point for working with Alaskans and the Legislature on the spending plan for the next fiscal year. Your participation in that process is appreciated.

Thank you again for writing.

Sincerely,

Karen J. Rehfeld
Director

Map shows modified pipeline route, power house site, and access road of the proposed Old Harbor Hydroelectric Power Project for the Village of Old Harbor, Alaska.

OHNC Lands Subject to a Conservation Easement

Kodiak National Wildlife Refuge Lands

Intake

Pipeline - new route

Pipeline - old route

Penstock

Power House Building

Tailrace

Powerline & Road

Access Road Penstock

The Lake

Existing Trails

Old Harbor Native Corporation Lands

New Water Tower

New Road to Water Tower

Water Pump House

Village

Lagoon

Kodiak National Wildlife Refuge

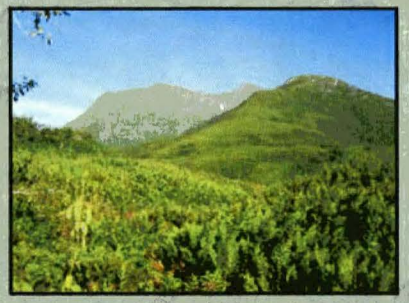
OHNC Land with Conservation Easement

Old Harbor Native Corporation Conservation Easement

Old Harbor Native Corporation Lands with Conservation Easement

Old Harbor Native Corporation

City of Old Harbor



Upper Reaches of Project Area

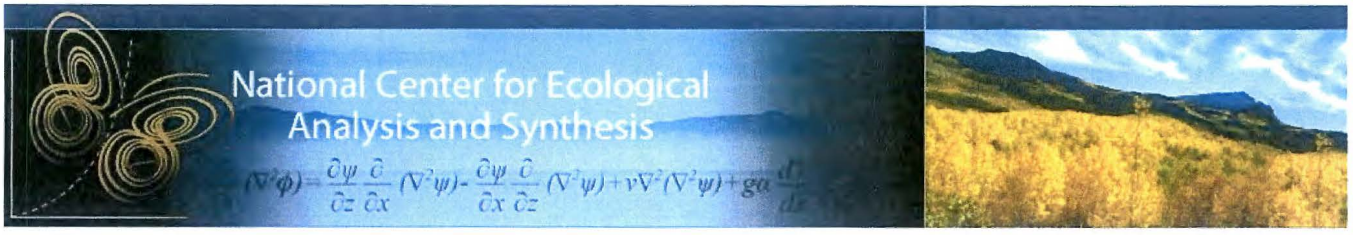
Lower Reaches of Project Area

The Lake

0 1,000 2,000 Feet

Scale 1:12,000

Property boundaries are only approximate



The Impact of NCEAS

NCEAS has hosted over 4,000 individuals and supported more than 400 projects since its inception in 1995. The projects have produced a wide array of outcomes, from specific results to general knowledge within and across disciplines and the application of science to resource management. NCEAS has engaged hundreds of graduate students and grade school children, and has developed information access tools that are becoming the standard for ecology and allied fields. Unlike many research centers, we have no permanent body of scientific faculty; rather, NCEAS maintains its well-known vitality through the dynamic nature of the resident and visiting scientists who are collectively responsible for its success.

Over its lifespan, NCEAS' impact has been broad and significant.

- High Productivity and Significance
  - NCEAS Ranked One of the Top Ecological Institutes
  - Large Volume of Publications
  - Expanding Breadth and Influence of Research
- Broad Participation by the Scientific Community
- Highly Successful Postdoctoral Associates
- Commitment to Support the Application of Science in Conservation and Resource Management
- Advancing Ecoinformatics Research
- Improving Access to Data
- Promoting a Culture of Collaboration
- Education and Community Outreach

See funding agency reports for further information.

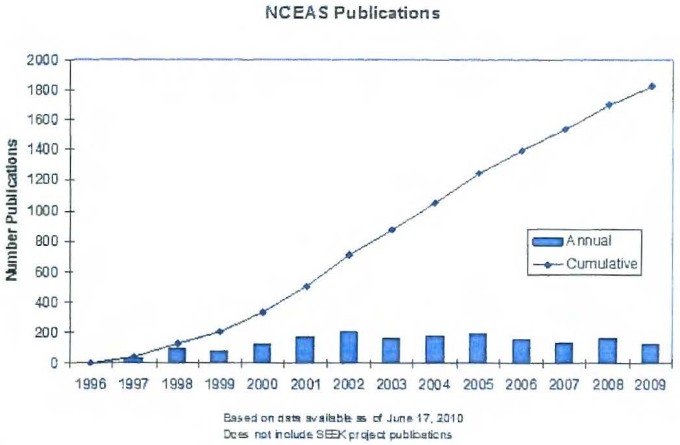
High Productivity and Significance

NCEAS Ranked One of the Top Ecological Institutes

- As of 2005, NCEAS had reached the top 1% of institutions worldwide working in ecology and the environment (38,000 institutions in total) in terms of total citations in the field of Environment/Ecology, according to *ISI Essential Science Indicators*.
- NCEAS ranked #22 out of the 38,000 institutions in publications impact in ecology and the environment. These numbers are very conservative, because they are based on institutional affiliations, rather than acknowledgments. Only 40% of NCEAS products have NCEAS listed as the institutional affiliation for one or more of the authors.
- Two of the top three most influential publications on ecological response to climate change were NCEAS Working Group products.

Large Volume of Publications

- More than 1,800 publications, many in *Science, Nature, Proceeding of the National Academy of Science (PNAS)*, and *Trends in Ecology and Evolution (TREE)*.

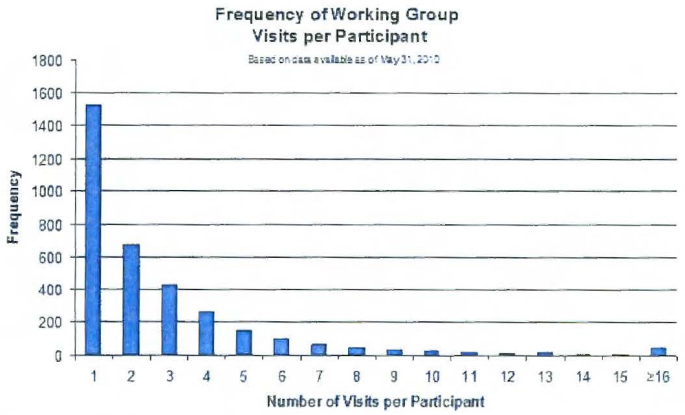


Expanding Breadth and Influence of Research

- NCEAS articles have been published in more than 250 different journals.
- NCEAS has attracted projects pertaining to ecology from outside the natural sciences, most notably economics, philosophy, and sociology.
- Areas of NCEAS inquiry stretch from genes to the biosphere. Examples of the diverse topics include climate change, infectious disease, economics, marine ecology and conservation. A range of specific NCEAS research projects are described in featured research.
- NCEAS projects have received recognition in local, regional, national and international press including *Science*, *Nature*, *The New York Times*, the *Los Angeles Times*, National Public Radio, PBS, and other national media.

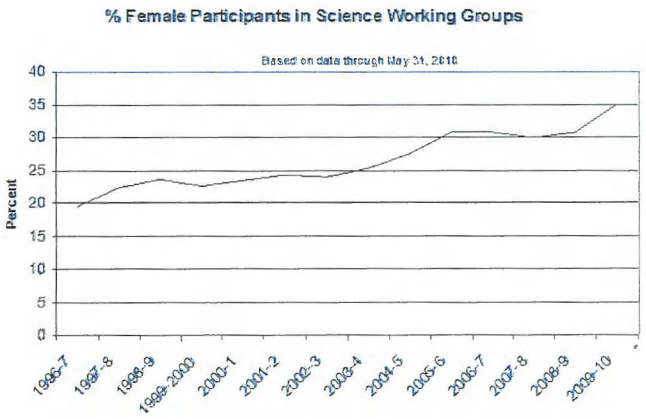
Broad Participation by the Scientific Community

- Most visitors come to NCEAS only one or two times. With more than 1,000 visits each year, the network of ecologists who are using NCEAS continues to grow.



- NCEAS participants come from diverse regions, institutions, and fields of study:
  - Participants are from 49 US states, Washington DC, Puerto Rico and 57 countries
  - 19% of participants are from outside the U.S.
  - More than 550 academic institutions have been represented; roughly a quarter of these are non-PhD granting institutions
  - More than 500 non-academic entities (companies, NGOs, public agencies) have been represented
  - Participants belong to more than 480 scholarly societies
- Faculty member participants in NCEAS activities include both junior and senior scientists:
  - 17% of participants are assistant professors
  - 28% are associate professors
  - 55% are full professors
- Women are well-represented at NCEAS:
  - 40% of the Science Advisory Board members

- Approximately 40% of Postdoctoral Associates
- Over 50% of Graduate interns



Highly Successful Postdoctoral Associates

- Postdocs are chosen from a highly diverse, competitive applicant pool and represent some of the best young scientists in the world.
- Postdocs are mentored in a new culture of collaboration, synthesis, and interdisciplinary research, allowing their scholarship to flourish. This unique postdoctoral experience was highlighted in an article in *Nature*.
- Several have received Young Investigator Awards, and one the ASN President's Award. Other awards include the Buell award (best paper by a graduate student), the Tom Frost award (best paper in limnology by a young scientist), and the W. S. Cooper Award (outstanding contributor to the field of geobotany from ESA).

Commitment to Support the Application of Science in Conservation and Resource Management

- Over 25% of the projects at NCEAS include among their goals "informing environmental policy and management."
- NCEAS participants have come from roughly 240 public agencies (local, national and international) and approximately 260 non-governmental organizations (NGOs), most of which focus on conservation and resource management.
- Postdoctoral Associates have included three Smith Fellows from The Nature Conservancy. NCEAS has supported Fellows from the U.S. Forest Service and NGOs, and currently hosts a conservation outreach associate from COMPASS.
- Recognizing the success of the NCEAS approach when applied to specific societal needs, NCEAS has established the Conservation and Resource Management Program to develop special projects supported from outside the core NSF funding.
- NCEAS projects have influenced public policy and resource management in many ways, from testimony before Congress to the development of analytical tools. For example, NCEAS scientists contributed to California's Channel Islands Marine Protected Areas planning process. In another example, a Working Group's timely publication on pollinators' ecosystem services was used by the Congressional Research Service (Johnson, CRS Report for Congress: Recent Honeybee Declines, 31

National Center for Ecological Analysis and Synthesis
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Last updated : April 5th, 2011 - 11:52am

May 2007) to inform lawmakers about Colony Collapse Disorder.

Advancing Ecoinformatics Research

- NCEAS' Ecoinformatics Program is dedicated to the development and dissemination of technological tools that facilitate analysis and synthesis in ecology. Consequently, the NCEAS Ecoinformatics group is a leading developer of collaborations and technical solutions to provide more efficient and powerful access to and analysis of ecological data.
- NCEAS and many collaborators have obtained significant funding from NSF and private foundations for more than a dozen Ecoinformatics research projects.

Improving Access to Data

- NCEAS maintains a data policy which encourages and facilitates the sharing of data, while respecting the intellectual property rights of data owners.
- A number of projects have developed major synthetic data sets that will have significance to the broader ecological community.
- NCEAS provides access to a data repository containing information about research data sets collected and collated as part of NCEAS' funded activities. Information in the NCEAS Data Repository is concurrently available through the Knowledge Network for Biocomplexity (KNB), an international data repository.

Promoting a Culture of Collaboration

- The average number of authors of an NCEAS article is significantly higher, and the percent of NCEAS articles with a single author is significantly lower than the average for articles in *Ecology*.
- Sociologists discovered that the NCEAS model promotes a higher level of productive collaboration than other, more typical models such as *in situ* resident centers: an interaction density of 50%, 2.5 times higher than the average for other groups that have been analyzed.
- Unplanned interactions between and among resident and visiting scientists have resulted in significant and new research collaborations.

Education and Community Outreach

- NCEAS undertakes a number of education and outreach initiatives to increase the public understanding of science, foster interest in ecology and technology professions, and contribute to the local community.
- NCEAS scientists have worked with over 2300 local 5th graders in NCEAS' Kids do Ecology program. In the program, scientists work in local classrooms to provide inquiry-based instruction in the scientific method as applied to ecological questions.
- The companion Kids Do Ecology website, is an award winning bilingual site used internationally by students and teachers. The site contains education resources and information on biomes, marine mammals, and presentation of data. From the first six months of 2010, the site had over 90,000 unique visitors.

Reports & Proposals:

Reports for NSF

Report for NSF 1995-2001

Report for NSF Site Visit - May, 1998

Annual Report 2002-2003

Annual Report 2003-2004

Annual Report 2004-2005

Annual Report 2005-2006

Annual Report 2006-2007

Report for NSF 2001-2007

Annual Report 2007-2008

Annual Report 2008-2009

Annual Report 2009-2010

Original NCEAS Proposal for NSF 1994

Printer-friendly version

ideology

staff

Rob Bochenek - Information Architect

Rob has been involved in data management for large scale federal and state research efforts for the past 10 years. He is a graduate of the University of Michigan with a background in aerospace engineering and mathematics. He spent 5 years at the Exxon Valdez Oil Spill Trustee Council leading the data management group in processing, documenting and organizing $900 million of scientific research regarding the ecological effects of the Exxon Valdez Oil Spill and associated mediation activities. He specializes in scientific geospatial information management with applications to physical/biological modeling and decision support data warehouse knowledge systems. Rob is also an avid runner, mountaineer and ultimate frisbee player.

Lyra Bochenek - Graphic Designer

Lyra Bochenek has a Bachelors of Arts degree in Journalism and Public Communications from the University of Alaska Anchorage. She was the lead graphic designer for the Alaska USA Federal Credit Union Marketing Department from 2003 to 2006. Before working at Alaska USA, Lyra was an associate editor and graphic designer for Alaska Newspapers Inc and the art director for First Alaskans Magazine for 5 years. She specializes in designing all types of printed and electronic materials for Axiom clients. Lyra also enjoys playing ultimate frisbee, skiing and chasing her two young daughters around the wilds of Alaska.

Lance Finfrock - Software Engineer

Lance has been a professional software engineer for over 6 years; five of those years were in the defense industry developing mission planning systems for the Global Hawk UAV as well Naval/Marine applications. Lance graduated from the University of Alaska Anchorage in 2004 with a double-major B.S. in Computer Science and Natural Sciences, and received his M.S. in Computer Science from San Diego State University in 2009.

Luc Mehl - Data Analyst

Luc has a Bachelor of Science degree from Carleton College and Master of Science degrees from the University of California, Santa Barbara (Geology, 2002) and the Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program (Marine Geology and Geophysics, 2008). Luc was hired by Axiom as a data analyst in 2009, and has been working with climate modeling and physical/ecological data intensively for the last two years. His work is published in several Earth Science journals and has been presented at international conferences. Luc's data collection, analysis, management, presentation, and publication experience provide considerable insight to developing data portals appropriate for the general public and research community.

Shane StClair - Software Engineer

Shane has been programming professionally for over eight years. Through many years of conducting data salvage and application development projects he has become a strong advocate for maintaining clean, organized and well described datasets; creating user interfaces that are both powerful and intuitive; and writing well documented and reusable code. Shane graduated from the University of Alaska Anchorage in 2002 with a degree in biological sciences, which gives him a useful insight into biological research. Shane is an avid traveler, musician, and aspiring minimalist. He also drinks too much coffee and types 90 words per minute.

Brian Stone - Software Engineer

Brian Stone has been developing web based applications since 2004 focusing on flex based interfaces. He has a Bachelor of Arts in Art Studio from Colorado College in Colorado Springs and specializes in web design and usability concepts.

JUSTIFICATION FOR AOOS SERVING AS LTM AND HERRING DATA MANAGER

Leveraging of other projects

AOOS brings a significant level of leveraged resources, infrastructure, regional data management projects and partnerships to this proposed effort. The data management effort for the LTM and herring projects could not be accomplished for the budgeted amount by a team without these leveraged resources.

1. AOOS – (500k to AOOS DM) Alaska oceanographic data management effort. Supports open source, standards based data system that serves up and archives real-time sensor feeds, models & remote sensing applications, GIS data layers, and historical datasets. Data system developed on interoperability concepts and meets national Integrated Ocean Observing System standards and protocols for streaming data feeds to national data assimilation sensors. Data Management Committee chaired by Dr. Phil Mundy provides ongoing advice, prioritization and direction to the team at Axiom Consulting & Design. AOOS board is made up of federal and state agencies, and major marine research institutions in the state that have committed to data sharing. The AOOS board has committed to supporting a statewide data system for as long as AOOS exists. Federal funding is stable, although we would like to see it increase. In the event AOOS was to end, all data and data products would be transferred to the University of Alaska.
2. AOOS/Axiom – PWSSC Data Management Project ($50K to AOOS DM). PWSSC Data Management Project – Project will initiate in April 2011 and involves the creation of a prototype data management system for use by PWSSC staff to manage, track, document via metadata and visualize oceanographic and biological data being collected at the center. Project will utilize a stack of open source technologies and protocols with the overall goal of creating a packaged solution for research organizations to better manage and document their data resources.
3. USFWS Seabird Data System – ($50K)Project involves the creation and population of a series of new seabird metric databases (diet and productivity) and integrating these new databases with legacy seabird databases (species distribution and abundance at seabird colonies, pelagic species distribution and abundance, and USGS seabird monitoring databases). Modern spatially explicit, web based data entry interfaces have and continue to be developed to assist researchers existing in distributed agencies to contribute their historic and current seabird metric data into standard data structures. Project will result in vastly increasing the amount and quality of seabird species distribution, diet and other seabird data available for use in retrospective analysis and management. Though data includes areas around all of Alaska, most available data is located in GOA and PWS.
4. AOOS – 3-year funded partnership(~$200K to ADF&G) with ADF&G Division of Commercial Fisheries to develop data sharing and transfer to make commercial fisheries data more accessible, and to allow ADF&G researchers greater access to oceanographic data. Project builds upon an effort funded

by the Moore foundation to develop improved data management capacity and salmon fishery management tools for the PWS fisheries.

5. AOOS – collaborator with Alaska Data Integration Working Group – an initiative with the Alaska Climate Change Executive Roundtable – to develop protocols for serving up project data to increase data sharing among federal and state agencies.
6. AOOS and NOAA – initiatives to develop data sharing agreements with private sector, including oil & gas companies.
7. Cook Inlet Regional Citizens Advisory Council – contract with Axiom to develop a data management system for their oceanographic and contaminants data in Cook Inlet.

Response to Science Panel Concerns

The Science Panel appears to be primarily concerned about whether or not the AOOS data team is high powered enough scientifically (i.e., has enough PhDs, post-docs) to provide the scientific synthesis desired by the panel. Our response is thus:

1. The data management expected for this project is PI project data and metadata management that does not require a PhD. The PI for the synthesis part of the LTM project is TBD, but is not anticipated to be the AOOS data team. In addition, project PIs want to work closely with the data team to develop tools for synthesis, but not to have them actually do the synthesis.
2. The current team has 2 staff with master's degrees. AOOS has just submitted a collaboration to ONR for data management support with NCAR, which currently does the CADIS data management project for the Arctic Observing Network funded by NSF. Most of their data staff do not have master's degrees, and no one has a PhD. The data team will be working closely with the PIs, but also welcome any additional input.
3. We think an in-state entity is essential since the majority of the PIs and program managers are in Alaska and being able to meet frequently in person is critical. The project PIs themselves have significant expertise in data management and will be major contributors to the system that develops.
4. We see AOOS being very long-term, if not permanent, and EVOS as a 20-year effort. NPRB's GOA-IERP is a 5-year effort and we anticipate significant collaboration over the next five years. We see that project feeding into the EVOS data system at its conclusion. We also see the EVOS project providing historical data valuable for the GOA-IERP project.
5. It does not make economic sense to go out of state to develop a parallel system to the one that AOOS is already developing.

Womac, Cherri G (EVOSTC)

From: Womac, Cherri G (EVOSTC)
Sent: Tuesday, April 12, 2011 12:07 PM
To: Amanda Bauer (amanda@stephenscruises.com); Cherri Womac (cherri.womac@alaska.gov); David Totemoff (totemoffdavid@yahoo.com); Douglas L. (Doug) Mutter (douglas_mutter@ios.doi.gov); Elise M. Hsieh (elise.hsieh@alaska.gov); Gary Fandrei (gfandrei@ciaanet.org); Jason Brune (jbrune@akrdc.org); Jennifer Gibbins (jennifer@pwsoundkeeper.org); John French; Kurt Eilo (keilo@akforum.org); Patience Andersen Faulkner (andersenpatc@ctcak.net); Stacy Studebaker (tidepoolak@ak.net); Torie Baker (torie@sfos.uaf.edu); Carroll, Samantha J (DNR); Catherine Boerner (catherine.boerner@alaska.gov); Dede Bohn (Dede_Bohn@usgs.gov); Jenifer Kohout (Jenifer_Kohout@fws.gov); Marit Carlson-VanDort (Marit.Carlson-Van.Dort@alaska.gov); Peter Hagen (Peter.Hagen@Noaa.gov); Steve Zemke (szemke@fs.fed.us); Tom Brookover (tom.brookover@alaska.gov); Veronica Varela (Veronica_Varela@fws.gov)
Cc: Hsieh, Elise M (EVOSTC)
Subject: FW: EVOSTC Marine Debris Review- NV EYAK

PAC Members:

Mr. Whissel's comments prompted by his review of the Science Panel's comments in the FFY 2012 Draft Work Plan.

Cherri

From: Hsieh, Elise M (EVOSTC)
Sent: Monday, April 11, 2011 10:53 AM
To: John Whissel
Cc: Womac, Cherri G (EVOSTC); Boerner, Catherine (EVOSTC sponsored)
Subject: RE: EVOSTC Marine Debris Review- NV EYAK

Hello John,

Thank you for your efforts in submitting a proposal under the FFY'12 Invitation. We also appreciate the additional information below, which we will forward to the Trustees.

Thanks again,

Elise

From: John Whissel [mailto:jwhissel@nveyak.org]
Sent: Monday, April 11, 2011 10:46 AM
To: Hsieh, Elise M (EVOSTC)
Subject: EVOSTC Marine Debris Review- NV EYAK

Dear Ms. Hsieh,

We thank you and EVOSTC for reviewing our proposal for marine debris cleanup. Our review listed several reservations, many of which are not consistent with the program we have proposes. I will list these below in hopes that the EVOSTC will consider these comments when making a final decisions for project funding

1) the activities suggested and current level of involvement do not suggest that this proposal will be highly effective in the removal of marine debris.

I agree that we could use the same amount of funding to clean up more coastline if we were to make this our project's sole priority, but I disagree that this program will not be highly effective in the removal of marine debris. In fact, I would argue that our program would remove more debris than any other, because ours is the only program that seeks funds to start a program that would fund cleanup efforts perpetually. The money spent on research and infrastructure would result in cleanup efforts continuing long after others would have spent their money and stop. Marine Debris is an accumulation issue. Any cleaup effort that supports itself will, over the long term, be far more effective.

2)Although the proposal gives a scientific review committee, it lacks process engineer.

This would be selected by our scientific technical panel, from among its membership, which has, since the proposals's submission, grown to include some marine debris experts who would be likely candidates.

3)the US Coast Guard will sling load the debris out, but this could be very costly and could significantly influence how much gets done

This service would be provided at no cost. The USCG would use removal of these debris loads as a training exercise, overcoming one of the main obstacles and highest costs to marine debris removal programs. I agree that sling loading loads would influence how much gets done, but in a positive direction.

4)A single fiscal year seems tight for all the activities including planning, MD analysis, data collection, cleanup and disposal as well as recycling and public outreach events

Per the invitation for proposals, ours is a five year program. I was asked to write this proposal fairly close to the deadline for submission. It is clear that the invitation and instructions for submission evolved over some time, and extra instructions and guidances were given to proposers who had been part of the process earlier. We wrote our proposal per the invitation, which asked for a 5 year project. I expected this would be assumed.

Thank you for considering these comments and passing them along to the appropriate personnel,

John

John Whissel
Environmental Coordinator
Native Village of Eyak

907.424.7738

Womac, Cherri G (EVOSTC)

From: Womac, Cherri G (EVOSTC)
Sent: Tuesday, April 12, 2011 3:50 PM
To: 'Amanda Bauer (amanda@stephenscruises.com)'; 'Cherri Womac (cherri.womac@alaska.gov)'; 'David Totemoff (totemoffdavid@yahoo.com)'; 'Douglas L. (Doug) Mutter (douglas_mutter@ios.doi.gov)'; Elise M. Hsieh (elise.hsieh@alaska.gov); 'Gary Fandrei (gfandrei@ciaanet.org)'; 'Jason Brune (jbrune@akrdc.org)'; 'Jennifer Gibbins (jennifer@pwsoundkeeper.org)'; 'John French'; 'Kurt Eilo (keilo@akforum.org)'; 'Patience Andersen Faulkner (andersenpatc@ctcak.net)'; 'Stacy Studebaker (tidepoolak@ak.net)'; 'Torie Baker (torie@sfos.uaf.edu)'; Carroll, Samantha J (DNR); Catherine Boerner (catherine.boerner@alaska.gov); 'Dede Bohn (Dede_Bohn@usgs.gov)'; 'Jenifer Kohout (Jenifer_Kohout@fws.gov)'; 'Marit Carlson-VanDort (Marit.Carlson-Van.Dort@alaska.gov)'; 'Peter Hagen (Peter.Hagen@Noaa.gov)'; 'Steve Zemke (szemke@fs.fed.us)'; 'Tom Brookover (tom.brookover@alaska.gov)'; 'Veronica Varela (Veronica_Varela@fws.gov)'
Cc: Hsieh, Elise M (EVOSTC)
Subject: FW: Herring Research Proposal comments

From: Hsieh, Elise M (EVOSTC)
Sent: Tuesday, April 12, 2011 3:47 PM
To: Womac, Cherri G (EVOSTC)
Subject: Fwd: Herring Research Proposal comments

Elise

Begin forwarded message:

> **From:** "W. Scott Pegau" <wspegau@pwssc.org>
> **Date:** April 12, 2011 3:10:04 PM AKDT
> **To:** "'Hsieh, Elise M (EVOSTC)'" <elise.hsieh@alaska.gov>, "'Boerner, Catherine (EVOSTC sponsored)'" <catherine.boerner@alaska.gov>
> **Cc:** 'Nancy Bird' <nbird@pwssc.org>
> **Subject: RE: Herring Research Proposal comments**
>
> Hi Catherine and Elise,
>
> The review comments had a lengthy discussion about egg deposition surveys and the potential for adding a couple more years of such surveys. While I am not trying to address the comment in detail, I think it is worth quickly mentioning a couple things about egg deposition. It has been pointed out that there is a paper (Thorne and Thomas 2008) that shows the egg deposition data actually was seen as a poor predictor of future biomass in PWS. The importance of measurements is not that all areas use the same approach, but that the measurements provide the best predictive capability. Testing the improvement in predictive capability provided by egg deposition surveys requires a minimum of ten years of data collection because we will need enough data to see if it can improve the ASA model that is based strictly on statistical relationships. It failed that test once and we don't recommend collecting a limited amount of data that won't be enough to test the model again. Especially a data set as expensive as egg deposition.

While the comments emphasize spawn estimates, I would argue we really want adult biomass information. We should work from the adults back towards spawn to provide the most accurate adult biomass estimates. That is why we chose to focus on expanding the adult biomass surveys and trying to provide an index of juvenile fish abundance that provides an indication of the incoming year classes rather than a measure that has a four to six year disconnect from the spawning population. Our emphasis on the age 0 herring comes about because it bypasses a huge source of mortality or loss to the system (egg deposition to larval settling) and yet appears to be able to provide a good predictor of a second very large mortality event (overwinter starvation).

When I look at the comments and the holes in what we proposed I would have to say the greatest weakness of the program we proposed is that we lack a modeling capacity. I realize Kiefer's work was expensive and hasn't produced much, but I hope that doesn't taint the importance of a modeling program. Several comments (e.g. #5, 6 and 7) refer to determining how well existing modeling and measurements are working, and our overall goal is to improve predictive capability, all of which requires bringing in a modeling effort somewhere along the line. The biggest boost to the herring program would be the addition of $500K over the five year period to add a modeling component. My preference would be to hire a modeler to work at the PWSSC, but would look at other options such as working with Terry Quinn. I tried to carve out that amount of funding in the existing proposal and couldn't justify it based on program needs at this time.

Thanks

Scott

From: Womac, Cherri G (EVOSTC) [mailto:cherri.womac@alaska.gov]
Sent: Friday, April 08, 2011 11:34 AM
To: wspegau@pwssc.org
Cc: Hsieh, Elise M (EVOSTC); Boerner, Catherine (EVOSTC sponsored)
Subject: Herring Research and Monitoring Proposal

Scott:

Attached is a request for more information RE the herring and monitoring proposal you submitted.

Thank you,

Cherri