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JUL 03 1990

Reply to  
Attn of: WD-139

MEMORANDUM

**SUBJECT:** Decision Memorandum - Interagency Agreement with  
U.S. Department of Justice

**FROM:** John Armstrong *John Armstrong*  
Office of Puget Sound

**THROUGH:** Jack Gakstatter, Chief *For John Armstrong*  
Office of Puget Sound

**TO:** Ronald A. Kreizenbeck  
Acting Director, Water Division


Attached is a proposed interagency agreement (IAG) between the Environmental Protection Agency (EPA) and the U.S. Department of Justice (DOJ) for \$20,000. Under this IAG, the DOJ will provide scientific peer reviewers for the Exxon Valdez oil-spill restoration planning effort.

The IAG is in compliance with statutory authority and EPA policy requirements.

We request your signature on the attached IAG and your concurrence below:

Concurrence:

Non-Concurrence:

  
\_\_\_\_\_  
Ronald A. Kreizenbeck  
Acting Director, Water Division

\_\_\_\_\_  
Ronald A. Kreizenbeck  
Acting Director, Water Division

Attachment

# COMMITMENT NOTICE

NOTE: Preparation and approval of this form does not constitute an obligation of money. The use of this form is intended to guarantee availability of money by reserving it for certain types of specified transactions.

THIS COMMITMENT TRANSACTION IN THE AMOUNT OF \$ 20,000 IS FOR:  
WHOLE DOLLARS

☐ GRANT (Number ) ☐ A PURCHASE REQUISITION ☐ A CONTRACT  
☒ OTHER (Specify):

DESCRIPTION OF PROJECT, GOODS, OR SERVICES

Provide scientific peer review for the Exxon Valdez oil spill restoration planning effort

NAME OF GRANTEE/CONTRACTOR/VENDOR

EMPLOYER IDENT. NO. (EIN)

TASK, ROAP, OR OTHER LOCAL IDENTIFIER

SPECIAL COMMENTS OR INSTRUCTIONS

## ALLOWANCE HOLDER APPROVALS (Optional, at discretion of Allowance Holder)

ALLOWANCE HOLDER TITLE

US EPA, Region 10

## STAFF APPROVALS

SIGNATURE	DATE	PHONE
Jack Bakstatter for John C. ... Chief, Office of Reg. Sec.	3 JUL 90	FTS 399-0966
Ron A. Kreizenbeck Acting Director, Water Division	July 3, 1990	FTS 399-1237

RESPONSIBILITY CENTER TITLE

Water Division, Water Division

## FUNDS CERTIFICATION

PREPARED BY	APPROVED BY
SIGNATURE	SIGNATURE
DATE	DATE

## FOR RESPONSIBILITY CENTER USE ONLY

Contract negotiator is ☐ is not ☐ authorized to exceed amount shown above by up to 10% without securing further approval for funds.

THE AMOUNT OF MONEY SHOWN IS:

☐ AN ORIGINAL COMMITMENT

☐ AN INCREASE TO A  
PREVIOUS COMMITMENT

☐ A DECREASE TO A  
PREVIOUS COMMITMENT

FINANCIAL DATA (See instructions on reverse before filling out)

APPROPRIATION:

FMO USE														DOCUMENT CONTROL NO.						ACCOUNT NUMBER										OBJECT CLASS				DOLLAR AMOUNT																					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
2									0	4	0			M	H	0	0	5	2	J	J	W	U	1	0	M	0	0	W									2	5	3	5							2	0	0	0	0	0		
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United States Environmental Protection Agency Washington, DC 20460  <b>Interagency Agreement/ Amendment</b>  <b>Part 1 - General Information</b>		1. EPA IAG Identification Number DW15957003-01-0 2. Other Agency IAG ID Number (if known)  3. Type of Action New		4. Funding Location by Region 10 5. Program Office Abbreviation			
6. Name and Address of EPA Organization Environmental Protection Agency Water Division 1200 Sixth Avenue Seattle, Washington 98101			7. Name and Address of Other Agency Department of Justice Environment and Natural Resources Division P.O. Box 7754 Washington, D.C. 20044				
8. Project Title Exxon Valdez Oil Spill: Peer Review for the restoration planning efforts.							
9. EPA Project Officer (Name, Address, Telephone Number) Brian Ross (907) 271-2461 Environmental Protection Agency Alaska Operations Office Room 537, Federal Building Anchorage, Alaska 99513			10. Other Agency Project Officer (Name, Address, Telephone Number) Gary Fisher FTS 514-3637 Department of Justice Environment and Natural Resources Division P.O. Box 7611, Ben Franklin Station Washington, D.C. 20044				
11. Project Period 7/1/90 - 9/30/92			12. Budget Period 7/1/90 - 9/30/91				
13. Scope of Work (Attach additional sheets, as needed)  Proposed restoration feasibility studies, monitoring plans, and other associated projects need to undergo a peer review process similar to that being followed in the Natural Resources Damage Assessment process. As the Restoration Planning Work group identifies expert witnesses or peer reviewers, the Department of Justice will support the peer review process for restoration planning by contracting with these individuals. Justice will ensure that peer reviewers/expert witnesses sign any appropriate agreements, including confidentiality agreements, as necessary. Contracts between Justice and these individuals will include all associated costs, including travel to Alaska.							
14. Statutory Authority for Both Transfer of Funds and Project Activities  Economy Act of 1932, as amended (31 USC 1535), Clean Water Act					15. Other Agency Type  Federal		
Funds		Previous Amount		Amount This Action		Amended Total	
16. EPA Amount				20,000			
17. EPA In-Kind Amount							
18. Other Agency Amount							
19. Other Agency In-Kind Amount							
20. Total Project Cost				20,000			
21. Fiscal Information							
Program Element	FY	Appropriation	Doc. Control No.	Account Number	Object Class	Obligation/Deobligation Amt.	
JWUB2D	90	689/0108	MH0052	JJWU10MOOW	2535	\$ 20,000.00	

Part II - Approved Budget		EPA IAG Identification Number DW15957003-01-0
22. Budget Categories	Itemization of This Action	Itemization of Total Project Estimated Cost to Date
(a) Personnel	\$	\$
(b) Fringe Benefits		
(c) Travel		
(d) Equipment		
(e) Supplies		
(f) Procurement/Assistance	20,000	20,000
(g) Construction		
(h) Other		
(i) Total Direct Charges	\$ 20,000	\$ 20,000
(j) Indirect Costs: Rate % Base \$		
(k) Total		
(EPA Share 100 %) (Other Agency Share %)	\$ 20,000	\$ 20,000
23. Is equipment authorized to be furnished by EPA or leased, purchased, or rented with EPA funds? (Identify all equipment costing \$1,000 or more) <span style="float: right;"> <input type="checkbox"/> Yes             <input checked="" type="checkbox"/> No           </span>		
24. Are any of these funds being used on extramural agreements? (See Item 22f) <span style="float: right;"> <input checked="" type="checkbox"/> Yes             <input type="checkbox"/> No           </span>		
Type of Extramural Agreement <span style="margin-left: 20px;"><input type="checkbox"/> Grant</span> <span style="margin-left: 20px;"><input type="checkbox"/> Cooperative Agreement</span> <span style="margin-left: 20px;"><input checked="" type="checkbox"/> Procurement (Includes Small Purchase Order)</span>		
Contractor/Recipient Name (if known)	Total Extramural Amount Under This Project	Percent Funded by EPA (if known)
Walcoff and Associates	\$20,000	100%
<b>Part III - Funding Methods and Billing Instructions</b>		
25. <input checked="" type="checkbox"/> Funds-Out Agreement <span style="float: right;">(Note: EPA Agency Location Code (ALC) - 68010727)</span> <div style="margin-left: 40px;"> <input checked="" type="checkbox"/> Disbursement Agreement           </div> <div style="margin-left: 40px;"> <input checked="" type="checkbox"/> Repayment           <div style="margin-left: 20px;">             Request for repayment of actual costs must be itemized on SF 1081 or SF 1080 and submitted to the Financial Management Center, EPA, Cincinnati, OH 45268:           </div> <div style="margin-left: 40px;"> <input type="checkbox"/> Monthly             <input type="checkbox"/> Quarterly             <input checked="" type="checkbox"/> Upon Completion of Work           </div> </div> <div style="margin-left: 40px;"> <input type="checkbox"/> Advance           <div style="margin-left: 20px;">             Only available for use by Federal agencies on working capital fund or with appropriate justification of need for this type of payment method. Unexpended funds at completion of work will be returned to EPA. Quarterly cost reports will be forwarded to the Financial Management Center, EPA, Cincinnati, OH 45268.           </div> </div> <div style="margin-left: 40px;"> <input type="checkbox"/> Allocation Transfer-Out           <div style="margin-left: 20px;">             Used to transfer obligational authority or transfer of function between Federal agencies. Must receive prior approval by the Office of the Comptroller, Budget Division, Budget Formulation and Control Branch, EPA Headquarters. Forward appropriate reports to the Financial Reports and Analysis Branch, Financial Management Division, PM-226F, EPA, Washington, DC 20460.           </div> </div>		
26. <input type="checkbox"/> Funds-In Agreement <div style="margin-left: 40px;"> <input type="checkbox"/> Reimbursement Agreement           <div style="margin-left: 20px;"> <input type="checkbox"/> Repayment             <input type="checkbox"/> Advance           </div> </div> <div style="margin-left: 40px;"> <input type="checkbox"/> Allocation Transfer-In           </div>		
Other Agency's IAG Identification Number	EPA Program Office Allowance Holder/Responsibility Center Number	
Other Agency's Billing Address (Include Agency Location Code or Station Symbol Number)	Other Agency's Billing Instructions and Frequency	



**Part IV - Acceptance Conditions**EPA IAG Identification Number  
DW15957003-01-0**27. General Conditions**

The other agency covenants and agrees that it will expeditiously initiate and complete the project for which funds have been awarded under this agreement.

**28. Special Conditions** (Attach additional sheets if needed)**Part V - Offer and Acceptance**

**Note: 1)** For Funds-out actions, the agreement/amendment must be signed by the other agency official in duplicate and one original returned to the Grants Administration Division for Headquarters agreements or to the appropriate EPA Regional IAG administration office within 3 calendar weeks after receipt or within any extension of time as may be granted by EPA. The agreement/amendment must be forwarded to the address cited in Item 29 after acceptance signature.

Receipt of a written refusal or failure to return the properly executed document within the prescribed time may result in the withdrawal of the offer by EPA. Any change to the agreement/amendment by the other agency subsequent to the document being signed by the EPA Action Official, which the Action Official determines to materially alter the agreement/amendment, shall void the agreement/amendment.

**2)** For Funds-in actions, the other agency will initiate the action and forward two original agreements/amendments to the appropriate EPA program office for signature. The agreements/amendments will then be forwarded to the appropriate EPA IAG administration office for acceptance signature on behalf of the EPA. One original copy will be returned to the other agency after acceptance.

EPA IAG Administration Office (for administrative assistance)

EPA Program Office (for technical assistance)

**29. Organization/Address**

Environmental Protection Agency  
Grants Administration Section, MD-100  
1200 Sixth Avenue  
Seattle, Washington 98101

**30. Organization/Address**

Environmental Protection Agency  
Alaska Operations Office  
Room 537, Federal Building  
Anchorage, Alaska 99515

**Certification**

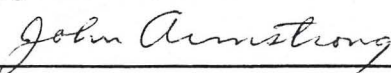
All signers certify that the statements made on this form and all attachments thereto are true, accurate, and complete. Signers acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

**Decision Official on Behalf of the Environmental Protection Agency Program Office****31. Signature****Typed Name and Title**

Ronald A. Kreizenbeck  
Acting Director, Water Division

**Date**

7/3/90

**Action Official on Behalf of the Environmental Protection Agency****32. Signature**

For

**Typed Name and Title**

Jack Gakstatter, Chief  
Office of Puget Sound

**Date**

3 JUL 90

**Authorizing Official on Behalf of the Other Agency****33. Signature****Typed Name and Title**

Bob Bruffy  
Chief, Financial Management

**Date**

RRSL  
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This is page 1 of 3 pages. Moss Landing Fax #: 408 753-2826  
Phone #: 408 755-8658

August 8, 1990

TO: Dr. Hal Kibby  
Environmental Research Laboratory  
U.S. Environmental Protection Agency  
200 SW 35th St.  
Corvallis, Oregon 97333

FROM: Dr. Michael S. Foster  
Moss Landing Marine Laboratory  
P.O. Box 450  
Moss Landing, California 95039

Revised Research Plan for the Eucys Restoration Project

As you know, there have been considerable delays in processing my contract to do the field work as specified in the "Eucys research plan" dated June 15, 1990, the plan upon which the contract is based. My present understanding is that final paper work is being done by the University of Alaska, Fairbanks, and the contract should arrive soon at the San Jose State University Foundation. Unfortunately, these delays have made it impossible to do all the work as specified in the above plan, and impossible to do it on the schedule originally proposed.

I do feel, however, that a Revised Plan as outlined below will make significant progress towards our general objectives of understanding the causes of variation in Eucys recovery in areas affected by the Exxon Valdez oil spill in Prince William Sound, and of documenting the extent and magnitude of natural recruitment of Eucys in areas subjected to alternative cleaning technologies (particularly areas that were heavily cleaned and those that have residual tar).

In this Revision I propose to:

A. Examine the extent, distribution, and recovery rates of areas coated with tar by

1) surveying the extent of areas with residual oil (tar), and the distribution of tar within these areas, at sites in Herring Bay and on the more exposed northern end of Knight Island.

2) sampling multiple sites with and without tar to determine present differences in species composition and abundance.

3) permanently marking some of the sites in A.2. so that future surveys of the same areas can be used to determine how fast recovery occurs on tarred substrates.





B. Determine differences in Eucus recovery at sites that were oiled and cleaned vs. areas that were not cleaned by

1) Sampling Eucus abundance and size frequency in oiled/cleaned sites and sites that were not cleaned. Replicate sites will be sampled, and samples will be stratified by tidal height within the Eucus zone, and by subhabitat (crevice, slope, presence of barnacles) within tidal heights.

2) (based on the results in B.1. and previous observations that Eucus recovery has been relatively slow in the upper part of its range in areas that were heavily oiled and cleaned) experimentally determining what factors affect Eucus recovery in the upper part of its natural range. We anticipate that factorial experiments will be done in at least two sites that involve manipulation of slope, surface roughness, water retention, and grazers.

Our proposed schedule (assuming the contract does arrive by mid August, 1990) is:

I. Sample and mark tar and control areas, and sample Eucus distribution as above in early September, 1990. This would require two people based on the University of Alaska barge in Herring Bay for 5 - 8 days. We will supply all our field equipment except gas for an outboard motor, and charter a float plane to reach sites outside Herring Bay. We would submit a report on this research by December 30, 1990.

II. Resample tarred and control areas, and set up recovery experiments as early as possible in Spring, 1991. We could either use the barge facilities or charter a boat for this work, which will require 4 - 5 field workers for 5 - 8 days.

III. Resample tarred and control areas, and sample recovery experiments in late Summer, 1991. This would require 2 - 3 field workers for 5 - 8 days, with logistics as in I. above. We would submit a report on the entire project by December 31, 1991.

Sampling methods, quality control, and quality assurance will be as stated in the work plan of June 15, 1990. The number of areas sampled and their precise location will depend on discussions with scientists at the University of Alaska, and logistical constraints (primarily weather).

Because of contract delays and prior commitments in August and September, 1991, I would like to add a co-principal investigator to the project. This will be Andrew De Vogelaere, an intertidal ecologist and colleague who has done extensive intertidal field work in central California and Washington, including work on the effects of tar on the rocky intertidal zone. Mr. De Vogelaere, presently a Ph.D. candidate at the University of California, Santa Cruz, will be involved in all aspects of the project, and supervise the intertidal field work in early September, 1990. His phone



numbers are: University- (408) 459-4026 Home- (408) 662-3265.

Please notify me of any difficulties with the above proposal before August 11, 1990. Otherwise (in my absence between August 11 and September 4), Mr. De Vogelaere will proceed with the above plan when the contract is in hand, and coordinate field work with appropriate University of Alaska personnel.

copies to:

- J. Armstrong, EPA, Corvallis
- B. Ross, EPA, Anchorage
- D. Gibbons, USFS, Juneau
- M. Stekoll, U of A, Juneau
- R. Highsmith, U of A, Fairbanks



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## RESTORATION TECHNICAL SUPPORT PROJECT NUMBER 1

Project Title: Peer Reviewer Process for Restoration Feasibility Studies

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Lead Agency: RPWG

Cooperating Agencies: DOJ, DOL

### INTRODUCTION

The initial feasibility study projects to be conducted during the 1990 field season were developed with the assistance of many of the scientists involved in the NRDA process, after considering comments received at the technical workshop and a series of public meetings held in Spring 1990 in Alaska. Due to the limited time available before projects need to be in the field, an additional more formal round of peer review is not possible. This technical support project is designed to incorporate formal peer review in the design, implementation, and evaluation of 1991 and future feasibility studies. It will also provide for detailed review of 1990 feasibility study results.

### OBJECTIVE

Implement a peer reviewer process to assure the scientific quality of feasibility studies and restoration projects.

### METHODS

Peer reviewers may include experts already involved in the NRDA process, experts involved in the technical workshops on restoration, or other selected individuals. Peer reviewers would review and comment on feasibility study proposals (including overall design and detailed study plans) and results. The budget for 1990 is based on the services of 10 expert reviewers for five days each, plus expenses. It is anticipated that this technical support project will expand in 1991, as additional feasibility studies are initiated and as results from 1990 feasibility study projects become available.

BUDGET: DOJ, DOL

Salaries:	\$ 0.0
Travel:	0.0
Contractual Services:	70.0
Supplies:	5.0
Equipment:	<u>0.0</u>
TOTAL:	\$75.0



RWG  
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## RESTORATION TECHNICAL SUPPORT PROJECT NUMBER 2

Project Title: Assessment of Beach Segment Survey Data

Lead Agency: DNR

Cooperating Agencies: DEC, ADF&G, USFS, NPS, EPA

### INTRODUCTION

There is a large volume of beach-survey information obtained through response activities (e.g., the fall and spring surveys) and NRDA studies (e.g., CH 1). All of these data are being integrated into a standard NRDA data base. This information is being reviewed and summarized with respect to restoration planning needs and will complement and support Restoration Feasibility Study Number 5 (RF 5). Together, this information will help identify potential sites at which (a) hands-on restoration projects may be carried out, and (b) equivalent resources may be acquired. Additionally, it should prove valuable in providing further information for analytical purposes in the development of the restoration planning matrix.

### OBJECTIVES

- A. Obtain and translate to maps, pertinent beach survey information that is important for feasibility studies and restoration projects.
- B. Analyze possible trends in information for applicability to restoration feasibility studies.
- C. Create a data base for future reference use in restoration projects.

### Relationships with Other Studies:

This project relates directly to RF 5 and provides data of fundamental importance to the entire Restoration Planning Project.

### METHODS

Research and map, using standard cartographic and G.I.S. techniques, all available information from the Fall 1989, Spring 1990, and Fall 1990 walk-a-thon and shoreline assessment team surveys. Combined with RF 5, this will provide further support in the selection process for specific restoration sites and habitats. It may also prove advantageous for documenting natural recovery processes that may be occurring. Care will be taken to not duplicate existing data bases and maps. The need is to integrate new information and summarize it in a form helpful to the Restoration Planning Project. This project will essentially add a

"restoration layer" to the existing NRDA data base.

BUDGET: DNR

Salaries	\$ 16.0
Travel	0.0
Contractual Services	5.0
Supplies	4.0
Equipment	<u>0.0</u>
TOTAL	25.0



RAWG  
L

## RESTORATION FEASIBILITY STUDY NUMBER 2

Study Title: Re-establishment of Critical Fauna in Rocky Intertidal Ecosystems

Lead Agency: USFS

Cooperating Agency: EPA

### INTRODUCTION

Intertidal ecosystems on rocky shores, including both fauna and flora, were seriously affected by the oil spill and cleanup activities. Initial results suggest that certain key faunal species, such as grazers and predators, that are likely to structure these intertidal communities, were moderately to heavily affected. Natural restoration processes in these communities will be limited by recolonization rates of these key species, which in some cases are known to be quite low. Re-establishment of Fucus alone may therefore not be sufficient to ensure a return to pre-spill conditions on ecologically meaningful time scales. Before a restoration plan is proposed, we should demonstrate the feasibility of enhancing the rate of recovery of the intertidal community by the re-establishment of key grazers and predators. If the natural recoveries of Fucus and intertidal fauna can be augmented by restoration projects, it will be of fundamental benefit to the marine ecosystem.

### OBJECTIVES

- A. Compare rates of recovery of rocky intertidal communities with and without key faunal species and combinations of species.
- B. Demonstrate the feasibility of restoring rocky intertidal communities by enhancing colonization by key faunal species.
- C. Determine the costs of implementing a full-scale restoration project to re-establish key faunal species in rocky intertidal ecosystems.

### Relationships with Other Studies:

This study will be carried out in conjunction with the Fucus study, R/F 1, and it is related to several other NRDA studies, particularly CH 1.

### METHODS

Based on results of NRDA studies, limpets have been identified as important grazers that were harmed by the oil spill in rocky intertidal ecosystems. Predators, such as Nucella and Leptasterius, also could be important in structuring these

intertidal communities. Rates of recovery of intertidal areas with and without key species and combinations of species will be compared. Grazer, predator, and grazer-predator exclusion and enhancement plots will be established in habitats that experienced differing degrees of oiling or were subjected to different cleanup techniques (e.g., bioremediated, hot-water high-pressure cleaned). A key aspect of the study will be demonstrating the feasibility of enhancing colonization by key species.

BUDGET: USFS

Salaries	\$ 0.0
Travel	5.0
Contractual Services	65.0
Supplies	2.0
Equipment	<u>3.0</u>
TOTAL	75.0



# United States Department of the Interior



IN REPLY REFER TO:

AFWRC

FISH AND WILDLIFE SERVICE :  
1011 E. TUDOR RD.  
ANCHORAGE, ALASKA 99503

APR 27 1990

Mr. Brian Ross  
Oil Spill Restoration Planning Work Group  
437 E Street, Suite 301  
Anchorage, Alaska 99501

Dear Mr. Ross:

The enclosed pilot restoration proposal on sea otters prepared by Dr. Haebler (Environmental Protection Agency) and Dr. Harris (Armed Forces Institute of Pathology) is submitted for funding. Both principal investigators are recognized experts and have committed considerable expertise and time at the sea otter rehabilitation centers since the early days of the spill. If funded, the proposed histopathology in combination with hematology, toxicology, and clinical treatment will provide a scientifically sound assessment of rehabilitation as a tool for restoring sea otter populations. Please contact Paul Gertler at 786-3579, if you have any questions.

Sincerely,

*Walt Stiglitz*

Regional Director

Enclosure

Copy to: Sanford Rabinowitch  
National Park Service



Subject: Research Proposal for Oil Spill Restoration Pilot Project 1990

Title: Rehabilitation: A tool for restoring sea otter populations?

Objective: To determine the efficacy of sea otter medical treatment and rehabilitation as a viable method for the restoration of the sea otter population following exposure to crude oil.

Rationale: Following the Exxon Valdez oil spill, a massive effort was undertaken to capture, clean, and medically treat sea otters exposed to crude oil. Of the 329 sea otters brought into rehabilitation centers in Valdez and Seward, 119 died in captivity, 37 were sent to aquaria, and 173 were released into the natural environment August 1989. Forty-five of the animals were radio-tagged and followed after release. Of these 24% have died and an additional 24% are currently missing. Exxon alone spent 18 million dollars to rehabilitate affected otters. The effectiveness of current capture and rehabilitation methodologies to preserve and restore sea otter populations exposed to crude oil needs to be re-examined.

Animals that died in captivity can provide crucial information regarding mechanisms of toxicity and pathological processes associated with exposure to crude oil, capture and rehabilitation. Analysis of data from these animals will provide information critical to assessing and modifying current capture, handling, and rehabilitation techniques for preserving and restoring sea otter populations exposed to crude oil.

Approach: In the 6 months following the Exxon Valdez oil spill, pathologists from the Environmental Protection Agency (EPA) and the Armed Forces Institute of Pathology (AFIP) were on site and performed complete gross necropsies on all sea otters that died at rehabilitation centers. Histopathology of samples collected from these animals will be conducted and integrated with the clinical record, hematology, clinical chemistries, and chemical residue analyses. The results of this study will allow us to:

- assemble, integrate, and analyze the response activities;
- describe gross anatomical and histopathological lesions in sea otters that died at rehabilitation centers;
- identify the role of stressors associated with capture/captivity as cause of mortality versus chemically induced mortality;
- develop a model to describe toxic effects and pathological processes that caused death in sea otters exposed to crude oil;
- test whether the necropsy, histopathology, toxicology, and hematology results are statistically related to handling, clinical treatment, and oiling; and
- establish rehabilitation guidelines for restoration.

Resources Required: FY 90: \$80K

FY 91: \$50K

Responsibility: AFIP: Dr. R. Harris

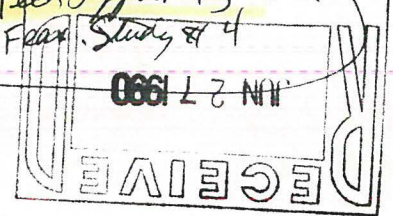
EPA: Dr. R. Haebler



JUN 21 1990

Reply to  
Attn of: WD-139

*File a copy in each of:*  
*1990 Tech Support #3 and*  
*1990 Fax Study #4*



**MEMORANDUM**

**SUBJECT:** Decision Memorandum - Interagency Agreement with  
U.S. Fish and Wildlife Service

**FROM:** John Armstrong *John Armstrong*  
Office of Puget Sound

**THROUGH:** Jack Gakstatter, Chief *JG*  
Office of Puget Sound

**TO:** Ronald A. Kreizenbeck  
Acting Director, Water Division

Attached is a proposed interagency agreement (IAG) between the Environmental Protection Agency (EPA) and the U.S. Fish and Wildlife Service (USFWS) for \$36,500. Under this IAG, the USFWS will complete two tasks. The first task will be to evaluate a sampling technique for determining the distribution and abundance of forage fish in relation to marine birds and marine mammals. The second task will create a database of beach segment survey data for future use in restoration projects.

The IAG is in compliance with statutory authority and EPA policy requirements.

We request your signature on the attached IAG and your concurrence below:

Concurrence:

Non-Concurrence:

*Ronald A. Kreizenbeck*  
\_\_\_\_\_  
Ronald A. Kreizenbeck  
Acting Director, Water Division

\_\_\_\_\_  
Ronald A. Kreizenbeck  
Acting Director, Water Division

Attachment



## COMMITMENT NOTICE

NOTE: Preparation and approval of this form does not constitute an obligation of money. The use of this form is intended to guarantee availability of money by reserving it for certain types of specified transactions.

THIS COMMITMENT TRANSACTION IN THE AMOUNT OF \$ 36,500 IS FOR:  
WHOLE DOLLARS

☐ GRANT (Number )      ☐ A PURCHASE REQUISITION      ☐ A CONTRACT

☒ OTHER (Specify):

DESCRIPTION OF PROJECT, GOODS, OR SERVICES

DESCRIPTION OF PROJECT, GOODS, OR SERVICES  
IAG To US Fish and Wildlife Service for a study of forage fish distribution in relation to marine birds and marine mammals and for the development of a beach survey database

NAME OF GRANTEE/CONTRACTOR/VENDOR

EMPLOYER IDENT. NO. (EIN)

TASK, ROAP, OR OTHER LOCAL IDENTIFIER

SPECIAL COMMENTS OR INSTRUCTIONS

**ALLOWANCE HOLDER APPROVALS** (Optional, at discretion of Allowance Holder)

ALLOWANCE HOLDER TITLE

US EPA Region 10

### STAFF APPROVALS

**SIGNATURE**

DATE \_\_\_\_\_

PHONE

Jack Gakstatter  
Chief, Office of Puget Sound

6/21/90

FTS 399-0966

Ron A. Kreizenbeck  
Acting Director, Water Division

03/21/80

FTS 399-1237

RESPONSIBILITY CENTER TITLE

WATER DIVISION

## FUNDS CERTIFICATION

**PREPARED BY**

APPROVED BY

**SIGNATURE**

Ellen Petersen

**SIGNATURE**

ATURE  
Ellen Peterson

DATE \_\_\_\_\_

6-22-90

DATE \_\_\_\_\_

6-22-90

**FOR RESPONSIBILITY CENTER USE ONLY**

Contract negotiator is ☐ is not ☐ authorized to exceed amount shown above by up to 10% without securing further approval for funds.

**THE AMOUNT OF MONEY SHOWN IS:**

**AN ORIGINAL COMMITMENT**

☐ AN INCREASE TO A PREVIOUS COMMITMENT

☐ A DECREASE TO A PREVIOUS COMMITMENT**FINANCIAL DATA** (See instructions on reverse before filling out)

**APPROPRIATION:**

[illegible]



United States Environmental Protection Agency Washington, DC 20460		1. EPA IAG Identification Number DW14957002-01-0		4. Funding Location by Region 10		
<b>Interagency Agreement/ Amendment</b> <b>Part 1 - General Information</b>		2. Other Agency IAG ID Number (if known)		5. Program Office Abbreviation		
		3. Type of Action New				
6. Name and Address of EPA Organization Environmental Protection Agency Water Division 1200 Sixth Avenue Seattle, Washington 98101		7. Name and Address of Other Agency U.S. Fish and Wildlife Service Contracting and General Services 1011 East Tudor Road Anchorage, Alaska 99503				
8. Project Title Distribution and Abundance of Forage Fish in Relation to Marine Birds and Marine Mammals: Pilot Project and Development of a Beach Survey Database						
9. EPA Project Officer (Name, Address, Telephone Number) Brian Ross, Project Officer EPA Alaska Operations Office Room 537, Federal Building Anchorage, Alaska 99513			10. Other Agency Project Officer (Name, Address, Telephone Number) David Irons (907) 786-3376 (same as block # 7)			
11. Project Period 6/1/90 - 9/30/91			12. Budget Period 6/1/90 - 9/30/91			
13. Scope of Work (Attach additional sheets, as needed)  Attached.						
14. Statutory Authority for Both Transfer of Funds and Project Activities Economy Act of 1932 as amended; Clean Water Act					15. Other Agency Type Federal	
Funds	Previous Amount	Amount This Action	Amended Total			
16. EPA Amount		36,500				
17. EPA In-Kind Amount						
18. Other Agency Amount						
19. Other Agency In-Kind Amount						
20. Total Project Cost		36,500				
21. Fiscal Information						
Program Element	FY	Appropriation	Doc. Control No.	Account Number	Object Class	Obligation/Deobligation Amt.
JWUB2D		689/0108	MH0041	JJWU10M00W	25.71	36,500

Part II - Approved Budget		EPA IAG Identification Number DW14957002-01-0
22. Budget Categories	Itemization of This Action	Itemization of Total Project Estimated Cost to Date
(a) Personnel	\$ 22,500	\$ 22,500
(b) Fringe Benefits		
(c) Travel	1,000	1,000
(d) Equipment		
(e) Supplies	13,000	13,000
(f) Procurement/Assistance		
(g) Construction		
(h) Other		
(i) Total Direct Charges	\$ 36,500	\$ 36,500
(j) Indirect Costs: Rate      %      Base \$		
(k) Total		
(EPA Share      100%)      (Other Agency Share      %)	\$ 36,500	\$ 36,500
23. Is equipment authorized to be furnished by EPA or leased, purchased, or rented with EPA funds? (Identify all equipment costing \$1,000 or more) <span style="float: right;"> <input type="checkbox"/> Yes      <input checked="" type="checkbox"/> No           </span>		
24. Are any of these funds being used on extramural agreements? (See Item 22f) <span style="float: right;"> <input type="checkbox"/> Yes      <input checked="" type="checkbox"/> No           </span>		
Type of Extramural Agreement <input type="checkbox"/> Grant <input type="checkbox"/> Cooperative Agreement <input type="checkbox"/> Procurement (Includes Small Purchase Order)		
Contractor/Recipient Name (if known)	Total Extramural Amount Under This Project	Percent Funded by EPA (if known)
Part III - Funding Methods and Billing Instructions		
25. <input checked="" type="checkbox"/> Funds-Out Agreement      (Note: EPA Agency Location Code (ALC) - 68010727)		
<input checked="" type="checkbox"/> Disbursement Agreement		
<input checked="" type="checkbox"/> Repayment      Request for repayment of actual costs must be itemized on SF 1081 or SF 1080 and submitted to the Financial Management Center, EPA, Cincinnati, OH 45268:		
<div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Monthly           <input checked="" type="checkbox"/> Quarterly           <input type="checkbox"/> Upon Completion of Work         </div>		
<input type="checkbox"/> Advance      Only available for use by Federal agencies on working capital fund or with appropriate justification of need for this type of payment method. Unexpended funds at completion of work will be returned to EPA. Quarterly cost reports will be forwarded to the Financial Management Center, EPA, Cincinnati, OH 45268.		
<input type="checkbox"/> Allocation Transfer-Out      Used to transfer obligational authority or transfer of function between Federal agencies. Must receive prior approval by the Office of the Comptroller, Budget Division, Budget Formulation and Control Branch, EPA Headquarters. Forward appropriate reports to the Financial Reports and Analysis Branch, Financial Management Division, PM-226F, EPA, Washington, DC 20460.		
26. <input type="checkbox"/> Funds-In Agreement		
<input type="checkbox"/> Reimbursement Agreement <input type="checkbox"/> Repayment		
<input type="checkbox"/> Allocation Transfer-In <input type="checkbox"/> Advance		
Other Agency's IAG Identification Number		EPA Program Office Allowance Holder/Responsibility Center Number
Other Agency's Billing Address (Include Agency Location Code or Station Symbol Number)		Other Agency's Billing Instructions and Frequency



## Part IV - Acceptance Conditions

EPA IAG Identification Number  
DW14957002-01-0

### 27. General Conditions

The other agency covenants and agrees that it will expeditiously initiate and complete the project for which funds have been awarded under this agreement.

### 28. Special Conditions (Attach additional sheets if needed)

The U.S. Fish and Wildlife Service certifies: 1) that any indirect costs incurred and included in billings to EPA represent, in accordance with GAO principles, costs that would not have been otherwise incurred by the U.S. Fish and Wildlife Service, or 2) that statutory authority exists for charging other than the incremental costs of performance. If an audit determines that any direct or indirect costs charged to EPA are unallowable, EPA will be notified immediately following the resolution of the audit and EPA will be credited for those costs.

## Part V - Offer and Acceptance

**Note: 1)** For Funds-out actions, the agreement/amendment must be signed by the other agency official in duplicate and one original returned to the Grants Administration Division for Headquarters agreements or to the appropriate EPA Regional IAG administration office within 3 calendar weeks after receipt or within any extension of time as may be granted by EPA. The agreement/amendment must be forwarded to the address cited in Item 29 after acceptance signature.

Receipt of a written refusal or failure to return the properly executed document within the prescribed time may result in the withdrawal of the offer by EPA. Any change to the agreement/amendment by the other agency subsequent to the document being signed by the EPA Action Official, which the Action Official determines to materially alter the agreement/amendment, shall void the agreement/amendment.

**2)** For Funds-in actions, the other agency will initiate the action and forward two original agreements/amendments to the appropriate EPA program office for signature. The agreements/amendments will then be forwarded to the appropriate EPA IAG administration office for acceptance signature on behalf of the EPA. One original copy will be returned to the other agency after acceptance.

EPA IAG Administration Office (for administrative assistance)

EPA Program Office (for technical assistance)

### 29. Organization/Address

Environmental Protection Agency  
Grants Administration Section  
1200 Sixth Avenue, MD-100  
Seattle, Washington 98101

### 30. Organization/Address

Environmental Protection Agency  
Alaska Operations Office  
Room 537, Federal Building  
Anchorage, Alaska 99515

## Certification

All signers certify that the statements made on this form and all attachments thereto are true, accurate, and complete. Signers acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

### Decision Official on Behalf of the Environmental Protection Agency Program Office

#### 31. Signature



#### Typed Name and Title

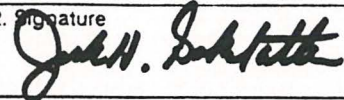
Ronald A. Kreizenbeck  
Acting Director, Water Division

#### Date

21 JUN 90

### Action Official on Behalf of the Environmental Protection Agency

#### 32. Signature



#### Typed Name and Title

Jack Gakstatter, Chief  
Office of Puget Sound

#### Date

6/21/90

### Authorizing Official on Behalf of the Other Agency

#### 33. Signature

#### Typed Name and Title

Paul Gertler  
NRDA Mgmt Team Representative

#### Date



## TASK 1

### RESTORATION STUDIES - PILOT PROJECT

#### Title

Pilot Project -- Distribution and abundance of forage fish in relation to marine birds and marine mammals in northeastern Prince William Sound.

#### Introduction

Many species of marine birds and marine mammals feed mainly on schooling forage fish (e.g., sandlance, capelin, and herring). Populations of some marine bird and marine mammal species in Prince William Sound have decreased during the past 18 years (Dwyer et al. 1975, Klosiewski, pers. comm.). The reasons for these declines are unknown, but may be related to food availability. If the Exxon Valdez oil spill negatively affected forage fish populations we might expect an accelerated decline of some marine bird and mammal populations. Marine bird and mammal species require appropriate habitat and food to maintain stable populations. If restoration studies repair or replace habitat damaged by oil, but sufficient food does not exist, then there will be no restoration of the target species.

#### Objective

- I. Determine distribution and relative abundance of forage fish in relation to foraging and non-foraging marine birds and mammals.

#### Methods

This pilot study would be conducted in conjunction with an existing non-oil spill study being done in the northeastern portion of the Sound. Major equipment items such as boats could be shared with the ongoing study, thereby decreasing costs. The work would be concentrated in the area between Bligh Island and Glacier Island and would stress testing techniques that would be used in a fully funded study.

The objective of the study would be met using the following procedures. First, the precise area to be studied would be defined, within this area 20 to 30 random transects 1 KM in length would be chosen. These transects would be surveyed from 28 June to 15 August twice a day, every other day to determine the temporal and spatial variation of forage fish, marine birds, and marine mammals. Presence, behavior (i.e., foraging, flying, or resting), and exact location of marine birds and marine mammals would be recorded for a width of 200 meters along the

transects. Presence of fish would be recorded with a chart recording fathometer. Species of forage fish in the area would be determined by collecting birds foraging on the fish and through the use of gill nets. Birds will be collected with a shot gun using # 4 steel shot. Stomachs will be removed immediately and will be preserved in alcohol. Dates, start and end times, local weather and sea conditions will be recorded for each transect. Exact locations of transects will be determined with the use of a LORAN and nautical charts. The degree of the temporal and spatial variability found in the pilot study would help determine the appropriate sample size and timing of surveys for a large scale study.

The EPA person associated with this project is Brian Ross, OIL Spill Restoration Team, (907-271-2461). The USFWS personnel are Paul Gertler, Deputy Assistant Regional Director for Oil Spill (907-786-3579), Kent Wohl, Project Leader, Marine and Coastal Birds (907-786-3503), David Irons, Wildlife Biologist, Project Leader (907-786-3376), Mary Beth Decker, Biological Technician, Camp Leader (907-786-3443).

All data will be stored at the USFWS Anchorage office in the Migratory Birds division. David Irons (907-786-3376) may be contacted in order to retrieve the data.

Schedule: Complete report on the success of the pilot project by Sept. 30, 1990



## **Task 2**

### **ASSESSMENT OF BEACH SEGMENT SURVEY DATA FOR RESTORATION**

#### **INTRODUCTION/JUSTIFICATION:**

There is a large collection of beach survey information obtained via the fall and spring surveys (walk-a-thon and S.A.T.). More is expected to be added when the 1990 fall survey is completed. These data are expected to complement the information obtained from ongoing studies by adding to the land and habitat database. This study will assist in further identifying restoration project sites, particularly in identification of potential acquisition of equivalent resources. Additionally, it should prove valuable in providing further information for analytical purposes in the development of the restoration planning matrix.

#### **Subtasks:**

- A. Under guidance from the restoration planning workgroup and technical advisors obtain and translate to maps, pertinent beach survey information that is not currently available in hard copy.
- B. Analyze possible trends in information for applicability to feasibility studies.
- C. Create a data bank, via G.I.S. and d-base, for future reference use in restoration projects.

#### **METHODS AND ANALYSES:**

Research and map, using standard cartographic and G.I.S. techniques, all available information from the fall 1989, spring 1990 and fall 1990 walk-a-thon and S.A.T. surveys. Combined with other ongoing studies, this will provide further support in the selection process for specific restoration sites and habitats. It may also prove advantageous for documenting natural recovery processes that may be occurring.

SCHEDULE: Complete report on the success of the creation of the databank by Sept. 30, 1990



RAWG  
L



June 14, 1990

REPLY TO  
ATTN OF:

ES-095

MEMORANDUM

SUBJECT: Review of Scope of Work for the Distribution and Abundance of Forage Fish in Relation to Marine birds and Marine Mammals - Pilot Project

FROM: Donald Matheny, Chemist *Donald Matheny*  
Regional Quality Assurance Management Office

THRU: Bob Melton, Chemist *Robert H. Melton*  
Regional Quality Assurance Management Office

TO: John Armstrong  
Office of Puget Sound

A review of the Scope of Work for the Distribution and Abundance of Forage Fish in Relation to Marine birds and Marine Mammals has been completed and it is recommended that the following information be incorporated into the plan.

1. The Plan date should be included on the plan along with a schedule of plan activities.
2. The EPA and USFWS personnel responsible for the implementation of this project and those individuals responsible for making any major decisions concerning the outcome of this project should be identified. This information should include names, title, phone number, government agency and a short statement of responsibilities.
3. A description of how all data (strip charts recordings, copies of logbooks, maps, etc..) will be recorded, archived and how that data can be retrieved should be given. This may be done by stating who will be collecting, transferring and storing the data, where and under what conditions the data will be stored, and who to contact (EPA, USFWS) in order to retrieve the data.
4. Dates should be recorded on all strip chart recordings. The time ~~interval~~ directly before and after each transect run should also be recorded.
5. How the locations of data collection activities will be determined and recorded (maps, descriptions, photos, etc...) should be identified.
6. Describe the procedure or reference a USFWS procedure that will be used for collecting birds.

# (SCOPE FOR IAG TO USFWS)

KPWG  
L

## RESTORATION STUDIES - PILOT PROJECT

### Title

Distribution and abundance of forage fish in relation to marine birds and marine mammals - pilot project.

### Introduction

Many species of marine birds and marine mammals feed mainly on schooling forage fish (e.g., sandlance, capelin, and herring). Populations of some marine bird and marine mammal species in Prince William Sound have decreased during the past 18 years (Dwyer et al. 1975, Klosiewski, pers. com.). The reasons for these declines are unknown, but may be related to food availability. If the Exxon Valdez oil spill negatively affected forage fish populations we might expect an accelerated decline of some marine bird and mammal populations. Marine bird and mammal species require appropriate habitat and food to maintain stable populations. If restoration studies repair or replace habitat damaged by oil, but sufficient food does not exist, then there will be no restoration of the target species.

### Objectives

- I. Determine distribution and relative abundance of forage fish in relation to foraging and non-foraging marine birds and mammals.

### Methods

This pilot study would be conducted in conjunction with an existing study being done in the northeastern portion of the Sound. Major equipment items such as boats could be shared with the ongoing study, thereby decreasing costs. The work would be concentrated in a small area of the Sound and would stress testing techniques that would be used in a fully funded study.

The objective of this pilot study would be met using the following procedures. First, the area of interest would be defined, within this area 20 to 30 randomly chosen transects one kilometer long would be run repeatedly with a 25' Boston Whaler to determine the temporal and spatial variation of forage fish, marine birds, and marine mammals. Presence of fish would be recorded with a chart recording fathometer. Presence, behavior (i.e., foraging, flying, or resting), and exact location of marine birds and marine mammals would be recorded for a width of 200 meters along the transect. Species of forage fish in the area would be investigated by collecting birds foraging on the fish and through the use of gill



DRAFT

nets. The degree of the temporal and spatial variability found in the pilot study would help determine the appropriate sample size and timing of surveys for a large scale study.

Budget

Salaries GS 5	\$5000
Volunteer Expenses	\$1500
Travel	\$1000
Fuel	\$4000
Equipment (Gill nets etc.)	\$3000
Supplies (i.e., Food)	\$2000
Total	\$16500

Submitted by

David Irons  
Migratory Bird Mgmt.  
U.S. Fish & Wildlife



06/21/90

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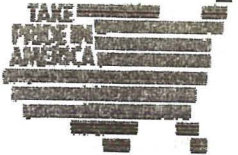
907 786 3404

DIV. OF REALTY

RWS 001



## United States Department of the Interior



IN REPLY REFER TO:

FACSIMILE TRANSMISSION COVER PAGE

File w/  
1990 FEAS. Studies  
(Tech-Support #3)  
w/ IAGs Contracting"

DATE:

21 June 90

TO:

BRIAN ROSS

ORGANIZATION:

EPA

PHONE:

(907) 271-2461

FROM:

DAVE IRONS

PHONE:

(907) 786-3374

ORGANIZATION:

U.S. Department of the Interior  
Fish and Wildlife

FAX NUMBER:

(907) 562-2297

NUMBER OF PAGES:

3

CONTENTS:

RESTORATION Studies - Pilot Project  
PROPOSAL

## RESTORATION STUDIES - PILOT PROJECT

Title

Pilot Project -- Distribution and abundance of forage fish in relation to marine birds and marine mammals in northeastern Prince William Sound.

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Equipment (Gill nets etc.)	\$3000
Supplies (i.e., Food)	\$2000
Total	\$16500

Submitted by

David Irons  
Migratory Bird Mgmt.  
U.S. Fish & Wildlife



LITIGATION SENSITIVE  
ATTORNEY — CLIENT  
PRIVILEGED

**EXXON VALDEZ NRDA  
STUDY RECOMMENDATIONS**

STUDY NO.	STUDY TITLE	RECOMMENDATION:		LEAD AGENCY	OIL YEAR BUDGET	
		CONTINUE	DISCONTINUE		1989 BUDGET*	1990 BUDGET
6	Marbled Murrelets		X	USFWS	\$115,700	-0-

**COMMENTS**

This study will not produce substantial useful information if continued as originally planned. All 1989 hydrocarbon samples should be analyzed, and murrelets should be observed as part of the 1990 survey for Bird Study #2.

-90:11:59 AM;  
JULIEH OPERATIONS OFFICE

OCITT 03 →

RPW  
(2)

9075622297 ; #1  
P.12

LITIGATION SENSITIVE  
ATTORNEY - CLIENT  
PRIVILEGED

Title: Prince William Sound Harlequin Duck Breeding Habitat  
Analysis Pilot Study

Study ID Number: Bird Study Number 11

Project Leader: Dr. Samuel M. Patten

Leading Agency: Alaska Department of Fish and Game

Cooperating Agency: U.S. Fish and Wildlife Service

Cost of Proposal: 10K

Date of Plan: April 12, 1990

Principal Investigator: \_\_\_\_\_ Date: \_\_\_\_\_

Organization Leader: \_\_\_\_\_ Date: \_\_\_\_\_

Organization Financial Officer \_\_\_\_\_ Date: \_\_\_\_\_

I THINK THIS ONE  
HAS SOME POTENTIAL  
OR IS, AT LEAST,  
WORTH EVALUATING



## II. INTRODUCTION:

This focus of proposal is a pilot study for restoration of Harlequin Duck (Histrionicus histrionicus) populations in Prince William Sound (PWS). Harlequin Ducks are year-around residents in Prince William Sound (Isleib and Kessel, 1973), feeding in heavily impacted intertidal zones resulting from the Exxon Valdez Oil Spill (EVOS) and breeding along nearby streams (Hogan, 1980). In addition to direct mortality associated with the EVOS, preliminary damage assessment results from Bird Study No. 11 suggest that a significant proportion of the Harlequin population surviving in oiled areas is in physiologically poor condition, probably associated with consumption of oiled intertidal prey items.

Harlequin Ducks, because of their resident status and intertidal foraging habits, have been considered substantially at risk to effects of the Exxon Valdez Oil Spill (King and Sanger, 1979). Harlequin Ducks are dependent upon intertidal marine invertebrates (Vermeer and Bourne, 1982). Harlequins consume a wide variety of small mussels, clams, snails, and limpets (Koehle, Rothe and Dirksen, 1982; Dzinbal and Jarvis, 1982). Bivalves, particularly blue mussels (Mytilus), and small clams (Macoma), are well-known for their ability to concentrate pollutants at high levels (Shaw et al, 1976). The crude oil spilled from the Exxon Valdez may cause severe damage to marine invertebrates that support Harlequin Ducks (Stekoll, Clement, and Shaw, 1980) and bioaccumulation in the food chain may result in uptake of petroleum hydrocarbons by Harlequin Ducks over a long period (Dzinbal and Jarvis, 1982; Sanger and Jones, 1982).

Bird Study No. 11 is determining levels of petroleum hydrocarbon ingestion by sea ducks, including Harlequins, and predicting resultant physiological and life-history effects (Hall and Coon, 1988). Pre-oil spill baseline data is fortunately available on petroleum contaminant levels of Harlequin Ducks in Prince William Sound (Irons, USFWS, pers. comm.).

Preliminary results from gross necropsies of intertidal feeding Harlequins collected in oil-impacted areas of western Prince William Sound in early winter 1989-90 suggest approximately 25% of these birds were in poor physiological condition. By comparison, approximately 97% of Harlequins collected in winter 1989-90 in unexposed areas of southeastern Prince William Sound and near Juneau were in good condition. Collected White-winged Scoters, which feed in deeper water on benthic invertebrates (Sanger and Jones, 1982) were in good condition in both exposed and unexposed areas of Prince William Sound. These preliminary damage assessment results are in accordance with theoretical predictions of effects of petroleum exposure through the food chain to higher trophic level intertidal predators such as Harlequin Ducks.

USFWS and ADF&G biologists attending the initial Oil Spill Restoration Planning meeting in Anchorage (April 3-4, 1990) identified the lack of knowledge of Harlequin Duck breeding habitat ecology in Prince William Sound as being a critical data gap which needs to be addressed before restoration efforts can proceed for this species. This proposal for a pilot study analysis of Prince William Sound Harlequin Duck breeding habitat is the first step to address that requirement.

Harlequin breeding habitat in Prince William Sound may need protection as part of restoration efforts aimed at rebuilding population numbers, yet little is known about Harlequin breeding parameters other than they nest along forested streams. A single study has been conducted on the breeding ecology of the Harlequin Duck in Iceland (Bengston, 1966). Specific information is lacking about Harlequin Duck breeding in Alaska, other than Dzinbal and Jarvis' (1982) work on summer coastal feeding ecology. Increase in knowledge about this topic received a priority rating by biologists attending the initial EVOS restoration planning meeting in Anchorage. Harlequin nesting streams in Prince William Sound need special protection from impending logging activities if this seaduck population is to recover from the 1989 Exxon Valdez Oil Spill.

In response to this priority identification, Bird Study No. 11 is prepared to proceed with a limited feasibility study in the 1990 field season, to commence before June 1. This would be considered an additional, although limited, objective for Bird Study No. 11, and would require minimal additional funding in 1990. An experienced waterfowl biologist and a technician from Bird Study No. 11 are planning to be in the field in Prince William Sound investigating Harlequin Ducks in oiled areas throughout the summer. Boats, motors, and field gear have previously purchased.

A considerable amount of information concerning anadromous fish streams (where Harlequins would nest) is available from Commercial Fisheries and Habitat Divisions of the Department of Fish and Game. Early spring and summer surveys of streams along which Harlequins are expected to nest would involve minor logistical planning changes to a field program already in place for the 1990 summer season. This breeding habitat analysis pilot study would enable the biologists to gather some data on Harlequin breeding ecology, and enable aspects of a larger 1991 restoration study to be assembled.



### III. OBJECTIVES:

- A. To locate, identify and describe Harlequin nesting streams in Prince William Sound.
- B. To identify habitats used by nesting Harlequin Ducks including stream, riparian, and adjacent forest types.
- C. To investigate Harlequin Duck breeding parameters such as distance from the coast, distance from the stream, and physical features of the nest site.
- D. To obtain limited data on Harlequin breeding productivity where possible, such as clutch size, hatching and fledging success.
- E. A postulated objective for the the larger restoration feasibility study would be the recommended size of forested buffer strips to protect Harlequin breeding streams from the effects of impending logging in Prince William Sound.

Logging effects could significantly retard or thwart efforts to restore the population of Harlequin Ducks in Prince William Sound after the EVOS. Riparian forest zones or stream conservation easements could be obtained as part of the "acquisition of equivalent resources" oil spill restoration program. Many other wildlife species other than Harlequin Ducks would benefit.

- F. Identify potential alternative methods and strategies for restoration of lost use, populations, or habitat.

### IV. METHODS:

- A. Sampling Methods:  
Streams will be selected for investigation based upon reported concentrations of Harlequins in the vicinity and interviews with knowledgeable observers.
- B. Citations:  
See section VIII.
- C. Standard Operating Procedure Requirements:  
None. This is a preliminary survey.
- D. Equipment Protocol:  
A 20-ft. center-console fiberglass boat will be used as transportation during this study. The boat will have appropriate safety and survival gear, marine VHF radio, and depth finder. An outboard powered inflatable boat may be used in protected areas in addition to the larger craft.

- E. Quality Assurance and Control Plans:  
Data will be recorded in standard formats. Chain-of-custody procedures as outlined in State/Federal Damage Assessment Plan Analytical Chemistry QA/QC will be followed.
- F. Information Required From Other Investigators:  
Data on Harlequin distribution may be requested from U.S. Fish and Wildlife Service aerial surveys of Prince William Sound. Interviews will be conducted with Commercial Fisheries personnel experienced with Prince William Sound stream surveys. Other agency or private biologists working in Prince William Sound and having knowledge of Harlequin Ducks may be consulted.

V. DATA ANALYSIS:

- A. Tests:  
This is a preliminary investigation to determine the feasibility of a larger program. Statistical tests are not planned until the form of the data to be gathered is obtained.
- B. Analytical Methods:  
Not known at the present time until preliminary surveys are completed.
- C. Products:  
The products of this study will be a narrative report with maps, figures, and tables.

VI. Schedules and Planning:

A. Data Submission Schedule:

Fieldwork	May 15, 1990 to Sept. 30, 1990
Analyze Data	Oct. 1, 1990 to Dec. 15, 1990
Complete Interim Report	Feb. 15, 1991

B. Special Reports:

Additional interim reports and communications will be prepared by the PI as desired by the Management Team. If warranted, a proposal for a complete Harlequin breeding inventory may be developed by spring 1991 as part of restoration efforts.

C. Visual Data:  
None.



- D. Sample and Data Archival:  
Samples and data will be archived at the Department of Fish and Game.
- E. Management Plan:  
This study will be conducted and managed by the Principal Investigator who will work under the general guidance of the Division of Wildlife Conservation Oil Spill Damage Assessment Management Coordinator. The Management Coordinator will provide general supervision during planning, implementation, and reporting phases of the study. The Principal Investigator and assistants will collect the field and laboratory data, and prepare and handle specimens. The Principal Investigator will interpret results, and write draft and final reports. General guidance may also be provided by the DWC Waterfowl Coordinator. The Principal Investigator may be also assisted in field and laboratory work by one or more DWC biologists or technicians.
- F. Logistics:  
The Prince William Sound aspects of this study will be conducted from Whittier and Cordova, with the Department of Fish and Game facilities at Main Bay Hatchery, located in the oil spill area of western Prince William Sound, providing a secondary base of support. A field camp will be constructed on Knight Island in summer 1990. Transportation will be from a center console fiberglass boat. This boat is designed for open water operations and can access most of Prince William Sound in good weather. An inflatable boat will be used inshore and in sheltered waters. Aircraft or larger vessel charter may be used to access streams distant or difficult by small boat.

#### VII. Budget:

A. Costs:	
Salaries	included in Bird Study No. 11
Travel	included in Bird Study No. 11
Contracts	5,000 (aircraft or boat charter)
Supplies	2,500 (boat gas, food, etc.)
Equipment	2,500 (boat repair and maintenance)

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TOTAL                      \$ 10,000

#### B. Personnel:

1. Samuel M. Patten
2. Wildlife Technician/Field and Laboratory Assistant

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C. Qualifications:

1. Principal Investigator - Samuel M. Patten  
Sam Patten received his B.A. degree from Cornell University in 1968, majoring in Biology and German. He attended Heidelberg University 1968-71. In 1971 he began work as a Research Assistant at the University of Washington, conducting thesis research on Glaucous-winged Gulls in Glacier Bay National Monument under National Park Service sponsorship. He received his Master of Science degree in 1974.

He worked as a Research Associate for the University of Alaska in the summer of 1974, conducting research on avian populations on the outer coast of Glacier Bay for the National Park Service in an area potentially impacted by nickel mining. In 1975 he began research on gulls on the south coast of Alaska as a doctoral student at Johns Hopkins University. Field work was conducted as part of the NOAA-OCS gas and oil baseline studies prior to the development of oil resources. He received his Ph.D. in Animal Ecology and Behavior from the Department of Pathobiology, School of Hygiene and Public Health, Johns Hopkins, in 1980, with a dissertation on the evolution of gulls in Alaska.

Patten continued work on seabirds, shorebirds and waterfowl in Yakutat, Alaska, for Operations Research, Inc., 1980-81, under NOAA contract. He assisted in production of a data atlas of the Bering, Chukchi, and Beaufort Seas for NOAA while at the University of Alaska 1981-82. He also conducted research on avian populations in the Susitna basin, as part of the hydroelectric project, for the University of Alaska Museum in 1982. He began working for the Department of Fish and Game as Area Biologist on the Yukon-Kuskokwim Delta in 1983, conducting a cooperative management program instrumental in the population recovery of four species of geese. This management program also led to the expansion of muskox, moose, and caribou populations on the Yukon-Kuskokwim Delta through 1989. Since May 1989 he has been working on seabirds and waterfowl as a Division of Wildlife Conservation research biologist in the Oil Spill Impact Assessment and Recovery (OSIAR) program, as a result of the Exxon Valdez Oil Spill.



## VIII.

## CITATIONS:

Bengston, S.-A. 1966. Field studies on the Harlequin Duck in Iceland. Wildfowl Trust Ann. Rep. (1964-65) 17: 79-94.

Dzinbal, K.A. and R.L. Jarvis. 1982. Coastal feeding ecology of Harlequin Ducks in Prince William Sound, Alaska, during summer. pp. 6 - 10 in Marine birds: their feeding ecology and commercial fisheries relationships. Nettleship, D.A., G.A. Sanger, and P.F. Springer, eds. Proc. Pacific Seabird Group Symp., Seattle, WA., 6 - 8 Jan. 1982. Can. Wildl. Serv. Spec. Publ.

Sanger, G.A. and R.D. Jones, Jr. 1982. Winter feeding ecology and trophic relationships of Oldsquaws and White-winged Scoters on Kachemak Bay, Alaska. pp. 20 - 28 in Marine birds: their feeding ecology and commercial fisheries relationships. Nettleship, D.A., G.A. Sanger, and P.F. Springer, eds. Proc. Pacific Seabird Group Symp., Seattle, WA., 6 - 8 Jan 1982. Can. Wildl. Serv. Spec. Publ.

Hall, R.J., and N.C. Coon. 1988. Interpreting residues of petroleum hydrocarbons in wildlife tissues. U.S. Fish and Wildl. Serv., Biol. Rep. 88(15). 8 pp.

Hogan, M.E. 1980. Seasonal habitat use of Port Valdez, Alaska by marine birds. Unpublished administrative report. U.S. Fish and Wildl. Serv., Anchorage, Ak. 25 pp.

Isleib, M.E. and B. Kessel. 1973. Birds of the North Gulf Coast - Prince William Sound Region, Alaska. Biol. Pap. Univ. Alaska 14.

King, J.G. and G.A. Sanger. 1979. Oil vulnerability index for marine oriented birds. pp. 227-239 in J.C. Bartonek and D.N. Nettleship (eds.). Conservation of marine birds in northern North America. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11. Washington, D.C.

Koehl, P.S., T.C. Rothe, and D.V. Derksen. 1982. Winter food habits of Barrow's Goldeneyes in southeast Alaska. pp. 1 - 5 in Marine birds: their feeding ecology and commercial fisheries relationships. Nettleship, D. N., G.A. Sanger, and P.F. Springer, eds. Proc. Pacific Seabird Group Symp., Seattle, WA., 6-8 Jan. 1982. Can. Wildl. Serv. Spec. Publ.



Sanger, G.A. and R.D. Jones, Jr. 1982. Winter feeding ecology and trophic relationships of Oldsquaws and White-winged Scoters on Kachemak Bay, Alaska. pp. 20-28 in Marine birds: their feeding ecology and commercial fisheries relationships. Nettleship, D.N., G.A. Sanger, and P.F. Springer, eds. Proc. Pacific Seabird Group Symp., Seattle, WA., 6-8 Jan. 1982. Can. Wildl. Serv. Spec. Publ.

Shaw, D.G., A.J. Paul, L.M. Cheek, and H.M. Feder. 1976. Macoma balthica: an indicator of oil pollution. Mar. Poll. Bull. 7 (2): 29-31.

Stekoll, M.S., L.E. Clement, and D.G. Shaw. 1980. Sublethal effects of chronic oil exposure on the intertidal clam Macoma balthica. Mar. Biol. 57: 51-60.

Vermeer, K. and N. Bourne. 1982. The White-winged Scoter diet in British Columbia: resource partitioning with other scoters. pp. 30 - 38 in Marine birds: their feeding ecology and commercial fisheries relationships. Nettleship, D.A., G.A. Sanger, and P.F. Springer, eds. Proc. Pacific Seabird Group Symp., Seattle, WA., 6-8 Jan. 1982. Can. Wildl. Serv. Spec. Publ.