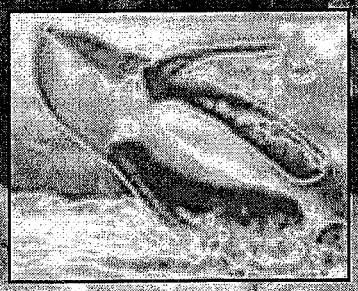

FISCAL YEAR 1998 WORK PLAN

DECEMBER 1997

***Exxon Valdez* Oil Spill Trustee Council**

645 G Street, Suite 401
Anchorage, Alaska 99501-3451
907/278-8012 fax 907/276-7178
Toll-free in Alaska 1-800-478-7745
Outside Alaska 1-800-283-7745

This publication was released by the *Exxon Valdez* Oil Spill Trustee Council and produced at a cost of $2.41 per copy.

FISCAL YEAR 1998

WORK PLAN

DECEMBER 1997

Prepared by:
***Exxon Valdez* Oil Spill**
Trustee Council

BRUCE BOTELHO
Attorney General
State of Alaska

MICHELE BROWN
Commissioner
Alaska Department of
Environmental Conservation

DEBORAH WILLIAMS
Special Assistant to the Secretary
for Alaska
U.S. Department of the Interior

PHIL JANIK
Regional Forester
Alaska Region
U.S. Department of Agriculture

STEVE PENNOYER
Director, Alaska Region
National Marine Fisheries Service

FRANK RUE
Commissioner
Alaska Department of Fish & Game

For More Information...

For more information about projects in this Work Plan or for general information about the activities of the *Exxon Valdez* Oil Spill Trustee Council, contact the Council's Anchorage Restoration Office:

Executive Director	Ms. Molly McCammon
Mail	*Exxon Valdez* Oil Spill Trustee Council Anchorage Restoration Office 645 G Street, Suite 401 Anchorage, AK 99501
Telephone	In Anchorage 278-8012 Toll free in Alaska 1-800-478-7745 Toll free outside Alaska 1-800-283-7745
Fax	(907) 267-7178
E-mail	jeffl@oilspill.state.ak.us

Fiscal Year 1998 Work Plan
December 1997

Table of Contents

List of Tables

Dear Reader,

Each year since the 1991 settlement of a lawsuit concerning the 1989 *Exxon Valdez* oil spill, the *Exxon Valdez* Oil Spill Trustee Council has funded activities to restore the resources and services injured by the spill. In the settlement, Exxon Corporation agreed to pay the United States and the State of Alaska $900 million over ten years. This Work Plan describes the research, monitoring, and general restoration projects funded by the Council for federal fiscal year 1998, and touches on the other activities of the Council as well.

The collection of projects funded in FY 98 continues four major themes begun in earlier years: monitoring the recovery status of species injured by the oil spill (such as population monitoring of common murres), researching factors constraining the recovery of injured species (such as the Nearshore Vertebrate Predator project), conducting research that should lead to long-term improvements in resource management (such as the pink salmon genome project and the Sound Ecosystem Assessment project), and synthesizing research results (such as preparation of summary manuscripts for publication in the scientific literature).

In addition, FY 98 continues the Council's commitment to community involvement in the restoration process. The Youth Area Watch, which involves local youth in ongoing restoration projects, and the Community Involvement Project, which funds a network of local liaisons in oil spill communities, are funded again in FY 98. A number of projects proposed by communities to replace or enhance subsistence resources injured by the oil spill also are continuing in FY 98. At least two of the projects funded, an investigation of surf scoters and the herring component of the Sound Ecosystem Assessment project, include traditional and local knowledge in their study designs.

Also of interest, funding is provided for five projects that will be conducted at the Alaska SeaLife Center in Seward. The SeaLife Center, funded in part by the Trustee Council, is currently under construction and scheduled to be open to researchers in early 1998. It will provide unique, technologically advanced facilities for research on marine mammals, fish and seabirds.

A continuing trend is the necessary decrease in the size of the research, monitoring, and general restoration program. The Council has adopted a declining schedule of expenditures through federal fiscal year 2002 to coincide with the final payment from Exxon Corporation in 2001. This means that the administrative costs of the program are declining (from $2.9 million in FY 97 to $2.8 million in FY 98), as is the amount of money available to fund research, monitoring, and general

restoration activities (from $16 million in FY 97 to $14 million in FY 98). Agency project management costs also have declined accordingly.

A final comment concerns some activities that are not funded through this work plan, but which contribute to the comprehensive, balanced approach to restoration outlined in the Trustee Council's *Restoration Plan* (November 1994).

- The Council has begun planning for a major symposium to be held on the 10th anniversary of the oil spill (March 1999). The symposium, designed to inform the scientific community and the public about the status of restoration, will include presentation of scientific papers and summaries of restoration program activities since the 1991 settlement.
- The Council continues its efforts to protect habitats important to the recovery of injured resources and services. Recent actions include an agreement with English Bay Corporation to protect 32,470 acres of habitat within the boundaries of Kenai Fjords National Park and an agreement with Eyak Corporation to protect 75,425 acres of habitat.
- The Council will deposit an additional $12 million into the Restoration Reserve in FY 98, bringing the total in the reserve account to $60 million plus interest. During FY 98, the Council will plan for the future use of the reserve. The planning process will include solicitation of public input from throughout the spill area on possible uses of the fund.

Public interest and input are essential to the Trustee Council process. Please feel free to contact me if you would like more information on the activities of the Council or if you have comments and suggestions on the Council's restoration efforts.

Sincerely,

Molly McCammon

Molly McCammon
Executive Director

The Work Plan Process

Table 1 describes milestones in development of the FY 98 Work Plan. The work plan process began with a restoration workshop in January 1997. The Trustee Council made most of its funding decisions in August so that projects could begin on October 1, the first day of federal fiscal year 1998. A few funding decisions were deferred until December to allow time for review of results from the FY 97 field season or further deliberation over project objectives and work plan priorities.

Table 1. Milestones for FY 98 Work Plan

Jan. 23-25, 1997	Annual Restoration Workshop discussed results of FY 96 work and directions for FY 98.
Feb. 15, 1997	*Invitation to Submit Restoration Proposals for Federal Fiscal Year 1998* was issued.
April 15, 1997	Restoration Office received 119 research, monitoring, and general restoration proposals requesting $23 million for FY 98.
May 11-13, 1997	Chief Scientist and core reviewers met to discuss the scientific and technical merits of proposals.
May 21, 1997	Executive Director discussed proposals with Chief Scientist, Public Advisory Group representatives, and Trustee agencies and drafted preliminary recommendations.
May 28, 1997	Public Advisory Group discussed proposals and preliminary recommendations and advised Executive Director.
June 9, 1997	*FY 98 Draft Work Plan* was distributed for public comment.
July 15, 1997	Public hearing was held on *FY 98 Draft Work Plan.*
July 16, 1997	Public Advisory Group met to advise Trustee Council on final work plan.
Aug. 6, 1997.	Trustee Council approved 61 research, monitoring, and general restoration projects totaling $13,079,100 for *FY 98 Final Work Plan*, and deferred projects that required further review or deliberation.
Oct. 1, 1997	Fiscal year 1998 (FY 98) began.
Dec. 18, 1997	Trustee Council approved 5 additional research, monitoring, and general restoration projects for *FY 98 Final Work Plan.* This action brought the FY 98 authorization total to $14,098,100.

Summary of Fiscal Year 1998 Projects

For FY 98, the Trustee Council received 119 research, monitoring, and general restoration proposals requesting a total of $23 million. In August and December 1996, the Council authorized 66 projects totaling $14,098,100. The table on the following page summarizes the Trustee Council's funding decisions by "resource cluster," as well as the expected cost of completing the projects authorized in FY 98. (Note: Regarding future year costs, a "$0" in the table means that no funding is expected. A blank space means that the estimated funding level is not known or that a tentative decision on future funding has not been made.)

Many of the projects funded are the continuation of efforts funded in FY 97. As illustrated in Table 2, several new projects also were funded.

Table 2. New and Continuing Projects

	Number of Projects Funded	Total Cost of Projects Funded
New Projects	17	$1,977,700
Continuing Projects	49	$12,120,400

In addition to funding research, monitoring, and general restoration projects, the Trustee Council authorized funds for the administrative costs of the restoration program ($2.8 million, primarily for public information, independent scientific review, and operating expenses), habitat protection support ($851,400, for services such as negotiations, land surveys, and appraisals), and the fifth $12 million payment to the Restoration Reserve.

Table 3. Summary of Funding by Resource Cluster

Resource Cluster	FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	Total FY98-02
Pink Salmon	$1,202.3	$606.9	$234.0	$0.0	$2,043.2
Pacific Herring	$735.3	$80.6	$0.0	$0.0	$815.9
SEA and Related Projects	$2,669.6	$841.0	$53.7	$62.8	$3,627.1
Sockeye Salmon	$11.7	$0.0	$0.0	$0.0	$11.7
Cutthroat Trout, Dolly Varden, Rockfish, and Pollock	$357.9	$271.8	$272.0	$571.0	$1,472.7
Marine Mammals	$739.3	$390.1	$262.8	$91.4	$1,483.6
Nearshore Ecosystem	$2,249.1	$626.6	$0.0	$0.0	$2,875.7
Seabird/Forage Fish and Related Projects	$2,992.1	$2,364.5	$1,395.0	$360.1	$7,111.7
Archaeological Resources	$206.6	$161.5	$0.0	$0.0	$368.1
Subsistence	$1,481.9	$354.1	$343.7	$491.1	$2,670.8
Habitat Improvement	$631.1	$359.7	$0.0	$0.0	$990.8
Ecosystem Synthesis	$261.1	$265.5	$0.0	$0.0	$526.6
Project Management	$560.1				$560.1
Total Research, Monitoring, and General Restoration Projects:	$14,098.1	$6,322.3	$2,561.2	$1,576.4	$24,558.0
Habitat Protection/Acquisition Support	$851.4				$851.4
Public Information/Science Mgt./ Admin.	$2,796.3	$2,500.0			$5,296.3
Restoration Reserve	$12,000.0	$12,000.0	$12,000.0	$24,000.0	$60,000.0
Total All Activities:	$29,745.8	$20,822.3	$14,561.2	$25,576.4	$90,705.7

Description of FY 98 Projects

This section describes the research, monitoring, and general restoration projects funded by the Trustee Council for FY 98. It also includes a brief description of the Council's other activities.

RESEARCH, MONITORING, AND GENERAL RESTORATION PROJECTS

The research, monitoring, and general restoration projects described on the following pages are arranged by "resource cluster." Each cluster description includes the Trustee Council's restoration strategies (which were established in the *Restoration Plan* and are updated as needed each year through the annual work plan), the projects authorized to implement those strategies, and the expected cost of completing the projects authorized in FY 98. (Note: Regarding future year costs, "$0" means that no funding is expected. A blank space means that the estimated funding level is not known or that a tentative decision on future funding has not been made.)

Appendix A contains a numerical listing of all projects funded by the Trustee Council. It contains the text of the Chief Scientist's technical review of each project and the Trustee Council's decision for each project. It also indicates who proposed each project, which Trustee agency is responsible for project management, and whether the project is continuing (i.e., also was funded by the Council in FY 97) or new.

A detailed project description (DPD) and budget are on file at the Anchorage Restoration Office for each of the projects summarized in this section.

Restoration Strategies for Fiscal Year 1998

Research and Monitor the Toxic Effect of Oil

- Continue embryo mortality project (98191A), which is monitoring recovery of pink salmon embryo mortality and examining whether genetic damages occurred as a result of exposure to oil during early life stages.
- Complete straying project (98076), which is examining effects of oil exposure during embryonic development on the straying rates, reproduction, and early developmental stages of pink salmon.
- Complete spawning habitat project (98194), which is examining level of oil in pink salmon streams following the spill relative to embryo mortalities.
- Begin pink salmon synthesis project (98329), which will synthesize the results of seven studies funded by the Trustee Council to examine toxicological damage to pink salmon populations.

Provide Stock Separation and Management Information and Tools

- Complete coded wire tag project (98186); the Trustee Council's funding support will shift to the otolith thermal technique, discussed below.
- Continue otolith thermal mass marking project (98188), which is more effective than coded wire tags at marking fish for management purposes.
- Continue genetic stock identification project (98196), which is examining the geographic extent of genetic differences in Prince William Sound pink salmon.
- Continue genetic linkage project (98190), which is constructing a genetic map that will aid understanding of straying, stock structure, and marine survival of pink salmon.

Supplement Populations

- Complete Little Waterfall barrier bypass project (98139A1), which in FY 98 will prepare a final report summarizing the effectiveness of the barrier bypass modification (decreased grades and additional resting pools) at increasing spawning habitat for pink and coho salmon.
- Continue Port Dick Creek project (98139A2), which in FY 98 will continue to evaluate the effectiveness of excavation of the spawning tributary at increasing spawning habitat for pink and chum salmon.

Investigate Ecological Factors that Influence Adult Pink Salmon Returns

- Continue SEA project (98320); this project is discussed in the Sound Ecosystem Assessment cluster.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98076	Effects of Oil on Straying	$272.2	$0.0	$0.0	$0.0	$272.2
98139A1	Little Waterfall Barrier Bypass	$13.4	$0.0	$0.0	$0.0	$13.4
98139A2	Port Dick Spawning Channel	$85.8	$76.5	$47.0	$0.0	$209.3
98186	Coded Wire Tag Recovery	$120.2	$0.0	$0.0	$0.0	$120.2
98188	Otolith Thermal Marking	$141.1	$182.9	$0.0	$0.0	$324.0
98190	Genome Linkage Map	$229.4	$187.0	$187.0	$0.0	$603.4
98191A	Oil Related Embryo Mortality	$159.4	$58.7	$0.0	$0.0	$218.1
98194	Spawning Habitat Recovery	$25.0	$0.0	$0.0	$0.0	$25.0
98196	Genetic Structure	$130.2	$50.0	$0.0	$0.0	$180.2
98329	Synthesis of Toxicological Impacts	$25.6	$51.8	$0.0	$0.0	$77.4
	TOTAL	$1,202.3	$606.9	$234.0	$0.0	$2,043.2

Restoration Strategies for Fiscal Year 1998

Investigate Herring Disease as a Cause of the 1993 Crash

- Continue herring disease project (98162), which is investigating the potential links among oil exposure, disease, and the Pacific herring population decline in Prince William Sound.

Provide Management Information

- Complete herring natal habitats project (98166), which has monitored the abundance of Pacific herring; the Alaska Department of Fish and Game will continue this monitoring using normal agency funds.
- Complete genetic stock identification project (98165), which is addressing basic questions about the genetic composition of Prince William Sound Pacific herring in relation to other North Pacific populations.

Investigate Ecological Factors that Influence Populations of Pacific Herring

- Begin herring productivity project (98311), which will examine how changes in carbon flow between Prince William Sound and the Gulf of Alaska affect herring recruitment.
- Continue SEA project (98320); this project is discussed in the Sound Ecosystem Assessment cluster.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98162	Disease Factors	$517.7	$0.0	$0.0	$0.0	$517.7
98165	Genetic Discrimination	$56.0	$0.0	$0.0	$0.0	$56.0
98166	Herring Natal Habitats	$42.3	$0.0	$0.0	$0.0	$42.3
98311	Productivity Dependencies	$119.3	$80.6	$0.0	$0.0	$199.9
	TOTAL	$735.3	$80.6	$0.0	$0.0	$815.9

Restoration Strategies for Fiscal Year 1998

Investigate Ecological Factors

- Continue Sound Ecosystem Assessment project (98320), which is exploring and developing models of the processes influencing the survival and recruitment of pink salmon and Pacific herring in Prince William Sound.
- Conduct oceanography of Prince William Sound project (98297-BAA), which will study water mass properties and circulation patterns in four bays in Prince William Sound that are the focus of the SEA project.
- Begin Trustee Council contribution to long-term oceanographic monitoring project (98340) near Seward, which is gathering temperature and salinity data that will help researchers evaluate the status and recovery of species injured by the oil spill.

Monitor Pristane Levels

- Continue pristane monitoring project (98195), which is collecting and measuring pristane in mussels as a measure of marine productivity.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98195	Pristane Monitoring	$114.9				$114.9
98297	Oceanography of PWS Bays	$94.2	$0.0	$0.0	$0.0	$94.2
98320	SEA	$2,383.4	$755.2	$0.0	$0.0	$3,138.6
98340	Long-Term Oceanographic Monitoring	$77.1	$85.8	$53.7	$62.8	$279.4
	TOTAL	$2,669.6	$841.0	$53.7	$62.8	$3,627.1

Restoration Strategies for Fiscal Year 1998

Supplement Populations

- Complete Delight and Desire Lakes project (98254), which is evaluating the feasibility of restoring sockeye salmon in these two lakes through nutrient enrichment.
- Continue Solf Lake stocking project (98256B); this project is discussed in the Subsistence cluster.

Restore Habitat Along the Kenai River

- Continue Kenai habitat restoration project (98180); this project is discussed in the Habitat Improvement cluster.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98254	Delight and Desire Lakes	$11.7	$0.0	$0.0	$0.0	$11.7
	TOTAL	$11.7	$0.0	$0.0	$0.0	$11.7

Restoration Strategies for Fiscal Year 1998

Research and Monitor Populations

- Continue population research project (98145), which is determining the relationship between resident and anadromous forms of Dolly Varden and cutthroat trout in Prince William Sound.
- Begin genetics project (98252), which will obtain genetic stock structure information on rockfish and pollock.

Improve Habitat

- Continue habitat improvement project (98043B), which is monitoring the effectiveness of cutthroat trout and Dolly Varden habitat improvement structures installed at four sites in Prince William Sound in FY 95.

Develop Restoration Strategies

- Complete inventory project (98302), which is investigating a number of remote lakes and streams in Prince William Sound to determine whether cutthroat trout and Dolly Varden are present.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98043B	Habitat Improvement	$24.0	$8.0	$0.0	$0.0	$32.0
98145	Anadromous/Resident Forms	$120.7	$0.0	$0.0	$0.0	$120.7
98252	Genetic Investigations of Rockfish and Pollock	$209.1	$263.8	$272.0	$571.0	$1,315.9
98302	PWS Inventory	$4.1	$0.0	$0.0	$0.0	$4.1
	TOTAL	$357.9	$271.8	$272.0	$571.0	$1,472.7

Restoration Strategies for Fiscal Year 1998

Monitor Harbor Seals and Research the Decline in Harbor Seals

- Complete harbor seal condition/health project (98001), which has conducted field studies to document the body condition and nutritional status of harbor seals.
- Begin harbor seal health/diet project (98341), which will conduct studies under controlled conditions at the Alaska SeaLife Center to help validate the results of prior field studies.
- Continue harbor seal monitoring project (98064), which in FY 98 will monitor the status of harbor seals in Prince William Sound and investigate the hypothesis that food limitation to pups and juveniles is causing the ongoing decline of harbor seal populations.
- Complete stable isotope study (98170), which is assessing food webs in Prince William Sound in an effort to explain the decline of harbor seals.
- Continue community-based harbor seal biosampling project (98244); this project is discussed in the Subsistence cluster.

Monitor Killer Whales

- Continue killer whale investigation (98012A-BAA), which is analyzing the long-term effects of the oil spill on resident and transient pods of killer whales in Prince William Sound.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98001	Harbor Seal Condition and Health Status	$51.1	$0.0	$0.0	$0.0	$51.1
98012	Killer Whale Investigation	$154.7				$154.7
98064	Harbor Seal Monitoring	$272.5	$265.0	$130.0	$0.0	$667.5
98170	Isotope Ratio Studies	$108.8	$0.0	$0.0	$0.0	$108.8
98341	Harbor Seals: Health and Diet	$152.2	$125.1	$132.8	$91.4	$501.5
	TOTAL	$739.3	$390.1	$262.8	$91.4	$1,483.6

Restoration Strategies for Fiscal Year 1998

Monitor Recovery

- Complete harlequin duck monitoring project (98427), which has assessed the recovery status of harlequin ducks in Prince William Sound.
- Conduct black oystercatcher monitoring project (98289-BAA), which will assess the recovery status of black oystercatchers.
- Conduct manuscript project (98325-BAA), which will prepare six manuscripts on results of intertidal studies previously funded by the Trustee Council.

Research Mechanisms Constraining Recovery

- Continue nearshore vertebrate predator project (98025), which is monitoring the recovery of intertidal organisms and closely linked vertebrate predators and evaluating whether continuing contamination is slowing recovery.
- Complete harlequin duck genetics project (98161), which has examined the population differentiation and movement among geographically separate groups of harlequin ducks in the northern Gulf of Alaska.
- Begin river otter project (98348), which will use facilities at the Alaska SeaLife Center to validate the effects of oil contamination on river otters.

Monitor the Fate and Persistence of Oil

- Continue hydrocarbon database project (98290), which is analyzing hydrocarbon samples collected through other Trustee Council projects.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98025	Nearshore Vertebrate Predators	$1,652.9	$450.0	$0.0	$0.0	$2,102.9
98161	Harlequin Duck Genetics	$16.5	$0.0	$0.0	$0.0	$16.5
98289	Status of Black Oystercatchers	$80.4		$0.0	$0.0	$80.4
98290	Hydrocarbon Database	$75.7				$75.7
98325	Intertidal/Subtidal Manuscripts	$99.0		$0.0	$0.0	$99.9
98348	River Otter: Oil Contamination	$245.4	$176.6	$0.0	$0.0	$422.0
98427	Harlequin Duck Monitoring	$78.3	$0.0	$0.0	$0.0	$78.3
	TOTAL	$2,249.1	$626.6	$0.0	$0.0	$2,875.7

Restoration Strategies for Fiscal Year 1998

Research Mechanisms Limiting Recovery of Seabird Populations

- Continue Alaska Predator Ecosystem Experiment (APEX, 98163), which is investigating link between forage fish and seabird productivity.
- Continue genetics project (98169), which is using genetic techniques to define regional populations of common murres, marbled and Kittlitz's murrelets, and pigeon guillemots.
- Continue sand lance research project (98306), which is studying basic ecology, distribution, and demographics of this forage fish in lower Cook Inlet.
- Begin pigeon guillemot project (98327), which will conduct research at the Alaska SeaLife Center on how nutrition and oil affect the growth and physiology of nesting guillemots; will also test techniques to establish a new guillemot colony.
- Begin murre/kittiwake project (98338), which will explore adult overwinter survival as one mechanism by which forage fish availability may be affecting the recovery of seabirds.
- Begin fatty acid/lipid analysis project (98347), which will examine the nutritional consequences of dietary differences in marine mammal prey.

Monitor Seabird Populations

- Continue common murre project (98144A), which in FY 98 will monitor common murre populations on the Chiswell Islands.
- Conduct marine bird monitoring project (98159), which surveys the status and recovery of seabirds and sea otters in Prince William Sound on a biennial basis.
- Complete Kittlitz's murrelet project (98142-BAA), which is evaluating abundance, distribution, habitat use, productivity, and trophic position of this seabird.
- Conduct sand lance publication project (98346), which will create a bibliography of published and unpublished reports about this species.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98142	Kittlitz's Murrelets	$269.0	$0.0	$0.0	$0.0	$269.0
98144A	Common Murres	$57.4	$23.0	$0.0	$0.0	$80.4
98159	Marine Bird Surveys	$237.0	$35.0	$230.0	$265.0	$767.0
98163	APEX	$2,012.2	$1,880.3	$882.1	$0.0	$4,774.6
98169	Seabird Genetics	$88.2	$86.2	$13.8	$0.0	$188.2
98306	Sand Lance Ecology	$32.8	$30.0	$20.0	$0.0	$82.8
98327	Pigeon Guillemot Research	$123.3	$159.5	$168.8	$95.1	$546.7
98338	Adult Murre/Kittiwake Survival	$56.2	$57.9	$45.0	$0.0	$159.1
98346	Sand Lance Publication	$5.4	$0.0	$0.0	$0.0	$5.4
98347	Fatty Acid/Lipid Analysis	$110.6	$92.6	$35.3	$0.0	$238.5
	TOTAL	$2,992.1	$2,364.5	$1,395.0	$360.1	$7,111.7

Restoration Strategies for Fiscal Year 1998

Monitor Archaeological Sites

- Continue index site monitoring project (98007A), which is periodically checking on sample ("index") sites to detect further damage from vandalism and looting and to gauge the effect of oiling on archaeological deposits.
- Continue site stewardship project (98149), which is training and coordinating volunteers to monitor vandalized archaeological sites in the spill area.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98007A	Index Site Monitoring	$139.7	$151.5			$291.2
98149	Site Stewardship	$66.9	$10.0	$0.0	$0.0	$76.9
	TOTAL	$206.6	$161.5	$0.0	$0.0	$368.1

Note: In December 1997 the Trustee Council approved a resolution setting aside $2.8 million for an archaeological repository in the Prince William Sound/lower Cook Inlet region, artifact display facilities in each of the eight communities in the region, and development of a traveling exhibit. A request for proposals to construct these archaeological facilities will be issued by the Trustee Council this winter (1998).

Restoration Strategies for Fiscal Year 1998

Restore Injured Resources Used for Subsistence

In general, all projects which address resources used by subsistence harvesters are subsistence restoration projects in that they restore the injured resources upon which subsistence depends. In addition:

- Begin surf scoter project (98273), which will study the life history and ecology of surf scoters in Prince William Sound.

Enhance or Replace Injured Subsistence Resources

- Continue Tatitlek remote release project (98127), which is creating a coho salmon run near the community of Tatitlek.
- Continue Port Graham pink salmon project (98225), which is increasing the availability of pink salmon near the community of Port Graham.
- Continue Kametolook River project (98247), which is enhancing a coho salmon run near the community of Perryville.
- Continue Solf Lake project (98256B), which is stocking Solf Lake near the community of Chenega Bay with sockeye salmon.
- Complete Eastern Prince William Sound stream project (98220), which in FY 98 will monitor salmon habitat improvements constructed in Plateau Creek near the Native Village of Eyak.
- Continue Port Graham streams project (98263), which in FY 98 will construct habitat enhancements in salmon streams near the community of Port Graham.
- Continue clam restoration project (98131), which is working to reestablish populations of littleneck clams on beaches near Port Graham, Nanwalek, Tatitlek, and the Native Village of Eyak.

Increase Involvement of Subsistence Users in the Restoration Process

- Continue community involvement project (98052A), which is facilitating communication and interaction among the Trustee Council, scientists, and residents of communities impacted by the oil spill.
- Continue traditional ecological knowledge (TEK) project (98052B), which is facilitating the use of TEK in the restoration process.
- Continue youth area watch project (98210), which is involving junior high and high school students from Chenega Bay, Tatitlek, Cordova, Whittier, Valdez, and Seward in ongoing restoration projects.
- Complete harbor seal pilot project (98244), which is a prototype for a long-term biological sampling program that would involve Native hunters in the

study and management of harbor seals.

- Conduct elders-youth conference (98286), which will bring together subsistence users from throughout the spill area and EVOS researchers to discuss the status of recovery of the resources and services injured by the spill as well as means of assisting in the recovery of injured resources.
- Conduct herring/nearshore video project (98274), which will produce a documentary that transmits local knowledge about herring and nearshore resources to the scientific community.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98052A	Community Involvement	$232.1	$230.0	$230.0	$460.0	$1,152.1
98052B	Traditional Knowledge	$61.3				$61.3
98127	Tatitlek Coho Salmon Release	$10.5	$10.7	$0.0	$0.0	$21.2
98131	Clam Restoration	$290.1				$290.1
98210	Youth Area Watch	$150.2				$150.2
98220	Eastern PWS Salmon Habitat	$11.9	$0.0	$0.0	$0.0	$11.9
98225	Port Graham Pinks	$73.5	$75.0	$75.0	$0.0	$223.5
98244	Community Harbor Seal	$84.7	$0.0	$0.0	$0.0	$84.7
98247	Kametolook River	$14.9	$14.8	$15.1	$31.1	$75.9
98256B	Solf Lake Stocking	$95.5				$95.5
98263	Port Graham Streams	$107.0	$23.6	$23.6	$0.0	$154.2
98273	Surf Scoter Life History	$170.4				$170.4
98274	Herring/Nearshore Video	$89.6	$0.0	$0.0	$0.0	$89.6
98286	Elders/Youth Conference	$90.2	$0.0	$0.0	$0.0	$90.2
	TOTAL	$1,481.9	$354.1	$343.7	$491.1	$2,670.8

Restoration Strategies for Fiscal Year 1998

Protect and Restore Habitat

- Continue Kenai River restoration project (98180), which is restoring degraded habitat along the banks of the Kenai River for the benefit of sockeye salmon and other fish species.
- Begin human use and wildlife disturbance project (98339), which will develop and test a model for projecting and managing impacts of human use on injured species in Prince William Sound.
- The Trustee Council's program to acquire land and conservation easements as a means of protecting the habitat of injured resources is discussed in the Habitat Protection and Acquisition section.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98180	Kenai Habitat Restoration	$491.9	$306.6	$0.0	$0.0	$798.5
98339	Human Use Model	$139.2	$53.1	$0.0	$0.0	$192.3
	TOTAL	$631.1	$359.7	$0.0	$0.0	$990.8

Restoration Strategies for Fiscal Year 1998

Prepare a Model of Research Results

- Continue synthesis project (98300), which is working with EVOS principal investigators and ecological modelers to synthesize data collected through EVOS studies into mathematical and written descriptions of the spill area ecosystem and how it changes in response to anthropogenic and natural events.
- Begin mass-balance model project (98330-BAA), which will construct a model of trophic interactions among the organisms of Prince William Sound to help synthesize the results of studies funded by the Trustee Council.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98300	Ecosystem Synthesis	$81.3	$80.0			$161.3
98330	Mass-Balance Model	$179.8	$185.5	$0.0	$0.0	$365.3
	TOTAL	$261.1	$265.5	$0.0	$0.0	$526.6

Project Management

The costs of project management in FY 98 are identified in project 98250. Project management is provided by resource managers in the six trustee agencies and provides essential accountability to the work plan process. It includes such functions as tracking the progress of restoration projects; ensuring that projects meet their stated goals, objectives, and schedules; monitoring project expenditures; and ensuring that all reports and other contract deliverables are properly performed. Prior to FY 97, project management funds were included in each individual restoration project's budget.

Although an estimate of future years' funding for project management has not been developed, it is expected to decline consistent with the decline in the annual funding targets for the overall work plan. The FY 98 funding level represents a reduction from the amount approved for FY 97 ($641,600).

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 98 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98250	Project Management	$560.1				$560.1
	TOTAL	$560.1				$560.1

HABITAT PROTECTION AND ACQUISITION

The *Exxon Valdez* Trustee Council funds the acquisition and protection of land in order to protect the habitat of injured resources. Project 98126 continues the support services necessary for these land acquisitions, such as negotiations staff, appraisals, title reports, on-site inspections, and hazardous materials surveys.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98126	Habitat Acquisition Support	$851.4				$851.4

As of December 1997, the Council has committed $269.6 million to protect 597,490 acres of land in large parcels, including inholdings in Kachemak Bay State Park, land adjacent to Seal Bay/Tonki Cape on Afognak Island, commercial timber rights on land along Orca Narrows, a parcel on Shuyak Island, and lands owned by Akhiok-Kaguyak, Inc., Old Harbor Native Corporation, Koniag, Inc., Chenega Corporation, Eyak Corporation, English Bay Corporation, and Tatitlek Corporation. Final acceptance of the offer from the Tatitlek Corporation depends on a vote of the shareholders. Negotiations continue with Afognak Joint Venture and Koniag, Inc. to protect additional habitat.

The Council also has authorized offers to purchase 44 small parcels of land at appraised fair market value, a contribution of $4 million to acquire a package of lands owned by the Kenai Natives Association, and up to $1 million to acquire key waterfront parcels that were forfeited to the Kodiak Island Borough for tax delinquency. If all of the offers result in land acquisitions, about 7,500 acres of habitat on small parcels will have been protected for about $20 million. Fourteen additional small parcels are under active consideration.

Interests in the lands protected by the Council range from acquisition of fee simple title to various forms of conservation easements.

PUBLIC INFORMATION/SCIENCE MANAGEMENT/ADMINISTRATION

The cost of the administrative functions necessary to efficiently implement the restoration program (project 98100) continue to decline, from a high of $4.1 million in FY 94 to $2.8 million in FY 98. Further reductions are expected through FY 2002, consistent with the planned transition to the Restoration Reserve in FY 2003.

Project 98100 includes funds for the independent scientific review of project proposals and results, the Trustee Council's 17-member Public Advisory Group (PAG), the Oil Spill Public Information Center which at the end of FY 97 merged with Alaska Resources Library and Information Services (ARLIS), the Council's Annual Restoration Workshop, public meetings and other communication efforts such as the Council's newsletter and radio program, operations and staff support for the Trustee Council itself, an annual financial audit, and a variety of smaller items.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98100	Public Info/Science Mgt/ Administration	$2,796.3	$2,500.0			$5,296.3

RESTORATION RESERVE

In recognition of the fact that complete recovery from the oil spill may not occur for decades, the Trustee Council established the Restoration Reserve to hold funds to be used for restoration after the last annual payment is received from Exxon Corporation in September 2001. For FY 98, the Trustee Council deposited $12 million in the reserve account. This deposit, the Council's fifth, brings the total in the account to $60 million. Annual deposits of $12 million in each of the next four years would provide a reserve of $108 million plus interest.

Funds in the Restoration Reserve will be used for restoration activities, but allocation of the funds to specific activities has not yet been made. During FY 98, the Trustee Council will solicit public input from throughout the spill area on possible uses of the funds. The Council is scheduled to make a decision on the future of the Restoration Reserve by October 1998.

Funding Approved for Fiscal Year 1998

Project Number and Title		FY 98 Approved	FY 99 Estimate	FY 00 Estimate	FY 01-02 Estimate	TOTAL 98-02
98424	Restoration Reserve	$12,000.0	$12,000.0	$12,000.0	$24,000.0	$60,000.0

NOTE: During the fiscal years 1994 through 1997, the Trustee Council deposited $48 million in the Restoration Reserve. The additional $12 million deposited in FY 98 and the $48 million in deposits projected for FY 99-02 would bring the total in the year 2002 to $108 million plus interest.

Appendix A -- Description of Projects and Trustee Council Action

How to read Appendix A:

Proposer	The individual, organization, or trustee agency that submitted the project proposal.
Lead Agency	The Trustee agency (USFS, NOAA, DOI, ADFG, ADEC, or ADNR) to which the project has been assigned for project management purposes.
New or Cont'd	Whether or not the project is the continuation of a project funded by the Trustee Council in FY 97. Also, what year FY 98 is in the Trustee Council's funding of the project, followed by the total number of years Council funding is expected to be sought (e.g., 3rd year of a 5-year project).
FY 98 Approved	The amount of funding approved by the Trustee Council for FY 98.
FY 99 Estimate	The estimated project cost for FY 99.
FY 00 Estimate	The estimated project cost for FY 2000.
FY 01-02 Estimate	Sum of the estimated project cost for FY 2001 and FY 2002.
FY 98-02 Estimate	Sum of the estimated project cost for all years, beginning in FY 98 and ending with FY 2002 or the project's completion, whichever is sooner.
Abstract	A brief summary of the project.
Chief Scientist's Recommendation	A summary of the Chief Scientist's review of the project's technical merit.
Trustee Council Action	The Trustee Council's decision on project funding for FY 98.

APPENDIX A: DESCRIPTION OF PROJECTS AND TRUSTEE COUNCIL ACTION

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98001-CLO	Recovery of Harbor Seals From EVOS: Condition and Health Status	M. Castellini/UAF	ADFG	Cont'd 4th yr. 4 yr. project	**$51.1**	$0.0	$0.0	$0.0	$51.1

Project Abstract

This project will provide the final analysis for three years of field work that sampled harbor seals for condition and health status. Tasks will include analysis of late arriving samples, completion of analytical and statistical tests, production of final reports, and publication of research papers.

Chief Scientist's Recommendation

This project has been a good one, and the species is important in the restoration program. This study should be properly closed out in FY 98.

Trustee Council Action

Fund closeout of this project. It will conclude a multi-year study of harbor seal body condition and nutritional status and should produce a peer-reviewed publication. Results to date indicate that adult harbor seals in Prince William Sound are neither sick nor food stressed, but there are natural variations in health indices that reflect environmental, seasonal and geographic differences. In collaboration with projects 98064 and 98170, this project will help explain the long-term decline in harbor seals in Prince William Sound. The results of these studies will enable resource managers, subsistence hunters, and others to focus their concerns and efforts on the most probable causes of population decline.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98007A	Archaeological Index Site Monitoring	D. Reger/ADNR	ADNR	Cont'd 4th yr. 8 yr. project	**$139.7**	$151.5			$291.2

Project Abstract

Monitoring of archaeological sites on public land injured by vandalism and oiling will concentrate on a sample of index sites in the three regions of the spill. Oiled sites will be tested for reintroduced oil. This project will end in FY 99 if monitoring shows no continued injury.

Chief Scientist's Recommendation

This is an ongoing project that is continuing to document the rate of degradation (vandalism, erosion, etc.) at archaeological sites in the spill area. Annual visitation of four of the index sites, as originally proposed, is probably unnecessary. However, the proposal was revised to incorporate visits to a combination of new (98007C proposal) and existing sites. Fund.

Trustee Council Action

Fund. This project monitors archaeological sites injured by vandalism and oiling. In FY 98, by combining the 98007C proposal with this project, the sites to be monitored will include some sites on land recently acquired through the Trustee Council's habitat protection program as well as index sites and other sites of concern on public land.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98012A-BAA	Comprehensive Killer Whale Investigation in Prince William Sound	C. Matkin/North Gulf Oceanic Society	NOAA	Cont'd 6th yr. 9 yr. project	**$154.7**				$154.7

Project Abstract

This project continues to monitor the damaged AB pod and other Prince William Sound killer whales to analyze a GIS database on killer whales. In FY 98, critical habitats for transient whales in Prince William Sound will be identified using these data. Year round residency of killer whales will be assessed using a remote hydrophone system. Environmental contaminant levels in the blubber of specific whales will be determined and potential effects on recovery evaluated.

Chief Scientist's Recommendation

This ongoing work has been developing valuable information regarding killer whale populations in Prince William Sound, including the first data sets on the genetics and contaminant body burdens in these populations. The long-term data set collected by this principal investigator should expand our knowledge of the natural history of killer whales. The proposal is generally consistent with the results of the November 1996 killer whale review, including conclusion of biopsy sampling for contaminants and genetic analyses. Fund.

Trustee Council Action

Fund. The contract for continuation of this project should place special emphasis on producing the five manuscripts promised in the Detailed Project Description. This project is providing valuable information about the long-term effects of the oil spill on resident and transient pods of killer whales in Prince William Sound.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98025	Mechanisms of Impact and Potential Recovery of Nearshore Vertebrate Predators (NVP)	L. Holland-Bartels, et al/USGS	DOI	Cont'd 4th yr. 5 yr. project	**$1,652.9**	$450.0	$0.0	$0.0	$2,102.9

Project Abstract

The Nearshore Vertebrate Predator project (NVP) makes an integrated assessment of trophic, health, and demographic factors across a suite of apex predators injured by the spill to determine mechanisms constraining recovery and to improve knowledge of the status of recovery. Primary hypotheses are: (1) Recovery of nearshore resources injured by EVOS is limited by recruitment processes; (2) Initial and/or residual oil in benthic habitats and in or on benthic prey organisms has had a limiting effect on the recovery of benthic foraging predators; and (3) EVOS-induced changes in populations of benthic prey species have influenced the recovery of benthic foraging predators.

Chief Scientist's Recommendation

The FY 98 proposal covers the final field season, with FY 99 as the closeout year. This project was favorably reviewed in February 1997. It is a well-managed program that is reaching its objectives. Fund.

Trustee Council Action

Fund all components except sea otter manuscripts. Funding for additional sea otter manuscripts ($10,000) may be reconsidered if the sea otter manuscript funded in FY 97 is completed and submitted for publication. In general, the nearshore ecosystem, including intertidal habitat and organisms, was the area hardest hit by the oil spill. This project monitors recovery of intertidal organisms and closely linked vertebrate predators (harlequin ducks, pigeon guillemots, river otters, and sea otters) and addresses the question of whether continuing contamination is slowing recovery of vertebrate predators. FY 98 will be the final year of field work for this project, with only data analysis and final report writing funded in FY 99. In FY 98, funds are included ($9,900) for traditional knowledge workshops on clams and sea otters, to be conducted in conjunction with Project 98052B/TEK.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98043B	Monitoring of Cutthroat Trout and Dolly Varden Habitat Improvement Structures	D. Gillikin/USFS	USFS	Cont'd 5th yr. 6 yr. project	**$24.0**	$8.0	$0.0	$0.0	$32.0

Project Abstract

This project monitors habitat improvement structures installed in 1995 and their effects on cutthroat trout and Dolly Varden populations. There has been concern raised that habitat structures may inadvertently increase coho salmon populations, and thereby increase competition stress on Dolly Varden and cutthroat trout populations. Preliminary data collected in 1995 and 1996 could be interpreted to support this assumption with regard to cutthroat trout. Additional monitoring seeks to address these questions, and provide solid results on which to base conclusions on the effectiveness of these types of improvements to benefit Dolly Varden and cutthroat trout.

Chief Scientist's Recommendation

The low-cost assessment of the performance of earlier habitat enhancement efforts provided by this project will be valuable information for the restoration program. Although there was a previous recommendation to end monitoring in FY 97, the opportunity to quantify the effects of this habitat enhancement effort with another year of monitoring deserves support. The project should be closed out in FY 99, and the results of this project should be published in the scientific literature.

Trustee Council Action

Fund a third and final year of monitoring. This project monitors the effectiveness of cutthroat trout and Dolly Varden habitat improvement structures installed in FY 95. The structures were monitored in FY 96 and FY 97. Only closeout funds (preparation of a final report/manuscript) are expected in FY 99.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98052A	Community Involvement	P. Brown-Schwalenberg/CRRC	ADFG	Cont'd 4th yr. 8 yr. project	**$232.1**	$230.0	$230.0	$460.0	$1,152.1

Project Abstract

This project will increase community involvement in the restoration process. The Spill Area-Wide Coordinator's work will continue through a contract with the Chugach Regional Resources Commission (CRRC). Through direct communication with a network of local facilitators, the Spill Area-Wide Coordinator will continue to actively involve local residents in the restoration program. (Local facilitators are located in Tatitlek, Chenega Bay, Port Graham, Nanwalek, Cordova, Seward, Seldovia, Valdez, Kodiak, and Alaska Peninsula.)

Chief Scientist's Recommendation

This project has been a relative success. People in the communities feel that they are better informed about the Trustee Council's restoration efforts, which is one of the primary goals of the project. However, improvements could be made. People in the villages continue to be frustrated by the relatively low success rate of their project proposals. The Spill Area-Wide Coordinator should spend greater effort in helping individuals improve the quality of submitted proposals and in discouraging those proposals that can clearly not be funded by the Council. It also seems that the resource abnormality hotline is an idea whose time has passed -- it has received no calls in the past six months. Fund.

Trustee Council Action

Fund. This project, which is designed to facilitate communication and interaction among the Trustee Council, scientists, and residents of communities impacted by the oil spill, responds to an important goal of the Trustee Council. The recent review session (July 1997) made clear that this project is of the highest importance to the villages in the spill region, for it gives them a voice in the restoration process.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98052B	Traditional Ecological Knowledge	P. Brown-Schwalenberg/CRRC	ADFG	Cont'd 2nd yr.	**$61.3**				$61.3

Project Abstract

This project will fund a TEK (Traditional Ecological Knowledge) specialist to (1) provide technical assistance to restoration project principal investigators who plan to use, or for whom it would be appropriate to use, TEK, (2) serve as a contact point for spill area communities, the community facilitators and Spill Area-Wide coordinator hired under Project /052A, and principal investigators on issues related to TEK, (3) organize and coordinate synthesis workshops between principal investigators and community experts. Also, community workshops will be held to enhance understanding of the benefits and implications of working with TEK. These workshops may involve experts who have experience in applying TEK from an Alaska Native perspective. The Alaska Department of Fish and Game will provide staff support for the project.

Chief Scientist's Recommendation

This project seeks the beneficial exchange of knowledge from traditional and local sources and from scientific studies, which is a highly desirable goal. It has been funded in one form or another since FY 95; the approach of hiring a TEK consultant was funded on a pilot basis in FY 97. The project seems to still not have found its bearings and appears to have an unwieldy management structure. In addition, the project risks failure because of suspicion among the Native community about the potential use of any TEK data collected, and their resultant reluctance to endorse the protocols developed by the Trustee Council for obtaining TEK. In FY 98, an alternative approach -- "synthesis workshops" -- is proposed. Fund for FY 98 only, with funding for FY 99 dependent on the results of the FY 98 effort.

Trustee Council Action

Fund. This project, which is designed to explore and facilitate the use of traditional knowledge in the restoration of injured resources, responds to an important goal of the Trustee Council. In FY 98, the TEK Specialist will focus on providing technical assistance to the Herring TEK effort (Project 98320T-Supp) and conducting synthesis workshops of villagers and principal investigators on seaducks (Projects 98273 and 98427), sea otters (Project 98025) and clams (Project 98025).

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98064	Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in Prince William Sound	K. Frost/ADFG	ADFG	Cont'd 4th yr. 6 yr. project	**$272.5**	$265.0	$130.0	$0.0	$667.5

Project Abstract

This project will monitor the status of harbor seals in Prince William Sound and investigate the hypothesis that food limitation to pups and juveniles is causing the ongoing decline. Aerial surveys will be conducted during molting to determine whether the population continues to decline, stabilizes, or increases. Seal pups will be satellite-tagged to describe and compare their movements, hauling out, and diving behavior to older seals and seals in other areas. Fatty acids analysis will be conducted on recent and archived blubber samples and mathematical models developed to estimate seal diets and whether they have changed since the 1970s. Special emphasis will be on pups and juveniles, the age groups most likely to be affected by food limitation.

Chief Scientist's Recommendation

There continues to be great concern about the status of the harbor seal. The principal investigator has done excellent work to date, and the reviewers strongly encourage the principal investigator to produce a major ecological paper on her work. The monitoring component of this work is producing invaluable data and should be continued. Based on a harbor seal program review this autumn, I strongly support continued fatty acid analyses, statistical analyses of population trend data, and population modeling. Concern about the harbor seal in Prince William Sound is now being refocused on pups and juveniles, and it is important to better understand their movements and survival rates. Efforts to relate glacial-associated harbor seal populations to those in the trend count area are encouraged. Continued use of satellite tags should be informative, but there are limitations and technological questions about the smaller transmitters required for use on pups. There also is need to invest additional time in the analysis of existing transmitter data. Given this need and in view of the experimental nature of the pup-sized transmitters, I recommend providing funds for about half of the ten units proposed for FY 98 (a reduction of $35,000). Otherwise, I recommend full funding for this important project.

Trustee Council Action

Fund revised proposal, which reduces the number of pup-sized transmitters to be purchased. In collaboration with projects 98001 and 98170, this project will help explain the long-term decline in harbor seals in Prince William Sound. The results of the study will enable resource managers, subsistence users, and others to focus their efforts and concern on the most probable causes of harbor seal population decline.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98076	Effects of Oiled Incubation Substrate on Straying and Survival of Wild Pink Salmon	A. Wertheimer/NOAA	NOAA	Cont'd 4th yr. 4 yr. project	**$272.2**	$0.0	$0.0	$0.0	$272.2

Project Abstract

This project examines the effects of oil exposure during embryonic development on the straying, marine survival, and gamete viability of pink salmon. The objectives are to conduct a related series of controlled experiments on straying of pink salmon to determine the role of oil and other factors so that field studies of straying in Prince William Sound after the oil spill can be interpreted; to determine if the return rate of pink salmon to adult is reduced when they have been exposed to oiled gravel during embryonic development; and to continue investigations into whether such exposure causes heritable damage to reproductive fitness of pink salmon.

Chief Scientist's Recommendation

This is the fourth and final year of a continuing effort to estimate straying rates of pink salmon in Southeast Alaska. There is some concern regarding applying what is learned in Southeast Alaska to fisheries in Prince William Sound. It is possible that high variance in estimates of straying will limit the utility of the measurements, but this risk was known when the project was initiated. Fund.

Trustee Council Action

Fund. This is the final year of Trustee Council contribution to this project, which is improving understanding of the effects of oil on straying rates, reproduction, and early developmental stages of pink salmon. In addition, this project's information on marine survival of pink salmon will have broad application to salmon management. Funding includes preparation of a final report by September 30, 1998, which will include a synthesis of results with previous straying studies.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98100	Administration, Science Management, and Public Information	All Trustee Council Agencies	ALL	Cont'd	**$2,796.3**	$2,500.0			$5,296.3

Project Abstract

This project provides overall support for administration and implementation of the restoration program through the Restoration Office. It includes funding for the Trustee Council's core staff working at the direction of the Executive Director, the Chief Scientist and the scientific peer review process, public involvement efforts including the 17-member Public Advisory Group (PAG), and support for Trustee agency participation in the restoration program as part of the Restoration Work Force.

Chief Scientist's Recommendation

Proposal not reviewed.

Trustee Council Action

Fund. This project provides overall support for administration and implementation of the restoration program. The budget has been reduced from the FY 97 authorization of $2,940,600. *NOTE: The administrative costs of the Trustee Council are funded outside of the regular FY 98 work plan of research, monitoring, and general restoration projects.*

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98126	Habitat Protection and Acquisition Support	C. Fries/ADNR, D. Gibbons/USFS, G. Elison/DOI	ADNR	Cont'd	**$851.4**				$851.4

Project Abstract

This project provides negotiation support to the Trustee Council in order to reach closure on habitat protection priorities. This support includes title reports, appraisals, on-site inspections, hazardous materials surveys, land surveys, timber cruises and reviews, and other services necessary for the successful completion of habitat protection negotiations. The Council has completed acquisition packages with eight large-parcel landowners resulting in the protection of 420,640 acres of land. Agreements with three additional landowners would result in protection of an additional 177,000 acres of land. In addition, the Council has acquired 32 small parcels encompassing more than 3,500 acres. Negotiations and closing activities continue with additional large parcel and small parcel landowners.

Chief Scientist's Recommendation

Project not reviewed.

Trustee Council Action

Fund. This project provides funds to support the habitat protection program, including negotiation staff, appraisals, closing costs, etc. A total of $1,282,600 was authorized for this purpose in FY 97. *NOTE: Funds for this project are provided through the Trustee Council's habitat protection program, not through the regular FY 98 work plan of research, monitoring, and general restoration projects.*

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98127	Tatitlek Coho Salmon Release	Tatitlek IRA Council	ADFG	Cont'd 4th yr. 5 yr. project	**$10.5**	$10.7	$0.0	$0.0	$21.2

Project Abstract

This project will create a coho salmon return to Boulder Bay near the village of Tatitlek. Enough coho eggs to produce 20,000 smolt will be collected from an Alaska Department of Fish and Game approved stream, incubated and reared to smolt at the Solomon Gulch Hatchery, transported, and held for two weeks in net pens in Boulder Bay before release. Release will produce a 2,000 to 3,000 adult return to Boulder Bay for harvest in a subsistence fishery.

Chief Scientist's Recommendation

This is the fourth year of a five-year project that is successfully returning 2,000 to 3,000 coho per year to Boulder Bay. This subsistence replacement project should be continued, but FY 99 should be the final year of Trustee Council support.

Trustee Council Action

Fund through FY 99 (one coho life cycle). This project is creating a "put and take" coho salmon run near Tatitlek as a replacement resource for subsistence resources injured by the oil spill. Two to three thousand coho salmon are expected to return for each year in which the project is carried out.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98131	Chugach Native Region Clam Restoration	P. Brown-Schwalenberg/ CRRC	ADFG	Cont'd 4th yr.	**$290.1**				$290.1

Project Abstract

Cost effective procedures for establishing safe, easily accessible subsistence clam populations near Native villages in the oil spill region will be established. The Qutekcak hatchery in Seward will annually provide about 800,000 juvenile littleneck clams and cockles. Historical information, local and agency expertise, and research will be used to identify areas to seed and what method to use. Total seeded area during the project will not exceed five hectares. Follow-up research on success of seeding will be conducted. Development work will be confined to areas near the Native villages of Eyak, Tatitlek, Nanwalek, and Port Graham.

Chief Scientist's Recommendation

The revised Detailed Project Description and progress report indicate improvements in conditioning of brood stock, gamete quality and larval survival in association with changes in hatchery protocols for littleneck clams. I encourage further work of this sort to improve future hatchery production. In addition, the nursery operation appears to be improved with sustained algal blooms and satisfactory growth in the Seward pond nursery as well as in the tidal FLUPSY in Prince William Sound. Beach growouts also appear to surpass expectations with survival of over 85 percent and a doubling of size in a 15-month period. The revised Detailed Project Description is properly focused on improving the hatchery protocols in order to define the optimal conditions for spawning and larval rearing, as well as maintaining production of the later stages in the FLUPSY and following up on growth of out-planted clams on beaches in Tatitlek, Eyak, Nanwalek, and Port Graham. I recommend funding the revised proposal as requested.

Trustee Council Action

Fund. This project is an effort to establish subsistence clam populations as replacements for subsistence resources injured by the spill. The emphasis in FY 98 should be on the development of standard operating procedures that produce viable littleneck clams. Technical difficulties have been encountered at the old hatchery; it is hoped that production will improve and can be sustained at the new hatchery. A decision on whether or not to provide additional funding in FY 99 will be made following a review of FY 98 progress and results.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98139A1-CLO	Salmon Instream Habitat and Stock Restoration - Little Waterfall Barrier Bypass Improvement	S. Honnold/ADFG	ADFG	Cont'd 4th yr. 4 yr. project	**$13.4**	$0.0	$0.0	$0.0	$13.4

Project Abstract

This project will prepare a final report summarizing the results of monitoring and evaluation of the barrier bypass modification at Little Waterfall Creek, as required by the Trustee Council's supplementation criteria, to assess the likelihood of success and potential risks of supplementation. The renovation of the bypass (decreased grades and additional resting pools) was completed in FY 96 and is expected to facilitate increased spawning habitat use by pink and coho salmon populations, thus increasing salmon production to optimum levels in ensuing years.

Chief Scientist's Recommendation

The Chief Scientist previously stated that FY 98 funding for the assessment effort should be contingent on considering impacts of introduction on resident species, and this was not done in the Detailed Project Description. Fund closeout only.

Trustee Council Action

Fund closeout of this project. The FY 98 Invitation to Submit Restoration Proposals indicated that the Trustee Council would consider additional monitoring in FY 98 if questions raised by the Chief Scientist concerning interspecific competition and interaction with other species were addressed. This proposal does not address those questions.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98139A2	Port Dick Creek Tributary Restoration and Development	W. Bucher/ADFG	ADFG	Cont'd 3rd yr. 5 yr. project	**$85.8**	$76.5	$47.0	$0.0	$209.3

Project Abstract

This project will restore the native Port Dick Creek salmon stocks which were exposed to moderate to heavy oiling. Actual restoration of the spawning habitat took place in June 1996. Natural colonization rates were adequate to fully seed the newly restored spawning habitat. Water temperature, water level, salinity, and stream velocity will be monitored as these parameters are well correlated in the literature with spawning success and egg-to-fry survival. Additional sedimentologic parameters (bedload transport, accumulated sediments, and gravel/cobble transport rates) will also be analyzed. These activities as well as evaluation studies will be conducted annually from 1996 to 2000, with possible extension of minor monitoring through 2002 for streambed stability research.

Chief Scientist's Recommendation

The project appears to have been carefully executed and is likely to be successful. A well-conceived monitoring design will allow a valuable assessment of the performance of the project. Fund.

Trustee Council Action

Fund. This project will evaluate the effects of improvements on Port Dick Creek, which are intended to increase available spawning habitat and thus provide additional pink and chum salmon for harvest as a replacement for salmon lost in the oil spill. FY 97 will be the first year the number of fry produced by the project will be measured. Trustee Council funding is expected through the year 2000 (one chum salmon life cycle).

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98142-BAA	Status and Ecology of Kittlitz's Murrelets in Prince William Sound	B. Day/ABR, Inc.	NOAA	Cont'd 3rd yr. 3 yr. project	**$269.0**	$0.0	$0.0	$0.0	$269.0

Project Abstract

This project will conduct a third and final year of investigations on the status and ecology of Kittlitz's murrelet, a rare seabird breeding in glaciated fjords of Prince William Sound. It will continue to evaluate the distribution and abundance, habitat use, productivity, and trophic position of this little-known seabird in northwestern Prince William Sound. Given uncertainty about the effects of the oil spill on this species, a better understanding of its status and ecology is required to ensure its long-term conservation.

Chief Scientist's Recommendation

Kittlitz's murrelet is a rare, poorly-known seabird that was injured by the oil spill. This project would conclude a three-year effort on its basic life history and ecology. The principal investigator is strong and has done excellent work to date. This project should be funded, including the additional mid-summer cruise. Fund.

Trustee Council Action

Fund, including funds for project closeout (data analysis and report writing). This study will gather basic information on the Kittlitz's murrelet, which is a rare, poorly known seabird. According to one estimate, a substantial fraction of the world population of this species was killed in the spill. The results of this study may lead to identification of restoration measures.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98144A	Common Murre Population Monitoring	D. Roseneau/USFWS	DOI	Cont'd 3rd yr. 4 yr. project	**$57.4**	$23.0	$0.0	$0.0	$80.4

Project Abstract

This project will collect common murre population data at the Chiswell Islands nesting colonies, which have not been censused since 1992. Data will be statistically compared with counts made at these colonies during the 1989-1991 common murre damage assessment studies and counts obtained during the 1992 common murre restoration monitoring project. Results of the analyses (e.g., differences among years, presence/absence of trends) will be used in combination with 1989-1997 Barren Islands information to evaluate and refine the overall recovery status of the common murre.

Chief Scientist's Recommendation

The recovery of murres from EVOS injury appears to be underway, but a reevaluation of their recovery status requires obtaining some population data from colonies other than the Barren Islands. The Chiswell Islands are accessible from Seward and there are data from visits during 1989-92 as well as pre-spill. I recommend funding this field work in FY 98 with close-out funds only in FY 99. The PIs are very experienced and have performed well to date. Fund.

Trustee Council Action

Fund. In FY 98, common murres will be monitored on the Chiswell Islands. In conjunction with censuses of common murre populations at the Barren Islands, the data from the Chiswell Islands should help reassess and refine the recovery status of common murres. Also in FY 98, the principal investigator will prepare a manuscript for publication in a peer-reviewed journal. The project will be closed out in FY 99.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98145-CLO	Cutthroat Trout and Dolly Varden: Relation Among and Within Populations of Anadromous and Resident Forms	G. Reeves/USFS, Pacific Northwest Research Station	USFS	Cont'd 3rd yr. 3 yr. project	**$120.7**	$0.0	$0.0	$0.0	$120.7

Project Abstract

This project will determine the relation between resident and anadromous forms of Dolly Varden and cutthroat trout within the same watershed and between watersheds in Prince William Sound. In FY 98, analysis of genetic, meristic, and life-history features of each group, which were sampled in FY 96 and FY 97, will be concluded. Results from this study will allow development of a longterm, comprehensive and ecologically sound restoration strategy for these fish.

Chief Scientist's Recommendation

This is a promising ongoing study, which has not yet delivered substantial results. The proposed new objective has merit in terms of enabling a reevaluation of prior Natural Resource Damage Assessment results on growth differences in unoiled and oiled areas. However, for FY 98 I can recommend funding only the existing program; the new objective is a lower priority for funding at this time.

Trustee Council Action

Fund final year of field work, lab work,and closeout (data analysis and report writing) for the original study. This project defines relationships among stocks and life history forms (e.g., anadromous and resident). The results of the study will be used to develop a restoration strategy for cutthroat trout and Dolly Varden, and have direct implications for management of sport fisheries in Prince William Sound and nationwide. The US Forest Service is providing significant support for this project. Funding for the proposed new objective to evaluate growth may be considered at a later date (FY 99 or beyond).

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98149	Archaeological Site Stewardship	D. Reger/ADNR	ADNR	Cont'd 3rd yr. 4 yr. project	**$66.9**	$10.0	$0.0	$0.0	$76.9

Project Abstract

The archaeological site stewardship program provides training and coordination for a cadre of volunteers to monitor vandalized sites in the oil spill area that are beyond the ability of agency monitoring. Volunteer site stewards are protecting damaged sites on the Kenai Peninsula, Kachemak Bay, Uganik Bay, Uyak Bay and the Chignik area of the Alaska Peninsula. Further protection will come from increased local awareness of harm from site vandalism.

Chief Scientist's Recommendation

FY 98 will be the final field season for this project. It is essential to continue this pilot effort and have a careful evaluation of what worked and what didn't.

Trustee Council Action

Fund. This is a pilot project that trains and coordinates volunteers to monitor vandalized archaeological sites in the spill area. This effort is currently beyond the ability of normal agency management. After FY 98, expenses will be assumed either by volunteer stewards or agency budgets. The final report for the project, which will be prepared in FY 99, will include a program assessment to help other organizations interested in establishing site stewardship programs elsewhere in the spill area. The report will also include a description of how site stewardship programs in these areas will be continued after EVOS funding terminates.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98159	Surveys to Monitor Marine Bird Abundance in Prince William Sound during Winter and Summer 1998	S. Kendall and D. Irons/USFWS	DOI	Cont'd 5th yr. 9 yr. project	**$237.0**	$35.0	$230.0	$265.0	$767.0

Project Abstract

This project will conduct small boat surveys to monitor abundance of marine birds and sea otters in Prince William Sound during March and July 1998. Five previous surveys have monitored population trends for more than 65 bird and 8 marine mammal species in the sound. Data collected in 1998 will be used to continue to examine trends from summer 1989-98 and from winter 1990-98 by determining whether populations in the oiled zone changed at the same rate as those in the unoiled zone. Overall population trends for the sound from 1989-98 will also be examined. In addition to monitoring the status of injured species, continued monitoring will confirm possible oil spill effects on species not previously considered injured.

Chief Scientist's Recommendation

This project is a continuation of the biennial boat survey of marine mammals and birds that produces a critical data set for tracking recovery of injured species in Prince William Sound. This monitoring is going forward at a frequency based upon a statistical power analysis, and is expected in future years to provide conclusive trend analyses for the recovery of injured species. Fund.

Trustee Council Action

Fund. The abundance surveys provide basic information on the status and recovery of seabirds and sea otters in Prince William Sound and should be continued on a biennial basis. The FY 98 survey will be the sixth biennial survey conducted since the spill. A statistical analysis indicates that ten surveys need to be completed to enable researchers to confidently detect trends in seabird populations.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98161-CLO	Differentiation and Interchange of Harlequin Duck Populations Within the North Pacific	B. Goatcher/FWS	DOI	Cont'd 3rd yr. 3 yr. project	**$16.5**	$0.0	$0.0	$0.0	$16.5

Project Abstract

This project will close out previous two years of field and laboratory work.

Chief Scientist's Recommendation

This is the closeout of a multi-year project. Fund.

Trustee Council Action

Fund closeout of this project. This multi-year project is designed to improve understanding of the population differentiation and movement among geographically separate groups of harlequin ducks in the northern Gulf of Alaska. This information will contribute to restoration and management goals in Prince William Sound and elsewhere in the spill area. Funds are included in FY 98 for preparation of a manuscript on molecular genetics, to be submitted to a peer reviewed journal.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98162	Investigations of Disease Factors Affecting Declines of Pacific Herring Populations in Prince William Sound	G. Marty/UC Davis; R. Kocan /Univ. Wash., C. Kennedy & A. Farrell, Simon Fraser Univ.	ADFG	Cont'd 4th yr. 4 yr. project	**$517.7**	$0.0	$0.0	$0.0	$517.7

Project Abstract

Field and controlled laboratory studies will focus on viral hemorrhagic septicemia virus (VHS) and *Ichthyophonus hoferi*, a pathogenic fungus, to determine their role in the disease(s) and mortality observed in Prince William Sound herring since 1993. Herring will be monitored for signs of disease and immune status, while specific pathogen-free herring will be used to determine the degree of mortality, blood chemical changes, and pathogenicity produced by these organisms alone and in combination with exposure to stressors such as petroleum hydrocarbons, temperature and crowding. Wild herring will be studied under laboratory conditions to determine the course of VHS infection associated with captivity and their immune status and susceptibility to reinfection. Protocols for field evaluation of the immune status of whole herring populations will be developed and field tested.

Chief Scientist's Recommendation

This is the continuation of a project that has demonstrated excellent progress toward developing practical indicators of population health from earlier theoretical work. The principal investigators in this project are excellent. I have now reviewed the results of the FY 97 field work on the closed pound fishery, which indicate that there is potential for spreading viral hemorrhagic septicemia from fish inside closed pounds to fish outside of the pounds. The significance of this potential remains unclear, however, as do the processes responsible for triggering viral outbreaks in the impounded fish. The possible management applications of the herring pound work warrant support for a second and, I hope, final field season in FY 98. I recommend funding the full project.

Trustee Council Action

Fund, including funds for herring pound component and for project closeout (data analysis and report writing). This project is investigating the potential link between oil exposure and disease in herring, and between disease and the herring population decline in Prince William Sound. Understanding the causes of the decline and the lack of recovery is important for restoration of the herring population in the sound.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98163	APEX: Alaska Predator Ecosystem Experiment in Prince William Sound and the Gulf of Alaska	D. Duffy, et al/UAA	NOAA	Cont'd 4th yr. 6 yr. project	**$2,012.2**	$1,880.3	$882.1	$0.0	$4,774.6

Project Abstract

This project uses seabirds as probes of the trophic (foraging) environment of Prince William Sound, comparing their reproductive and foraging biologies, including diet, with similar measurements from Cook Inlet, an area with apparently a more suitable food environment. These measurements are compared with hydroacoustic and net samples of fish to calibrate seabird performance with fish distribution and abundance to determine the extent to which food limits the recovery of seabirds from the spill. Fish are sampled in order to compare diet, energetics and reproductive parameters of the different forage-fish species, to determine whether competitive and predatory interactions or different responses to the environment may favor the abundance of one fish species over another. In FY 98, a new sub-project (/163S-BAA) to study jellyfish is included.

Chief Scientist's Recommendation

Overall this project is yielding very definitive results about the relationship between forage fish abundance, seabird diet composition, and seabird reproductive success. A recent initiative within APEX to model seabird foraging and reproduction in relation to food availability appears promising. Progress is being made on processing the large volume of hydroacoustic data. Addition of a marbled murrelet productivity measure in FY 98 will lead to further insight into how nearshore forage fish affect this common nearshore seabird and help test the APEX hypotheses. I recommend full funding for this project.

Trustee Council Action

Fund, including marbled murrelet component previously funded as Project 97231. The APEX project is investigating the link between forage fish and seabird productivity. It may yield results that will benefit the marine ecosystem in Prince William Sound and the northern Gulf of Alaska.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98165-CLO	Genetic Discrimination of Prince William Sound Herring Populations	J. Seeb, L. Seeb, S. Merkouris/ADFG	ADFG	Cont'd 4th yr. 4 yr. project	**$56.0**	$0.0	$0.0	$0.0	$56.0

Project Abstract

Following the oil spill, the Prince William Sound herring fishery underwent a catastrophic decline. The Alaska Department of Fish and Game recovery effort includes incorporating a knowledge of genetically-derived population structure into harvest management. This closeout project will delineate the structure of Prince William Sound population(s) and related North Pacific populations using both nuclear and mitochondrial DNA analyses. Results of year-one DNA analysis indicate very limited genetic exchange between the Bering Sea/Kodiak Island populations and the Prince William Sound populations, and there is evidence of significant levels of genetic divergence within Prince William Sound.

Chief Scientist's Recommendation

This project is on schedule to be closed out in FY 98 and should be completed as proposed.

Trustee Council Action

Fund closeout of this project. This project addresses basic questions about the genetic composition of Prince William Sound herring in relation to other North Pacific populations. When setting harvest limits, it is important to know whether there exists one or more genetically distinct populations. Preliminary results indicate a significant level of genetic diversity within Prince William Sound herring and between Prince William Sound herring and other North Pacific populations.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98166-CLO	Herring Natal Habitats	M. Willette/ADFG	ADFG	Cont'd 5th yr. 5 yr. project	**$42.3**	$0.0	$0.0	$0.0	$42.3

Project Abstract

This project, which has monitored the abundance of the injured herring resource in Prince William Sound using spawn deposition techniques and hydroacoustic biomass surveys, is being closed out in FY 98. The Alaska Department of Fish and Game will continue to monitor the abundance of herring using normal agency funds.

Chief Scientist's Recommendation

This multi-year program assesses the relationship between herring spawn deposition and adult spawning biomass. Questions raised in FY 97 regarding the value of comparing spawn deposition and hydroacoustic estimates remain. The hydroacoustic survey methods appear to be the most promising for ongoing monitoring, and it is fortunate that the Alaska Department of Fish and Game has obtained permission from the Legislature to recover the costs of the hydroacoustic work through a test fishery. I cannot recommend additional Trustee Council support of the spawn deposition component, especially since there is little or no prospect of the Department of Fish and Game obtaining from the legislature the support needed to continue application of this technique after Trustee Council funding ends. At this point, it would be appropriate to fund only closeout costs in FY 98.

Trustee Council Action

Fund closeout of this project (data analysis and report writing). This project has monitored the abundance of Pacific herring to support fisheries management decisions that protect the recovery of the stock. The Alaska Department of Fish and Game will continue to monitor the abundance of herring using normal agency funds.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98169	A Genetic Study to Aid in Restoration of Murres, Guillemots, and Murrelets in the Gulf of Alaska	V. Friesen/Queen's University, J. Piatt/USGS	DOI	Cont'd 2nd yr. 4 yr. project	**$88.2**	$86.2	$13.8	$0.0	$188.2

Project Abstract

Populations of common murres, pigeon guillemots, and marbled and Kittlitz's murrelets from the Gulf of Alaska are failing to recover from the oil spill. This project will continue genetic analyses to aid in their restoration by (1) determining the geographic limits of the populations affected by the oil spill, (2) identifying sources and sinks, and (3) identifying appropriate reference or control sites for monitoring. As incidental results, this project will also reveal cryptic species and subspecies, indicate the role of inbreeding and small effective population sizes in restricting recovery, and suggest suitable source colonies for translocations.

Chief Scientist's Recommendation

This is the second year of a project to use genetic techniques to identify separate seabird populations and to clarify the populations injured by the spill. Despite the obvious skill of the principal investigator, the reviewers have some concern that the project is perhaps too ambitious, given the methods and budget. However, there apparently is cost sharing from other sources. Inclusion of this project in the upcoming genetics review session is essential. Fund.

Trustee Council Action

Fund. The upcoming genetics review session (scheduled for February 1998) will include this project and may recommend changes in its scope and budget. This project has the potential to improve our understanding of the relationship among common murres, pigeon guillemots and marbled and Kittlitz's murrelets and thereby assist in designing effective strategies to restore these injured species.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98170-CLO	Isotope Ratio Studies of Marine Mammals in Prince William Sound	D. Schell/UAF	ADFG	Cont'd 3rd yr. 3 yr. project	**$108.8**	$0.0	$0.0	$0.0	$108.8

Project Abstract

This project uses natural stable isotope ratios to assess trophic structure and food webs in Prince William Sound and contributes to the studies by Alaska Department of Fish and Game personnel to determine the reasons for the decline of harbor seal populations. Through a mix of captive animal studies and a comparison of isotope ratios in prey species and archived and current marine mammal tissues, insight into environmental changes causing the decline may be possible. Preliminary data point strongly toward a major decline in the carrying capacity of the northern Pacific Ocean in the past two decades. This decline is evident in the abundance and distribution of marine biota and is reflected in the carbon isotope ratios of marine mammals of the region.

Chief Scientist's Recommendation

This is the final year of a three-year project examining trophic relationships for marine mammals in Prince William Sound. The principal investigator has performed well, with excellent integration of results into broader ecological questions. I expect to see peer-reviewed publications in the coming year; the results should be interpreted in the context of oceanographic processes and marine mammal physiology.

Trustee Council Action

Fund closeout of this project, which will conclude a three-year study of isotope ratios in harbor seals and their prey. This project provides technical support for Project 98064, which may help explain why harbor seal populations have declined. Project 98170 will also assist the SEA project (/320) by describing the food chains that support important commercial fisheries in Prince William Sound.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98180	Kenai Habitat Restoration and Recreation Enhancement	M. Kuwada/ADFG, A. Weiner/ADNR	ADNR	Cont'd 3rd yr. 4 yr. project	**$491.9**	$306.6	$0.0	$0.0	$798.5

Project Abstract

Adverse impacts to the banks of the Kenai River total approximately 19 miles of the river's 166-mile shoreline, including 5.4 river miles of public land. Riparian habitats have been impacted by trampling, vegetation loss and structural development. The project's objectives are to restore injured fish habitat, protect fish and wildlife habitat, enhance and direct recreation, and preserve the values and biophysical functions that the riparian habitat contributes to the watershed.
Restoration/enhancement techniques will include revegetation, streambank restoration, elevated boardwalks, floating docks, access stairs, fencing, signs, and educational interpretive displays.

Chief Scientist's Recommendation

This is a worthwhile project that provides public demonstration of physical accomplishments by the restoration program and fulfills a key educational role at the same time. Given the scale and expense of the program, however, the original proposal provided inadequate detail regarding methods, previous accomplishments, and proposed FY 98 activities. The annual report for the project was similarly lacking in detail. However, the principal investigators have now provided substantial supplemental material. On the basis of these materials and the recent formal review (July 1997), I can recommend funding the revised request, which reduces personnel costs and phases the remaining work over two fiscal years. In FY 98, special attention should be given to developing a monitoring plan for each individual project, obtaining the endorsement of the Kenai River Advisory Board for individual project designs, and improving public review and education efforts.

Trustee Council Action

Fund, with funding for each individual project contingent on (1) formal endorsement of the project design by the Kenai River Advisory Board (the design should include a monitoring plan), (2) receipt of a detailed budget that specifies design/engineering, labor, equipment, and materials costs, and (3) affirmation by the Alaska Department of Fish and Game that the project will provide for improved fish habitat. In addition, funding for the Russian River project is also contingent on (4) a review of the boardwalk design to ensure that the decking option and the opportunity for wildlife passage are appropriate and will allow restoration goals to be achieved. In general, the project should be implemented consistent with the Chief Scientist's review memorandum (dated July 28, 1997), including: in FY 98 the project leaders should inform the Restoration Office, through the quarterly project status report, of any departures from the Detailed Project Description in terms of which projects are being undertaken; the FY 97 annual report should include the same level of detail as the materials that were recently provided to supplement the FY 96 report, and should describe the educational materials developed under this project. The project is designed to aid restoration of habitat along the Kenai River for the benefit of sockeye salmon and other fish species of commercial and recreational importance.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98186-CLO	Coded Wire Tag Recoveries From Pink Salmon in Prince William Sound	T. Joyce/ADFG	ADFG	Cont'd 10th yr. 10 yr. project	**$120.2**	$0.0	$0.0	$0.0	$120.2

Project Abstract

This project closes out the Trustee Council's support for coded wire tagging of hatchery-released pink salmon fry in Prince William Sound. Originally scheduled to close out in FY 99, the second year of overlap (FY 98) between the coded wire tag and otolith thermal methods of marking salmon has been canceled due to financial problems suffered by the private non-profit hatcheries in Prince William Sound. Included in the closeout budget are funds to carry out two new objectives that will contribute to a comprehensive final report: (1) determine the incidence of stray fish and the rate of adipose-clipped fish without tags in the brood stocks of Prince William Sound hatcheries and (2) determine the origin of adipose-clipped fish without tags recovered from Northern district catches.

Chief Scientist's Recommendation

This project is proposed for closeout one year early due to loss of joint funding from the Prince William Sound Aquaculture Corporation and the Valdez Fisheries Development Association. Early closeout will result in only one year of overlap between coded wire tags and otolith thermal marks (Project 98188), weakening the original two-year plan to intercalibrate these techniques. Early results from Project 97188 suggest that the otolith mass marking technique produces reliable results, and that one year of overlap of otolith mass marking with coded-wire tag will be sufficient to evaluate otolith mass marking. Fund.

Trustee Council Action

Fund closeout of this project (data analysis and final report writing), including the two new objectives related to adipose-clipped fish without tags. This project has provided information that allows fisheries managers to vary the timing and location of commercial harvest in order to direct fishing effort away from oil-damaged stocks.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98188	Otolith Thermal Mass Marking of Hatchery Reared Pink Salmon In Prince William Sound	T. Joyce/ADFG	ADFG	Cont'd 4th yr. 5 yr. project	**$141.1**	$182.9	$0.0	$0.0	$324.0

Project Abstract

This project is developing otolith marking as a technology for identification of hatchery pink salmon returning to Prince William Sound. The otoliths of all pink salmon reared in Prince William Sound hatcheries will be thermally marked in the fall of 1998. A blind test will be conducted to determine the ability of otolith readers to successfully determine the origin of randomly selected otoliths. During the 1998 commercial fishery, approximately 100 otoliths will be processed from each fishery opening to estimate stock composition. A Bayesian approach will be used in the estimation of postseason contribution estimates, with a dynamic sample size allocation scheme being used to maximize sampling efficiency.

Chief Scientist's Recommendation

This project will begin routine implementation of a new in-season management technique utilizing thermal marking of hatchery-raised pink salmon. The requested budget increase for personnel appears justified due to the loss of coordinated funding from the Prince William Sound Aquaculture Corporation and the Valdez Fisheries Development Association. Fund.

Trustee Council Action

Fund. This project provides information that allows fisheries managers to vary the timing and location of commercial harvest to protect injured wild stocks. Otolith marking is a more accurate and less expensive technology for providing the information previously obtained through coded wire tags.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98190	Construction of a Linkage Map for the Pink Salmon Genome	F. Allendorf/Univ. Montana	ADFG	Cont'd 3rd yr. 5 yr. project	**$229.4**	$187.0	$187.0	$0.0	$603.4

Project Abstract

This project will construct a detailed genetic linkage map for pink salmon by analyzing the genetic transmission of several hundred DNA polymorphisms. The ability to genetically map the location of oil-induced lesions will allow the thorough identification, description, and understanding of oil-induced genetic damage. This research will also aid other recovery efforts with pink salmon, including estimation of straying rates, description of stock structure, and testing whether marine survival has a genetic basis. The linkage map will be completed ahead of schedule in this, the third year of Trustee Council support. Efforts to achieve Objectives 5 and 6 of this project using Alaska SeaLife Center facilities will also begin in FY 98.

Chief Scientist's Recommendation

This is a strong project with an excellent principal investigator. The investigator has made significant progress toward project objectives and may be ahead of schedule. Detecting genetic lesions due to the oil spill is not too likely. However, the results from this project will be significant for the long-term management of pink salmon. Fund.

Trustee Council Action

Fund. Concerns raised by the Chief Scientist in FY 97 regarding link to restoration objectives, application to management, and cost sharing by non-EVOS sources have been addressed. In addition, the project is ahead of schedule and the budget has been reduced from the prior year. This project, which will be conducted in part at the Alaska SeaLife Center, is designed to provide fundamental information which will likely aid restoration of wild stocks of pink salmon and benefit pink salmon management. It is a long-term project with national importance. [NOTE: Funding includes $17,800 for SeaLife Center bench fees.]

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98191A	Field Examination of Oil-Related Embryo Mortalities in Pink Salmon Populations in Prince William Sound	M. Willette/ADFG	ADFG	Cont'd 7th yr. 8 yr. project	**$159.4**	$58.7	$0.0	$0.0	$218.1

Project Abstract

Elevated embryo mortalities were detected in populations of pink salmon inhabiting oiled streams following the oil spill. These increased rates of mortality persisted annually through the 1993 field season, suggesting that genetic damage may have occurred as a result of exposure to oil during early developmental life-stages. The consequences of this putative genetic damage include physiological dysfunction of individuals and reduced reproductive capacity of populations. The 1994, 1995, and 1996 field results show no statistical difference in embryo mortality between oil-contaminated and reference streams. In FY 98, this project will continue to monitor the recovery of pink salmon embryos in the field. If there is again no difference in embryo mortality between oil-contaminated and reference streams, this project will be closed out in FY 99.

Chief Scientist's Recommendation

This proposal will complete the fourth year of field monitoring and define the recovery of pink salmon embryo mortality. The proposed investigations are on track with previous recommendations made by peer reviewers. Closeout in FY 99 is appropriate, and must include integration of these investigations with laboratory studies of mechanisms for the observed effect.

Trustee Council Action

Fund. This project represents the major monitoring effort for the ongoing injury to and recovery of pink salmon. Funding in FY 98 will allow two even-year and two odd-year life cycles to be followed. Only closeout funds (final data analysis and report writing) are anticipated in FY 99.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98194-CLO	Pink Salmon Spawning Habitat Recovery	M. Murphy, S. Rice/NOAA	NOAA	Cont'd 2nd yr. 2 yr. project	**$25.0**	$0.0	$0.0	$0.0	$25.0

Project Abstract

This proposal requests funds to close out Project /194, allowing publication of results and participation at the 1998 Restoration Workshop. Project 97194 examined the level of oil contamination in pink salmon streams in 1989-90 and 1995 by analyzing sediment samples collected in 1989-90 by the Alaska Department of Fish and Game and similar samples collected in 1995 by the National Marine Fisheries Service/Auke Bay Laboratory. Approximately 500 samples from 200 streams were analyzed by the Auke Bay Laboratory in 1997. Results will help to complete the understanding of the injury to pink salmon by documenting the initial exposure level and subsequent habitat recovery.

Chief Scientist's Recommendation

This project needs to be closed out and the results synthesized and published. Fund.

Trustee Council Action

Fund closeout of this project. It will conclude studies conducted in FY 97 to illuminate the role of direct exposure to oil in potentially causing the observed multi-year effects in pink salmon embryos. A manuscript will be submitted to a peer reviewed journal for publication in March 1998, and a final report will be submitted by May 1, 1998.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98195	Pristane Monitoring in Mussels	J. Short, P. Harris/NOAA	NOAA	Cont'd 3rd yr. 5 yr. project	**$114.9**				$114.9

Project Abstract

This project will continue to monitor pristane in mussels as an indirect index of potential year-class strength for pink salmon and herring and to identify critical juvenile pink salmon and herring marine habitat in Prince William Sound.

Chief Scientist's Recommendation

This proposal is for the continuation of a very innovative application of natural tracer substance which could develop into a valuable monitoring tool to provide a cost effective measure of spatial and temporal variation in the zooplankton bloom. Attention should be paid to the question of what other species (besides salmon juveniles) might be involved in transport of pristane to the nearshore environment for uptake by mussels. Funding beyond FY 98 should be considered only after review of the first three years of results.

Trustee Council Action

Fund FY 98 only. Funding in future years will be contingent on a favorable review of the first three years' results. This project is collecting and measuring pristane in mussels, which may provide a relatively inexpensive measure of marine productivity, thus allowing predictions about future fisheries production and harvest levels.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98196	Genetic Structure of Prince William Sound Pink Salmon	C. Habicht/ADFG	ADFG	Cont'd 5th yr. 6 yr. project	**$130.2**	$50.0	$0.0	$0.0	$180.2

Project Abstract

Previous work found that wild-stock pink salmon suffered direct lethal and sublethal injuries as a result of the oil spill. An understanding of the population structure of pink salmon in Prince William Sound is essential to assess the impact of these injuries on a population basis and to devise and implement management strategies for sustained conservation. Results to date from this study suggest gene flow between pink salmon spawning aggregates can be restricted both spatially (regional and upstream-tidal) and temporally (early-late) within the sound. This proposal covers the final year of laboratory analysis and the statistical analysis of year-three allozyme and mtDNA data.

Chief Scientist's Recommendation

This project, which investigates the genetics of pink salmon in Prince William Sound, is finding some differences between eastern and western parts of the sound as well as between some up- and downstream populations. These findings are helpful in formulating sound-wide management policies for both hatchery and harvest practices. The reviewers would like to see a clearer theoretical basis for the project objectives (e.g., defining what constitutes a "stock"). However, there is no doubt that this project aids the Alaska Department of Fish and Game's efforts to manage and conserve wild pink salmon stocks. Fund.

Trustee Council Action

Fund. This project is designed to determine the geographic extent of genetic differences in Prince William Sound pink salmon. Knowledge of the location of pink salmon stocks and genetic differences among the stocks in Prince William Sound could help refine pink salmon management areas and goals, aiding in the recovery of wild stocks.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98210	Youth Area Watch	R. Sampson/Chugach School District	ADFG	Cont'd 3rd yr. 7 yr. project	**$150.2**				$150.2

Project Abstract

The Youth Area Watch project links students in the oil spill impacted area with research and monitoring projects funded through the Trustee Council. The goal is to involve students in the restoration process, and give these individuals the skills to participate in oil spill restoration activities now and in the years to come. Youth conduct research identified by EVOS principal investigators who have indicated interest in working with students in oil spill impacted communities. Youth Area Watch serves as a positive example of community investment in the restoration process. Participating communities are: Tatitlek, Chenega Bay, Cordova, Seward, Valdez, Whittier, and a remote site.

Chief Scientist's Recommendation

Presentations by student participants in the Youth Area Watch project at this year's Annual Restoration Workshop were very well received. The project is doing a good job of meeting its goal of involving youth in the restoration process and should be funded again in FY 98. The personnel and indirect costs seem high, however, and should be reviewed by administrative staff.

Trustee Council Action

Fund. This project is designed to involve local youth in ongoing restoration projects. In FY 98, 28 youth in Chenega Bay, Tatitlek, Cordova, Whittier, Valdez, Hinchinbrook Island, and Seward will participate. In FY 98, with funding for the project coordinator (a Chugach School District employee) being increased from nine months to twelve months, it is expected that at least one article on the Youth Area Watch program will be prepared, peer reviewed by the Chief Scientist, and submitted to a journal for publication. In FY 99, funding will be contingent on presentation in the Detailed Project Description of a concrete plan to transition away from Trustee Council funding.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98220-CLO	Eastern Prince William Sound Wildstock Salmon Habitat Restoration	D. Schmid/USFS	USFS	Cont'd 3rd yr. 3 yr. project	**$11.9**	$0.0	$0.0	$0.0	$11.9

Project Abstract

This project will close out Project /220. It consists of monitoring the instream habitat structures built in FY 97, analyzing the utilization of the structures by juvenile fish, counting escapement of coho salmon in October 1997, and preparing a final report by September 1998.

Chief Scientist's Recommendation

This is the closeout of a three-year project, and the final report should quantitatively describe the amount of coho salmon produced by the project. Fund.

Trustee Council Action

Fund closeout of this project, which in FY 98 will monitor habitat improvements being constructed in Plateau Creek under Project 97220. Structures will be monitored to see how well they have withstood high flows, the amount of habitat created, and the utilization by juvenile coho salmon. This project is designed to replace subsistence services lost due to the oil spill by increasing wild salmon production near the Native Village of Eyak. Funding is included for preparation of the final report in FY 98; the final report should quantitatively describe the numbers of coho produced by this project.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98225	Port Graham Pink Salmon Subsistence Project	E. Anahonak, Port Graham IRA Council	ADFG	Cont'd 3rd yr. 5 yr. project	**$73.5**	$75.0	$75.0	$0.0	$223.5

Project Abstract

This project will provide pink salmon for subsistence use in the Port Graham area while maintaining the Port Graham hatchery's broodstock development schedule. Because local runs of coho and sockeye salmon, the more traditional salmon subsistence resource, are at low levels, pink salmon are being heavily relied on for subsistence. This project will help ensure that pink salmon remain available for subsistence use until the more traditional species are rejuvenated. Two strategies are being employed: increasing fisheries management surveillance to maximize use of the adult pink salmon return and increasing marine survival of hatchery produced pink salmon.

Chief Scientist's Recommendation

This project is in its third year and has a high probability of producing more salmon for subsistence users. I encourage a greater effort to share the results of this project in local communities, as well as with professional organizations. Fund.

Trustee Council Action

Fund. This project is designed to increase the availability of pink salmon for subsistence use near the village of Port Graham, replacing runs of coho and sockeye salmon depleted since the oil spill.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98244-CLO	Community-Based Harbor Seal Management and Biological Sampling	M. Reidel/Alaska Native Harbor Seal Commission	ADFG	Cont'd 3rd yr. 3 yr. project	**$84.7**	$0.0	$0.0	$0.0	$84.7

Project Abstract

This project funds a biological sample collection program, implemented in FY 96 and expanded in FY 97, in Prince William Sound, lower Cook Inlet, and the Kodiak area. Village-based technicians will be selected by the Alaska Native Harbor Seal Commission (ANHSC) and trained to collect samples and transport these samples to Anchorage or Kodiak for further sampling and analysis. In addition to coordinating the biological sampling program, the ANHSC will organize a two-day workshop and produce and distribute a newsletter.

Chief Scientist's Recommendation

This is the third year of a three-year pilot project, and in many respects it seems to be a model of how subsistence hunters and the research community can cooperate. There are questions about how many samples are needed and whether harbor seal researchers are making use of the samples collected to date or that will be collected in FY 98. A thorough review of the results of the pilot project is essential before any decisions are made regarding continuation of the program beyond FY 98. Fund.

Trustee Council Action

Fund final year of this three-year pilot project, including funds for preparation of a final report by September 30, 1998. This project is serving as a prototype for a long-term sampling program that would involve Native hunters in the management of harbor seals. In the near term, this project is enabling Native hunters to provide harbor seal samples to ongoing EVOS projects which seek to explain why harbor seals are not recovering.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98247	Kametolook River Coho Salmon Subsistence Project	Perryville Village Council	ADFG	Cont'd 2nd yr. 6 yr. project	**$14.9**	$14.8	$15.1	$31.1	$75.9

Project Abstract

Subsistence users from the Alaska Peninsula Native Village of Perryville have noted significant declines in the coho salmon run in the nearby Kametolook River since the oil spill. Criminal settlement funds were used in FY 96 to determine what method would best restore the river's coho salmon stock to historic levels. This project will provide funding through FY 2002 for the Alaska Department of Fish and Game to try conservative and safe restoration methods. Instream incubation boxes have been evaluated and selected as the primary restoration tool to rebuild the depressed coho salmon stock needed for subsistence in the Kametolook River.

Chief Scientist's Recommendation

The principal investigators have done a good job addressing previous scientific concerns, and this project has excellent local participation. There is some concern that mixed stock fisheries could reduce returns. This is a worthwhile project. Fund.

Trustee Council Action

Fund. This project is designed to enhance a small coho salmon run near the Alaska Peninsula village of Perryville as a replacement for subsistence resources injured by the oil spill. Trustee Council funding is anticipated through 2002, at which time the run is expected to be self-sustaining.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98250	Project Management	All Trustee Council Agencies	ALL	Cont'd	**$560.1**				$560.1

Project Abstract

Project management represents those costs incurred by the state and federal trustee agencies in fulfilling their responsibility to ensure that individual projects are managed consistent with the Memorandum of Agreement and Consent Decree, the Restoration Plan, and Trustee Council authorization.

Chief Scientist's Recommendation

Proposal not reviewed.

Trustee Council Action

Fund. Project management provides essential accountability for the work plan process. The FY 98 funding level represents a reduction from the amount approved for FY 97 ($641,600). Future years' funding is expected to decline further, consistent with the decline in the annual funding targets for the overall work plan.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98252	Investigations of Genetically Important Conservation Units of Rockfish and Walleye Pollock	J. Seeb, L. Seeb, S. Merkouris/ADFG	ADFG	New 1st yr. 5 yr. project	**$209.1**	$263.8	$272.0	$571.0	$1,315.9

Project Abstract

This proposal consolidates an array of requests from the commercial fisheries industry for discrete stock research into a single proposal for work that the Alaska Department of Fish and Game would conduct at its Anchorage genetics laboratory. Also, the Alaska Department of Fish and Game proposes to develop experimental fish runs at the Alaska SeaLife Center; these are essential for study of genetics, physiology, or diseases of anadromous fish proposed by University of Montana, University of Alaska, or the Alaska Department of Fish and Game and other principal investigators seeking to conduct research at the Seward facility.

Chief Scientist's Recommendation

Work on walleye pollock and rockfish, both of which have been more heavily exploited following the oil spill, will be valuable because basic information on their stock structures is lacking. The genetic techniques proposed here are a cost-effective way of obtaining this information. The work on Kodiak Island Pacific herring should be reevaluated after the genetic analysis in Project /165 has been completed. Fund revised proposal, which eliminates herring objectives.

Trustee Council Action

Fund. This project will obtain genetic stock structure information on rockfish and pollock, both of which have faced increased harvest pressure as replacement species following the oil spill. The project also will provide funding to consolidate Alaska Department of Fish and Game genetics wet-lab projects, including the rockfish and pollock work, at the Alaska SeaLife Center. [NOTE: Funding includes $13,200 for SeaLife Center bench fees.]

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98254-CLO	Delight and Desire Lakes Restoration	G. Kyle/ADFG	ADFG	Cont'd 2nd yr. 2 yr. project	**$11.7**	$0.0	$0.0	$0.0	$11.7

Project Abstract

This project is evaluating the quality of the rearing habitat and the feasibility of lake fertilization in Delight and Desire lakes. Limnological and fisheries data were collected during FY 97; FY 98 funds are for data analysis and preparation of a final report. Nutrient enrichment has increased the forage base for rearing sockeye salmon fry in other Alaskan lakes. The expected result of nutrient enrichment is larger, more numerous sockeye smolts and a corresponding increase in adult returns. An enrichment program in Delight and/or Desire lakes would increase lake fertility, which in turn should accelerate the recovery of the currently depressed sockeye salmon runs in these two lakes.

Chief Scientist's Recommendation

The Trustee Council paid for the initial feasibility study and needs the final report to complete this project. The principal investigators should pay special attention to the historical fisheries data, the treatment of which was rather weak in the FY 97 Detailed Project Description. Funding of this closeout project implies no commitment in regard to future lake fertilization.

Trustee Council Action

Fund closeout (data analysis and report writing) of the limnology study of Delight and Desire lakes funded by the Trustee Council in FY 97. The final report will make recommendations regarding restoration of sockeye salmon in these two lakes through stocking/nutrient enrichment. The Council's support of Project 98254-CLO is not a commitment at this time to also support lake fertilization, should it be proposed at a later date.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98256B	Sockeye Salmon Stocking at Solf Lake	D. Gillikin/USFS, P. Shields/ADFG	USFS	Cont'd 3rd yr. 7 yr. project	**$95.5**				$95.5

Project Abstract

This project is designed to benefit subsistence users of Prince William Sound and especially residents of Chenega Bay. Habitat improvements were made in 1978, 1980 and 1981 to provide access to Solf Lake for anadromous fish. Investigations suggest that the lake is fishless and has adequate zooplankton biomass to support a salmon population. There are two phases to this project. The feasibility phase, which began in FY 96, has verified the ability of Solf Lake to support a sustainable population of sockeye salmon. Phase 2 plans to initially stock the lake with 100,000 sockeye salmon fry in 1998 and ensure access to Solf Lake for returning adult sockeye salmon.

Chief Scientist's Recommendation

This would be the third year of an effort to establish a self-sustaining sockeye run at Solf Lake as a subsistence resource for Chenega Bay residents. The proposers are well qualified and have been responsive to previous questions raised by the reviewers. This project has a high probability of success. Fund.

Trustee Council Action

Fund. This project is intended to provide sockeye salmon as a replacement for subsistence fishing resources injured by the oil spill, particularly for the residents of Chenega Bay. The number of years of Trustee Council support for the stocking effort will be dependent on annual results.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98263	Assessment, Protection and Enhancement of Salmon Streams in Lower Cook Inlet	W. Meganack, Jr./Port Graham Corporation	ADFG	Cont'd 2nd yr. 4 yr. project	**$107.0**	$23.6	$23.6	$0.0	$154.2

Project Abstract

This project will replace lost subsistence services resulting from the oil spill by constructing enhancement projects on major salmon streams in the Lower Cook Inlet spill area. Protection and enhancement will be implemented using instream fisheries habitat improvement techniques, primarily creation of spawning channels, removal of natural barriers to spawning, and construction of wall-based rearing structures. Local subsistence users will be employed as technical assistants during field surveys and construction.

Chief Scientist's Recommendation

A decision on funding this project was deferred until December pending evaluation of 1997 field results. Based on my review of an interim report of the 1997 results, the prospects for significantly increased production of coho salmon appear to be good for at least two of the five proposed stream enhancements (Port Graham River and Windy Creek). The other proposed enhancements are of more marginal value. In addition, there remain questions about the source of supplementation stock, difficulties in maintaining spawning channels, and possible harvest management issues. I also am concerned about the ambitious scope and schedule of what the Port Graham Corporation proposes to undertake in FY 98. I recommend phased funding for the two most promising enhancements, provided that technical and management questions can be resolved.

Trustee Council Action

Fund the Port Graham River ($57,000) and Windy Creek ($50,000) components only, contingent on (1) resolution of the technical questions raised by the Chief Scientist and (2) approval of a detailed budget. Consistent with Trustee Council policy, funds for Project 98263 will be released in two phases: Phase I will consist of NEPA, necessary permits (e.g., approval by the state geneticist, endorsement by the Cook Inlet Regional Planning Team), and engineering and design. Phase II, to begin upon completion of Phase I, will consist of actual construction of stream improvements. The goal of this project is to protect and enhance salmon streams important to the restoration of subsistence in the Port Graham area.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98273	Surf Scoter Life History and Ecology: Linking Satellite Technology with Traditional Knowledge to Conserve the Resource	D. Rosenberg/ADFG	ADFG	New 1st yr. 3 yr. project	**$170.4**			$0.0	$170.4

Project Abstract

This project will study the life history and ecology of surf scoters wintering in Prince William Sound and lower Cook Inlet, and integrate this information with traditional ecological knowledge. Scoter populations in Alaska are declining for unknown reasons. Local residents harvest scoters for subsistence purposes. Scoters will be marked with surgically implanted satellite transmitters to define the breeding, molting, and wintering areas. Local participation will be solicited and information will be conveyed to local residents through the Youth Area Watch program (Project \210).

Chief Scientist's Recommendation

Residents of rural villages in the spill area have repeatedly expressed concern that the Trustee Council is not sponsoring studies on waterfowl important to subsistence users. This is a rather expensive proposal, but it addresses a valuable subsistence resource, scoters, and has the potential to provide important data linking breeding and wintering locations that can contribute to long-term conservation. There is an excellent community involvement element, including an education component for school children. Fund.

Trustee Council Action

Fund. This project will study the life history and ecology of surf scoters in Prince William Sound (and perhaps lower Cook Inlet in future years) as the first step in determining the cause of their suspected population decline and developing conservation and management strategies to ensure the long-term health and welfare of the population. Concerns over the declining number of surf scoters were raised by subsistence users at the 1997 EVOS Annual Workshop. Surf scoters are not on the injured species list. However, the Trustee Council's Restoration Plan allows restoration actions to address resources not on the list if the action will benefit an injured resource or service; this project would benefit the service of subsistence. Traditional ecological knowledge will be integrated into the project (working with the TEK Specialist under Project /052B) and Youth Area Watch students (Project /210) will be asked to participate in the capturing and monitoring of the scoters.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98274	Documentary Film on Subsistence Use of Herring, Herring Spawn, and Resources in the Nearshore Ecosystem in Prince William Sound	G. Kompkoff/Tatitlek Village Council	ADFG	New 1st yr. 1 yr. project	**$89.6**	$0.0	$0.0	$0.0	$89.6

Project Abstract

This project will produce a 28-minute film on the subsistence use of herring, herring spawn, and nearshore ecosystem resources in Prince William Sound. Historically, the nearshore ecosystem produced critical resources for subsistence users including herring spawn, octopus, clams, mussels, sea otters, harlequin ducks, and chitons. In the harbor seal documentary (Project /214) Tatitlek residents discussed their view of the relationship between the oil spill, Pacific herring populations, harbor seal populations, and their ability to pursue subsistence. This film will expand on this discussion by documenting all facets of herring and nearshore ecosystem resource use including the ecological and biological knowledge people use to harvest those resources.

Chief Scientist's Recommendation

This project is patterned after the harbor seal video (Project /214), which was released in Spring 1997. The harbor seal video has proven to be popular among the rural residents of Alaska and should contribute to the restoration of subsistence services. A video on herring should be equally educational and useful. Fund.

Trustee Council Action

Fund. This project, which will produce a documentary through a competitive bid and involve the community of Tatitlek, is designed to contribute to the restoration of herring, nearshore resources, and subsistence uses by transmitting local knowledge about herring and nearshore resources to the scientific community. The process of making the film will involve the collection of a substantial amount of data that can be applied directly to the recovery of herring and nearshore resources and used to promote greater appreciation and stewardship of these resources, contributing to their long-term restoration. The development of the video should be coordinated with the documentary currently under production by the Restoration Office.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98286	Elders/Youth Conference on Subsistence and the Oil Spill	B. Henrichs /Native Village of Eyak	DOI	Cont'd 2nd yr. 2 yr. project	**$90.2**	$0.0	$0.0	$0.0	$90.2

Project Abstract

This project will bring together, from all of the oil spill-affected communities, elders and other traditional knowledge bearers and youth, as well as principal investigators from EVOS-sponsored research projects to create a forum for the exchange of information between Western scientific ways of knowing and traditional ways of knowing. The forum will give rise to possible collaborative efforts between local community members and research scientists designing FY 99 restoration projects. In addition, it will facilitate a reexamination of the positive outcomes from the Community Conference on Subsistence and the Oil Spill sponsored by the Trustee Council in October 1995. Funds were provided in FY 97 for preliminary conference planning. Funds requested in FY 98 will be for holding the conference itself, which is scheduled to be held in Cordova in May 1998.

Chief Scientist's Recommendation

Action on this project was deferred until December, pending receipt and review of a full Detailed Project Description. Based on my review of the Detailed Project Description, I believe that this is a worthwhile project that will bring together village subsistence users and EVOS investigators to exchange the latest scientific knowledge and traditional and local knowledge on the status of fish and wildlife resources injured by the spill. Although I can affirm the value of this concept, I am concerned that most of the tribal councils in spill-area communities, including the Eyak Tribal Council which proposed this project, have not adopted the traditional knowledge protocols developed under Project /052B. In addition, I have questions about the timing, length, and content of the conference, and about the budget. If these policy and substantive issues can be addressed satisfactorily, I recommend funding the project at a reduced level.

Trustee Council Action

Fund. The fact that the Eyak Tribal Council, and most other village councils in the spill region, have not adopted the Trustee Council's TEK protocols is a concern. It is hoped that preparation for the conference, as well as the conference itself, will lead to active consideration and adoption of the protocols. The Elders/Youth Conference is intended to create a forum for the exchange of information between Western scientific ways of knowing and traditional ways of knowing. Initial planning money for the conference, which is scheduled for May 1998 in Cordova, was provided by the Trustee Council in FY 97 (Project 97286). The Council sponsored a similar conference in October 1995.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98289-BAA	Status of Black Oystercatchers in Prince William Sound	S. Murphy/ABR, Inc.	NOAA	New 1st yr.	**$80.4**		$0.0	$0.0	$80.4

Project Abstract

Black oystercatchers currently are considered to be "injured with recovery unknown." Because most of the unresolved issues for this species pertain to impacts to the breeding population in Prince William Sound, this study is designed to assess aspects of the life history (e.g., phenology and productivity) of oystercatchers that potentially are spill-related for the same population of oystercatchers that was studied during 1989-1993. Year 1 will entail an examination of the life-history parameters that were identified by previous researchers as having been negatively impacted by the oil spill and an evaluation of whether these birds have recovered from the previously identified impacts. Data analyses will focus on comparisons of previously oiled sites with unoiled sites and among-year analyses.

Chief Scientist's Recommendation

The recovery status of black oystercatchers is unknown. This project would reassess the status of this species in an initial Year-1 phase and then, if needed, follow up with a more in-depth investigation. The principal investigator did a good job of providing additional detail on proposed methods and substantially reduced the budget. The Trustee Council should support a reassessment of the status of black oystercatchers, and it should be carried out and reported on in advance of the 10th Anniversary of the oil spill.

Trustee Council Action

Fund FY 98 only; additional funding in FY 99 will be considered following a review of FY 98 results. The upcoming 10th Anniversary compels reassessment of the recovery status of black oystercatchers at this time. The FY 98 Invitation to Submit Restoration Proposals invited proposals for this additional monitoring.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98290	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance	J. Short/NOAA	NOAA	Cont'd 7th yr. 11 yr. project	**$75.7**				$75.7

Project Abstract

This project is a continuation of the Natural Resource Damage Assessment and restoration database management, sample storage, and interpretive service. New data will continue to be incorporated into the Trustee Council hydrocarbon database. Updated summary reports for investigators and managers will be produced along with an electronic copy of the data for all data queries.

Chief Scientist's Recommendation

This ongoing project has provided valuable archival and interpretive services to the restoration program, both with current research and preparation of final reports from past projects. Fund in FY 98. A projection of workload for FY 99 and beyond will be necessary to judge cost effectiveness of future efforts.

Trustee Council Action

Fund. Project is ongoing analysis and interpretation of hydrocarbon data for other Trustee Council funded studies. This project makes the data available to the scientific community and the public, including in an electronic format. Currently the database contains results of the analysis of more than 13,000 samples and collection information from more than 46,000 samples. The level of funding in FY 99 will be determined following a review of the expected workload in future years.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98297-BAA	Oceanography of Prince William Sound Bays and Fjords	S. Vaughan/PWSSC	NOAA	New 1st yr. 1 yr. project	**$94.2**	$0.0	$0.0	$0.0	$94.2

Project Abstract

Eaglek Bay, Whale Bay, Simpson Bay, and Zaikof Bay are the focus of the Sound Ecosystem Assessment herring project (/320T) based on historical observations of large numbers of juvenile Pacific herring. Hydrographic surveys and current velocity measurements from October 1995 to November 1996 show significant differences in water mass properties and circulation patterns between these four bays in Prince William Sound. The SEA physical oceanography project (/320M) has provided support for SEA Herring in the past, but support in FY 98 will not be possible because of scheduled funding cuts. Without continued funding, physical data will not be available for the SEA Herring project in its third and final winter sampling period. The goal of this research is to identify physical factors that control the production of Pacific herring in Prince William Sound.

Chief Scientist's Recommendation

This project will continue the physical oceanographic component of SEA (Project /320), as funded in FY 97. These studies have the general objective of documenting the physical oceanography of Prince William Sound, the contrasts in which should reveal much about the importance of various physical and biological factors in the survival of juvenile herring. Fund.

Trustee Council Action

Fund. This project will study certain aspects of the water mass properties and circulation patterns in four bays in Prince William Sound that have historically been the focus of the SEA herring project (/320T). It will provide essential support for interpretation of the SEA/Herring hypotheses that would not otherwise be available. Funding in FY 98 includes funds for preparation of a final report by September 30, 1998.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98300	Synthesis of the Scientific Findings from the *Exxon Valdez* Oil Spill Restoration Program	R. Spies/Applied Marine Sciences	ADNR	Cont'd 2nd. yr 3 yr. project	**$81.3**	$80.0			$161.3

Project Abstract

Research sponsored by the Trustee Council has provided an astonishing amount of information on the ecology of the spill area and represents the largest single infusion of data on natural resources in the northern Gulf of Alaska. The goal of this project is to synthesize this information across projects to realize its maximum benefit to the public and management agencies. The specific objectives involve coordinating the work of principal investigators on synthesis products, facilitating the efforts to apply food-web models of the spill area ecosystem, and facilitating the translation of valuable scientific findings into new management tools for use by natural resource agencies in Alaska.

Chief Scientist's Recommendation

NOTE: This proposal was submitted by the Chief Scientist at the request of the core scientific reviewers and the Executive Director.

Trustee Council Action

Fund. This project will continue the Chief Scientist's effort begun in FY 97 to work with principal investigators who have conducted restoration projects and with ecological modelers (see Project 98330) to facilitate synthesis of existing information into both mathematical and written descriptions of the spill area ecosystem and how it changes in response to anthropogenic and natural events. A new objective in FY 98 will be to develop a plan for improving the interaction between management agency personnel and principal investigators that leads to applied research useful to management and better integration of existing research findings into management programs.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98302-CLO	Prince William Sound Cutthroat Trout, Dolly Varden Char Inventory	M. Schelske/USFS	USFS	Cont'd 2nd yr. 2 yr. project	**$4.1**	$0.0	$0.0	$0.0	$4.1

Project Abstract

This proposal requests funds for report writing to close out Project /302. In FY 97, the principal investigator interviewed local residents and other knowledgeable persons and conducted literature searches to document the locations of cutthroat trout and Dolly Varden char populations. A number of previously undocumented populations have been discovered. Additional work and some field sampling also took place in FY 97 to verify unsubstantiated reports.

Chief Scientist's Recommendation

This modest funding request is appropriate to close out this project.

Trustee Council Action

Fund closeout (data analysis and report writing) of this project. Local knowledge will be used to determine which streams in Prince William Sound are known to have populations of cutthroat trout and Dolly Varden. The results of this project will be provided to the Alaska Department of Fish and Game for inclusion in the Anadromous Waters Catalog, a document used in the management of these species. The results of this project will also be provided to researchers on Project \145 for use in developing a restoration strategy for these species.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98306	Ecology and Demographics of Pacific Sand Lance in Lower Cook Inlet	J. Piatt/USGS	DOI	Cont'd 2nd yr. 4 yr. project	**$32.8**	$30.0	$20.0	$0.0	$82.8

Project Abstract

The purpose of this project is to characterize the basic ecology, distribution, and demographics of sand lance in lower Cook Inlet. Recent declines of upper trophic level species in the Northern Gulf of Alaska have been linked to decreasing availability of forage fishes. Sand lance is the most important forage fish in most nearshore areas of the northern Gulf. Despite its importance to commercial fish, seabirds, and marine mammals, little is known or published on the basic biology of this key prey species.

Chief Scientist's Recommendation

The sand lance is a poorly understood species which is a key prey for marine birds and marine mammals. Having more basic knowledge about its life history and ecology is essential to interpreting the prospects for recovery of several injured species. This work involves a quality graduate student and is rather inexpensive. The work is well coordinated with APEX and is highly commended by the reviewers.

Trustee Council Action

Fund. This project will study sand lance, an important forage fish in the Gulf of Alaska. Sand lance populations have been in decline in recent years and should be studied in order to understand marine ecosystems as they may affect injured seabirds and marine mammals.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98311	Pacific Herring Productivity Dependencies in the Prince William Sound Ecosystem Determined With Natural Stable Isotope Tracers	T. Kline/PWSSC	ADFG	New 1st yr. 2 yr. project	**$119.3**	$80.6	$0.0	$0.0	$199.9

Project Abstract

Research conducted under the Sound Ecosystem Assessment project (SEA, /320) has shown that Pacific herring have significant dependence on Gulf of Alaska carbon. Accordingly, herring are subject to changes in carbon flow occurring between the Gulf of Alaska and Prince William Sound. The first step in understanding how this fundamental environmental process affects herring recruitment is to isotopically analyze a time series of herring for which energetic data have been collected. This will expand upon the data series available from SEA, providing a total four-year time period corresponding to one period in the cyclicity of herring population abundance in Prince William Sound.

Chief Scientist's Recommendation

This project continues work begun under SEA (Project /320) to collect herring and other forage fish from Prince William Sound and nearby Gulf of Alaska and analyze them for stable isotope ratios of carbon and nitrogen. These data not only provide clues to carbon sources for these important species but also potentially provide a link between natural variation in the Gulf of Alaska from year to year and inshore food webs. Previous issues related to coordination with other projects and data interpretation have been resolved. Fund.

Trustee Council Action

Fund. This project follows on work begun under SEA (Project /320) to examine how changes in carbon flow between Prince William Sound and the Gulf of Alaska affect herring recruitment.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98320	Sound Ecosystem Assessment (SEA)	T. Cooney, et al/UAF	ADFG	Cont'd 5th yr. 6 yr. project	**$2,383.4**	$755.2	$0.0	$0.0	$3,138.6

Project Abstract

This project is an integrated, multi-component study of processes influencing the annual survival of juvenile pink salmon and herring rearing in Prince William Sound. An emerging understanding of mechanisms of loss at this life stage is being captured by linked numerical simulations of ocean state, plankton dynamics, fish energetics, and prey/predator relationships. FY 98 will be the final fully-funded year of SEA, a period of reduced field work but accelerated data analysis and application of results to management models.

Chief Scientist's Recommendation

This project is on track to close out in FY 99, and the performance of the project remains excellent. It is essential that the project document the integration and initial application of oceanographic, plankton, and nekton models in FY 98. I have now reviewed the FY 97 results of the Herring TEK component as presented in an interim report. Although I have questions about the specific applications of these data, this project is documenting information that may prove valuable for scientists and managers who are trying to understand changes in forage fish populations in Prince William Sound. I consider this project to be a pilot effort in bringing local and traditional knowledge to bear to help answer scientific questions, and I recommend funding in FY 98.

Trustee Council Action

Fund, including funds for Traditional Ecological Knowledge component. In FY 98, this component's emphasis should be on collecting more data and interacting with scientists and managers who could benefit from the data collected. In general, SEA is an interdisciplinary ecosystem project focused on issues relating to the survival and recruitment of pink salmon and herring. SEA is entering the final year of a five-year study effort (to be followed by one year of data analysis/report writing). The project has been the subject of numerous technical reviews, including recent review sessions on the SEA modeling efforts (February 1997) and the SEA herring effort (March 1997). Both reviews indicated strong progress toward meeting project objectives. The FY 98 recommended funding level includes $429,700 for PWSSC's FY 99 closeout costs. ADFG project management costs ($49,500) have been deducted from SEA's FY 98 request and added to Project 98250/Project Management. In FY 99, only closeout funds are expected. Submittal of the draft final report is expected April 15, 1999.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98325-BAA	Assessment of Injury to Intertidal and Nearshore Subtidal Communities: Preparation of Manuscripts	T. Dean/Coastal Resources Associates, Inc.	NOAA	New 1st yr. 2 yr. project	**$99.9**		$0.0	$0.0	$99.9

Project Abstract

This project will prepare manuscripts for publication in scientific journals based on previous Trustee Council funded evaluations of injury to, and restoration of, coastal habitats (intertidal and subtidal communities).

Chief Scientist's Recommendation

This project will address a major need of the restoration program to compile and publish in the peer reviewed literature the large volume of intertidal research and monitoring results. It proposes to produce ten papers over two years. Fund.

Trustee Council Action

Fund FY 98 only. This project will prepare six manuscripts for submittal to the peer reviewed literature in FY 98 on results of intertidal studies previously funded by the Trustee Council (projects CH1, /086C, /106, and others). A proposal to prepare an additional four manuscripts will be considered for funding in FY 99.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98327	Pigeon Guillemot Restoration Research at the Alaska SeaLife Center	D. Roby/Oregon State Univ.	DOI	New 1st yr. 4 yr. project	**$123.3**	$159.5	$168.8	$95.1	$546.7

Project Abstract

This project will test the feasibility of direct restoration techniques for pigeon guillemots (e.g., installation of artificial nest sites, use of social attractants, captive propagation and release). While raising young guillemots in captivity it will also be possible to conduct controlled experiments crucial to two other restoration objectives: (1) development of nondestructive biomarkers of petroleum hydrocarbon contamination, and (2) understanding how dietary factors (prey species composition, prey size, lipid content, feeding frequency) constrain growth, development, and condition at fledging in guillemots.

Chief Scientist's Recommendation

This project has two interconnected objectives: (1) conduct research on the growth and physiology of nesting guillemots in relation to nutrition and oil and (2) test the ability to establish a colony of wild guillemots attracted to artificial nest sites at the Alaska SeaLife Center. Fledglings from the experimental work could eventually return to nest at the SeaLife Center, although it is not certain that enough birds would return to provide a sample size for measurement of survival in relation to the original experimental treatments. This work is closely tied to NVP (Project /025) and APEX (Project /163) hypotheses and has strong possibilities for public education and student involvement. It is assumed that eggs will be taken outside of the spill-impacted region early in the season that will result in double clutching. Fund.

Trustee Council Action

Fund. This project will improve our knowledge of how nutrition and oil affect the growth and physiology of pigeon guillemots. This information will help us understand the marine and nearshore ecosystems in Prince William Sound and the northern Gulf of Alaska. The work will be performed at the Alaska SeaLife Center. [NOTE: Funding includes $5,900 for SeaLife Center bench fees.]

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98329	Synthesis of the Toxicological Impacts on Pink Salmon	S. Rice/NOAA	NOAA	New 1st yr. 2 yr. project	**$25.6**	$51.8	$0.0	$0.0	$77.4

Project Abstract

This project will synthesize results of all Trustee Council sponsored studies related to the toxicological damage to pink salmon. Since 1989, seven separate Council-sponsored projects have individually advanced understanding of the effects of the oil spill on pink salmon: past and present potential for oil exposure (Project /194), effects on egg/embryo survival (Project /191A&B), juvenile feeding and growth (Project R4), marine survival and straying of returning adults (Projects /076 and /209), and the possibility that effects are heritable (Project /228). Data from these studies will be drawn upon in order to construct synthetic conclusions regarding the injury to and subsequent recovery of pink salmon. The results of contracted studies by Exxon Corporation will be compared with the Trustee Council studies.

Chief Scientist's Recommendation

This project will synthesize the research efforts on pink salmon toxicity, including review of the differences between the conclusions of Exxon and government scientists, providing a valuable contribution to the restoration program. Fund.

Trustee Council Action

Fund contingent on submittal of late report (FS1/Bue). This project, which will synthesize the results of seven separate studies funded by the Trustee Council to examine possible long-term damage to pink salmon populations (R4, /076, /191A, /191B, /194, /209, /228), will provide a valuable contribution to the restoration program. The synthesis will include an evaluation of relevant Exxon-funded findings and an attempt to reconcile differences where possible. Products will be publications in peer reviewed journals and a presentation at the 10th Anniversary Symposium.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98330-BAA	Mass-Balance Model of Trophic Fluxes in Prince William Sound	D. Pauly/UBC, S. Pimm/U. Tenn	NOAA	New 1st yr. 2 yr. project	**$179.8**	$185.5	$0.0	$0.0	$365.3

Project Abstract

This project will construct, validate, and disseminate two models of trophic interactions among the organisms of Prince William Sound, as required to synthesize the vast amount of information gathered before and after the oil spill, and to evaluate its impact at the ecosystem level. Project components are: (1) an initial workshop devoted to model specification by researchers from the Gulf of Alaska region, (2) an extended study by project staff, and (3) a dissemination phase, in year two, consisting of a training workshop for potential users of the software implementing the model and the production of a CD-ROM for the public domain, incorporating an interactive graphic version of the software and an extensive database on the biology and local/traditional knowledge on fishes of Prince William Sound.

Chief Scientist's Recommendation

This is a proposal by an internationally-recognized scientific team to apply food-web modeling techniques to (1) help synthesize existing research and monitoring, (2) develop predictive tools that may be used to examine the impacts of large-scale perturbations in the system, and (3) develop public information/education applications. The approaches utilized complement mechanistic models being funded as part of SEA (Project /320), although the food web models have important limitations that must be considered in interpretation of results.
Fund.

Trustee Council Action

Fund. This project is responsive to the FY 98 Invitation to Submit Restoration Proposals, which invited proposals for development of a model to integrate the results of ecological studies sponsored by the Trustee Council. The project received a strong technical review.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98338	Survival of Adult Murres and Kittiwakes in Relation to Forage Fish Abundance	J. Piatt/USGS	DOI	New 1st yr. 3 yr. project	**$56.2**	$57.9	$45.0	$0.0	$159.1

Project Abstract

Some seabird populations damaged by the spill continue to decline or are not recovering. In order to understand the ultimate cause of seabird population fluctuations, productivity, recruitment, and adult survival must be measured. Current APEX (Project /163) studies are focused on measuring productivity only. Recruitment measurement demands an unrealistic study duration. This project will augment current studies in lower Cook Inlet that relate breeding success and foraging effort to fluctuations in forage fish density by using banding and resighting to quantify the survival of adult common murres and black-legged kittiwakes.

Chief Scientist's Recommendation

A decision on funding for this project had been deferred until December pending the results of a pilot effort (conducted with non-EVOS funds) to use subcutaneous radio tags on murres. I have reviewed an interim report on the 1997 pilot study and a revised Detailed Project Description for the FY 98 work. Although the subcutaneous radio tags were successfully used on murres this past summer, the principal investigators concluded that the cost and effort involved did not warrant pursuing this approach. The investigators have reformulated the proposal to emphasize use of conventional leg bands, which I think provide a feasible, cost-effective way to obtain important data on adult survival as a means of gaining insights into the population-level effects of food availability. This is a dimension that is missing from the current APEX program, which emphasizes the effects of food on annual productivity, and the APEX project will benefit from the work proposed here. I do not think it is essential to fund the proposed use of conventional, external radio transmitters to supplement the banding data. Otherwise, I recommend funding this project as requested.

Trustee Council Action

Fund revised proposal, which excludes purchase of radio transmitters. This project was deferred until December pending completion of an FY 97 pilot study using subcutaneous radio tags as a means of obtaining data on adult survival of murres and kittiwakes. Although the subcutaneous tags were successfully used, the researchers concluded that the cost and effort did not warrant using this approach, and the Detailed Project Description has been revised to emphasize use of conventional leg bands. The project will explore adult overwinter survival as one mechanism by which forage fish availability may be affecting the recovery of seabirds, and will complement the work on chick production and forage fish being performed under APEX (Project /163).

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98339	Prince William Sound Human Use and Wildlife Disturbance Model	K. Murphy, L. Suring/USFS	USFS	New 1st yr. 2 yr. project	**$139.2**	$53.1	$0.0	$0.0	$192.3

Project Abstract

This project will use geographic information system (GIS) techniques to describe current human-use patterns in western Prince William Sound and to model potential changes in those use patterns as a result of additional development (e.g., increased access). GIS-generated maps of present and projected human-use patterns will be incorporated with GIS maps of the distribution of resources injured as a result of the oil spill. This will provide a basis to identify areas where there may be existing and potential conflicts between human use and wildlife concentrations resulting in disturbance. Disturbance of injured wildlife may result in decreased productivity exacerbating the effects of the oil spill and prolonging the time to recover.

Chief Scientist's Recommendation

This project would assess and model impacts on injured resources and services associated with increased human uses in western Prince William Sound. The model would allow projections of future impacts from increased human access and provide a basis for evaluating and possibly changing agency management practices with respect to species injured by the oil spill. This work could be very valuable, and I recommend funding it.

Trustee Council Action

Fund. This project will develop and test in western Prince William Sound a model for projecting future impacts of human use on resources injured by the oil spill. The model, which will be designed to be adaptable to other locations, will provide information useful for evaluating and possibly changing agency management practices with respect to injured species. This management tool could help protect injured resources and services for many years into the future. Funding the project this year will allow the work to be coordinated with other ongoing planning efforts in Prince William Sound, such as the update of the Chugach National Forest Plan and the work being undertaken by the Alaska Department of Transportation.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98340	Toward Long-Term Oceanographic Monitoring of the Gulf of Alaska Ecosystem	T. Weingartner/UAF	ADFG	New 1st yr. 4 yr. project	**$77.1**	$85.8	$53.7	$62.8	$279.4

Project Abstract

The 27-year time series of temperature and salinity data from hydrographic station GAK1 near Seward shows substantial interannual and interdecadal variability that could influence the Gulf of Alaska shelf ecosystem. This program will continue this time series and quantify the interannual and interdecadal variability of this shelf. A related goal is to resolve better the time and vertical structure of this variability at periods ranging from the tidal to the interannual. This information will aid in assessing progress in the recovery and restoration of organisms and services affected by the oil spill, and will aid in designing a long-term, cost-effective ecosystem monitoring program for this shelf.

Chief Scientist's Recommendation

Long-term data sets such as the ocean physics data available at GAK1 are rare and valuable, and physical forcing of marine ecosystems appears vital for understanding variation of biological populations. Although the parameters of an overall long-term monitoring program have yet to be described, and the GAK1 site has no associated biological measurements, it seems extraordinarily likely that maintenance of this long-term data set would be part of an ecosystem monitoring strategy in the spill area. I understand that a complementary proposal has been approved for funding by the GLOBEC program. Trustee Council support of Project 98340 presents an opportunity for tangible cooperation with this international scientific initiative. Fund.

Trustee Council Action

Fund. This project will continue the existing 27-year time series of conductivity-temperature versus depth (CTD) data collected at hydrographic station GAK1 on the northcentral Gulf of Alaska shelf. In the Chief Scientist's view, it is highly likely that maintenance of this long-term data set would be part of an ecosystem monitoring strategy in the spill area.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98341	Harbor Seal Recovery: Controlled Studies of Health and Diet	M. Castellini/UAF	ADFG	New 1st yr. 4 yr. project	**$152.2**	$125.1	$132.8	$91.4	$501.5

Project Abstract

This program begins a long-term study that quantifies the impact of feeding controlled fish diets on the health and body condition of harbor seals. Even though health status biomarkers for marine mammals in Prince William Sound were established during field trials, the critical test on how each marker varies in an individual seal fed differing prey diets has not been conducted. The ability to test these markers directly, under controlled conditions, is now available at the Alaska SeaLife Center. This project proposes to conduct those experiments on harbor seals, but the approach would apply to any of the injured top predators, whether bird or mammal.

Chief Scientist's Recommendation

This is a sound proposal that takes the next step in validating indicators of health of harbor seals using captive animals at the Alaska SeaLife Center. Proposers should consider focusing the project on pups, as this appears to be the key life-stage affecting recruitment to adult populations. Fund.

Trustee Council Action

Fund. This project will investigate the health and diet of harbor seals under controlled conditions at the Alaska SeaLife Center and enable scientists to test the validity of results from field studies. The project should focus its research on harbor seal pups. [NOTE: Funding includes $20,200 for SeaLife Center bench fees.]

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98346	Publication of an Indexed Bibliography of the Genus Ammodytes (Sand Lance)	R. Armstrong/UAA, M. Willson/USFS, M. Robards/DOI	USFS	New 1st yr. 1 yr. project	**$5.4**	$0.0	$0.0	$0.0	$5.4

Project Abstract

Pacific sand lance is important in the diet of birds, fish, and sea mammals. Little is known about this species in Alaska. Much of the information is found in agency reports and gray literature, which are usually not attainable by library electronic searching methods. This project will review all studies of Pacific sand lance in Alaska and recommend further research. Studies done outside of Alaska will be integrated where local knowledge is lacking. The bibliography will cover all published and unpublished references on the genus *Ammodytes*. Key words and a summary of information will be provided for each reference. All references will be incorporated into a taxonomic, geographic, and subject index.

Chief Scientist's Recommendation

For a very modest cost, this project would publish a review and bibliography of studies on sand lance, a key forage fish species. Much of the needed work will be generated in Project /306, and this project concerns only the publication in an appropriate technical series. Fund.

Trustee Council Action

Fund. This project is an inexpensive way of sharing information about sand lance through publication of a bibliography of published and unpublished reports about this species. This information will contribute to the APEX project (/163), which is investigating the link between forage fish (including sand lance) and seabird productivity. APEX is designed to yield results that will benefit the marine ecosystem in Prince William Sound and the northern Gulf of Alaska.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98347	Fatty Acid Profile and Lipid Class Analysis for Estimating Diet Composition and Quality at Different Trophic Levels	R. Heintz/NOAA	NOAA	New 1st yr. 3 yr. project	**$110.6**	$92.6	$35.3	$0.0	$238.5

Project Abstract

This project will begin the systematic development of fatty acid profiles and lipid class analysis to identify diet differences and quality in predators on several trophic levels. The spatial variability of fatty acid profiles in herring and sand lance will be related to their prey, and the nutritional consequences of dietary differences will be examined. Results of the fish studies will benefit APEX (Project /163) investigators by demonstrating the utility of fatty acid analysis for establishing dietary and energetic differences between aggregates of forage fish.

Chief Scientist's Recommendation

This proposal is an ambitious attempt to apply a new technique to determine feeding behavior of sea lions in the wild using fatty acid signatures. The first year of the project will entail defining spatial, temporal, and interspecific variability of these signatures in forage fish species. The results of this project and current work being conducted by the Trustee Council on harbor seals will provide important data on the feasibility of applying these techniques to quantitative evaluation of diet composition of marine mammals. Fund.

Trustee Council Action

Fund. This project will enhance the ability to quantitatively evaluate the diet composition of marine mammals, thus contributing to the Trustee Council's effort to determine the reason for the long-term decline in harbor seals.

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98348	Responses of River Otters to Oil Contamination: A Controlled Study of Biological Stress Markers	M. Ben-David, T. Bowyer, L. Duffy/UAF	ADFG	New 1st yr. 2 yr. project	**$245.4**	$176.6	$0.0	$0.0	$422.0

Project Abstract

This project will explore the effects of oil contamination on physiological and behavioral responses in river otters experimentally. Fifteen captive otters will be exposed to two levels of oil contamination under controlled conditions in captivity. Samples of blood, tissues, and feces will be collected for analysis of biomarkers and immunological examinations.

Chief Scientist's Recommendation

The controlled response to oil (biomarkers) is important work and should yield useful information. This work will be done at the Alaska SeaLife Center. Although the methods proposed for the behavioral aspects of the project are feasible, the reviewers doubt that this component of the project would yield significant insights into river otters in a wild situation. Fund only the biomarker portion of the project.

Trustee Council Action

Fund revised Detailed Project Description, which includes blood-chemistry component of project only. This project will use facilities at the Alaska SeaLife Center to validate the effects of oil contamination on river otters, thus contributing to our understanding of the injury to and recovery status of this injured species. [NOTE: Funding includes $44,100 for SeaLife Center bench fees.]

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98424	Restoration Reserve	All Trustee Council Agencies	ALL	Cont'd	**$12,000.0**	$12,000.0	$12,000.0	$24,000.0	$60,000.0

Project Abstract

In recognition of the fact that complete recovery from the oil spill may not occur for decades, the Trustee Council established the Restoration Reserve to hold funds to be used for restoration after the last payment is received from Exxon Corporation in September 2001. The $12 million recommended for deposit in FY 98 will be the fifth deposit into the reserve account and will bring the total in the account to $60 million. Annual deposits of $12 million in each of the next four years will provide a reserve of $108 million plus interest. These funds will be used for restoration activities, but allocation of the funds to specific activities has not yet been made.

Chief Scientist's Recommendation

Proposal not reviewed.

Trustee Council Action

Fund an additional $12 million deposit into the Restoration Reserve. The Reserve will help ensure that restoration can continue beyond the time of the final payment from Exxon Corporation. *NOTE: Funds for deposit in the Restoration Reserve are outside of the regular FY 98 work plan of research, monitoring, and general restoration projects.*

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 98 Approved	FY99 Estimate	FY00 Estimate	FY01-02 Estimate	FY98-02 Estimate
98427-CLO	Harlequin Duck Recovery Monitoring	D. Rosenberg/ADFG	ADFG	Cont'd 5th yr. 5 yr. project	**$78.3**	$0.0	$0.0	$0.0	$78.3

Project Abstract

This project will complete the harlequin duck recovery monitoring project (/427). A final report and manuscripts will be prepared, reporting on the findings of this multi-year project.

Chief Scientist's Recommendation

The Trustee Council has made a major commitment to monitoring of and research on harlequin ducks dating back to 1989. It is appropriate to complete current efforts and integrate the data with prior results. Fund.

Trustee Council Action

Fund. This project provides funds for preparation of a final report and manuscripts on this multi-year effort to assess the recovery status of harlequin ducks in Prince William Sound. The final report will incorporate traditional ecological knowledge (working with the TEK Specialist under Project /052B).