proposal application for:

PERMANENT ARCHIVING OF SPECIMENS COLLECTED IN NEARSHORE AND DEEP BENTHIC HABITATS

submitted to:

Exxon Valdez Oil Spill Trustee Council
645 G Street, Suite 401
Anchorage, AK 99501
(907) 278 8012

April 9, 2001

Proposed amount:

$ 104,465

Director:

Nora R. Foster
Aquatic Collection
University of Alaska Museum
907 Yukon Drive Fairbanks, Alaska 99775
telephone: (907) 474-7994
fax: (907) 474-5469

Permanent Archiving of Specimens Collected in Nearshore and Deep Benthic Habitats

Project Number:	02608
Restoration Category:	Monitoring
Proposer:	University of Alaska Museum
Cooperating Agencies:	
Alaska SeaLife Center:	no
Duration:	1st year, 1-year project
Cost FY 02	$ 104,465
Geographic Area	Prince William Sound
Injured Resource/Service:	Nearshore and deep benthic ecosystems

ABSTRACT

This project is intended to support acquisition and archiving of marine invertebrate specimens collected as part of EVOS assessment studies in Prince William Sound and environmental monitoring in Port Valdez between 1990 and 1995. Specimens represent a time series of samples from eelgrass habitats, kelp forest habitats, deep benthic communities. As a result of these efforts, there will be an improved set of baseline data for the marine biota of Prince William Sound.

INTRODUCTION

This project will support acquisition and archiving in the University of Alaska Museum (UAM) of collections made by the University of Alaska School of Fisheries and Ocean Sciences from the nearshore subtidal and benthic environments of Prince William Sound. The project will address the need to "analyze and synthesize existing data sets." including "collections of specimens and archived samples." described in the RFP. Specimens and samples archived at the UAM will be included in a system that assures their perpetual availability to the scientific community. The disposition of samples and documentation of scientific work based on them will be available on the Museum's website. At least one paper describing range extensions and biogeography will be prepared.

NEED FOR THE PROJECT

A. Statement of Problem

Collections made by the University of Alaska School of Fisheries and Ocean Sciences represent an extensive survey of the invertebrate fauna of Prince William Sound (Jewett et al. 1994; Feder and Blanchard, 1998). The physical condition of the specimens is excellent, and locality and taxonomic information are available with each, but this valuable collection and its associated data are not easily accessible, either to EVOS stakeholders or to scholars, and their long-term care is not assured. Unless collections are archived, they could be lost, neglected or ruined.

The scientific value of these specimens has been established. A subset representing nearshore subtidal habitats was re-examined as part of research on potential introductions of nonindigenous species into Prince William Sound, (Foster, chapter 9E in Hines et al. 2000). For that project, annotated species lists were developed to help taxonomic experts establish a baseline for the status of nonindigenous species in Prince William (Foster and Feder, Chapter 10 in Hines et al. 2000). One hundred two species records in the data sets are derived from the EVOS specimens. Thirteen species are potentially undescribed, and seven are the first records of the species' occurrence in Alaska. The deep benthic samples are the physical documentation of Feder and Blanchard's (1998) paper on the effects of the oil spill on deep benthos, and of temporal changes in the benthic fauna of Port Etches, Rocky and Zaikof bays (Hoberg and Feder in press).

B. Rationale/Link to Restoration

The proposed project is closely linked to both the research and the monitoring needs of restoration. Because these specimens are the physical documentation of resources present in Prince William Sound, they are essential to assessment and to monitoring studies (such as GEM) which depend on accurate identifications for their

scientific validity. As a result of these efforts, there will be an improved set of baseline data for the marine biota of Prince William Sound. These data will be both the physical specimens, available for teaching and research, and a remarkable set of geographical and time series data on distribution of marine invertebrates in biologically important subtidal habitats.

This new set of specimens will be a valuable addition to the systematic collections at the UAM which have been active and growing, particularly in the past decade. The UAM's biological collections will continue to expand in the near future through UAM's Arctic Archival Observatory. Through this project, all of the UAM's scientific collections will be brought into a single georeferenced database with extensive Worldwide Web interfaces for querying and mapping results. In addition to "label data" the database will include extensive information on how individual specimens were generated and how they have been used in subsequent investigations. In June of 2001, a new Curator of Fishes will join the UA Museum staff and assume some of the responsibility for marine collections. Additionally, the Museum's long-term plan includes hiring a curator for marine invertebrates in FY 2003. The UAM is expanding its capacity for housing regional natural history collections with a 30-million dollar expansion campaign intended to approximately double the size of the existing structure.

C. Location

This work will take place at the University of Alaska Fairbanks. The project should benefit scientists, the lay public, educators, and subsistence users working in the sound and Gulf of Alaska coast areas. Further, the Museum's marine invertebrate collections are accessible to the world-wide scientific community.

PROJECT DESIGN

A. Objectives

The project's objectives are to:

1. Keep specimens and associated locality data collected as part of oil spill studies from being lost.
2. Make information based on the specimens (that is, species composition and distribution of Prince William Sound and Gulf of Alaska marine invertebrate fauna) available to stakeholders.

B. Methods

The specimen archive addressed here consists of alcohol-preserved specimens stored in vials within taped plastic bags. They have been sorted by taxon and locality. The physical condition of the specimens is excellent, locality and taxonomic information are available with each. There are 30 "banker' boxes" which contain specimens collected

from nearshore subtidal sites, and 90 five-gallon buckets containing the deeper benthic specimens. There are about 800 specimens per box or bucket.

The nearshore subtidal specimens represent a time series for four localities in Prince William Sound, Drier Bay, Lower Herring Bay, Moose Lips Bay, and Mallard Bay. Collections were made in 1990, 1991, 1993, and 1995. Specimens were collected by divers at three depths, (to 20 meters) within eelgrass beds. Identification to genus and species level was accomplished at the University of Alaska School of Fisheries and Ocean Sciences, with additional taxonomic assistance from Nora Foster, UA Museum and Dr. Jerry Kudenov, University of Alaska Anchorage.

The deep benthic specimens were collected in 1990 and 1991 by Howard Feder and Arny Blanchard, at 20 and 100 meter depths in the vicinity of Knight Island, seven sampling stations represent the oil spill trajectory, seven were outside the oil spill area. Samples from Port Valdez represent the stations within Port Valdez occupied over several years as part of environmental monitoring of the pipeline terminal and port. Similarly, the specimens are identified to genus and species level.

Incorporating the collections into the UA Museum Collection involves three tasks: accessioning, in which permanent records are created for assemblages of specimens to which the museum has title; cataloging, in which individual specimens are assigned numbers and entered as records in an electronic catalog; and finally the specimens are placed within the museum shelves, usually in taxonomic order. As part of cataloging, the specimens will be screened for quality, so that fragmentary, damaged or otherwise inappropriate specimens will not be retained. Quality screening will reduce the actual number of specimens acquired by over 50%. The cataloging process leads easily into the basis for a paper on range extensions and biogeographic relationships of Prince William Sound invertebrate fauna, and a draft could be completed within the first year of funding.

This project's highest priority is the collections made in the nearshore subtidal habitats. If the Trustees can fund only a smaller-scale project, a smaller budget, (ca. $63,000) and shorter timeline can be considered by the proposers.

C. Cooperating Agencies, Contractors, and other Agency Assistance

The University of Alaska School of Fisheries and Ocean Sciences will donate the specimens and copies of associated locality data to the Museum. Max Hoberg, a Technician with the School of Fisheries will work on this project at the Museum.

SCHEDULE

A. Measurable Project Tasks for FY 02 (October 1, 2001- September 30, 2002)

November 30: Accession numbers assigned, accession log created

January 13-23:	Attend annual restoration workshop
March 30:	Specimen labels prepared
April 1:	Specimens unpacked, sorted by taxon
April 15:	Complete annual report to EVOS Trustees
August 1:	Specimens sorted, labeled and incorporated into Museum shelving
July 30:	All species locality data available to Gordon Jarrell to incorporate into Arctic Observatory database
August 30 31:	Complete manuscript on distribution of marine mollusks and polychaetes

B. Project Milestones and Endpoints

1. Keep specimens and associated locality data collected as part of oil spill studies from being lost. This objective will be met by November 30, when specimens will be physically in the Museum and accessioned.
2. Make information based on the specimens (that is, species composition and distribution of Prince William Sound and Gulf of Alaska marine biota) available to stakeholders. This objective will be addressed by August 30 when a manuscript on the distribution of marine mollusks and polychaetes will be completed; it will be met when the publication has been accepted by a peer reviewed journal.

C. Completion Date

All milestones, except acceptance the resulting paper by a peer-reviewed journal will be completed within the fiscal year (before September 30, 2002).

PUBLICATIONS AND REPORTS

An annual report to the Trustees Council will be submitted by April 15, as required by the Invitation to Submit Proposals. A paper on distribution and habitats of subtidal annelids and mollusca (title and co-authorship to be determined), could be submitted to the following journals: the Veliger, International Review of Hydrobiology, or other journals to be considered.

PRINCIPAL INVESTIGATOR

Nora R. Foster
Aquatic Collection
University of Alaska Museum
Fairbanks, Alaska 99775
(907) 474-7994 fax
(907) 474 5469
fyaqua@uaf.edu

QUALIFICATIONS OF PRINCIPAL INVESTIGATOR

Education

University of Alaska B.S., 1969 Biological Sciences
University of Alaska M.S., 1979 Biological Oceanography

Employment

1999-present Coordinator, Aquatic Collection, University of Alaska Museum (part-time affiliate)
1997-present Taxonomic consultant, self-employed
1997 Project Manager/Biologist, Prince William Sound Science Center, Cordova, Alaska
1981-1997 Coordinator, Aquatic Collection University of Alaska Museum

Selected Reports and Publications

Lee, R. S. and N. R. Foster. 1985. A Distributional List with Range Extensions of the Opisthobranch Gastropods of Alaska. The Veliger 27(4):440-448.

Juday, G. P. and N. R. Foster. 1990. A preliminary Look at the Effects of the Exxon Valdez Oil Spill on Green Island Research Natural Area. Agroborealis 22 (1):10-17.

Foster, N. R. 1991. Intertidal Bivalves: A Guide to the Common Marine Bivalves of Alaska. University of Alaska Press. 152 pp.

Feder, H. M., N. R. Foster, S. C. Jewett, T. J. Weingartner, and R. Baxter 1994. Distribution of Mollusks in the Northeastern Chukchi Sea. Arctic 47(2):145-163.

Scheel, D., N. R. Foster, and K. Hough 1998. Habitat and Biological Assessment: Shepard Point Road and Port Project. Report to the City of Cordova, Alaska. Prince William Sound Science Center, Cordova, Alaska. (www.pwssc.gen.ak.us/~shepard).

Goddard, J. H. R. , and Foster, N. R. [in preparation] Range extensions of saccoglossan and nudibranch molluscs (Gastropoda: Opisthobranchia) to Alaska. Sibmitted to the Veliger March 2001.

Experience and Interests:

Taxonomy, ecology, and biogeography of marine invertebrates of the north Pacific and Arctic; care of invertebrate collections, zooarchaeology of shellfish

OTHER KEY PERSONNEL

Max K. Hoberg
Responsibilities: Manage project on day-to-day basis; assign accession numbers to specimens, enter data; unpack boxes; sort specimens by taxon; screen for quality; arrange in systematic order; design, print labels; order supplies.

Gordon H. Jarrell
Responsibilities: Assure that data generated by this project is compatible with other Museum cataloging projects, especially the Arctic Observatory database; design computer printed labels and data interfaces for input and query of the database.

Howard M Feder
Responsibilities: Contribute ideas and co-author paper on distribution of marine benthos.

LITERATURE CITED

Feder, H. M. and Blanchard, A. 1998. The deep benthos of Prince William Sound, Alaska, 16 months after the Exxon Valdez oil spill. Mar. Pollut. Bull. 36: 118-130.

Hines, A. H., G. M. Ruiz, J. Chapman, G. I. Hansen, J. T. Carlton, N. Foster & H. M. Feder. 2000. Biological invasions of cold-water coastal ecosystems: ballast-mediated introductions in Port Valdez / Prince William Sound, Alaska. Final Report to the Prince William Sound Citizen's Advisory Council, U.S. Fish and Wildlife Service and National Sea Grant Program.

Hoberg, M. K. and Feder, H. M. In press. The macrobenthos of sites within Prince William Sound, Alaska, prior to the Exxon Valdez oil spill. International Review of Hydrobiology.

Jewett, S. C., Dean, T. A, Smith R. O., Stekoll, M., Haldorson, L. J., McDonald, L., and Laur D. R., 1995. The effects of the Exxon Valdez Oil Spill on Shallow Subtidal Communities in Prince William Sound, Alaska, 1989-93. Restoration Project 93047 (Subtidal Study 2A) Final Report to the Alaska Department of Fish and Game.

Personnel Costs:			Months	Monthly	Overtime	Proposed
	Name	Position Description	Budgeted	Costs		FY 02
	N. Foster	*Coordinator, Aquatic Collection	3	$3,375.00		$10,125.00
	M. Hoberg	Technician	6	$4,127.35		$24,764.10
		Subtotal				$34,889.10
Staff Benefits:						
	* Nora Foster 3 months at 520 hours x $19.47 justified because she does not receive salary support from the University of Alaska Museum benefit rate of 7.6% is used for temporary employees					
	Foster					$769.50
	Hoberg					$8,642.67
					Personnel Total	$44,301.27

Travel Costs:						
	Description	Ticket Price	Round Trips	Total Days	Total Per Diem	Proposed FY 02
	Foster- to Anchorage to attend restoration workshop	$200.00	1	2	$120.00	$440.00
					Travel Total	$440.00

FY 02

Project Number: 02608

Project Title: Permanent Archiving of Specimens Collected in Nearshore Habitats

Name: University of Alaska Museum

FORM 4B

Personnel & Travel

DETAIL

Prepared: 2-Jul-01