Mapping Marine Habitat –Kodiak Island

Project Number:	02619
Proposer:	Coastal and Ocean Resources Inc. 107-9865 West Saanich Road Sidney BC Canada V8L 5Y8
Cooperating Agencies:	National Park Service US Fish and Wildlife Service University of Alaska Fairbanks (School of Fisheries and Ocean Sciences) Kodiak Borough Fisheries and Industrial Technology Center (Kodiak Island)
Duration:	1st year, 1-year project
Cost FY 02:	$70,000
Geographic Area:	Northern Kodiak Island

ABSTRACT

The Project is to undertake aerial video mapping of northern coastal areas of Afognak and Kodiak Island at extreme low tides; these locations have been identified as among the highest risk for spill impacts. Video mapping will employ the shore zone mapping protocols of the Washington ShoreZone mapping project (see also: http://www2.wadnr.gov/nearshore/research/index.asp#project9; http://srmwww.gov.bc.ca/dss/rpts/BCBiophysicalShore-ZoneMapping.pdf) , incorporating all of their features and new ones appropriate for Alaska. Imagery will be collected with future application ShoreZone protocols for mapping biological, geological and anthropogenic attributes. Approximately 1,600 km of coastline will be mapped in a five-day survey. Final imagery will be set up on an ArcIMS website (probably at UAA).

The project is proposed as a component of the EVOS-GEM Nearshore program and will provide a spatial framework for more detailed mapping

INTRODUCTION

Aerial video mapping of the coastal zone for geological (substrate, geomorphology), biological (flora, fauna) and anthropogenic attributes has been demonstrated as an effective method of providing an important baseline dataset of intertidal and subaerial environmental data for a wide range of applications. Extensive mapping using aerial video has been undertaken throughout coastal British Columbia and Washington, initially related to oils spill concerns.

In addition to a complete set of georeferenced, annotated videotapes of the coastline, interpreted data are provided in GIS-compatible databases from which mapping of various types and scales can be undertaken. An innovation in the proposed program is the introduction of web-based mapping through ArcIMS (imagery only).

NEED FOR THE PROJECT

Large areas of the Alaskan coastline remain unmapped with a system of sufficient resolution to be used in coastal monitoring. The proposed program would be to begin to map some of these areas to provide the required inventory of intertidal and coastal substrates, morphology and biological resources.

LOCATION

The proposed five-day field program would collect georeferenced, annotated (biology, geology) aerial video data along approximately 1,600 km of the coastline of Afognak Island and northern Kodiak Islands. This are was identified as a higher priority, with respect to potential oil spills, through discussions with Bob Foy and Susan Saupe (CIRCAC).

COMMUNITY INVOLVEMENT

There has been involvement in discussions related to the project by the Kodiak Borough, the Fisheries and Technology Center (Kodiak Island) and National Parks Service

PROJECT DESIGN

A. Objectives

1. Undertake aerial video survey at extreme low tide of an area along Afognak and Kodiak Islands for shore-zone geology and biology (intertidal to shallow sub-tidal).

2. Based on the annotated, georeferenced videotapes produce ArcInfo map coverages or imagery coverage.

3. Set up video imagery on an ArcIMS website (UAA) in conjunction with shorelines already mapped in south-central Alaska.

B. Methods

Field Survey

Aerial video imagery is collected of the shore zone at tides less then "zero" elevation, resulting in the entire intertidal zone being imaged. A synchronous narration is provided by a geomorphologist and a marine ecologist on separate audio channels. High resolution still photos are shot by the biologist. DGPS track line data is recorded and also burned synchronously onto the video images. All video imagery is recorded in digital tape format, as well as a back-up tape in Hi8 format. Ground hovers are conducted as required to assist both the biologist and geomorphologist in interpreting features and biota. A flightline manual is produced as part of the field survey with maps of flight tracks and logs of tapes.

In a 5-day tide window, we anticipate covering approximately 1,600 km of shoreline.

Imagery will be web-posted as part of this project.

Analysis

Analysis will not be conducted as part of this project but analysis is anticipated pending additional funding. The shore zone will be mapped using a protocol of the Washington ShoreZone mapping project (see: http://www2.wadnr.gov/nearshore/research/index.asp#project9; http://srmwww.gov.bc.ca/dss/rpts/BCBiophysicalShore-ZoneMapping.pdf). Maps and databases are produced during this phase and would incorporate all of the Washington ShoreZone features in addition to new features appropriate for Alaska that were defined for the Alaskan pilot program conducted for CIRCAC in Cook Inlet and the outer Kenai Peninsula Coastline. Geomorpholgists and biologists review the imagery and using professional interpretations, classify the shore-zone features. The Washington ShoreZone protocol includes QAQC procedures.

SCHEDULE

The field survey will be undertaken in mid-June (June 11-15) in order to take advantage of low tide windows. Web posting and delivery of imagery products will be completed by 1 October 2002.

Interpretation of the products is anticipated at a later date but is not funded as part of this project.

PROPOSED PRINCIPAL INVESTIGATOR

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PRINCIPAL INVESTIGATOR

Dr. John Harper received his Ph.D. from Louisiana State University in 1978; his dissertation concerned coastal processes in Alaska. Since that time he has worked with the Geological Survey of Canada, Woodward-Clyde Consultants, Dobrocky Seatech Ltd. and Coastal and Ocean Resources Inc. of which he is president. Over the past 15 years he has managed more than 250 projects related to coastal and marine mapping and processes in areas such as Alaska, British Columbia, Washington State, the South Pacific, Atlantic Canada and the Caribbean. He is a registered Professional Geoscientist in the Province of British Columbia. He is an adjunct professor in the School of Earth and Ocean Sciences (University of Victoria).

Dr. Harper will be responsible for overall project management as well as carrying out the field aerial video surveying.

Coastal Zone Management - Dr. Harper has been closely involved with coastal management planning in several jurisdictions. He is also involved with the development of marine region classification of Canada for use in environmental ecosystem monitoring. Dr. Harper has been closely involved with the development of coastal habitat classification and mapping systems over the past three years, using state-of-the-art remote sensing (aerial video) and GIS systems.

Oil Spill Research, Planning and Response – Dr. Harper has been involved in oil spill research studies since 1980, including several years of field studies associated with the Baffin Island Oil Spill experiment, sensitivity evaluations for the coasts of northern California, British Columbia, Kodiak Island, the Chukchi and Beaufort Sea coasts of Alaska, the Beaufort Sea coast of Canada, Labrador and Newfoundland.

Dr. Harper has been extensively involved in the EXXON Valdez oil spill cleanup operation in Prince William Sound (1989-1992) with participation in quality assurance for preparation of oiling maps, coordination of the Prince William Sound Fate and Persistence Studies, bioremediation monitoring surveys.

Coastal Research/Marine Geology – He has been involved in coastal and nearshore studies since 1971 and with research projects on all major coastlines of North America and throughout the South Pacific. Research topics have included: beach monitoring, coastal mapping, sediment transport predictions and measurements, coastal erosion and scour monitoring, and coastal storm surge surveys.

Environmental Impact - Since 1973, Dr. Harper has been closely involved with large, multidisciplinary impact assessments including: the first superport to be developed in the US (Harper, 1974), major construction projects at Prudhoe Bay (causeway construction and oil field waterflood construction), siting and impact evaluation of a major marine oil terminal in Santa Barbara, and the Beaufort Sea Environmental Monitoring Project (BEMP). Also he has been extensively involved with oil spill contingency planning in the marine environment with input to plans for offshore drilling in western Canada (Chevron, PetroCanada), the Beaufort Sea (Dome Petroleum) and Prudhoe Bay, Alaska (ARCO).

Marine Parks – He has conducted numerous marine park studies including field studies of coastal landforms to delineation of new marine park sites in the Canadian arctic. In 1983, Dr. Harper conducted a strategic planning study for Parks Canada to delineate the marine regions of

Canada; major segments of this study, including the delineated regions, have recently been incorporated into Parks Canada policy. Two field seasons of field work have been conducted within Pacific Rim National Park. He is currently directing a major biophysical mapping project of the newest marine park in Canada, South Moresby/Gwaii Haanas National Park Reserve.

OTHER KEY PERSONNEL

Ms. Mary Morris

Mary Morris holds a M.Sc. degree from the University of British Columbia (nearshore and coastal marine biota) and is a Registered Professional Biologist in the Province of British Columbia. She will be responsible for biological mapping as part of the proposed project.

She has worked as an aquatic biologist for: BC Fisheries and Wildlife Branch; Fisheries and Oceans Canada; Ducks Unlimited; LGL Limited, MacLaren Plansearch, Land Use Coordination Office (BC), Habitat Conservation Fund, Entech, Canadian Parks Service, BC Ministry of Forests, BC Ministry of Environment, Habitat Conservation Fund, Coastal and Ocean Resources Inc. as a sub-contractor.

Ms. Morris is presently employed as a biologist with Archipelago Marine Research Ltd., Victoria, BC where she is responsible for coastal inventory projects and biological shore-zone mapping throughout the coast of BC, including the Strait of Georgia, west coast of Vancouver Island, the Bella Bella area, the north coast and the Queen Charlottes. Numerous aerial video surveys have been completed, with associated bio-mapping projects for those areas. Other recent projects include shore-zone rating for the Victoria and Esquimalt Harbours, development of provincial standards for coastal monitoring, and completion of the BC standard for Estuarine Mapping.

Mr. Neil Borecky

Mr. Neil Borecky has a B.Sc. from McMaster University in Environmental Studies and Geography with specialization in GIS and is completing an M.Sc. from University of Victoria in June in Biology with a specialization in large-scale spatial hazard rating. He will be joining Coastal and Ocean Resources Inc. in June 2002.

Mr. Borecky worked with Coastal and Ocean Resources Inc. on a number of previous contracts with Coastal and Ocean Resources Inc., including: development of interactive HTML seabed mapping products (Race Rocks, Gabriola Passage and Victoria Harbour biophysical surveys), Cook Inlet aerial video imaging surveys and seabed mapping surveys in the Strait of Georgia.

He will carry out coastal mapping and be responsible for navigation , as part of the proposed project, and will oversee and GIS aspects of the project.

FY 03 *EXXON VALDEZ* TRUSTEE COUNCIL PROJECT BUDGET

October 1, 2002 - September 30, 2003

Budget Category:	Authorized FY 02	Proposed FY 03	LONG RANGE FUNDING REQUIREMENTS					
Personnel		$1.6						
ADFG share		$0.0						
Contractual		$55.5						
Commodities		$0.1						
Equipment		$0.0						
Subtotal	$0.0	$57.2	Estimated					
Indirect		$8.2	FY 04					
Project Total	$0.0	$65.4						
Full-time Equivalents (FTE)		0.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

NOTE: ADF&G GA of $4.6 needs to be added to this project, for a total of $70.0.

FY03

Prepared: May 15, 2002

Project Number: 02619
Project Title: Mapping Marine Habitat - Kodiak Island
Name: University of Alaska Fairbanks

FY 03 *EXXON VALDEZ* TRUSTEE COUNCIL PROJECT BUDGET

October 1, 2002 - September 30, 2003

Personnel Costs:			Months	Monthly		
	Name	Position Description	Budgeted	Costs	Overtime	
	Foy, Robert	PI, Assistant Professor	0.3	5.2		
		Subtotal	0.3	5.2	0.0	
					Personnel Total	

Travel Costs		Ticket	Round	Total	Daily	
	Description	Price	Trips	Days	Per Diem	
					Travel Total	

FY03

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FY 03 *EXXON VALDEZ* TRUSTEE COUNCIL PROJECT BUDGET
October 1, 2002 - September 30, 2003

Contractual Costs:	
Description	
Coastal and Ocean Resources (Subcontract) Communications Shipping	
Contractual Total	
Commodities Costs:	
Description	
Project supplies	
Commodities Total	

FY03

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FY 03 *EXXON VALDEZ* TRUSTEE COUNCIL PROJECT BUDGET

October 1, 2002 - September 30, 2003

New Equipment Purchases:	Number of Units	Unit Price	
Description			
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	

Existing Equipment Usage:	Number of Units	
Description		

FY03

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