

**Research Projects Catalog -- 2006  
For the Prince William Sound/Exxon Valdez Oil Spill Area**

Compiled by  
Linda Swiss  
Prince William Sound Regional Citizens' Advisory Council  
3709 Spenard Road, Suite #100  
Anchorage, AK 99503  
(907) 277-7222  
[www.pwsrcac.org](http://www.pwsrcac.org)



## Regional Catalog of Research Projects

### Overview

In 2004, PWSRCAC developed the first web-based edition of a project catalog of research sites in the Prince William Sound/*Exxon Valdez* Oil Spill region. This catalog was developed based on recommendations from the 2004 Workshop on Physical Oceanographic Data Sharing and Coordinated Research in the Prince William Sound/*Exxon Valdez* Oil Spill region. The catalog has been updated for 2005 and 2006 in an effort to provide project information for the region. Similar annual updates are anticipated in the future in cooperation with the North Pacific Research Board or the Alaska Ocean Observing System. Data continues to focus on physical and oceanographic data, but biological research is not excluded when provided to the catalog.

The goals of the catalog are to encourage coordination of research projects and sharing of project information and resources. All researchers, research funding organizations, and end users benefit from increased coordination of research and sharing of project information and resources. This catalog provides an easily accessible, central project location for research in the area using web-linked maps. Project sites are plotted on interactive maps in three regions – Prince William Sound, Kenai Peninsula, and the Kodiak archipelago.

All research and data gathering projects in the region are welcome to be submitted for the catalog, whether from individual researchers or organizations. The process is designed to be as inclusive as possible. Supporting organizations at this time include the Alaska Ocean Observing System, Cook Inlet Regional Citizens' Advisory Council, North Pacific Research Board, Prince William Sound Science Center, Prince William Sound Regional Citizens' Advisory Council, and the Oil Spill Recovery Institute.

Since PWSRCAC first began this project in 2004, increasing numbers of research organizations and institutions have posted their organization's research on the web in searchable databases. That is an important step in making research more easily available. The Regional Catalog of Research Projects improves on this process in two key ways: (1) by presenting regional research from multiple organizations, and (2) by providing a graphic, map-based presentation of project locations and information for the region.

In an effort to further the linking of data from the region, web links to other websites that provide regional research data have been added to the catalog (see Links below).

### Project Data Format

PWSRCAC gathers project data from funding organizations and researchers in a simple metadata format for the catalog. The Federal Geographic Data Committee (FGDC) has established metadata as the official language for national data development and exchange. (For a description of metadata see <http://www.fgdc.gov/metadata>.) For the

catalog, researchers provide the following information about their projects:

- title
- abstract
- purpose
- project contact/principal investigator
- project dates
- status
- geographic location
- theme keywords

To maintain consistency, project coordinates are provided in Decimal Degrees format (thousandths or ten thousandths of a degree). This avoids potential conversion problems and provides for more specific project locations. Study areas are described with decimally-coded latitude and longitude readings (also called Decimal Degrees or D.d) of the sampling locations or the bounding coordinates of the sampling region (i.e., 60.8233, - 147.1029, 60.479, - 147.7309 for the north, east, south, and west bounding coordinates). The formula for converting from degree minute seconds to decimal degrees is:  $\text{degrees} + (\text{minute}/60) + (\text{seconds}/3600)$ . So,  $121 \text{ degrees } 8' 6'' = 121 + (8/60) + 6/3600 = 121.135$ . Only the metadata for the projects is available in the catalog. Those interested in the raw data or processed data from a project will need to retrieve it from the original project website or organization. The catalog serves as the tool to identify and locate the project of interest and as the tool that provides the contact information for the project data.

### **Accessing Project Information on the Web**

On PWSRCAC's website, project sites are plotted on interactive maps to graphically link location and project information for research that is currently being conducted by various organizations and independent researchers in the Prince William Sound/*Exxon Valdez* Oil Spill region.

Selecting one of the regional maps will display a large interactive version of the map. On the interactive map, each research project site number is an active link to a document with specific information about that particular project. Included in the project-specific information is a brief summary of the project's purpose, the principal investigator, contact information, and, when available, precise coordinate information. On each map, the individual project site information is provided in PDF format. The maps are printer-friendly.

### **Summary**

This web-based project catalog of research sites in the Prince William Sound/*Exxon Valdez* Oil Spill region is welcome to be used by researchers or the general public. In keeping with the inclusive nature of this catalog, information regarding it can be forwarded to others who may have been omitted from the original catalog distribution list for inclusion in future updates. All researchers and research funding organizations as

well as end users can benefit from increased coordination of research and sharing of project information and resources.

### **Links**

The following are additional research and information links for the Prince William Sound/*Exxon Valdez* Oil Spill region (essentially the North Gulf of Alaska region):

National Snow and Data Center: <http://nsidc.org/>

Alaska Marine Information System/North Pacific Research Board:  
<http://amis.nprb.org/article.php?id=5> and <http://amis.nprb.org/gmap/index.php>

Cordova Science and Research Project List from Prince William Sound Fisheries Research Applications and Planning: <http://www.pwsfrap.org/crpws/index.html>

Alaska Ocean Observing System: <http://www.aos.org/>

Cook Inlet RCAC: <http://www.circac.org/>

For questions:

Linda Swiss – [swiss@pwsrcac.org](mailto:swiss@pwsrcac.org) 907-277-7222

Joe Banta – [banta@pwsrcac.org](mailto:banta@pwsrcac.org)

Research Projects Catalog -- 2006

Site Id: 4

Title: **PWSRCAC LONG-TERM ENVIRONMENTAL MONITORING PROGRAM**

Location: Prince William Sound, Kodiak, Kenai Peninsula

Purpose: The program has sampled twice a year since 1994 for evidence of hydrocarbons in mussel tissue and sediment samples. In recent years, the program was cut back to just mussel tissue at all sites with subtidal sediments only in Port Valdez (site of Alyeska Marine Terminal's tanker operations). For more complete sampling in Port Valdez, mussels are also collected in October. All samples are analyzed for PAH and AHC; sediments are also analyzed for TOC and sediment grain size.

Abstract: PWSRCAC Long Term (oil) Monitoring Program data from mussel tissues, intertidal and subtidal sediments from fixed monitoring sites in Prince William Sound, Outer Kenai Coast and Kodiak, Alaska.

Start: 06/01/1994

Finish:

Contacts	Name	Organization	Email Address
	Ka'aihue, Lisa	Prince William Sound RCAC	kaaihue@pwsrcac.org

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West
					61.1240	-145.9975	58.5012	-152.6276

Site Id: 6

Title: **TROPIC DYNAMICS OF INTERTIDAL SOFT-SEDIMENT COMMUNITIES: INTERACTION BETWEEN TOP-DOWN AND BOTTOM-UP PROCESSES**

Location: Prince William Sound, Copper River Delta, Orca Inlet

Purpose:

Abstract: Vast expanses of intertidal sand/mudflats serve as a critical link in the food web of nearshore communities along the southcentral Alaska coastline. The rich abundance of benthic invertebrates residing within the sediments of intertidal flats and the large network of subtidal channels that bisect these flats provide a significant prey resource for numerous species of fish, crabs, birds, and marine mammals. One of the largest expanses of intertidal mud/sand flats occurs in the Copper River Delta and southeastern Prince William Sound (Orca Inlet). Here we propose a large-scale field study that examines the physical/chemical and biological factors that limit and/or regulate invertebrate community dynamics. The largely "bottom-up" approach we propose (physical/chemical parameters – phytoplankton/epibenthic production – invertebrate production) is balanced by the largely "top-down" focus of a companion project funded by the Prince William Sound Oil Spill Recovery Institute that examines predator dynamics and assesses their role in invertebrate community dynamics. At the completion of this project (FY 06), the results of both projects will be synthesized and a subset of key physical/chemical parameters will be identified for long-term monitoring.

Start:

Finish:

Contacts	Name	Organization	Email Address
	Bishop, MaryAnne	Prince William Sound Science Center	mbishop@pwssc.gen.ak.us
	Powers, Sean	University of Southern Alabama	spowers@disl.org

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West
		60.3500	-145.4800					
		60.3800	-145.8300					
		60.4100	-145.6300					
		60.5000	-145.8600					

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Site Id: 11

Title: **ASSESSMENT OF RECREATIONAL HALIBUT AND GROUND FISH HARVEST IN SOUTHCENTRAL ALASKA**

Location: Kodiak Harbor, Homer Harbor, Anchor Point, Deep Creek, Seward Harbor, Whittier Harbor, Valdez Harbor

Purpose: This project provides long-term monitoring (since 1991) of age, size, and sex composition of Pacific halibut, rockfishes, lingcod, and sharks harvested in the sport fishery throughout Southcentral Alaska. Data are collected from harvested fish and anglers and charter boat operators are interviewed to gather fishery performance data at the major access points for the fishery. Data are used in management actions by the Alaska Board of Fisheries, International Pacific Halibut Commission, North Pacific Fishery Management Council, and National Marine Fisheries Service.

Abstract: Estimate key parameters describing the sport fishery for halibut, rockfishes, lingcod, and sharks throughout Southcentral Alaska.

Start: 05/16/2006

Finish: 09/10/2006

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Meyer, Scott C.	ADF&G	scott_meyer@fishgame.state.ak.us

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
		57.7830	-152.4170					
		59.6000	-151.4170					
		59.7670	-152.8670					
		60.0330	-149.4330					
		60.1000	-149.4330					
		60.7830	-148.6830					
		61.1330	-146.3500					

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Site Id: 14

Title: **A CONTINUOUS PLANKTON RECORDER SURVEY OF THE NORTH PACIFIC AND SOUTHERN BERING SEA**

Location:

Purpose: With this new funding, we will continue the sampling programme for a further year, sampling the transect in June and September/October 2006 and April 2007. Although the CPR will be deployed in June 06, which is during the final weeks of the existing funding, the equipment will not return from sampling until July (when the ship returns to port). All the sample processing and analysis would therefore occur in the proposed new period of funding. As is done currently, initial processing of CPR samples will be done at IOS, Sydney, BC with the remaining samples sent to SAHFOS, UK for processing and quality control. Some plankton data are therefore available within a few weeks of the ship's return to the west coast (and are posted on the project website) while full quality controlled data are available about 9 months later.

We will deploy the CTD with each CPR deployment and, and as a continued collaboration with project 611, bird and mammal observations will also be collected on each transect. We will thus obtain another year of physical, lower and upper trophic level data to compare with the plankton data. These additional interdisciplinary data will be invaluable in investigating the links between ecosystem constituents and their environment. Recent years have seen the Gulf of Alaska experiencing warmer than normal surface conditions. Should 2006/7 see a reverse to cooler conditions it will be very useful to have additional sampling to supplement the data from 2000/01 when conditions were also cooler."

Abstract: Will sample plankton using ships of opportunity crossing the North Pacific and characterize associated environmental conditions. Will enhance interpretation of plankton, marine bird and mammal data and improve understanding of marine ecosystem.

Start: 07/01/2003

Finish: 07/01/2007

Contacts	Name	Organization	Email Address
	Batten, Sonia	Sir Alister Hardy Foundation for Ocean	soba@sahfos.ac.uk
	Mackas, David L.	Institute of Ocean Sciences, Fisheries a	mackasd@pac.dfo-mpo.gc.ca
	Welch, David	Kintama Research	david.welch@kintamaresearch.org

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West
		54.9318	-149.2375					

Research Projects Catalog -- 2006

Site Id: 15

Title: **RESEARCH FOR NUTRIENT-BASED RESOURCE MANAGEMENT IN WATERSHEDS AND ESTUARIES**

Location: Hartney Creek, Alaganik Slough, Cordova

Purpose:

Abstract: Proposal offers a strategy for developing a monitoring program for watersheds that will form the basis for a comprehensive understanding of water quality and biological production in relation to natural and human induced variability. Sampling strategy effectively leverages existing funding from Oil Spill Recovery Institute and North Pacific Research Board to minimize costs. Data derived on isotopic signatures of C, N, and S will be invaluable in designing monitoring throughout the GEM area. Important new information will be produced on effects of watersheds on productivities of nearshore environments, the feasibility of using sulfur as indicator of marine related effects, and the relation of MDN to freshwater residence time in juvenile salmon.

Start:

Finish:

Contacts	Name	Organization	Email Address
	Kline, Thomas	Prince William Sound Science Center	tkline@pwssc.gen.ak.us
	Knudsen, Eric	USGS	ericknudsen@gci.net
	Woody, Carol	USGS	Carol_Woody@usgs.gov

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West
					60.4978	-145.0556	60.2689	-145.9297

Site Id: 32

Title: **GULF OF ALASKA LTOP**

Location:

Purpose:

Abstract: The 2 cruises in 2006 (May and August/September) represents a continuation of the 1998-2004 NE Pacific GLOBEC program, and a funded extension of NPRB project 520, whose purpose is to develop a mechanistic understanding of the response of this marine ecosystem to climate variability. Toward this end, the Seward Line cruises on the Gulf of Alaska shelf determine the physical/chemical structure, primary production and the distribution and abundance of zooplankton, along with their seasonal and inter-annual variations. Data will be compared with historical data sets.

The objectives of the cruises are to:

1. Determine thermohaline and nutrient structure of the Gulf of Alaska shelf, emphasizing Seward Line, Cape Fairfield Line, and Prince William Sound (PWS) stations.
2. Determine nutrients concentrations, primary production and phytoplankton biomass distribution.
3. Determine the distribution and abundance of zooplankton.
4. Determine copepod rates of growth and egg production on selected species.

Start: 04/01/2006

Finish: 04/30/2007

Contacts	Name	Organization	Email Address
	Hopcroft, Russell	University of Alaska Fairbanks	hopcroft@ims.uaf.edu

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West
		59.4215	-149.2579					



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Site Id: 47

Title: **MANAGEMENT APPLICATIONS: IMPROVING PRESEASON FORECASTS OF KENAI RIVER SOCKEYE SALMON RUNS THROUGH SMOLT MONITORING - TECHNOLOGY DEVELOPMENT**

Location: Kenai Peninsula, Skilak Lake

Purpose:

Abstract: This project will develop and implement a smolt-monitoring program for Kenai River sockeye salmon as a tool for managing one of the largest and most accessible salmon stocks in Upper Cook Inlet. Sockeye salmon smolt population estimates will be used to develop preseason forecasts of run size for this stock. The Alaska Board of Fisheries has specified that the Kenai River sockeye salmon run will be managed based upon preseason and in season forecasts of run strength, and in river escapement goals for this system vary as a function of these forecasts. This management structure causes relative uses of the resource by recreational, personal use, and commercial fishers to be strongly dependent on the accuracy of forecasts. The project will use two independent methods to estimate the population size of sockeye salmon smolt emigrating from the Kenai River watershed. GEM funding is requested to support estimation of smolt population size using mark recapture methods. ADF&G funding will support estimation of smolt population size using side-looking sonar. During the first two years of the project, we will evaluate the accuracy and precision of our estimates and identify the methodology that provides the best estimate at the lowest cost. In the third year, we will implement this new method to estimate smolt population size. The project will also estimate the proportion of marine derived elements in smolts, beginning a database needed to evaluate the effect of marine nutrient contributions on salmon production in this and other systems.

Start:

Finish:

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Edmundson, J.	ADF&G	jim_edmundson@fishgame.state.ak.us
	Willette, Mark	ADF&G	mark_willette@fishgame.state.ak.us

  

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>

Research Projects Catalog -- 2006

Site Id: 64

Title: **LINGERING OIL: PATHWAYS OF EXPOSURE AND POPULATION STATUS**

Location: Herring Bay, Lower Passage: area from Passage Point to the southern tip of Ingot island, Bay of Isles

Purpose:

Abstract: Lingering oil from the Exxon Valdez oil spill remains throughout Western Prince William Sound and appears to have chronic effects on sea otter and sea duck populations in these areas. Studies conducted in 2001-02 have documented the extent of oiling throughout the sound, and as of this writing, we have determined that oil is bioavailable to predators. Bioavailability defines potential for exposure, but is not equal to exposure or significance. In 2003 and 2004, we are determining the significance of lingering oil by quantifying the probability of oil encounters in areas where sea otters and sea ducks have not recovered. Prey and passive samplers collected in 2003 will be analyzed in 2004, and will be supplemented with additional samples in 2004 to meet the needs of the on-going tagging studies of otters and ducks by USGS. With the mechanism of exposure from lower intertidal oil deposits determined, the research theme will move toward the goal of determining the extent and probability of oil exposure in three restricted areas: Herring Bay, Lower Passage, and Bay of Isles. Information gained in this project could aid in the decision process regarding future mitigation, litigation, or clean-up actions.

Start:

Finish:

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Rice, Jeep	NOAA	jeep.rice@noaa.gov

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>

Site Id: 71

Title: **ACQUISITION AND APPLICATION OF CPR DATA IN THE GULF OF ALASKA**

Location: Gulf of Alaska, Prince William Sound

Purpose:

Abstract: Plankton are a critical link in the marine food chain that respond rapidly to climate change and form the link between the atmosphere and upper trophic levels. Many important marine resources in the GoA are strongly influenced by changes in ocean climate. Recent CPR data have shown significant changes occurring in all plankton communities in the GoA, associated with the recent climate shift. We will continue the acquisition of CPR data in the Gulf of Alaska on the current transect that crosses the ACC and add an additional transect in FY05 that will sample the ACC further 'downstream' and provide baseline, seasonal plankton data for the lower Cook Inlet and it's transition to the Gulf of Alaska. We also propose analysis of data already collected to investigate the links between plankton and juvenile salmon migrations, and the larval distribution of commercially important decapods sampled by the CPR.

Start: 03/01/2004

Finish: 09/30/2006

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Batten, Sonia		soba@sahfos.ac.uk
	Welch, David		david.welch@kintamaresearch.org

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
					60.9943	151.0120	48.2542	123.5380

Research Projects Catalog -- 2006

Site Id: 74

Title: **BIOPHYSICAL OBSERVATIONS ABOARD ALASKA MARINE HIGHWAY SYSTEM FERRIES**

Location: Alaskan Coastal Current, Prince William Sound

Purpose: To measure oceanographic biophysical parameters along the route of the Alaska Marine Highway System ferry Tustumena in the Gulf of Alaska. The observed variables are the near-surface temperature, salinity, nitrate concentration, chlorophyll fluorescence, dissolved organic matter fluorescence and optical beam transmittance. Temperature and salinity characterize the physical state of the system. Dissolved nitrate is an essential nutrient for phytoplankton growth. Chlorophyll fluorescence is a measure of chlorophyll concentration - the essential pigment for plant production. Dissolved organic matter fluorescence is an indicator of freshwater runoff from rivers and glaciers. Optical beam transmittance is an index of particulate matter concentration.

Abstract: The Alaska Coastal Current flows counterclockwise along the edge of the Gulf of Alaska carrying the river runoff, nutrients and plankton that fuel the productive coastal-marine ecosystem. As seen in satellite images, a strong "chlorophyll front" develops in summer between the nutrient-poor region to seaward and a productive region around Kodiak Island that extends northward to the Kenai Peninsula. Conventional wisdom predicts that the Gulf ecosystem should not be productive because the average wind pattern favors downwelling oceanic conditions that fail to restore nutrients to the sunlit upper layers. The chlorophyll front presents a natural study area over which low- and high-productivity regions lie in close proximity. The Alaska Marine Highway System ferry M/V Tustamena crosses this front over 280 times each year. We propose to instrument the Tustamena to measure physical and biological oceanographic parameters across the Alaska Coastal Current and in Prince William Sound. This will begin a GEM oceanographic monitoring program in the Gulf that will lead to understanding nutrient replenishment and document ecosystem trends for years to come.

Start: 10/01/2003

Finish: 09/30/2006

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Cokelet, Edward D.	NOAA/PMEL	Edward.D.Cokelet@noaa.gov
	Mordy, Calvin W.	Joint Institute for the Study of the Atmos	mordy@pmel.noaa.gov
	Pegau, Scott	Kachemak Bay Research Reserve	scott_pegau@fishgame.state.ak.us

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
					61.0000	146.0000	54.0000	167.0000





Research Projects Catalog -- 2006

Site Id: 79

Title: **IMPACTS OF SEAFOOD WASTE DISCHARGE IN ORCA INLET, PRINCE WILLIAM SOUND**

Location: Orca Inlet

Purpose:

Abstract: In 2005, we dumped about 125,000 lbs of fish heads and carcasses at one location and examined the environmental response. We found that the heads and carcasses dispersed rapidly, were clearly utilized by both fish and other benthic organisms, and had no negative consequences. However, the 125,000 lbs was only half our original goal. We underestimated the difficulty of the task, including limited boat availability for transport. At the same time, we learned some valuable lessons about the logistics of the operation.

Our goal in 2006 is identical. However, we have made firm agreements with all four major processors and with an experienced vessel operator for transport. We have contracted with Ken Romhildt to oversee the operation and to interface with the seafood processors and the vessel operator.

In addition to the camera surveys, visual surveys and halibut sampling that we did last year, we will conduct a tagging program to track the rate and direction of fish head dispersal. We have purchased 16 tags from Vemco and will use a tracking hydrophone system in house at PWSSC.

The initial (baseline) camera survey will take place the first half of May. The salmon fishery will begin May 15. We anticipate dumping 30,000-40,000 lbs per week for 7 weeks, beginning the second week of the fishery. The camera and visual surveys will be conducted at 10 day intervals for the first two months, then monthly for three months. Surveys will cover both experimental and control locations.

Start: 01/01/2006

Finish: 12/31/2006

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Bishop, Mary Anne	Prince William Sound Science Center	mbishop@pwssc.gen.ak.us
	Thorne, Richard	Prince William Sound Science Center	thorne@pwssc.gen.ak.us

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>

Research Projects Catalog -- 2006

Site Id: 80

Title: **BIOLOGICAL MONITORING OF SPRING ZOOPLANKTON AND NEKTON IN PRINCE WILLIAM SOUND**

Location: Prince William Sound

Purpose:

Abstract: The overall goal of this project is to develop and apply a cost effective approach to the estimation of the pink salmon food supply and predator abundance. The specific objectives are to measure the abundance of zooplankton as food supply for juvenile pink salmon and the abundance of predators. Pink salmon were a major impacted species by the Exxon Valdez Oil Spill. Accurate forecasting of adult returns has been lacking and is critical to the economics of the Cordova community. The project was initiated in 2000. Field work consists of three spring-period cruises (late April to early June) of 3-day length that cover the main basin and Knight Island/Perry Island Passages. Measurements include multi-frequency acoustic backscattering and plankton net tows (typically 12 per cruise) to measure abundance of both plankton and fish in Prince William Sound. The results have shown strong correlations between pink salmon survival and the abundance of large zooplankton, particularly large-bodied copepods, and are increasingly providing predictive capability.

Start: 01/01/2006

Finish: 12/31/2006

Contacts	Name	Organization	Email Address
	Thorne, Richard	Prince William Sound Science Center	thorne@pwssc.gen.ak.us

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West

Site Id: 81

Title: **THE ROLE OF PACIFIC HERRING AS CRITICAL WINTER FORAGE FOR STELLER SEA LIONS**

Location: Prince William Sound and the Kodiak Archipelago

Purpose:

Abstract: The objectives of this study are to document the herring prey field available to Steller sea lions in Prince William Sound (PWS) and around the Kodiak Archipelago and to investigate the factors that determine Steller sea lion foraging intensity on herring. Techniques include acoustic surveys, various direct capture techniques, infrared scanning, underwater videos and visual surveys from boats and airplanes. Several surveys are conducted annually in both Prince William Sound and Kodiak. Data include biomass and distribution of herring and numbers of associated whales, Steller sea lions and birds.

Start: 01/01/2006

Finish: 10/31/2008

Contacts	Name	Organization	Email Address
	Thorne, Richard	Prince William Sound Science Center	thorne@pwssc.gen.ak.us

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West

Research Projects Catalog -- 2006

Site Id: 82

Title: **USING OTOLITH CHEMICAL ANALYSIS TO DETERMINE LARVAL DRIFT OF PRINCE WILLIAM SOUND PACIFIC HERRING (CLUPEA PALLASII)**

Location: Prince William Sound

Purpose:

Abstract: Chemical analyses of herring otoliths can be used to consider the effect the Exxon Valdez oil spill continues to have on the recovery of the herring population in PWS. Studying the regional elemental signatures within the core of the herring otolith enables researchers to identify the spawning areas (Objective 1), and the edge of the otolith will identify nursery area (Objective 2). The 3D-PWS model describing larval drift and larval retention in PWS (Norcross et al., 2001a) has never been field-tested. Comparing the two methods for describing larval drift could validate this model as a tool for understanding the impediments to herring recovery in PWS (Objective 3). With these otolith chemical data combined with the 3D-PWS model, fishery managers will have the tools necessary to better predict recruitment and estimate herring spawning habitat recovery.

Start:

Finish:

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Bickford, Nate		nate@sfos.uaf.edu

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>

Site Id: 83

Title: **INFORMATION SYNTHESIS AND RECOVERY RECOMMENDATIONS FOR RESOURCES AND SERVICES INJURED BY EVOS**

Location: Gulf of Alaska, Prince William Sound

Purpose:

Abstract: The periodic reassessment of the resources and services injured by the Exxon Valdez oil spill (EVOS) is essential to understanding effects of the original spill and lingering oil, documenting recovery of resources, and identifying new areas where additional restoration action or research may be needed. The proposed work is designed to synthesize restoration work performed to date; develop a scientifically sound process for objectively assessing the status of resources and services classified as injured, recovering, or unknown; distinguish (where possible) the contribution of other stressors to the condition of the resource; identify appropriate restoration actions for resources that are not recovering; and definitively identify resources that are unlikely to be suffering any residual injury from the 1989 spill. This proposal addresses all resources and services currently classified as Not Recovered, Recovering, or Recovery Unknown.

Start:

Finish:

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Jacobs, Lucinda		ljacobs@integral-corp.com

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>



Research Projects Catalog -- 2006

Site Id: 85

Title: **SEASONAL DISTRIBUTION, HABITAT USE, AND ENERGY DENSITY OF FORAGE FISH IN THE NEARSHORE ECOSYSTEM OF PRINCE WILLIAM SOUND**

Location:

Purpose: This study will supplement an on-going NMFS Essential Fish Habitat project and establish ground stations for ShoreZone aerial mapping in western PWS in 2006. Funding from this project will support a seasonal forage fish component and facilitate the collection of valuable information on habitat use, fish growth, and energy content needed to begin ecosystem modeling studies in the future.

Abstract: This project will assess the seasonal distribution, habitat use, relative abundance, diet, and energy density of forage fish in the nearshore ecosystem of western Prince William Sound (PWS). This information is lacking because forage fish species are usually not targeted for assessment, and nearshore areas are seldom surveyed as fish habitat. Because nearshore habitats are vulnerable to human disturbance, a better understanding of how the nearshore environment supports ecologically important forage fish species is needed to help managers conserve forage fish populations and protect essential habitats. We know that several forage fish species use the nearshore environment, but we do not fully understand their dependence and fidelity to the different habitats types within the nearshore, or which habitats are more important for different life stages. In addition, we do not know the effect of season on the utilization of nearshore habitats or energetics of forage fish. This study will help address information gaps by assessing 1) seasonal use of nearshore habitats by forage fish, 2) quantity and quality of habitat, 3) relative fish abundance, and 4) energy flux and relative growth of forage fishes in western PWS through seasonal change.

Start: 04/01/2006

Finish: 05/31/2008

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Johnson, Scott	NMFS, Auke Bay Laboratory	scott.johnson@noaa.gov

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>



Research Projects Catalog -- 2006

Site Id: 87

Title: **BLACK OYSTERCATCHER SURVEYS OF EASTERN PRINCE WILLIAM SOUND JASON FODE AND PAUL MEYERS, CHUGACH NATIONAL FOREST, CORDOVA RANGER DISTRICT**

Location: Green Island, Montague Island

Purpose:

Abstract: We surveyed 70 km of shoreline on Green Island and Montague Island for black oystercatchers and other water birds from 31 May–10 June 2005. We encountered 13 species of water birds and over 300 individuals. We found 16 black oystercatcher nests. Highest Oystercatcher densities occurred on the northwest coast of Green Island. However this area also appeared to have a high failure rate for first nesting attempts. Of the nine nesting territories found there only three contained active nests. In the past 6 years, we have surveyed nearly 800 km of shoreline in eastern Prince William Sound. Future plans call for completing Montague, Hinchinbrook, and Hawkins Islands.

Start: 06/05/2006

Finish: 06/15/2006

Contacts	Name	Organization	Email Address
	Fode, Jason	U.S. Forest Service	jfode@fs.fed.us

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West

Site Id: 88

Title: **ECOFOCI**

Location:

Purpose: EcoFOCI works to advance the understanding of ecosystem dynamics of the North Pacific Ocean, Gulf of Alaska and Bering Sea as related to climate variability and marine resource management.

Abstract: EcoFOCI is a NOAA ecosystem research program joining several distinct projects, notably Fisheries-Oceanography Coordinated Investigation (FOCI) and North Pacific Climate Regimes and Ecosystem Productivity (NPCREP) that conduct similar research with related goals.

Start:

Finish:

Contacts	Name	Organization	Email Address
	Macklin, Allen		S.Allen.Macklin@noaa.gov
	Napp, Jeff	NOAA/AFSC	
	Stabeno, Phyllis	NOAA/PMEL	

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West

Research Projects Catalog -- 2006

Site Id: 89

Title: **THE DISTRIBUTION OF SEABIRDS ON THE ALASKAN LONGLINE FISHING GROUNDS: IMPLICATIONS FOR SEABIRD AVOIDANCE REGULATIONS**

Location: continental shelf waters of Alaska, British Columbia, Washington and Oregon

Purpose: The purpose of this project was to determine the degree of overlap between sensitive seabird species and longline vessels fishing in Prince William Sound and Southeast Alaska in order to develop seabird avoidance measures that are appropriate for these inside waters.

Abstract: The incidental mortality of seabirds in commercial fisheries is a global conservation concern. In Alaska, seabird bycatch mitigation practices are driven primarily by possible takes of the endangered short-tailed albatross, and secondarily by takes of Laysan and black-footed albatrosses. To develop appropriate seabird avoidance regulations, systematic information on seabird abundance and distribution on fishing grounds is essential, though absent for most fisheries. We used fish stock assessment cruises performed by the International Pacific Halibut Commission, NOAA Fisheries and Alaska Department of Fish and Game as platforms to conduct systematic seabird surveys, yielding the most comprehensive and current database of at-sea seabird sightings on the Alaska, British Columbia and Washington/Oregon longline fishing grounds. Observations were made at approximately 1,350 survey stations each year for three years (2002-2004) and seabird distributions were analyzed by species and area. Across all three years, all three albatross species were absent or rare in the inside waters of Prince William Sound (PWS) and Southeast Alaska (SE-AK). Short-tailed and Laysan albatrosses were generally restricted to the Western Gulf of Alaska (W-GOA), the Aleutians and the Bering Sea, while black-footed albatrosses were most abundant east and south of the W-GOA. Based on these results we will recommend to the North Pacific Fishery Management Council that seabird avoidance regulations be relaxed for vessels fishing in PWS and SE-AK. We strongly recommend that the collection and processing of data from these seabird surveys be institutionalized in NOAA Fisheries to ensure that a long-term data set is available for ecosystem-based fisheries management.

Start: 06/01/2002

Finish: 09/30/2004

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Melvin, Edward	Washington Sea Grant Program	emelvin@u.washington.edu
	Wainstein, Michelle	Washington Sea Grant Program	mwain@u.washington.edu

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>

Research Projects Catalog -- 2006

Site Id: 90

Title: **SEABIRD AVOIDANCE MEASURES FOR SMALL ALASKAN LONGLINE VESSELS**

Location: continental shelf waters of Alaska

Purpose: The purpose of this research was to determine the effectiveness of current seabird mitigation strategies for small Alaskan longline vessels, and to identify the variables on which any revised regulations should be based.

Abstract: Current seabird avoidance regulations for the entire Alaskan longline fleet are based on research conducted on vessels over 55 ft LOA fishing with fixed gear (where gangions are permanently fixed to the groundline). While a separate set of specific requirements was established for vessels 55 ft and less, and large vessel fishing snap-on gear (where gangions are clipped on or off as gear is deployed or retrieved), there remained a lack of information regarding appropriate field-tested measures for these two categories of Alaskan longliners. We conducted field trials of mitigation gear in 2002 on eight vessels ranging from 26 to 55 ft in length. Two vessels were salmon trollers fishing snap-on gear, three were combination vessels fishing fixed gear, and three were bowpickers fishing snap-on gear. We characterized 1) the "2-m access window", or the distance astern that longline hooks were accessible to Alaska seabirds, which generally dive no deeper than 2 m; and 2) the distance astern that streamer lines (also called tori or bird scaring lines) were maintained aloft, because it is this aerial extent that deters birds from the sinking hooks. These variables were measured under different vessel speed, line-weighting, and streamer line deployment regimes. For trollers using snap-on gear, we determined that the current single streamer line requirement for snap-on gear vessels over 55 ft (a 45-m streamer line with a minimum aerial distance of 20 m) was achievable and practical, especially with a lighter streamer line design, and highly likely to be an effective seabird deterrent for vessels under 55 ft as well. For bowpickers, our trials demonstrated that the current regulation (deploying buoys beyond the entry point of the groundline) could not be met without significant risk of fouling gear. Without further work, buoy lines are unlikely to be a practical seabird avoidance measure on bowpickers. For small vessels setting fixed gear, the "2-m access window" was over twice the distance astern than for trollers and bowpickers setting snap-on gear and more comparable to large (67-107 ft) freezer/longliner vessels fishing in the Bering Sea, suggesting that gear type and vessel setting speed are more important than vessel length in determining risk to seabirds. We conclude that current requirements of a single streamer line with no performance standards are unlikely to provide sufficient protection to seabirds, should fishing overlap spatially and temporally with Alaska seabirds.

Start:

Finish:

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Melvin, Edward	Washington Sea Grant Program	emelvin@u.washington.edu
	Wainstein, Michelle	Washington Sea Grant Program	mwain@u.washington.edu

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>

Research Projects Catalog -- 2006

Site Id: 91

Title: **KODIAK COMMERCIAL FISHERIES SALMON MANAGEMENT FIELD CAMP AND WEIR OPERATIONAL PLAN, 2006**

Location:

Purpose:

Abstract: The Alaska Department of Fish and Game (ADF&G) Division of Commercial Fisheries (CFD) management staff will operate five weirs in the Kodiak Management Area (KMA) in 2006. These weirs include the Dog Salmon, Upper Station, Ayakulik, Karluk, and Litnik weirs. Weirs provide the primary method for enumerating salmon escapements into KMA river systems. This information assists the ADF&G management staff in their decisions to open and close the salmon fisheries throughout the season. This operational plan will inform seasonal employees of their responsibilities for effectively running field camps, operating weirs, and living at a remote site.

Start:

Finish:

Contacts	Name	Organization	Email Address
	Spalinger, Geoff	ADF&G	geoff_spalinger@fishgame.state.ak.us

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West

Site Id: 92

Title: **THE EXXON VALDEZ TRUSTEE COUNCIL HYDROCARBON DATABASE**

Location:

Purpose: This project is an archival service of the hydrocarbon data analysis by the EVOS trustee projects.

Abstract: The Auke Bay Laboratory provides data and sample archiving services for all samples collected for hydrocarbon analysis in support of the Exxon Valdez Trustee Council projects. These data represent samples collected since the oil spill in 1989 to the present and include environmental and laboratory Response and Restoration data as well as subsistence information. As the hydrocarbon information is analyzed through the chemistry lab and quality controlled it is added to the public release version of the database. A public version of the analyzed environmental samples was released in 1996 (Exxon Valdez Oil Spill of 1989: State/Federal Trustee Council Hydrocarbon Database 1989 B 1995 / EVTHD) and is updated annually. We also provide interpretive services for the hydrocarbon analyses designed specifically for investigators and managers and FOIA response which include: (1) identification of the probable sources of the hydrocarbons observed in the samples, (2) evaluation of new hydrocarbon data for evidence of systematic bias, (3) hydrocarbon data editing according to consistent criteria. Archived frozen hydrocarbon samples are maintained.

Start:

Finish:

Contacts	Name	Organization	Email Address
	Nelson, Bonita	NOAA	Bonita.Nelson@noaa.gov

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West

Research Projects Catalog -- 2006

Site Id: 93

Title: **DETERMINATION OF RECOVERY FROM DISTURBANCE IN COLD-TEMPERATE ROCKY INTERTIDAL SYSTEMS**

Location: Kasitsna Bay

Purpose: To experimentally test the performance of recovery endpoints in rocky intertidal systems.

Abstract: Determination of recovery following pulse disturbance to rocky intertidal communities has proved to be difficult because recovery endpoints are difficult to define, especially in highly dynamic systems such as the temperate rocky intertidal zone. To address this problem through direct experimental manipulation, we established a long-term manipulative field experiment at a rocky intertidal site in Kasitsna Bay, Alaska. We plan to sample experimental plots again in the summer of 2006.

Start:

Finish:

Contacts	Name	Organization	Email Address
	Klinger, Terrie	University of Washington	tklinger@u.washington.edu

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West

Site Id: 94

Title: **REMOTE MONITORING OF STELLER SEA LIONS**

Location: Northern Gulf of Alaska

Purpose: To assist in identifying causes of the decline or lack of recovery in Steller sea lion populations.

Abstract: The Alaska SeaLife Center uses remote-operated video cameras developed by SeeMore Wildlife Systems, Inc. to study Steller sea lions (*Eumetopias jubatus*) on rookeries and haulouts in the northern Gulf of Alaska. This technology allows real-time observations on a year-round basis without disturbance to the animals or impairment by extreme weather conditions. Cameras, equipped with pan/tilt, zoom, windshield washer/wiper functions, were controlled from the convenience of the laboratory. We conduct long-term tracking of many individual females and males as identified by natural markings and brands and tags. The investigation monitors daily, seasonal, and annual population changes, maternal care, reproductive performance, breeding male behavior and intra- and inter-seasonal tenure, pup production and mortality. At Chiswell Island in Kenai Fjords, average summer abundance of age 1+ sea lions ranged from 71 to 92; while pup production rose from 54 in 2001 to 80 in 2004. Measures of maternal care included long perinatal periods (average =  $10.7 \pm 0.2$  [SE] days) and short summer foraging trips (average =  $16.5 \pm 0.6$  hrs), suggesting that sea lions at this rookery had no difficulty finding sufficient food. Reproductive rates, estimated from identifiable females giving birth in successive years on the rookery, were higher in 2001-2004 (average =  $82.5\% \pm 2.8\%$ ) than those reported in the 1970s and 1980s. Pup mortality during the first two months of life averaged 17.1% ( $\pm 4.4\%$ ) and its sources varied between years. Estimates of predation on sea lion pups by transient orcas ranged from 0 – 19% during 2001 - 2004. Other ongoing studies include alloparental care, breeding bull dynamics, pupping site fidelity, effects of branding and rookery disturbance.

Start:

Finish:

Contacts	Name	Organization	Email Address
	Maniscalco, John	Alaska SeaLife Center	john_maniscalco@alaskasealife.org

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West

Research Projects Catalog -- 2006

Site Id: 95

Title: **OPTIMIZATION OF A NUTRIENT-PHYTOPLANKTON-ZOOPLANKTON ECOLOGICAL MODEL FOR QUANTIFYING PHYSICAL AND BIOLOGICAL INTERACTIONS ON THE GULF OF ALASKA SHELF**

Location: Gulf of Alaska

Purpose:

Abstract: NPRB is currently supporting a long term observation program (LTOP) to continue sampling the Seward Line after the GLOBEC project completed field collection in 2004. The LTOP effort is directed toward maintaining observations to elucidate the ecosystem response to physical forcing on the Gulf of Alaska (GOA) shelf. However, understanding the mechanistic links between physical forcing and the ecosystem response requires development and verification of quantitative relationships between the physical and biological data collected during field observations. To this end, a 3-dimensional regional ocean model with embedded nutrient-phytoplankton-zooplankton (GOANPZ) component is under development to simulate the distribution of lower trophic level production on the GOA shelf. To insure that the equations and parameters in the GOANPZ model accurately express the observed relationships between the state variables as reflected in the field measurements and model simulations, the model must be optimized using field data, so that a suite of parameter values resulting in the most accurate depictions possible of the actual field observations can be incorporated into the model. This proposal seeks funds to use GLOBEC and NPRB - LTOP data to optimize the parameters in the GOANPZ model. The fully 3 dimensional model incorporating these optimized parameters will then be run for 2005 and 2006 to aid in placing the results of LTOP observation on the Seward Line within the broader geographic context of the GOA shelf.

Start: 05/01/2006

Finish: 09/01/2008

Contacts	Name	Organization	Email Address
	Coyle, Ken	University of Alaska Fairbanks	coyle@ims.uaf.edu
	Hermann, Al	University of Washington	hermann@noaa.gov
	Hinkley, Sarah	NMFS, Restricted Access Management	Sarah.Hinckley@noaa.gov

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West
		58.9500	147.5683					

Research Projects Catalog -- 2006

Site Id: 96

Title: **MARINE HABITAT MAPPING TECHNOLOGY WORKSHOP FOR ALASKA**

Location:

Purpose:

Abstract: In the marine science community, there is now broad recognition that a comprehensive ecosystem approach is necessary for effective management of marine resources. An important step in defining essential fish habitat and potential mitigative measures is to understand the relationship between habitat characteristics, fish distribution, and fishing effort and other human activities [e.g., Barnes and Thomas, 2005]. There is a need, however, for a synthesis approach in which experts in the various aspects of marine habitat mapping identify the key issues, evaluate technologies and techniques available to address them and those that are in development, and present the results in a form that can be used to educate managers and other interested parties. This synthesis may serve as a reference to aid in matching needs with the tools for specific marine habitat mapping programs. We propose to conduct a workshop on the topic of marine habitat mapping technologies, emphasizing (a) available tools and techniques; (b) methodologies for classifying seafloor habitats; (c) a synthesis approach, to aid those who are not experts in the field; (d) a focus on needs specifically in the three large marine ecosystems around Alaska, i.e., Gulf of Alaska, Bering Sea/Aleutian Islands, and Arctic; and (e) a workshop format that includes and educates a wide range of interested groups such as local community leaders, commercial fishing organizations, and NGOs. The workshop format that we propose will serve both the wider community and the managers/researchers who need specific technical knowledge about marine habitat mapping.

Start: 06/01/2006

Finish: 05/01/2008

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Allee, Brian	University of Alaska Fairbanks, Alaska S	brian.allee@sfos.uaf.edu
	Reynolds, Jennifer	University of Alaska Fairbanks, SFOS/G	jreynolds@guru.uaf.edu

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
		61.1750	150.0292					

Research Projects Catalog -- 2006

Site Id: 97

Title: **ESTIMATING MOVEMENT RATES OF PACIFIC COD (GADUS MACROCEPHALUS) IN THE BERING SEA AND THE GULF OF ALASKA USING MARK-RECAPTURE METHODS**

Location:

Purpose:

Abstract: We propose estimating movement rates for Pacific cod (~~Gadus macrocephalus~~) in the Bering Sea and the Gulf of Alaska, especially with regard to winter spawning season and spawning grounds. We will use four independent bodies of mark-recapture data and adapt an established statistical model for estimating movement parameters. Shimada and Kimura (1994) presented data from tags that had been released as part of standardized trawl surveys conducted by the Alaska Fisheries Science Center (AFSC). Many tags have been released as part of research cruises conducted by the Alaska Department of Fish and Game (ADFG), (Urban, D., unpublished data). The third set of tags was released during cruises for localized depletion studies conducted by the AFSC (Shi et al, in prep). The fourth data set is from archival tags released on a number research cruises (Nichol and Chilton, in press). In all four data sets the tags were recaptured through a variety of commercial fisheries. The proposed statistical model has been successfully used to estimate movement rates for other species (Hilborn, 1990; Anganuzzi et al, 1994) but will need to be adapted to allow for the disjointed character of the data sets, the data having come from seasons and geographic cells that were dictated by opportunity rather than by an optimal experimental design. The robustness of the estimates will be evaluated with regard to necessary underlying assumptions. Errors of the estimates will also be provided and research will be suggested for improving the precision and accuracy of the estimates.

Start: 06/01/2006

Finish: 05/30/2007

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Munro, Peter	Alaska Fisheries Science Center	peter.munro@noaa.gov
	Urban, Dan	Alaska Department of Fish and Game	dan_urban@fishgame.state.ak.us

  

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
		57.8447	144.8876					

Research Projects Catalog -- 2006

Site Id: 98

Title: **DIET AND TROPHIC ECOLOGY OF SKATES IN GULF OF ALASKA (RAJA AND BATHYRAJA SPP.): FOUNDATIONAL ECOLOGICAL INFORMATION FOR ECOSYSTEM-BASED MANAGEMENT OF DEMERSAL RESOURCES**

Location: Kodiak, Cook Inlet

Purpose:

Abstract: Elasmobranch (shark, skate, and ray) fishes have played important roles in marine ecosystems throughout their history, often occupying the highest trophic levels as apex predators. Despite the fundamental significance of feeding relationships in understanding food web dynamics, community structure, and energy transfer in marine systems, little is known about the feeding ecology of most elasmobranch species. This is especially true of batoids, which have received considerably less scientific attention than sharks. In the Gulf of Alaska (GOA), skates (*Raja* and *Bathyraja* spp.) are among the most common bycatch species taken in groundfish fisheries, support a recent directed fishery from Kodiak Island, and are also potentially important predators in benthic communities. However, published information on diet and trophic ecology on skates in this region is virtually non-existent. The objectives of this proposed study are therefore to determine diet composition and trophic ecology of the most abundant skates in GOA demersal fisheries through stomach content analysis. Specific research objectives are to determine the diet, trophic levels, and foraging habitats of *Raja binoculata*, *R. rhina*, *Bathyraja aleutica*, and *B. interrupta*. In addition, temporal, ontogenetic, and intergender aspects of diet will be compared within and among species. Successful completion of this study will elucidate the ecological roles of skates in the GOA ecosystem and provide quantitative information for ecosystem modeling and effective management of skates and other co-occurring groundfish populations.

Start: 07/01/2006

Finish: 06/30/2008

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Cailliet, Gregor	Moss Landing Laboratories	cailliet@mlml.calstate.edu
	Ebert, David	Moss Landing Laboratories	debert@mlml.calstate.edu

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
		56.9209	152.8857					

Research Projects Catalog -- 2006

Site Id: 99

Title: **TESTING LOW-COST METHODS TO REDUCE SPERM WHALE DEPREDATION IN THE GULF OF ALASKA**

Location: eastern Gulf of Alaska

Purpose:

Abstract: Sperm whales have learned to depredate deep-water sablefish longlines off Sitka, AK, and over the past decade their behavior has become more aggressive and widespread. During a typical encounter, when whales are present during the haul, about 3-6% of the catch is estimated to be removed, but sometimes over 50% of the catch has been lost by individual fishermen. Concerns about the potential for entanglements with an endangered species and the prospect of growing economic losses prompted the Alaskan Longline Fisherman's Association to collaborate with several academic institutions to form the Southeast Alaska Sperm Whale Avoidance Project (SEASWAP) in 2003. In collaboration with fishermen over the past three years; genetic, acoustic and fishing behavior studies have been conducted and statistically analyzed to gain insight into what may attract sperm whales to longline fishing. Based on these observations we have derived four low-cost depredation reduction techniques that we propose to quantitatively test: (i) circle hauls that minimize engine cycling, which seems to attract animals, (ii) deploying anchor lines that have no fishing gear attached (decoys), (iii) testing of an existing variant of fishing gear that includes acoustic reflectors and shortened gangions, and (iv) changing the time of year the fishermen deploy their gear.

Start: 05/01/2006

Finish: 04/30/2007

Contacts	Name	Organization	Email Address
	Straley, Jan	University of Alaska Southeast	jan.straley@uas.alaska.edu
	Thode, Aaron	University of California San Diego	thode@mpl.ucsd.edu

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West
		58.9953	140.5371					

Research Projects Catalog -- 2006

Site Id: 100

Title: **SEASONAL DISTRIBUTION, HABITAT USE, AND ENERGY DENSITY OF FORAGE FISH IN THE NEARSHORE ECOSYSTEM OF PRINCE WILLIAM SOUND**

Location: Prince William Sound

Purpose:

Abstract: This project will assess the seasonal distribution, habitat use, relative abundance, diel use, diet, and energy density of forage fish in the nearshore ecosystem of western Prince William Sound (PWS). This information is lacking because forage fish species are usually not targeted for assessment, and nearshore areas are seldom surveyed as fish habitat. Because nearshore habitats are vulnerable to human disturbance, a better understanding of how the nearshore environment supports ecologically important forage fish species is needed to help managers conserve forage fish populations and protect essential habitats. We know that several forage fish species use the nearshore environment, but we do not fully understand their dependence and fidelity to the different habitats types within the nearshore, or which habitats are more important for different life stages. In addition, we do not know the effect of season on the utilization of nearshore habitats or energetics of forage fish. This study will help address information gaps by assessing 1) seasonal and diel use of nearshore habitats by forage fish, 2) quantity and quality of habitat, 3) relative fish abundance, and 4) energy flux and relative growth of forage fishes in western PWS through seasonal change.

This study will supplement an on-going Essential Fish Habitat (EFH) project which will ground-truth ShoreZone aerial mapping in western PWS in 2006. Funding from this project will support a seasonal forage fish component and facilitate the collection of valuable information on habitat use, fish growth, and energy content needed to begin ecosystem modeling studies in the future.

Start: 06/01/2006

Finish: 05/30/2008

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Johnson, Scott	NOAA, Auke Bay Lab	scott.johnson@noaa.gov

  

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
		60.7447	148.2188					

Research Projects Catalog -- 2006

Site Id: 101

Title: **ALASKA ROCKFISH: SUBSISTENCE HARVESTS AND LOCAL KNOWLEDGE OF ALASKA ROCKFISH (GENUS SEBASTES)**

Location: Gulf of Alaska, Prince William Sound, Southeast Alaska

Purpose:

Abstract: This project will collect and analyze local traditional knowledge (LTK) about rockfish to augment the information available through conventional management approaches. Are subsistence fishers significant contributors to rockfish harvests? Does LTK contribute to sustainable harvest practices, and if so how? We expect to find that LTK is applied to reduce incidental rockfish harvests in the subsistence halibut fishery. The research will employ a combination of social science methods: participant observation, systematic household surveys, and structured key respondent interviews in order to document local knowledge and observations regarding rockfish populations, describe the contemporary subsistence harvest strategies for rockfish (how LTK is applied by its practitioners), and to define the relationship between the subsistence halibut fishery and rockfish harvests to assist in subsistence fisheries management.

Study communities will be: Sitka in Southeast Alaska and Nanwalek, Port Graham, and Tatitlek in Southcentral Alaska (Table 1). They were selected because of their documented subsistence harvests of rockfish and active involvement in the subsistence halibut fishery (Table 2). Further, the greatest incidental harvest of rockfish occurs in Southcentral and Southeast Alaska. The proposed research will be conducted in the Large Marine Ecosystem (LME) Gulf of Alaska.

Start: 06/01/2006

Finish: 07/31/2008

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Dizard, Jesse	Alaska Department of Fish and Game	jesse_dizard@fishgame.state.ak.us

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
		57.0530	135.3300					

Research Projects Catalog -- 2006

Site Id: 102

Title: **CHISWELL RIDGE HABITAT MAPPING AND GROUND FISH ASSESSMENT**

Location: northern Gulf of Alaska

Purpose:

Abstract: The goal of the proposed project is to collect high-resolution substrate data using side scan and multibeam sonar for the Chiswell Ridge along north gulf coast the Kenai Peninsula; a biologically important area for groundfish species. This project will expand on an area previously mapped using multibeam and provide a map of classified substrates to augment previous remotely operated vehicle (ROV) surveys to estimate the density of lingcod *Ophiodon elongatus* and other groundfish. The Alaska Department of Fish and Game (ADFG) manages commercial and recreational fisheries for lingcod and rockfish *Sebastes*, species that have life history characteristics that make them susceptible to overexploitation. These species have not yet been rigorously assessed, and so far management consists primarily of monitoring commercial and recreational harvest in relation to historical landings. For benthic habitat-oriented species such as lingcod and rockfish, mapping substrates is essential for designing effective surveys, extrapolating density estimates to larger scales, and understanding the relationships between habitat and abundance. Mapping this biologically productive area will also provide a seamless continuation of previously mapped substrates along the north gulf coast of the Kenai Peninsula. By completing a comprehensive inventory of available groundfish habitat on the Chiswell Ridge the department will move towards achieving a long-term goal of monitoring the abundance of important groundfish species at key locations within the Cook Inlet and Prince William Sound Management Areas.

Start: 07/01/2006

Finish: 07/01/2007

Contacts	Name	Organization	Email Address
	Byerly, Mike	Alaska Department of Fish and Game	mike_byerly@fishgame.state.ak.us
	Sylwester, Richard	Golder and Associates	dsylwester@golder.com

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West
		59.6065	149.5381					

Research Projects Catalog -- 2006

Site Id: 103

Title: **MONITORING OF HARBOR SEALS AND GLACIAL ICE HABITATS IN AIALIK BAY USING REMOTELY CONTROLLED VIDEO CAMERAS**

Location: Aialik Bay

Purpose: Long-term monitoring of harbor seals in a glacial ice environment

Abstract: Numbers of seals in Aialik Bay, a tidewater glacial fjord, diminished approximately 85% from 1980 to 1994. Remote video monitoring conducted from the Alaska SeaLife center has been used to monitor harbor seals near Aialik Glacier and Pedersen Glacier since 2002. Video monitoring is used to observe haulout activity, numbers of seals, vessel impacts on seals, ambient behaviors of undisturbed seals, glacial activity, ice conditions, weather, and other events affecting seals throughout the day from mid-May through mid-October. This study is supported by the ASLC and National Park Service through a partnership in the Oceans Alaska Science and Learning Center, the EVOS Trustee Council GEM program, the University of Alaska, Fairbanks, Alaska National Maritime Wildlife Refuge System, and Port Graham Corporation.

Start: 01/01/2002

Finish:

Contacts	Name	Organization	Email Address
	Armato, Peter	Ocean Alaska Science and Learning Ce	peter_armato@nps.gov
	Atkinson, Shannon	Alaska SeaLife Center	shannon_atkinson@alaskasealife.org
	Hoover-Miller, Anne	Alaska SeaLife Center	anne_hoovermiller@alaskasealife.org

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West
					59.9560	149.6700	59.8700	149.7500

Site Id: 104

Title: **MONITORING OF HARBOR SEALS OF THE SOUTHERN KENAI PENINSULA**

Location: Johnstone Bay through McCarty Fjord, southern Kenai Peninsula

Purpose: Monitor seasonal and inter-annual changes in the numbers and distribution of seals hauled out on the southern Kenai Peninsula between Johnstone Bay and McCarty Fjord.

Abstract: Aerial surveys are being conducted two times each month from May through August to monitor the distribution and abundance of harbor seals at land and glacial ice haulouts. Surveys are completed during standardized favorable haulout conditions when low tides occur during mid-day and weather conditions are mild. Results and images of these surveys are being incorporated into a GIS and are being used to provide regional representation of harbor seal distribution and abundance that can be contrasted to detailed observation recorded in Aialik Bay. This study has been supported by the ASLC and National Park Service through a partnership in the Oceans Alaska Science and Learning Center.

Start: 01/01/2004

Finish:

Contacts	Name	Organization	Email Address
	Armato, Peter	Ocean Alaska Science and Learning Ce	peter_armato@nps.gov
	Atkinson, Shannon	Alaska SeaLife Center	shannon_atkinson@alaskasealife.org
	Hoover-Miller, Anne	Alaska SeaLife Center	anne_hoovermiller@alaskasealife.org

Geographic Coordinates:	Point(s)	Latitude	Longitude	Region(s)	North	East	South	West
					60.1300	148.6500	59.4500	150.4100

Research Projects Catalog -- 2006

Site Id: 105

Title: **OCEANOGRAPHIC MONITORING IN AIALIK BAY**

Location: Aialik Bay

Purpose: Document temporal and spatial changes in oceanographic conditions in Aialik Bay

Abstract: Vessel-based sampling is being conducted 1-2 times each month from May-August in Aialik Bay to profile conductivity, temperature, density, dissolved oxygen and turbidity/fluorescence in the upper 100 m of the water column at standard sampling locations in Aialik Bay. Results are being incorporated into a GIS to provide spatial and temporal representation of changes in the marine environment associated with variation in haulout of harbor seals in upper Aialik Bay. This study is being supported by the ASLC and National Park Service through a partnership in the Oceans Alaska Science and Learning Center.

Start: 01/01/2006

Finish:

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Armato, Peter	Ocean Alaska Science and Learning Ce	peter_armato@nps.gov
	Atkinson, Shannon	Alaska SeaLife Center	shannon_atkinson@alaskasealife.org
	Hoover-Miller, Anne	Alaska SeaLife Center	anne_hoovermiller@alaskasealife.org

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
					59.9500	149.6200	59.7000	149.7800

Research Projects Catalog -- 2006

Site Id: 106

Title: **MARINE-DERIVED NUTRIENTS IN RIVERINE ECOSYSTEMS: DEVELOPING MONITORING TOOLS FOR TRACKING MDN IN ALASKA WATERSHEDS**

Location: 15 streams total: 3 southside of Kachemak Bay (Humpy Creek, Barabara Creek, China Poot Creek), 4 streams north side of Kachemak Bay (Anchor River, Ninilchik River, Crooked Creek, Happy Valley Creek (3 streams on Tustemena Lake (Bear Creek, Moose Creek, Glacier Creek), 3 streams in Cooper Landing area (Russian River, Moose Creek, Ptarmigan Creek), 1 stream on Kodiak Island (Buskin River), 1 stream in Palmer area (Deshka River)

Purpose: Marine-derived nutrients (MDN), delivered to streams by spawning salmon, are recognized as an ecologically important flux that contributes to the productivity of stream and riparian food webs. This project is designed to track and measure MDN in stream and riparian environments and is the first effort to measure MDN subsidies at the watershed scale.

Abstract: Marine derived nutrients and carbon (MDN) delivered by salmon and other anadromous fishes are considered important drivers in riverine ecosystems, providing nutrients and food to these land-based food webs. However, we know little about the relative value of MDN compared to other nutrient and carbon sources (e.g., watershed-derived) in the Gulf of Alaska region. The objectives of this study are to develop a water chemistry proxy for monitoring salmon returns, and to track and measure MDN effects in stream, riparian and nearshore environments, on the southern Kenai Peninsula. We will accomplish this by linking stream chemistry, marine isotope signatures, marine:terrestrial fatty acid ratios, and key animal and plant community density, growth, and lipid measures along a gradient from river mouth to headwaters in key watersheds. This study will be integrated with related studies proposed in other areas of southcentral Alaska to develop a broader regional understanding and a widely-applicable long-term monitoring program for the GEM region.

Start: 10/01/2004

Finish: 09/30/2006

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Walker, Coowe	Alaska Department of Fish and Game	Coowe_walker@fishgame.state.ak.us

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>

Research Projects Catalog -- 2006

Site Id: 107

Title: **EFFECTS OF LANDSCAPE SETTING ON LOW-ORDER STREAM SUPPORT OF COHO SALMON (ONCHORYHCHUS KISUTCH) IN THE KENAI LOWLANDS, ALASKA**

Location: 40 headwater stream segments on the lower Kenai Peninsula, within the watersheds for the North Fork of the Anchor River, South Fork of the Anchor River

Purpose: Forty-two percent of the Kenai Lowlands area, which extends across 810,000 acres of the western Kenai Peninsula, is occupied by wetlands (Gracz et al 2004). Considerable time and financial resources have been devoted to developing a Geographic Information System (GIS) based wetland map that can be used for management decisions in this area. This effort culminated in the production of the Kenai Lowlands Wetland Management Tool, which identifies eight different geomorphic settings, supporting 70 different wetland plant community types (Gracz et al 2004). Attention is now being focused on incorporating wetland habitat uses by key animal species into the GIS. The species that EPA is particularly interested in are caribou, sandhill cranes and coho salmon. This project addresses the importance of wetland communities to coho salmon. Many low-order streams on the lower Kenai Peninsula are located on privately owned lands where development is imminent based upon existing plat maps. The importance of these headwater habitats to salmonid populations, especially as juvenile rearing habitat, must be recognized before development occurs to provide effective management and regulation. The primary goal of this study is to model the relationship between percentage cover of particular wetland geomorphic classes in watersheds and in stream habitat, water chemistry, and relative abundance of juvenile coho. This information will be incorporated into the database for the Wetland Management Tool, providing managers, regulators and property owners with improved understanding on the importance of low order streams and surrounding wetlands as coho salmon habitat.

Abstract:

Start: 10/01/2006

Finish: 01/30/2007

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Walker, Coowe	Alaska Department of Fish and Game	Coowe_walker@fishgame.state.ak.us

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>

Research Projects Catalog -- 2006

Site Id: 108

Title: **NORTH PACIFIC PELAGIC SEABIRD OBSERVER PROGRAM**

Location: Ports of call include Homer, Seward, Kodiak, Dutch Harbor, Adak, Gulf of Alaska, Bering Sea, Aleutians

Purpose: Place seabird observers on board research vessels, to collect data for the North Pacific Pelagic Seabird Database.

Abstract: Breeding seabirds are generally monitored at colonies, yet they spend most of the year dispersed offshore. Additionally, one half or more of all seabirds do not breed and remain at sea. Marine management issues require knowledge of spatial and temporal overlap between seabirds at sea and commercial fisheries, oil tanker and shipping routes, catastrophic spills, and management zones. Recently, USGS and USFWS consolidated historic at-sea survey data into the North Pacific Pelagic Seabird Database (NPPSD), but most of these data were collected in the 1970's-80's. Since then, many seabird species have declined, and changes have occurred in ocean ecosystems. These changes may have affected the foraging patterns of seabirds. Further changes due to predicted Arctic climate change are anticipated. To address this data gap, the NPRB called for a marine bird observer program that would utilize ships of opportunity. This project will implement such a program via partnership and collaboration among the USFWS, NOAA-Fisheries, and other vessel-based programs. Fisheries stock assessment and oceanographic research vessels that conduct regular transects over specific areas will provide observation platforms, while simultaneously providing associated oceanographic and fishery data. This project will use standardized protocols for marine bird surveys. Data will be entered into the NPPSD, providing access to multiple users, with the goal of integrating updated seabird data into ecosystem-based management for Alaskan fisheries and furthering ecosystem research. We will also update materials for standardized protocols, and establish an infrastructure for continued collaboration with vessel operators.

Start: 04/01/2006

Finish: 04/01/2006

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Kuletz, Kathy	USF&WS	kathy_kuletz@fws.gov

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>



Site Id: 110

Title: **ANALYSIS OF CHINOOK SALMON SPORT HARVESTS IN PRINCE WILLIAM SOUND**

Location: ports in Valdez and Cordova; Robe River, Solomon Gulch Creek, Flemming Spit Creek, Humpy Creek, Eyak River, and Hartney Creek

Purpose: Prior to 2006 The Alaska Department of Fish and Game (ADFG) annually released a total of 300,000 Chinook salmon at three terminal harvest areas in Prince William Sound (PWS); Whittier, Valdez, and Cordova. The objective of the Chinook salmon release program was to create a fishery at each port area. All released fish are otolith marked to identify their hatchery origin. No natural runs of Chinook salmon are known to exist in Prince William Sound and the initiation of the Chinook releases prompted fisheries to develop quickly.

A considerable amount of sport fishing effort was created with the initiation of PWS Chinook salmon releases. Harvest of Chinook salmon throughout PWS averaged 600 fish prior to 1990, but catch was not recorded. Mean harvest of Chinook salmon for the last decade now has reached 2,121 (mean catch = 3,878) fish, and has been increasing to a peak of 3,672 in 2003 (Catch = 8,100). Of the current fisheries, the anglers out of Valdez are catching the greatest number of the Chinook salmon in Prince William Sound (6,350 of 8,100 in 2003). This occurred even though equal numbers of fish were released at each site. Currently, most of the fishing effort for Chinook salmon is in the summer months, but a growing fishery also occurs in winter.

Community planners in Whittier have suggested that Chinook releases should be increased for the western sound, but reductions in the ADFG hatchery program have forced the complete cancellation of fish release for that port in 2006. Information regarding the success of the Chinook salmon releases for each port is important to assess the success of the hatchery returns and benefits of the hatchery programs to those communities. Prioritized goals for release locations and amounts will need to be updated when a planned new hatchery facility increases the available stocking numbers of Chinook salmon in South Central Alaska as a whole.

The Prince William Sound Chinook sport fishery has not been investigated thoroughly, although it provides considerable angling opportunity early in spring when other salmon are not present. The cost effectiveness of the release program should be investigated so that questions in regard to the importance of each release can be addressed. Additionally, questions about potential straying of hatchery salmonids in PWS have increased as Private Non Profit (PNP) hatchery releases have increased over the last two decades. Some studies have identified straying in both pink and chum salmon in PWS. Documenting that ADF&G released Chinook salmon are not straying in local streams is needed to continue successful releases and viable sport fisheries into the future.

Abstract: This study will identify the proportion of hatchery Chinook salmon in the recreational harvest in Prince William Sounds terminal harvest areas, and help manage this part of the statewide stocking program. Additionally, the potential presence of straying fish will also be investigated in selected streams nearest the release sites. Future management planning can be improved with this information, and data relative to the prioritization of the hatchery releases will be obtained. Information gathered by the stream surveys will help document that hatchery released Chinook salmon are being harvested in the desired fishery areas, and not escaping into wild systems.

Objectives:

1. Estimate the proportion of Chinook salmon landed by anglers at Valdez Harbor that are of Ft. Richardson hatchery origin, such that the estimate is within 5 percentage points of the true value 95% of the time.
2. Estimate the proportion of Chinook salmon harvested by anglers at Flemming Spit that are of Ft. Richardson hatchery origin, such that the estimate is within 10 percentage points of the true value 90% of the time.
3. Estimate the harvest of Chinook salmon at Flemming Spit near Cordova such that the estimate is within 40% of the true value 80% of the time.
4. Obtain length and scale samples from sport harvested fish, and survey nearby streams to obtain otoliths from potentially strayed hatchery fish to access if straying can be detected.

Start: 03/01/2006

Finish: 09/30/2007

Research Projects Catalog -- 2006

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Marston, Brian Hall		brian_marston@fishgame.state.ak.us

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>

Site Id: 111

Title: **YOUTH AREA WATCH**

Location:

Purpose: The program goals include:

- Giving students "hands on" experiences with scientists.
- Enabling students to make meaningful contributions to community-based research occurring in Exxon Valdez oil spill affected areas.
- Helping increase communication between scientists and the communities affected by the oil spill.
- Undertaking long-term monitoring projects within oil spill affected communities.
- Increasing awareness about a variety of ecosystems.

Abstract: Youth Area Watch (YAW) is a program run by the Chugach School District and funded by the Exxon Valdez Oil Spill (EVOS) Trustee Council. The program is designed to involve students in working with scientists while making a meaningful contribution to research and long-term monitoring projects in oil spill affected Prince William Sound and Cook Inlet communities.

Start:

Finish:

Contacts	<u>Name</u>	<u>Organization</u>	<u>Email Address</u>
	Salasky, Sheryl	Chugach School District	salasky@alaska.net

Geographic Coordinates:	<u>Point(s)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Region(s)</u>	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>