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Photographs supplied by the staff of OSRI, PWS Science Center, and the individual project team members. The cover photograph is from the U.S. Coast Guard.
Message from the Executive Director

It was a very full year for the Oil Spill Recovery Institute (OSRI) as we transitioned staff and some Board members while continuing to expand our partnership programs. Before departing in the spring to join the academic world at the University of Alaska Fairbanks, Katey Walter worked avidly to involve OSRI in the Joint Industry Program (JIP), and also set up a new program with InnoCentive. The JIP is a largely industry funded project which will result in oil spill experiments in 2008 and 2009 in the Barents and Baltic Seas, environments similar to Alaska’s waters. It will be a good opportunity to conduct various biological experiments and also to test mechanical methods in actual cold water field environments.

Replacing Katey’s energy was a tall order, but Scott Pegau is doing a great job to expand OSRI assistance to oil pollution research and development. Among many tasks he has taken over from Katey, one was to coordinate with the Scientific and Technical Committee and OSRI Board members in the development of three oil spill research “challenges” posted at the InnoCentive website last summer.

InnoCentive has more than 110,000 solvers from every continent on the globe working on problems posted at its website. OSRI awards a purse prize only to those solutions meeting detailed criteria stated in the challenge when it’s posted. InnoCentive acts as a facilitator in the process, reviewing the solutions and only forwarding to OSRI those it determines have merit. Scott did a great video interview about this program which InnoCentive has now posted on You Tube; check it out at http://www.youtube.com/watch?v=gGaLUTpfxxo!

We’ll be evaluating this innovative approach to oil pollution R&D issues in the coming year. It appears to have merit for certain theoretical problems although it will certainly not entirely replace the more traditional requests for proposals.

Our new Board members include two fishing representatives from Valdez and Cordova, a new Alaska Native representative from Chenega Bay, and returning members from Kenai, the Native Village of Eyak, Anchorage, Juneau and Silver Spring, Maryland. This gives us broad geographic representation and expertise from the public, federal and state agencies and industry stakeholders. Adding to the Board’s strengths is the volunteer work by members of our Scientific and Technical Committee. Our thanks are particularly due to former Committee Chair Ted Cooney who retired from his committee service at the end of September. We are glad to have recruited several new STC members as we embark in the coming year to revise our strategic goals and move toward developing, in 2009, a new 5-year science plan.

Please be sure to contact Scott Pegau or myself with your suggestions on OSRI programs!

Nancy Bird
Advisory Board members

The OSRI programs are determined by a 16-member Advisory Board composed of (1) three Federal representatives from the Departments of Commerce, Interior and Transportation appointed by the Secretaries of the respective departments; (2) three State of Alaska representatives from the Departments of Environmental Conservation, Fish and Game, and Natural Resources appointed by the Commissioners of the respective departments; (3) two representatives each from the fishing industry, Alaska Native community (one of whom is a resident of Prince William Sound), Oil and gas industry, all of whom are appointed by the Governor of Alaska; (4) two At-large representatives from communities impacted by the Exxon Valdez oil spill and who are appointed by the remaining Advisory Board members; and (5) One non-voting representative from the Institute of Marine Science at the University of Alaska Fairbanks and one non-voting representative from the Prince William Sound Science Center (PWSSC). The OSRI Advisory Board meets twice each year to set policies, adopt annual work plans and review the implementation of OSRI programs. The Board’s structure includes four committees - Executive, Scientific and Technical, Financial and Work Plan - each of which meet as needed throughout the year. Annual work plans are adopted by the Advisory Board in the early fall and determine continuing projects and new project solicitations to be issued in the coming year.

Federal Representatives

John Calder, Ph.D., Chair  
Arctic Research Program - National Oceanic & Atmospheric Administration  
Silver Spring, Maryland  
Years of Service: 1992-94 & 1999-present

Douglas Mutter  
Department of Interior  
Anchorage, Alaska  
Years of Service: 1993-present

Captain Steve Hudson  
Chief, Marine Safety, U.S. Coast Guard, 17th District  
Juneau, Alaska  
Years of Service: 2005-present

State Representatives

Mark Fink  
Habitat and Restoration Division, Alaska Dept. of Fish & Game  
Anchorage, Alaska  
Years of Service: 2002-present

Carol Fries  
Natural Resources Manager, Alaska Dept. of Natural Resources  
Anchorage, Alaska  
Years of Service: 1997-present

Leslie Pearson  
Prevention & Emergency Response Program, Alaska Dept. of Environmental Conservation  
Anchorage, Alaska  
Years of Service: 2002-present
Fishing Industry Representatives

George Levasseur
Valdez, Alaska
Years of Service: 2006-present

William Lindow
Cordova, Alaska
Years of Service: 2006-present

Alaska Native Representatives

Pete Kompkoff
Chenega Bay, Alaska
Years of Service: 2006-present

Glenn Ujioka
Cordova, Alaska
Years of Service: 1997-present

Oil & Gas Industry Representatives

Doug Lentsch
General Manager, Cook Inlet Spill Prevention & Response, Inc.
Nikiski, Alaska
Years of Service: 2001-present

Bill Schoephoester
Pelorus
Anchorage, Alaska
Years of Service: 2006-2007

At-Large Representatives

Joe Banta
Project Manager, Prince William Sound Regional Citizen’s Advisory Council
Anchorage, Alaska
Years of Service: 2006-Present

Susan Saupe
Director of Science and Research
Cook Inlet Regional Citizens’ Advisory Council
Kenai, Alaska
Years of Service: 2003-present
Non-Voting Representatives

John Goering, Ph.D
Professor Emeritus, Institute of Marine Science, Univ. of Alaska
Fairbanks, Alaska
Years of Service: 1992-present

Charles P. Meacham
Prince William Sound Science Center Board of Directors,
Gig Harbor, Washington & Juneau, Alaska
Years of Service: 2006-present

Scientific and Technical Committee

The scientific and technical committee was formed as part of the Oil Pollution Act of 1990 legislation to ensure quality research projects are funded. This committee provides advice to the OSRI Advisory Board, OSRI Research Program Manager and OSRI Director on the conduct and support of research, projects, and studies related to Arctic and subarctic oil spills and their effects. It is made up of specialists in matters relating to oil spill containment and cleanup technology, Arctic and sub-Arctic marine environment, and the living resources and socioeconomics of Prince William Sound and its adjacent waters.

R. Ted Cooney, Ph.D., Committee Chair
  Professor Emeritus, Institute of Marine Science, School of Fisheries and Ocean Sciences
  University of Alaska Fairbanks
Michael T. Bronson, Ph.D.
  Crisis Management Coordinator, BP Exploration (Alaska), Inc., Anchorage
Henry Huntington, Ph.D.
  Huntington Consulting, Eagle River, Alaska
Lee Majors
  Planning and Development Manager Alaska Clean Seas, Prudhoe Bay and Anchorage
Alan J. Mearns, Ph.D.
  Senior Staff Scientist, Hazardous Materials Response Division
  National Atmospheric & Oceanic Administration, Seattle
Stanley (Jeep) Rice, Ph.D.
  National Marine Fisheries Service, Alaska Fisheries Science Center
  Auke Bay Laboratory, Juneau
Thomas C. Royer, Ph.D.
  Dept. of Oceanography, Old Dominion University, Virginia
Astrid Scholz, Ph.D.
  Ecological Economist, Vice President Knowledge Systems, Ecotrust, Portland
Terry Whitledge, Ph.D.
  Director, Institute of Marine Science, School of Fisheries and Ocean Sciences
  University of Alaska Fairbanks
John Goering, Ph.D. (Committee Member Emeritus)
  Professor Emeritus, Institute of Marine Science, School of Fisheries and Ocean Sciences
  University of Alaska Fairbanks
Mission and Goals

The mission of the Prince William Sound Oil Spill Recovery Institute (OSRI) is to support research, education, and demonstration projects all of which are designed to address oil spills in Arctic and sub-Arctic marine environments.

To achieve this mission, OSRI has developed the following four goals.

UNDERSTAND
Attain four-dimensional (meaning time and 3 dimensional space -x,y,z coordinates) interdisciplinary understanding of Prince William Sound to enable detection and prediction of spill-related impacts and subsequent recovery.
• Design Nowcast/Forecast observation and modeling system, demonstrate its utility, and seek long-term operational funding
• Conduct environmental research
• Profile potential impacts on economy, life-style and well-being of communities and resource users in the Prince William Sound.

RESPOND
Enhance the ability of oil spill responders to mitigate impacts of spills in Arctic and sub-Arctic marine environments.
• Fill knowledge gaps on behavior of spilled oil
• Fill knowledge gaps on use and effectiveness of specific mitigation techniques
• Identify and evaluate new prevention and response technologies

INFORM
Disseminate information and educate the public on the issues of oil spill prevention, response and impacts.
• Publish scientific and technical results in open literature
• Brief oil spill responders on OSRI products and assist to include them in operational activities
• Facilitate the exchange of information and ideas
• Provide graduate and undergraduate fellowships and internships

PARTNER
Partner with other organizations to take advantage of pooled funding, facilities, knowledge and experience.
• Collaborate with other partners in achieving a long-term coastal and ocean observing system for Alaska
• Coordinate with the efforts of other related programs, such as the Exxon Valdez Oil Spill Trustee Council (EVOS), the North Pacific Research Board (NPRB), the Alaska Ocean Observing System (AOOS), the Joint Industry Program (JIP), the Dispersants Working Group (DWG), and the Oil-spill Response Prize.

Picture by Kevin Co, provided by the Cook Inlet Regional Citizen’s Advisory Council.
History

The Prince William Sound (PWS) Oil Spill Recovery Institute (OSRI) was authorized in 1990 by the United States Congress to “identify and develop the best available techniques for preventing and responding to oil spills in the Arctic and sub-Arctic” (Title V, Section 5001, Oil Pollution Act of 1990); and, also to assess and understand the long range effects of Arctic or sub-Arctic oil spill impacts on the natural resources of Prince William Sound... and the environment, the economy and the lifestyle and well being of the people who are dependent on them.” OPA90 identifies the PWS Science and Technology Institute (known as the PWS Science Center) in Cordova, Alaska, as administrator and home for OSRI.

OSRI’s establishment followed the 1989 Exxon Valdez oil spill and the initial legislation focused on impacts from that event. It was also recognized that no other entity in the United States prioritized oil spill research and development for cold waters. Between 1992 and 1995, Congress appropriated $500,000 for the OSRI program. Since 1996, when amendments instituted a funding mechanism for OSRI, the program has received annual interest earnings from a $22.5 million trust held by the U.S. Treasury and maintained within the Oil Spill Liability Trust Fund. Amendments in 2005 to the OPA90 legislation extends OSRI’s research program as long as oil exploration and development occurs in Alaska.

OSRI’s first strategic plan for oil pollution research and development (1995) focused on the risks and costs of oil spills. At that time, a major weakness was recognized in our ability to make physical and biological predictions, and as a consequence, our understanding was limited as to whether damages were caused by oil spills or natural perturbations. The OSRI program incorporated goals and an approach to improve prediction of natural changes. This approach also improves our assessment of costs, a key element in identifying the best oil spill prevention and response technologies.

OSRI solicited its first proposals for grant projects in late 1997 shortly after funding mechanisms were approved that assured continuing revenues rather than year-to-year appropriations. Since 1998, OSRI has awarded an annual average of 1 million dollars supporting a wide range of projects. Today, OSRI is building from the foundation of prior research programs, such as Sound Ecosystem Assessment and the Prince William Sound Nowcast-Forecast System to help support an integrated ocean observing system. National and regional US ocean observing systems (www.aoos.org) are in development with goals to monitor real-time ocean observations and provide products from processed data and model simulations developed from those observations. The Prince William Sound Observing System (www.pwsos.org) is tailored to also address marine safety, security and ecosystem monitoring needs specific to the Sound.

OSRI’s funding of projects is based on annual work plans that are developed each fall and approved by the OSRI Board. The annual work plans are based on a five-year Science Plan adopted by the Board in 2005. The Science Plan is organized around four goals identified by the Board in 2002; those goals are to Understand, Respond, Inform and Partner. The Science Plan includes continuing support for physical oceanography and meteorological programs that are part of the PWS Observing System. It also promotes partnerships and joint solicitations with other research programs (such as the Coastal Research Response Center and the North Pacific Research Board). Finally, it includes graduate student fellowships and supports education programs in the Prince William Sound region.
Programs

UNDERSTAND
These projects are designed to improve our understanding of the dynamics and ecology of Prince William Sound. The desire is to develop a four-dimensional interdisciplinary understanding of Prince William Sound to enable detection and prediction of spill-related impacts and subsequent recovery. To achieve this objective we need to collect observations of the physical and biological environments and integrate them with biological and physical models.

Physical Science Program

MAINTENANCE OF SNOTEL METEOROLOGICAL STATIONS
Snowpack Telemetry (SNOTEL) stations set up in partnership with the Natural Resources Conservation Service (NRCS) measure wind speed and direction, air temperature, air pressure, and precipitation from snow and rain throughout the year (http://www.wcc.nrcs.usda.gov/snotel/Alaska/alaska.html). They are fully-automated, land-based stations that are usually set up in remote locations. Since the summer of 2005, six new SNOTEL stations were deployed at sea level in Prince William Sound (PWS), and two stations were installed at an alpine elevation. Further installations at alpine elevations are scheduled in 2008. The fully deployed system in PWS will have five pairs of sea-level and alpine stations with a pair in each of the four quadrants of the Sound and another representing the central basin.

Data transmitted by the weather stations are accessible through the Alaska Ocean Observing System (AOOS, aoons.org) web pages and is archived at the University of Alaska. Data from these stations are expected to improve the hydrological model needed for understanding ocean circulation and to verify meteorological models run for Prince William Sound.

This is a continuing program with $30,000 awarded in FY07 to Richard McClure, U.S. Natural Resources Conservation Service. Deployment of most of the SNOTEL Stations were funded by a combination of grants to the PWS Science Center from the National Oceanic and Atmospheric Administration, the Exxon Valdez Oil Spill Trustee Council, AOOS, and OSRI. Annual maintenance costs for all stations except the one at Nuchek are provided by OSRI. The installation cost for the Nuchek station was provided by the PWS Regional Citizens’ Advisory Council.

MAINTENANCE OF STARBAND DATA SITES IN PWS
Image data (web cams) at four SNOTEL sites in PWS is transmitted through Starband, a commercial geosynchronous broadband satellite system. The OSRI contracts for services to transmit the SNOTEL data and automatic weather images from the SNOTEL sites at Esther Island, Port San Juan, Tatitlek and Nuchek (http://ak.aoons.org/pws/web_cams.php). Micro Specialties, Inc (MSI) worked with the NRCS to install the SNOTEL stations and set up the Starband system for data transmission. The MSI contract covers monthly Starband fees, replacement of failed components, and some of the travel logistics involved in visiting these remote locations.

This is a continuing program with $8,800 awarded in FY07 to Richard M. Brown, Micro Specialties, Inc. PWS Aquaculture Corporation and PWS Regional Citizens’ Advisory Council are partners in this effort and are contributing in-kind or cash for ongoing maintenance costs.
PRINCE WILLIAM SOUND OBSERVATIONAL OCEANOGRAPHY

A postdoctoral staff position at the PWS Science Center is funded by OSRI to conduct basic and applied research in Prince William Sound (PWS) and the Gulf of Alaska (GOA). The general research focus is on understanding the physical circulation and mixing of the waters of the Sound to improve our understanding of that ecosystem. Two areas of research included in this project during 2007 are:

2) Monitoring of the seasonal variability of the hydrographic properties and circulation in PWS.

The exchange program aims to provide an improved description of the flow through the two major straits connecting PWS and the GOA to provide a better understanding of the relationship between circulation variability and biological variability in PWS. Two moorings are deployed in Hinchinbrook Entrance and Montague Straits. The moorings are instrumented with acoustic Doppler current profilers and three conductivity temperature recorders. The moorings are recovered and serviced at six month intervals; the instruments are downloaded, cleaned and serviced. Data is processed between deployment cruises.

The seasonal variability program provides longer time series measurements that are the basis for developing an oceanographic climatology. The climatology provides information on the hydrography properties necessary in oil spill modeling and permit better discrimination of seasonal anomalies for ecosystem research. Vertical profiles of temperature and salinity are acquired using a conductivity-temperature-depth profiler during two to four cruises per year. Sampling stations cross the central basin of the Sound and the entrances to the Sound.

This is a continuing program with $160,000 awarded in FY07 to Claude Belanger, Ph.D., Prince William Sound Science Center. This program is funded by a combination of grants to the PWS Science Center from the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration through the University of Alaska, the Alaska Ocean Observing System, and OSRI.

Modeling

ROUTINE FORECASTS USING THE RAMS ATMOSPHERIC CIRCULATION MODEL

The Alaska Experimental Forecast Facility (AEFF) is now providing two daily numerical weather forecast models for the Prince William Sound region using the Regional Atmospheric Modeling System (RAMS) and the Weather Research Forecasting (WRF) model. The models produce hourly 3-d forecast fields of a host of variables, including: temperature, pressure, winds (3-d), humidity, precipitation, and cloudiness. The models can also act as an integrator of data, by filling in the gaps or data voids, acting as surrogate observations in those places where direct observations do not exist. The models utilizes grid nesting, in effect telescoping down from a coarse-mesh grid that covers all of Alaska and surrounding oceans, to an intermediate grid that covers all of southern Alaska and the Gulf of Alaska, and ultimately down to the fine-mesh grid that covers PWS and its intricate terrain.

The atmospheric model output is currently available at the Alaska Ocean Observing System (AOOS) PWS web page in the forecasts tab: http://ak.aoos.org/pws/. Data are also delivered directly to the portal sites of collaborators such as ocean circulation and wave modeling groups.

The performance of WRF was found to be generally better than RAMS in forecasting the surface wind and surface temperature. Assimilation of the ground base measurements was not found to significantly change the model output.

This is a continuing program with $60,000 awarded in FY07 to Peter Q. Olsson, Ph.D., University of Alaska Anchorage. This program is funded by grants from AOOS and OSRI.
REGIONAL OCEAN MODEL SYSTEM IN PWS – ALASKA OCEAN OBSERVING SYSTEM

Real time data assimilating ocean circulation models allow for a better understanding of the circulation patterns in Prince William Sound (PWS) and water exchange mechanisms between the Gulf of Alaska (GOA) and PWS. The models provide a solid scientific foundation for addressing fisheries, ecosystem management, and oil-spill response planning needs related to long term oceanic and climate variability. Critical connections between PWS and other ecosystems are forged through variable water mass exchange with the GOA or from coastal freshwater runoff, implying dramatic differences in heat, salt, nutrient fluxes, stratification, planktonic organisms, and dissolved and suspended inorganic particles. The overall goal of this project is to develop an operational system that delivers information on the physical and biological conditions in real-time to research and application users. Work continues on incorporating the expected major forcing mechanisms. The tidal forcing was found to have significant effects on the exchange of water between PWS and GOA.

This is a continuing program with $60,000 awarded in FY07 to James C. Williams, Ph.D., University of California at Los Angeles. This program is funded by grants from the Alaska Ocean Observing System and OSRI.

BIOLOGICAL SCIENCE PROGRAM

BIOLOGICAL MONITORING OF SPRING ZOOPLANKTON AND NEKTON IN PWS

Pink salmon were a species impacted by the Exxon Valdez Oil Spill. A cost effective approach to estimation of pink salmon food supply and predator abundance and accurate forecasting of adult returns has been lacking and is critical to the economies of the PWS communities. The project was initiated in spring of 2000 and consisted of three surveys in spring and early summer, a period anticipated to encompass the Neocalanus plankton spring bloom and early marine entry of juvenile pink salmon. The surveys cover the main basin of PWS and Knight Island/Perry Island Passages. Measurements included multi-frequency acoustic backscattering and plankton net tows to measure abundance of both plankton and fish. Results verified the effectiveness of the assessment system for both the large-bodied copepods and the predator fishes and showed that pink salmon returns are impacted by the supply of large-bodied copepods.

The study confirmed hypotheses from previous research that Pollock and herring switch from feeding on zooplankton to feeding on juvenile fish when large copepod abundance drops.

This project was continued into FY07 with previous years funding, no new funds were provided in FY07. The project was conducted by Richard Thorne, Ph.D., Prince William Sound Science Center.

INTERTIDAL RESOURCES AT RISK OF OIL SPILLS: ECOLOGY OF THE COPPER RIVER DELTA

The goal of this multi-year project is to understand the spatial and temporal dynamics of the biological community of the Copper River Delta in order to predict how this community would respond to anthropogenic (e.g., an oil spill) or naturally induced changes (e.g., climate change) in the physical/chemical environment. The approach to achieve this goal has been to focus on the central part of the food web (benthic invertebrates) and then to add components that focus on higher (predators) and lower trophic levels (primary producers). This project is a collaboration between Drs. Sean Powers, Univ. of South Alabama, Dauphin Island Sea Lab and Mary Anne Bishop, PWS Science Center. The field program addresses four objectives:
OSRI Fiscal Year 2007 Annual Report

1) Characterization of the spatial abundance of macrobenthic species inhabiting intertidal sediments within the Copper River Delta and Orca Inlet, Southeast PWS.
2) Determination and quantification of those factors that best serve as predictors for primary production in the overlying water and within the sediments of tidal flat communities.
3) Quantification of the spatial and temporal abundance of demersal and avian predators and assessment of the role of epibenthic predation on recruitment of intertidal macroinvertebrates.
4) Development of a cost-effective strategy and sampling design for long-term monitoring of the intertidal sedimentary habitats.

The data from this project is being analyzed and results are expected soon.

This project was continued into FY07 with previous years funding, no new funds were provided in FY07. The project was conducted by Mary Anne Bishop, Ph.D., Prince William Sound Science Center and Sean Powers, Ph.D., University of South Alabama. This project was funded by the Exxon Valdez Oil Spill Trustees Council and OSRI.

PUBLICATION OF RESULTS FROM THE OSRI/EVOS COPPER RIVER DELTA STUDY

The “Copper River Delta Intertidal Resources at Risk” study has been an important component of the Prince William Sound Oil Spill Recovery Institute’s Research Program. The study represents a collaborative effort between Dr. Mary Anne Bishop, Prince William Sound Science Center and Dr. Sean P. Powers, University of South Alabama Dauphin Island Sea Lab. This study has examined predator dynamics and assessed their role in invertebrate community dynamics. A complementary study, “Trophic dynamics of intertidal soft-sediment communities”, funded by the Exxon Valdez Oil Spill Trustee Council, has provided a “bottom-up” approach to the Copper River Delta’s intertidal ecosystem. The ultimate goal of the combined Copper River Delta studies is to understand the spatial and temporal dynamics of the biological community in order to predict how this community would respond to anthropogenic changes (such as an oil spill) or to naturally induced changes (such as climate changes) in the physical and chemical environment. This project allows the two studies to be analyzed together to provide more comprehensive results.

This is a new program with $36,000 awarded in FY07 to Mary Anne Bishop, Ph.D., Prince William Sound Science Center.

SPATIAL AND TEMPORAL VARIABILITY OF OCEANIC SUBSIDIES IN PRINCE WILLIAM SOUND, ALASKA CHARACTERIZED USING STABLE ISOTOPE ANALYSIS.

The Prince William Sound (PWS), Alaska pelagic ecosystem is dependent, in part, on oceanic subsidies from offshore near the continental slope. A portion of the carbon measured in pelagic fishes from PWS, e.g., herring, juvenile salmon, and zooplankton, is thus generated in the open ocean and not in PWS. The fraction of carbon reflecting oceanic subsidies in PWS varies from year to year and may be a primary driver of fisheries recruitment variation. Accordingly, the fraction of oceanic subsidies in PWS is being monitored with the goal to develop fisheries recruitment forecasts and for circulation model validation. Intrinsic to using stable isotope techniques is assessing source isotope effects, which in the present application, is done by sampling feeding stage zooplankton on the continental slope and in PWS. Additionally, zooplankton recruited into the diapause (non-feeding, pre-reproductive resting stage) population of PWS, will be sampled for stable isotope and population analysis.

This is a new program with $40,000 awarded in FY07 to Thomas Kline, Ph.D., Prince William Sound Science Center.
PARTNERSHIP WITH THE NORTH PACIFIC RESEARCH BOARD (NPRB)

The NPRB and OSRI both encourage research partnerships in their science plans, and both organizations have a strong interest in ocean observing, habitat, ecological and socioeconomic studies. In 2005, the two groups signed a partnership protocol to provide the foundation for defining research priorities of mutual interest in any given year. The NPRB and OSRI Science Plans each committed $100K for this partnership in 2007. Continuation of the partnership and the level of funding committed is determined on an annual basis. In 2007, a joint Request for Proposals was issued by OSRI and the NPRB. The topics of interest were for a demonstration project to show the feasibility of tracking and monitoring marine organisms, and a socioeconomic modeling of community impacts by natural and anthropogenic change to the environment. A project started in 2006 was also continued.

SEASONAL DISTRIBUTION, HABITAT USE, AND ENERGY DENSITY OF FORAGE FISH IN THE NEAR SHORE ECOSYSTEM OF PWS

This study assesses the seasonal distribution, habitat use, relative abundance, diel use, diet and energy density of forage fish in the near shore ecosystem of western Prince William Sound (http://www.fakr.noaa.gov/habitat/fishatlas/). Information was collected on the dependence and fidelity of particular forage fish species to different near shore habitat types at different life stages of the fish. Taxa of interest include Pacific herring (Clupea pallasii), Pacific sand lance (Ammodytes hexapterus), capelin (Mallotus villosus), Pacific sandfish (Trichodon trichodon), and eulachon (Thaleichthys pacificus). This study fills knowledge gaps by assessing seasonal and diel use of near shore habitats by forage fish, quantity and quality of habitat, relative fish abundance, and energy flux and relative growth of forage fishes in western PWS through seasonal change. It was found that four fish accounted for 87% of the catch. In April juvenile pink salmon dominated the catch. In July saffron cod and herring were most numerous. And in September capelin were the most abundant. The fish catch was greatest in vegetated habitats and during the fall.

This project was continued into FY07 with previous years funding, no new funds were provided in FY07. The project was conducted by Scott Johnson, National Marine Fisheries Service, Juneau with a total budget of $150,000 ($75,000 from OSRI).

RESIDENCY AND MOVEMENTS OF COPPER ROCKFISH AND LINGCOD IN NEAR SHORE AREAS OF PRINCE WILLIAM SOUND

This study is designed to assess the residency and movements of copper rockfish (Sebastes caurinus) and lingcod (Ophiodon elongatus), two bottomfish that inhabit rocky, nearshore habitats. In doing so the project will prove the efficacy of using acoustic telemetry for documenting residency of copper rockfish and lingcod in shallow, nearshore habitats of Prince William Sound and their movement patterns during summer months. Our project is modeled after methodology used by the Pacific Ocean Shelf Tracking project including acoustic tagging and moored hydrophone arrays. The project is coupled to a United States Fish and Wildlife Service and National Oceanic and Atmospheric Administration funded study on artificial reefs in Passage Canal.

Specifically, the objectives of this project are:
1) quantify residence time of a representative subsample of copper rockfish and lingcod in Prince William Sound;
2) describe their movement patterns among selected sites in the nearshore zone;
3) test the application of recent advances in acoustic telemetry for the study of essential fish habitat; and
4) provide recommendations for post-oil spill, restoration efforts that will benefit demersal species such as rockfish.

This is a new program with a total of $145,000 ($72,500 from OSRI) awarded in FY07 to Mary Anne Bishop, Ph.D., Prince William Sound Science Center.
Data Management

**DEVELOPING AND HOSTING A WEB SITE FOR THE PRINCE WILLIAM SOUND OBSERVING SYSTEM**

This project maintains a web site which operates as a mirror site to the Alaska Ocean Observing System (AOOS) page but with a focus on Prince William Sound (PWS). The two main tasks are replicating a portion of the AOOS web server and archiving of a slice of the AOOS statewide observation databases applicable to PWS and a surrounding footprint. In coordination with the AOOS Data Manager and AOOS web master at the University of Alaska Fairbanks, the Alaska Experimental Forecast Facility at the University of Alaska Anchorage has built the database and the interactive GIS web data querying system, and is archiving a PWS subset of the AOOS statewide observation data base. The Alaska Experimental Forecast Facility developed scripts transferring daily model data into the database server and daily surface observations are also transferred from the AOOS database site.

This is a continuing program with $30,000 awarded in FY07 to Peter Q. Olsson, Ph.D., University of Alaska Anchorage.

**RESPOND**

The harsh environment found at high latitudes makes many existing oil spill response technologies ineffective. Projects funded under this goal are intended to enhance the ability of oil spill responders to mitigate impacts of spills in Arctic and sub-Arctic marine environments. This can be by developing or adapting equipment for oil spill response in Arctic and sub-Arctic marine environments, or by improving our understanding of the impacts of different response options.

**OIL RECOVERY WITH NOVEL SKIMMER SURFACES UNDER COLD CLIMATE CONDITIONS**

Increasing oil exploration, production and transport in Arctic waters will increase the risk of an oil spill occurring in cold and ice-infested waters. The mechanical oil spill recovery equipment currently used in warmer waters was not designed to collect more viscous oils or oil-ice mixtures. The objective of this project is to perform a comprehensive analysis of the adhesion between oil or ice-in-oil mixtures and various surface patterns and materials, under cold climate conditions. OSRI funded the laboratory bench scale phase; MMS is funding the field scale phase at the experimental test basin of the Cold Regions Research and Engineering Laboratory (CRREL).

The grooved style drum head was found to outperform the traditional flat drum in the retrieval of oil in waters containing slush ice. As might be expected there was some decrease in efficiency when ice was present. Some modifications to groove angle and materials can make minor increases in efficiency depending on the characteristics of the oil.

This project was continued into FY07 with previous years funding, no new funds were provided in FY07. The project was conducted by Arturo Keller, Ph.D., University of California, Santa Barbara. Funding for this project was provided by the Minerals Management Service and OSRI.
**JOINT INDUSTRY PROGRAM (JIP): OIL SPILL CONTINGENCY FOR ARCTIC AND ICE-INFESTED WATERS**

SINTEF has, on behalf of the oil companies ChevronTexaco, ConocoPhillips, Shell, Statoil, TOTAL, and other prospective participants, prepared a state-of-the-art report on oil spill contingency in Arctic and ice-infested waters which identifies research and development needs in this area. Based on this, SINTEF, international R&D partners and the oil companies have formulated a Joint Industry Program (JIP) to advance Arctic oil spill contingency technology and knowledge.

The overall objective of this JIP is:
Further development of tools and technologies for environmental beneficial oil spill response strategies for ice-infested waters.

Program sub-objectives are:
1) To improve our ability to protect the Arctic environment against oil spills resulting from exploration, development, production and transportation activities.
2) To provide improved basis for decision-making by responsible authorities:
3) Advance the state-of-the-art in Arctic oil spill response:
4) Address key problems/scenarios faced by program partners.
5) Demonstrate workable response options for different ice conditions and oil types.
6) Define limiting conditions for alternate response strategies.
7) Investigate and develop improved response capabilities and strategies.

This program performs experiments with oil and recovery techniques in the laboratory, flumes, small field experiments, and will culminate in a controlled oil spill in ice to test existing detection and recovery technologies in that environment. OSRI is contributing as a cooperating organization, which means that it is non-voting member of the steering committee, and it provides support for meetings of the participants and steering committee. OSRI is provided regular updates on the progress of the JIP projects. OSRI is working with the Coastal Response Research Center to develop a jointly funded biological project that contributes to the JIP research.

This project received approximately $15,000 for OSRI to participate in steering committee meetings and host a steering committee meeting in Anchorage.

**OIL SPILL RECOVERY PRIZE THROUGH INNOCENTIVE**

In FY07 OSRI used an alternative approach towards solving research and development challenges in the oil spill response field. It established a purse prize to reward successful, innovative solutions to challenges facing the oil spill response community. This allows OSRI to pay for solutions rather than the attempt to find a solution, which is what the result from the traditional research funding approach. OSRI worked with its partners to develop five challenge statements and released three. The challenges were released through InnoCentive, a company designed around the prize based approach to science and engineering. The three challenges released were:

1) To develop a means to break the viscous shear of oil below its pour point to allow it to flow to a pump. This is needed to pump out oil from containers, such as mini-barges, at sub-zero temperatures.
2) To develop an economical means to remove or remediate lingering oil in Prince William Sound.
3) And, to develop a means to contain and remove submerged oil.

Theoretical solutions were sought for these three challenges. Twenty eight solutions were received for the first challenge and a prize was awarded. There were six solutions for the second challenge and no solutions were deemed to meet the challenge criteria. Twenty solutions were provided for the third challenge. None met all of the criteria, but one was novel enough that we awarded the prize so that we can develop the solution further.

This is a new project. In FY07 OSRI committed $100,000 to this program to be run through InnoCentive.
INFORM

The projects described in this section are designed to disseminate information and educate the public on the issues of oil spill prevention, response, and impacts. OSRI funds projects to educate the public at all ages, supports graduate students, supports workshops and symposia that allow researchers to present results, and provides direct outreach through the web.

SCIENCE OF THE SOUND

Science of the Sound is a collaborative education program developed to provoke inquiry into the natural world, to increase science and ecological literacy and to foster responsible use of natural resources. The program is designed to enhance science education in the communities of the Prince William Sound (PWS) and is implemented in partnership among the PWS Science Center, the U.S. Forest Service Cordova Ranger District and other local organizations. There are four components to Science of the Sound programs:

- The Discovery Room program serves all students in grades K-6 in Cordova, and provides supplemental opportunities for hands-on science and environmental learning. Programs are executed during the school year with monthly environmental monitoring field trips to give students experience at collecting and recording data in the field.
- During Outreach Discovery trips, Science Center educators travel to the oil spill-affected Villages of Chenega Bay and Tatitlek to implement Discovery Room lessons adapted to fit the village school’s interests and grade-levels.
- Science Center educators work closely with science teachers in the Cordova School District to organize classroom presentations and field trips for Cordova Junior High and High School students. Science Center educators coach a team of high school students to compete in the Alaska Tsunami Bowl, the regional competition of the National Ocean Science Bowl. An annual Science Festival, combining high school student’s Science Fair projects and displays by invited exhibitors, is coordinated by educators from the Science Center and Cordova School District.
- Community Programs are primarily science lectures geared for adults and families presented weekly during the months of September to May. Fifty programs were given in the last season. Attendance varies widely depending on the topic and meeting location, with an average from 15 to 25 people and occasionally a meeting room capacity of 45. Science Center educators collaborate with Alaska SeaGrant, the U.S. Forest Service and the local Audubon Society chapter to recruit scientists and environmental professionals to give evening presentations on topics relevant to the region.

This is a continuing program with $60,000 awarded in FY07 to River Gates, PWS Science Center, Cordova, Alaska. Funding for this project was provided by British Petroleum, ConocoPhillips, the PWS Science Center, and OSRI.

FROM THE FOREST TO THE SEA

From the Forest to the Sea Summer Science Camp is a field-based youth camp program run in collaboration with the U.S. Forest Service, Cordova Ranger District. Participants learn about the natural environment that surrounds them through scientific investigations, data collection and a variety of fun outdoor adventure activities. Participants may hike through the temperate rainforest, observe glaciers up close, canoe through wetlands, and explore the intertidal zone and open ocean while paddling a kayak. Lessons are developed to explore scientific principals through outdoor, hands-on explorations. Emphasis is placed on the interconnected nature of all ecosystems, and the role human influence in each. Forty people between the ages of 9 and 18 participated in two camps in 2007.

Other Summer Education programs the PWS Science Center organizes include opportunities for high school students and adults. The Youth Environmental Leadership Program is an adventurous,
Academically rigorous program for high school students focusing on integrated watershed science, natural resource policy and environmental issues. Weekend workshops and week-long courses educate adult participants about the local environment and current scientific research being conducted by the Science Center. Participants in the adult programs have the option to obtain Professional Development credits through the University of Alaska, Anchorage.

This is a continuing program with $15,000 awarded in FY07 to Lindsay Butters, PWS Science Center, Cordova, Alaska. Funding for this project was provided by British Petroleum, ConocoPhillips, the PWS Science Center, and OSRI.

**WORKSHOPS OR SPECIAL PROJECTS**

These funds are to support workshops or special projects at the discretion of the OSRI Advisory Board. The following workshops and science meetings were supported in FY07.

AOOS/OSRI model validation planning meeting $3,500. This jointly sponsored workshop brought together researchers working in Prince William Sound to design a model validation experiment. By coordinating efforts with existing programs a comprehensive testing plan was developed.

Alaska Marine Science Symposium, $1,500. This symposium is the primary facility for disseminating research results related to Alaska’s Arctic and Subarctic marine environments.

Alaska Forum on the Environment, $5,000. This symposium brings together speakers, panels, and participants to discuss issues related to Alaska’s Environment, including the impact of oil spills.

International Oil and Ice Workshop, $10,000. Speakers presented on all aspects of oil in ice covered environments. Talks covered issues related to exploration, transportation, and spill response in the ice covered marine environment.

Dispersant Working Group Workshop, $532. This working group led by the Coastal Response Research Center is coordinating research efforts related to the use of dispersants in all environments.

**WEB AND PRINT PUBLICATIONS**

Fundamental to the mission of the Oil Spill Recovery Institute, and any organization involved in research, is the dissemination of the information we collect. Webmaster services for the Oil Spill Recovery Institute are provided by Engineering and Environmental Internet Solutions (EEI), LLC of Fairbanks. EEI performs weekly surveys of the site and works with OSRI to ensure regular updates.

OSRI staff prepare the content of annual reports which are designed and printed through a contract with TERRAgraphica of Anchorage.

These are continuing programs with $15,000 awarded in FY07 to Gary Whitton, Engineering and Environmental Internet Solutions, LLC, and $10,000 to Eric Cline, TERRAgraphica.

**FELLOWSHIPS**

OSRI funds are provided to support graduate student research projects that will enhance scientific understanding of the marine ecosystem, provide information needed by managers and decision-makers for oil spill response and recovery, and improve public awareness and understanding of marine and estuarine ecosystems. The OSRI Graduate Research Fellowship Program offers qualified masters and doctoral students the opportunity to address scientific questions of significance to high latitude cold climate regions resulting in high-quality research focused on improving oil spill response and recovery issues.
Sean-Bob Kelly, University of Alaska, Fairbanks
Masters of Science candidate
Advisor: Brenda Norcross, Ph.D.
Identifying past habitat use and essential habitat of Pacific herring (Clupea pallasii)

Populations and habitats of valuable forage fish, such as Pacific herring, are vulnerable to oil spills; therefore, it is important to gain a better understanding of their essential habitats. Specific objectives of this study are to (1) use trace element signatures of core portions of herring otoliths to identify individual spawning bays within Prince William Sound (PWS), (2) use trace element signatures of edge portions of juvenile herring otoliths to identify individual rearing bays within PWS, (3) use adult otoliths to identify bays that contribute a greater portion to the herring population, and (4) use adult otoliths to identify past habitat use and temporal changes.

Following the Exxon Valdez oil spill in March 1989 and the decline of herring stocks in the 1990’s, the need for quantitative analysis of essential fish habitat has become more critical to the conservation of this important fisheries stock. Identification of habitat change since 1995, the oldest available samples, through 2006, the latest samples, would be an indicator of the recovery of the herring populations in PWS. Herring spawning on documented oil-damaged habitat and surviving to recruitment is an indication that those habitats have recovered. Otolith chemical analysis of regional signatures enables Kelly’s research to quantify ecological recovery status through shifts in herring habitat usage over time.

This project was continued into FY07 with previous years funding, no new funds were provided in FY07.

Catherine Foster, University of Washington
Doctoral candidate
Advisor: Donald K. Grayson, Ph.D.
Human Dietary Response to Climate Change and Resource Availability

Climate-driven variation in fish populations has an effect on coastal communities during millennial time scales. Understanding natural sources of variation in marine resources is important for comparison of the affects of anthropogenic disturbances, such as oil spills, on marine resources of coastal communities.

The project employs archaeological and paleoenvironmental data to assess the effects of climate change on resource availability over the last 2200 years along the northeastern Pacific Rim, and will test the effects of this availability on prehistoric fisheries. Did people alter their foraging strategies to accommodate climate change and resource fluctuation by moving their fisheries from the riverine to the marine environment? Several lines of evidence are utilized in this investigation: a) stable oxygen isotopes extracted from fish otoliths will be used to reconstruct the paleoenvironment; b) archaeological faunal materials will be analyzed to test for changes in foraging focus; and c) salmon abundance data from the last 2200 years will be used as a control for the paleoenvironmental and archaeological data. The significance of this project lies in its unique archaeological perspective, and the potential of archaeological data to contribute to an understanding of the larger, long-term processes affecting the marine environment, fish ecology, human-environmental interaction and climate change, and Native Alaskan fisheries.

This project was continued into FY07 with previous years funding, no new funds were provided in FY07.

James M. Alanko, University of Alaska, Fairbanks
Doctoral candidate
Advisor: Tom Weingartner, Ph.D.
Surface Circulation in Prince William Sound

The temporal variability in Prince William Sound surface current patterns occurs over interannual, seasonal, synoptic, and tidal time scales and the spatial variability associated with these circulation patterns is significant. This study uses newly available High Frequency radar technology, to measure and analyze the surface currents of PWS and provide the first comprehensive study of the variability of surface circulation patterns. This technology is used to provide hourly maps with spatial resolutions of...
approximately 2 km. The relationship of the surface current patterns to wind forcing, flow through Hinchinbrook Entrance and Montague Strait, and tides are also being investigated. This project also considers the use of surface current maps from High Frequency radar for trajectory analysis for oil spill contingency planning and for use in search and rescue scenarios. This near real time information is made available to the public, to oceanographic modelers, and to spill response decision makers.

$25,000 were provided in FY07 for the continuation of this project

Xinglong Wu, University of Miami
Doctoral candidate
Advisor: Chris Mooers, Ph.D.
Princeton Oceanographic Modeling Study: How Does a Semi-Enclosed Sea Respond to External and Internal Forcings?

The goal of this study is to understand the response of PWS to such forcing as surface wind, atmospheric pressure, tides, buoyancy flux, inflow and mass structures at open boundaries, and bottom topography and to evaluate the relative roles played by these forcings in driving the synoptic and general circulation in PWS. Simulations of the PWS Nowcast Forecast System-(PWS/NFS) and Extended Prince William Sound / Nowcast Forecast System (EPWS/NFS), which includes the continental shelf of the Northern Gulf of Alaska, suggest that the physical ocean variability inside the two main entrances from PWS to the Gulf of Alaska are seasonal and complex.

The following questions are to be answered in this dissertation research:
Why does a large cyclonic gyre occur in PWS in September with little year-to-year variability, while in other seasons the circulation pattern in central PWS could be transient in either the cyclonic or anti-cyclonic direction? How does the seasonal inflow/outflow structure in Hinchinbrook Entrance (HE) change the circulation in PWS? What is the nature and strength of the buoyancy-driven (thermohaline) circulation in a small semi-enclosed sea such as PWS? What roles do the tides play in influencing the general circulation? How much of the tidal energy is dissipated inside the Sound and what is the Sound's annual tidal energy budget?

$25,000 were provided in FY07 for the continuation of this project

Kaithryn Ott, University of Wyoming
Masters of Science candidate
Advisor: Merav Ben-David, Ph.D.
Recolonization or local reproduction? An assessment of river otter recovery in previously-oiled areas of Prince William Sound via non-invasive genetic sampling.

River otters (*Lontra canadensis*) were one of the first resources to recover from the impact of the 1989 *Exxon Valdez* oil spill (EVOS) in Prince William Sound (PWS). Nonetheless, genetic evidence suggests that the numerical recovery of otters in oiled sites resulted from recolonization from adjacent areas rather than from local reproduction. Because increased trapping pressure on otters in recent years occurs mainly in non-oiled areas of PWS, previously-oiled sites may become important source locations for these animals. Whether otter reproduction has been attained in previously-oiled areas, however, is unknown. In this project we propose to determine whether reproduction was recovered in otter populations inhabiting previously-oiled areas of PWS, using genetic tools and non-invasive fecal sampling. We will estimate abundance, genetic structure, and relatedness. We predict that if otter reproduction recovered, genetic similarity in previously-oiled areas as well as the degree of relatedness of individuals will be comparable to those in non-oiled areas. In addition, we will estimate dispersal of individual animals originating in previously-oiled areas to non-oiled areas from fecal DNA analyses and GIS mapping to evaluate whether previously-oiled areas can serve as sources for sustainable otter harvest.

$25,000 was provided in FY07 to start this masters project.
Matthew Druckenmiller, University of Alaska Fairbanks
Doctoral candidate
Advisor: Hajo Eicken
Promoting sustainable oil and gas development on Alaska’s North Slope through local-scale integration of geophysical and traditional knowledge.

Increased oil and gas activities in Alaska’s Beaufort and Chukchi Seas may serve as a catalyst to more thoroughly investigate the research methodologies and institutional practices that incorporate local and traditional knowledge (LTK), thus promoting a sustainable future for North Slope communities, the coastal ecosystem, and the oil and gas industry itself. Most climate models and sea-ice investigations operate at resolutions not suited for observing the critical processes and variability that exist on the local level; therefore, information required by local institutions and oil and gas developers is often not readily available. Given that many Inupiat Eskimos possess a valuable and nonreplicable understanding of local and regional sea-ice dynamics and unexpected and rare sea-ice events, their knowledge may greatly contribute to decisions made regarding oil and gas development and oil spill response planning and operations.

A systematic investigation of local scale sea-ice system services (SISS) and sea-ice hazards provides a framework for identifying stakeholder-relevant sea-ice variables and collecting and documenting LTK. This project will: (1) investigate the landfast ice and adjacent pack ice in the Bering Strait and the Chukchi and Beaufort Seas using geophysical techniques, such as SAR satellite imagery and coastal radar, and the observations of various Inupiat sea-ice experts, and (2) systematically document SISS and hazards through sea-ice use mapping and interviews. While my research in the broadest context will involve a diverse set of stakeholders, I intend to focus on sea-ice information relevant to oil and gas development and oil spills in ice-covered waters. The main product of this work will be a GIS-based map for use by planners and developers that geographically organizes sea-ice information by the local services and hazards it provides, while also temporally organizing key events in the ice-year, such as when landfast ice stabilizes or becomes dynamic in a specific location.

$25,000 was provided in FY07 to start this doctoral project.

OTHER

RESEARCH PROGRAM MANAGER

Funds are provided for the expense of the OSRI Research Program Manager to track existing programs, develop new programs, develop partnerships, and outreach OSRI programs. Some major activities were the development of challenges to submit to InnoCentive, development of the FY08 work plan, updating the OSRI website, and coordination with the JIP program to attend a workshop in Svalbard and conduct one in Anchorage. During this year Katey Walter moved on to a new and exciting position at the University of Alaska Fairbanks and Scott Pegau was hired to replace her as the Research Program Manager.

Expenses related to this position are combined with the travel expense of the Scientific and Technical Committee described below. Total expense for the two components was $128,766. This includes relocation costs for Dr. Pegau.

SCIENTIFIC AND TECHNICAL COMMITTEE

The Scientific and Technical Committee meets twice a year to assist in developing the annual work plan and to advise OSRI on implementation of the work plan. Funding is provided to cover the travel costs of the members of the Scientific and Technical committee.
Financials

Funds for the Oil Spill Recovery Institute were authorized by the United States Congress through the Oil Pollution Act of 1990 (OPA’90) and amending legislation. The Prince William Sound (PWS) Science Center, a non-profit research and education institute in Cordova, Alaska, administers the OSRI programs as directed by OSRI’s Advisory Board. The PWS Science Center receives the interest earnings from a $22.5 million trust managed by the U.S. Treasury and held within the National Oil Spill Liability Trust Fund. These funds originated from the Trans-Alaska Pipeline Authority and are dedicated to finance the OSRI programs. In the past five years, interest earnings have averaged $872,000 annually while OSRI has budgeted an average of $1 million per year for its annual programs. The excess revenues required have come from a combination of reserve funds (savings accumulated in the early years as the program was ramping up), and interest earned on those reserve funds. OSRI’s programs are mandated by Congress to continue as long as oil exploration and development occurs in Alaska.

The following pages include the Statements of Financial Position for the Prince William Sound Science Center and the Financial Position and Statement of Activities related to the OSRI programs for the fiscal year 2007. Fiscal year 2006 data is provided for comparison.

Professional audits of the PWS Science Center’s financial records, including the OSRI program fund, are completed annually by a nationally recognized accounting firm. The fiscal year 2007 audits were completed by Mikundra, Cottrell & Co., Anchorage, Alaska. Copies of audited financial statements are available upon request to Penelope Oswalt, Finance Director, PWS Science Center, P.O. Box 705, Cordova, Alaska, 99574, or email poswalt@pwssc.org.

Summary of OSRI program expenditures FY06 and FY07

Note that in FY06 the Respond and Understand categories were combined, hence no amount provided in the Respond line.

<table>
<thead>
<tr>
<th>Program Areas</th>
<th>FY07</th>
<th>FY06</th>
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</thead>
<tbody>
<tr>
<td>Administration</td>
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<td>168,000</td>
</tr>
<tr>
<td>Research (Understand)</td>
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<td>586,514</td>
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<tr>
<td>Research (Respond)</td>
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<tr>
<td>Public Education &amp; Outreach (Inform)</td>
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<tr>
<td>Other Programs</td>
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<td>98,972</td>
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<tr>
<td><strong>TOTALS</strong></td>
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<td><strong>985,019</strong></td>
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### Statement of Financial Position

Including the Oil Spill Recovery Institute  
Year Ended September 30, 2007  
(with comparative totals for 2006)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Cash</td>
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<tr>
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<td>544,275</td>
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<td>55,500</td>
<td>73,500</td>
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<td>accumulated depreciation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total assets</td>
<td>562,958</td>
<td>801,371</td>
<td>2,606,810</td>
<td>3,971,139</td>
<td>4,337,496</td>
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<table>
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<tr>
<th>Liabilities:</th>
<th>General Fund</th>
<th>Plant Fund</th>
<th>Program Fund</th>
<th>Totals 2007</th>
<th>Totals 2006</th>
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</thead>
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<tr>
<td>Accounts payable</td>
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<td>230,952</td>
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<tr>
<td>Wages, taxes &amp; benefits payable</td>
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<td></td>
<td>119,467</td>
<td>129,844</td>
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<td>Deferred to revenue</td>
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<td>796,831</td>
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<td>Due to other funds</td>
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<td>436,957</td>
<td>544,275</td>
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<tr>
<td>Total liabilities</td>
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<table>
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<th>Net assets:</th>
<th>General Fund</th>
<th>Plant Fund</th>
<th>Program Fund</th>
<th>Totals 2007</th>
<th>Totals 2006</th>
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<td>73,500</td>
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<tr>
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<td>1,606,784</td>
<td>2,593,783</td>
<td>2,594,153</td>
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<thead>
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<th>Total liabilities &amp; net assets</th>
<th>General Fund</th>
<th>Plant Fund</th>
<th>Program Fund</th>
<th>Totals 2007</th>
<th>Totals 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>562,958</td>
<td>801,371</td>
<td>2,606,810</td>
<td>3,971,139</td>
<td>4,337,496</td>
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</table>
Oil Spill Recovery Institute Programs
Combined Statement of Financial Position
Year Ended September 30, 2007
(with comparative totals for 2006)

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2006</th>
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<tr>
<td><strong>Assets</strong></td>
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</tr>
<tr>
<td>Cash</td>
<td>39,558</td>
<td>46,033</td>
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<tr>
<td>Accrued interest receivable</td>
<td>7,886</td>
<td>7,676</td>
</tr>
<tr>
<td>Investments</td>
<td>2,247,471</td>
<td>2,225,578</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
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<td><strong>Liabilities</strong></td>
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<td></td>
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<tr>
<td>Deferred revenue</td>
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<tr>
<td>Due to other funds</td>
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<tr>
<td><strong>Total liabilities</strong></td>
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<td>863,609</td>
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<tr>
<td><strong>Net assets - unrestricted</strong></td>
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<td>1,415,678</td>
</tr>
<tr>
<td><strong>Total liabilities and net assets</strong></td>
<td>2,294,915</td>
<td>2,279,287</td>
</tr>
</tbody>
</table>

Deposits and expenditures per fiscal year since the original deposit in fiscal year 1997 are shown. While the expenditures initially lagged the deposits, expenditures have recently been greater than deposits so at the end of fiscal year the cumulative deposits are approximately equal to the cumulative expenditures.
## Oil Spill Recovery Institute Programs

### Combined Statement of Activities

Year Ended September 30, 2007  
*(with comparative totals for 2006)*

### Revenues:

<table>
<thead>
<tr>
<th>Description</th>
<th>OSRI Totals 2007</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grants and contributions - Federal</td>
<td>1,027,163</td>
<td>985,019</td>
</tr>
<tr>
<td>Interest</td>
<td>46,543</td>
<td>57,215</td>
</tr>
<tr>
<td>Unrealized gains on investments</td>
<td>144,561</td>
<td>(5,028)</td>
</tr>
<tr>
<td><strong>Total revenues</strong></td>
<td><strong>1,218,267</strong></td>
<td><strong>1,037,206</strong></td>
</tr>
</tbody>
</table>

### Expenses:

<table>
<thead>
<tr>
<th>Description</th>
<th>2007</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and benefits</td>
<td>360,707</td>
<td>381,238</td>
</tr>
<tr>
<td>Travel</td>
<td>27,061</td>
<td>37,002</td>
</tr>
<tr>
<td>Professional services</td>
<td>21,217</td>
<td>9,309</td>
</tr>
<tr>
<td>Subcontracts and charter costs</td>
<td>20,818</td>
<td>20,288</td>
</tr>
<tr>
<td>Supplies</td>
<td>11,456</td>
<td>13,421</td>
</tr>
<tr>
<td>Telephone</td>
<td>5,531</td>
<td>8,159</td>
</tr>
<tr>
<td>Postage and freight</td>
<td>3,246</td>
<td>1,151</td>
</tr>
<tr>
<td>Printing, publications and copying</td>
<td>2,195</td>
<td>1,168</td>
</tr>
<tr>
<td>Utilities</td>
<td>6,205</td>
<td>6,423</td>
</tr>
<tr>
<td>Insurance</td>
<td>2,787</td>
<td>2,787</td>
</tr>
<tr>
<td>Equipment maintenance</td>
<td>11,231</td>
<td>2,759</td>
</tr>
<tr>
<td>Advertising</td>
<td>1,839</td>
<td>1,648</td>
</tr>
<tr>
<td>Other</td>
<td>2,947</td>
<td>4,319</td>
</tr>
<tr>
<td>Grants awarded</td>
<td>467,978</td>
<td>406,584</td>
</tr>
<tr>
<td><strong>Total expenses before interfund facility, equipment costs, and indirect costs</strong></td>
<td><strong>945,218</strong></td>
<td><strong>896,256</strong></td>
</tr>
<tr>
<td>Interfund facility and equipment costs</td>
<td>13,140</td>
<td>13,140</td>
</tr>
<tr>
<td>Indirect costs</td>
<td>52,284</td>
<td>73,978</td>
</tr>
<tr>
<td><strong>Total expenses</strong></td>
<td><strong>1,010,642</strong></td>
<td><strong>983,374</strong></td>
</tr>
</tbody>
</table>

- **Change in net assets**: 207,625 (2006: 53,832)
- **Net assets at beginning of year**: 1,415,678 (2006: 1,363,491)
- **Transfers to Plant Fund**: (16,519) (2006: (1,645))

<table>
<thead>
<tr>
<th><strong>Net assets at end of year</strong></th>
<th>OSRI Totals 2007</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,606,784</td>
<td>1,415,678</td>
</tr>
</tbody>
</table>
Publications and Presentations

Peer-reviewed Publications

Bang, I., S. L. Vaughan, and C. N. K. Mooers. 2005. Initial steps toward validation of a seasonal cycle simulation for Prince William Sound circulation (flow and mass) fields. Continental Shelf Research 25: 901-934. (This reference had accidentally been overlooked in previous annual reports.)


Liu, H., P. Q. Olsson, K. P. Volz, and H. Yi. 2006. A climatology of mesoscale model simulated low-level wind jets over Cook Inlet and Shelikof Strait, Alaska. Estuarine, Coastal and Shelf Science 70: 551-556. (This reference had accidentally been overlooked in previous annual reports.)


Presentations


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