

SFOS NEWS

Institute of Marine Science • Marine Advisory Program • Fishery Industrial Technology Center • Coastal Marine Institute
 Alaska Sea Grant College Program • North Pacific Marine Research Program • Fisheries Division • Global Undersea Research Unit

Vol. 5 Issue 2 March 2002

Hocutt appointed as associate dean

Dr. Charles Hocutt will be joining us as associate dean as he returns to the United States from work abroad in Namibia. He will be in Fairbanks March 12-15 to visit with Fairbanks faculty and staff and will return to take up residence on April 22.

Dr. Hocutt earned his PhD at Virginia Polytechnic Institute. In the last ten years, he has been a professor at the University of Maryland and at Salisbury State College. Dr. Hocutt has also worked in administration as Director of the Coastal Ecology Research Laboratory at UM and, most recently, as the CEO of the Benguela Environment Fisheries Interaction and Training (BENEFIT) Programme in Swakopmund, Namibia.

Advisory Council Meeting

The School of Fisheries and Ocean Sciences' advisory council meeting will be held at the Anderson Building in Juneau on March 16 & 17.

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Alaskan students introduced to marine biology through outreach



K-12 outreach is important and none realize this more than the people in the Konar lab. Dr. Brenda Konar and some of her students, including Cathy Hegwer, Heather Patterson, Judy Hamilton, Casey Debenham, and Reid Brewer have been busy participating in various outreach programs. In the last month, they have

attended the Ryan Middle School All Girl Math/Science Symposium, the Sea Grant sponsored Ryan Middle School Walk Around the School of Fisheries and Ocean Sciences, and an afternoon at the Tanana Middle School. At these various functions they introduced students to the field of marine biology by doing a hands-on presentation using live critters (sea cucumbers, urchins, horseshoe crabs, etc.) and SCUBA diving gear. If anyone saw the picture of the young girl holding a seastar in the Fairbanks Daily News-Miner or the Anchorage Daily News, this was thanks to the Konar lab. What's up for next month? Skyview High School in Soldotna, Seldovia Village Tribal Council sponsored Career Day at the Seldovia School, and Pearl Creek Elementary here in Fairbanks.



"Crustacean Sensation" gets help from FITC

Marine science advisors from UAF's School of Fisheries and Ocean Sciences- Fishery Industrial Technology Center assisted the Kodiak High School team, "Crustacean Sensation," during their months of preparation for competing in the 2002 Alaska Tsunami Bowl in Seward.

Faculty involved were: Dr. Brian Himelbloom, Dr. Bob Foy, Dr. Loren Buck

and Dr. Scott Smiley. Affiliate FITC faculty member, Dr. Brad Stevens (NMFS-RACE, Kodiak), had a significant role in assisting in the students' research project: "Factors Affecting the Tanner Crab Population Near the Kodiak Archipelago." Congratulations and best wishes are extended to the victorious team in their preparation for the upcoming national competition!

SFOS presentations at Hawaiian meeting encompass a wide variety of research interests

The American Society of Limnology and Oceanography met jointly with the American Geophysical Union at the Ocean Sciences Meeting, held in Honolulu, Hawaii from February 10–15, 2002. Approximately 2,300 researchers were registered for the meeting, which was held under almost perfect weather conditions (60's at night, mid-70's during the day) – although the Hawaiians found it to be a bit chilly and wore sweaters. One highlight of the meeting was an evening reception at the Hawaiian Maritime Museum. Mai-tai's and appetizers aboard the 4-masted square-rigger Falls of Clyde provided an excellent backdrop in which to socialize and exchange information with fellow researchers. SFOS was well represented at the meeting, including the following:

"Water-column stability, phytoplankton distribution and zooplankton abundance during summer in Prince William Sound, Alaska." L. Haldorson, T. Shirley, J. Purcell, J. Boldt and J. Snyder.

"Juvenile pink salmon feeding and consumption in the north Gulf of Alaska." J. Boldt and L. Haldorson.

"Growth Rates of Neocalanus Species in the Northern Gulf of Alaska." R.R. Hopcroft, A.I. Pinchuk, C. Clarke.

"Preliminary Data on Euphausiid Distribution and Growth in the Northern Gulf of Alaska." A.I. Pinchuk, R. Hopcroft, K.O. Coyle.

"Eddy Kinetic Energy in the Western Gulf of Alaska and Bering Sea: Comparative Estimates From TOPEX Altimeter Data and Coupled Ice Ocean Model Simulations." S.R. Okkonen, W. Maslowski, W. Walczowski, T.E. Whittedge.

"Observationally Based Assessment of Polar Amplification of Global Warming." I. Polyakov, G.V. Alekseev, R.V. Bekryaev, U. Bhatt, R. L. Colony, M. A. Johnson, V. P. Karklin, A.P. Makshtas, D. Walsh, A. V. Yulin.

"The Distribution of Phytoplankton Standing Stock and Primary Productivity in Association with Observed Nutrient and Hydrographic Conditions Prevalent in the Laguna Madre of South Texas: A Multi-year Picture." T.E. Whittedge, D.A. Stockwell.

"Analysis of Hydrographic Data Collected by the Pollock Conservation Cooperative Research Center in the Bering Sea." H. Statscewich, D. Musgrave.

"A Comparison of the Operational and Experimental COAMPS Meteorological Forecasts at LEO During 2001 HYCODE Experiment." L. A. Bowers, S.M. Glenn, R. Cermak, J. Doyle, S. Wang.

"Seabird Distribution and Abundance in the Northern Gulf of Alaska in Relation to Physical Hydrography." L.D. Sousa, K.O. Coyle, T. Weingartner.

"Climate Control of New Production on the Shelf of the Southeast Bering Sea." C.P. McRoy, A. Springer, K. Mizobata, S. Nakanishi, S. Saitoh.

"Observations of a New Circulation Feature on the Gulf of Alaska Shelf: The Seward Eddy." D.L. Musgrave, H. Statscewich, T. Whittedge, T. Weingartner.

"Temporal and spatial variability in lipid fluxes over the southeastern Bering Sea shelf, 1997-2000." S.L. Smith, S. Henrichs.

"Relationship Between Ocean Color and Lidar Penetration in the Gulf of Alaska." J.H. Churnside, E. Brown, T. Veenstra.

"An Idealized Model of the Seasonal Variability in the Alaska Coastal Current." W.J. Williams, T.J. Weingartner.

"Juvenile Pink Salmon Feeding and Consumption in the North Gulf of Alaska." J.L. Boldt, L.J. Haldorson.

"The Gulf of Alaska Ecosystem: An Interdisciplinary View After Four Years." T.E. Whittedge, T. Weingartner, K. Coyle, T. Royer, D. Stockwell, L. Haldorson, B. Day, D. Musgrave, S. Henrichs, R. Hopcroft, T. Kline, E. Lessard.

"Sources of Interannual Variability in the Barents Sea." S.L. Zimmermann, M.A. Johnson.

"A Nested Coupled Ice-Ocean Model for the Beaufort Sea." Q. Liu, J. Wang, M. Jin.

"Interannual Variability and Sensitivity Study of Ocean Circulation in Prince William Sound, Alaska From 1995–1998." M. Jin, J. Wang.

"Preliminary Observations on Chlorophyll and Primary Productivity Distributions Obtained During the Gulf of Alaska GLOBEC Monitoring Program." D.A. Stockwell, T.E. Whittedge, A.R. Childers.

"Nitrate Sources and Sinks in the Shelf Waters of the Northern Gulf of Alaska." A.R. Childers, T.E. Whittedge, D.A. Stockwell, T.J. Weingartner.

"Effects of different nutrients on the nutrient uptake rates and species composition of summer phytoplankton in the southeastern Bering Sea shelf during 2000." T. Rho, T.E. Whittedge, D.A. Stockwell, J.J. Goering, I. Sukhanova.

"Stability Analysis of a Six Component Ecosystem Model for the Coastal Gulf of Alaska." G.A. Blamey, D.L. Musgrave, S. Hinckley.

"A Community Education Program in Marine Science for Prince William Sound, Alaska: Youth Area Watch." R. Fleharty, D.L. Musgrave, K.R. Turco, P.S. Marshall.

"Towards an Improved Model Representation of Oceanic and Sea Ice Conditions in the Bering and Chukchi Seas." W. Maslowski, S.R. Okkonen, W. Walczowski.

Proteomics may come to UAF

by Dr. Don Button

A joint 5-year program with Oregon State University, Southern Oregon University, University of California Santa Barbara, and Diversia Corporation has been proposed to develop functional models of marine microbial processes based on a recent bacterial isolate from the Sargasso Sea: SAR 11. It is prevalent throughout the world ocean but, like most other dominant marine microbes, has not previously been brought into laboratory cultivation for analysis. Work will include analyses of its complete genome, all its expressed proteins, cytoarchitectural properties, bioenergetic capacity, and kinetic constants for the transformation of nutrients. The idea is to provide a functional model of how the heterotrophic microflora control marine chemistry and contribute to food webs. This would be the first microbe to be modeled to this extent and in this way. Support would be from the National Science Foundation's Biocomplexity Program for 5 years.



People



Dr. Vera Alexander and Dr. John Kelley were invited presenters at the plenary session of the 17th International Symposium on the Okhotsk Sea and Sea Ice in Mombetsu, Japan February 24–28, 2002. Dr. Alexander described the proposed design and model testing of an ice capable Arctic research ship and Dr. Kelley presented a lecture on climate change effects on coastal dynamics. Dr. Alexander also was invited to make a brief presentation on the Arctic to the “Children’s Symposium” organized by the Mayor of Mombetsu and Dr. Masaaki Aota, Director of the University of Hokkaido, Sea Ice Laboratory (SIRL). Dr. Alexander later presented Dr. Aota with a plaque at a special ceremony in recognition of his contributions to oceanography in ice covered seas and his retirement from the University of Hokkaido.

Dr. T. Nishiyama, a former professor in the SFOS/IMS, will retire in March 2002 from his position as President of Tokai University. Dr. Nishiyama also attended the Sea Ice Symposium in Mombetsu.

Hector Douglas received a Grant in Aid of Research (GIAR) from the Society of Integrative and Comparative Biology.

Terry Johnson, Marine Advisory Program tourism specialist and Homer agent, is developing a publication for persons interested in working as sport fishing guides, water taxi and charterboat operators, and in other occupations related to marine recreation. Johnson developed the content for presentation Feb. 6 at the outdoor jobs fair, “Guiding Your Way to a New Career,” held at UAA and sponsored by the Alaska



Terry Johnson

Wilderness Recreation Tourism Association and Cook Inlet Region Incorporated. CIRI is developing a jobs training program and expressed interest in working with Marine Advisory on a marine tourism component.

Johnson also recently developed a draft set of voluntary guidelines for conduct associated with viewing marine wildlife, including shales, pinnipeds, seabirds, and coastal animals such as bears. The draft is currently being circulated for comment among marine wildlife tour operators, and will be presented in March at the annual AWRTA conference in Fairbanks.

Peggy Merritt has been hired by the Alaska Department of Fish & Game, Division of Commercial Fisheries, to assist the U.S./Canada Yukon River Joint Technical Committee in the development of a strategic research plan for salmon in the Yukon River. Technical Committee members represent Alaska State, U.S. Federal, and Canadian management authorities, as well as fishing and local village interests from both countries. In March 2001 a 16-year deadlock between the two countries over Yukon River salmon was overcome with the signing of the Yukon River annex to the Pacific Salmon Treaty. The new agreement stipulates that the parties shall undertake planning to recommend research in order of priority. There is a need to integrate biological and socioeconomic components to create comprehensive approaches for sustaining salmon populations and opportunities for optimal harvesting. Chinook and fall chum stocks have been classified as yield concerns by the Alaska Board of Fisheries based on the inability of management to maintain expected harvestable surpluses in recent years. Yukon River summer chum and Toklat River fall chum have been classified as management concerns based on the chronic inability to meet escapement goals.

Katrin Iken has recently been hired in the School of Fisheries and Ocean Science as an Assistant Professor. Iken received her Ph.D. at Alfred Wegener Institute for Polar and Marine Research in Bremerhaven, Germany in 1995, and did post-doctoral research at Alfred Wegener and the University of



Katrin Iken

Alabama Birmingham. Iken’s interest areas are chemical ecology, where she studies the interactions between organisms that are mediated by chemicals; and tropic ecology, which has to do with the feeding modes and feeding energetics of organisms.



Bodil Bluhm

Wegener Institute for Polar and Marine Science in 2000 and since February of 2001 has been at the University of Alaska Fairbanks as a non-degree seeking student. Her major research interests are biology and ecology of polar benthic macrofauna, population dynamics of benthic invertebrates, age determination of marine taxa, stock assessment and ecology of marine mammals, research for improved management and conservation, microscopic techniques (light, fluorescence and confocal laser scanning microscopy), and transfer of science to the public.

Bodil Bluhm has recently been hired as a Research Assistant Professor at the School of Fisheries and Ocean Sciences. Bluhm received her Ph.D in Marine Biology (magna cum laude) at Bremen University-Alfred



Alana Johnson

Boswell award for outstanding graduating senior woman. Congratulations, Alana!

Alana Johnson, an office assistant in the SFOS business office, won the UAF Justice Department award for outstanding undergraduate student, and has been nominated for the Marion Frances

New Faces in the Office

Amy Tonkin
Administrative
Assistant



Betty Higdon
Office
Assistant



How much oil remains in Prince William Sound?

The 1989 Exxon Valdez oil spill (EVOS) in Prince William Sound, Alaska, released a minimum of 11 million gallons of Alaskan crude oil into one of the largest and most productive estuaries in North America. During the summer of that year, the Alaska Department of Environmental Conservation (ADEC) estimated that 149 km of shoreline in Prince William Sound were heavily oiled and 459 km were at least lightly oiled. A year later a survey showed oiling had decreased 73 percent. Two years later in 1991 an interagency survey estimated only 1.4 km of shoreline were heavily oiled. By 1992 the estimate of heavily oiled shoreline was only 0.2 km. After three years of unprecedented efforts to clean the polluted beaches and subsequent surveys showing declining contamination, it was expected that natural processes would disperse any remaining oil.

However, in 1993 the EVOS Trustee Council funded an additional survey that estimated 7 km of shoreline were still contaminated with subsurface oil. Smaller-scale studies dealing with continued clean-up efforts and restoration of oiled mussel beds conducted between 1995 and

FITC presentations at Reno meeting

FITC researchers gave seven presentations (out of 47) at the 54th Annual Meeting of the Pacific Fisheries Technologists held in Reno, Nevada in February:

Himelbloom, B.H., S.M. Vitt and C.A. Crapo. Portable ATP Luminometry for Evaluating Salmon Roe Processing Facilities.

Himelbloom, B.H. Evaluation of MIST Alert in Paralytic Shellfish Poison Testing of Clams and Molluscs.

Vitt, S.M., C. A. Crapo, and B.H. Himelbloom. Refrigerated Sea Water (RSW) Modifications to Maintain Fish Quality.

Bechtel, P.J. and C.A. Crapo. Estimates of Alaska Fish Processing Waste Stream Components.

Smiley, S. Update on the Alaska Fisheries By-Product Utilization Project.

Sathivel, S. and W. Prinyawiwatkul. Removal of Free Fatty Acids from Crude Catfish Oil by Adsorption Using Chitosan, Activated Carbon and Activated Earth.

Egtvedt, C., J. Ringo and C. Crapo. Sharing Some Practical Aspects of Using Chlorine Dioxide as a Sanitizer (panel discussion).



Roughly 10,000 pits were excavated as part of the shoreline survey of Prince William Sound during summer 2001.

1999 showed that oil was surprisingly persistent and often in a relatively unweathered state, containing high concentrations of toxic and biologically available polycyclic aromatic hydrocarbons (PAH). Long-term monitoring in the oiled areas has also shown that fauna from higher trophic levels such as sea otters and sea ducks still has not recovered. It now appears the remaining oil deposits may have become a chronic source of low-level oil pollution within the spill-affected area.

Because a significant survey of Prince William Sound had not been conducted since 1993 and the cumulative extent of the remaining oil was unknown, concerns were generated by the public and scientific communities about the oil's possible continuing effects on humans and fauna potentially exposed to the oil directly or indirectly. Public perception of the amount of oil that remains on beaches within Prince William Sound has varied widely. Without an accurate assessment of the extent of the remaining oil, subsistence food-gatherers, consumers of commercial fish products from the area, and tourists have used mostly anecdotal evidence as the basis for economic decisions regarding resource utilization in the affected area. Scientists and resource managers also have lacked an accurate assessment of the amount of remaining oil in Prince William Sound necessary for determining further appropriate scientific studies and management actions.

Consequently, the Auke Bay Laboratory (ABL) with funding from the EVOS Trustee Council, took on the task of assessing the remaining oil along the shorelines of Prince William Sound during the summer of 2001. The primary objective of the project was to measure the amount of oil remaining in the intertidal zone of Prince William Sound. Secondary objectives include determining the rate of decline of oil on these beaches,

estimating the persistence of the remaining oil, and correlating the remaining oil with geomorphological features.

Methods

Previous attempts to estimate the oil remaining on beaches affected by the Exxon Valdez oil spill have relied mainly on Shoreline Contamination Assessment Teams (SCAT), field teams that perform comprehensive foot surveys of impacted beaches. The SCAT survey crews estimated oiled areas based mostly on visual clues at the surface. Although SCAT were useful for directing cleanup efforts immediately after the spill, it was determined that the SCAT methods would not be useful for producing a quantitative estimate of subsurface oil contamination 12 years after the spill.



Pits were dug manually with shovels and pry bars, mostly on cobbled beaches.

Sampling efforts for the 2001 survey focused on beaches assessed as heavily and moderately oiled during the 1989-93 ADEC/EVOS Trustee Council surveys. Limited additional effort was allocated to areas that had not been surveyed since 1989 and where persistence was uncertain. The survey design examined about 20 percent of the areas heaviest hit by the spill, with an intensity that permits extrapolation to other hard hit areas for all of Prince William Sound. The survey design guarantees a credible minimum estimate of remaining oil in the area and will provide a confidence interval for the most likely amount remaining throughout the affected region. This information is needed to predict oil persistence into the future and to determine associated risks to vulnerable biota.

The 2001 survey covered roughly 8,000 m of shoreline. Ninety-six sites were randomly selected from the total number of oiled beaches assessed during the ADEC/EVOS Trustee Council surveys. A 72-ft vessel was chartered for 90 days (three 20-day legs and one 30-day leg) between May

OIL SPILL . . . continued from page 4 and September of 2001. In addition to ABL staff, three contract laborers per cruise were provided by the native villages of Titilek and Chenega. The Alaska State Department of Natural Resources provided an archeologist on site to protect any cultural artifacts uncovered in the digging.

The 2001 survey adopted a stratified random/adaptive sampling (SRAS) design. Two random pits were excavated to a depth of 0.5 m (1.6 feet) in every stratified block (0.5-m verticle drop in tide height) within a grid system established at each site. If subsurface oil was discovered in any of the randomly stratified origin pits, then additional adaptive pits were excavated above, below, to the right, and to the left of the origin pit until the extent of the oil patch was determined. Sampling methods utilized only manual labor; holes were dug with shovels and pry bars. Most beaches were cobble or armored with boulders, making digging physically challenging. The sampling effort translated into 6,775 random origin pits and several thousand more adaptive pits within 7.7 km of the spill-affected area).

Two additional measurements were made from every oiled, random origin pit to aid in volumetric estimates. First, the oil was categorized into a standardized visual classification scheme developed by the previous surveys (light, moderate, or heavy oil residues). Then, the oiled zone within the pit was measured to the nearest centimeter. Also, a subset of pits representing each visual oiling classification was weighed, homogenized, and collected for chemical analysis. A regression relationship based on the quantity of oil extracted and weighted from these samples will be generated to establish an estimate of the mean amount of oil in each oiling classification.



Oil was categorized into a standardized visual classification scheme

Results

Buried or subsurface oil is of greater concern than surface oil. Subsurface oil can remain dormant for many years before being

dispersed and is more liquid, still toxic, and may become biologically available. A disturbance event such as burrowing animals or a severe storm reworks the beach and can reintroduce unweathered oil into the water. Results of the summer shoreline survey showed that the oil remaining on the surface of beaches in Prince William Sound is weathered and mostly hardened into an asphalt-like layer. The toxic components of this type of surface oil are not as readily available to biota, although some softer forms do cause sheens in tide pools.

Our survey results indicate a total area of approximately 20 acres of shoreline in Prince William Sound are still contaminated with oil. Oil was found at 58 percent of the 91 sites assessed and is estimated to have the linear equivalent of 5.8 km of contaminated shoreline. The overall 20 acre estimate of oil-contaminated beaches was more than twice the estimate from the EVOS Trustee Council survey conducted in 1993. (The 1993 surveys covered more beaches, but dug far fewer holes). Most of the oil found in 2001 was classified as lightly oiled, but was still easily observed once it was uncovered (sheening, strong odor, and sticky) and did not require the aid of a mechanical sniffer or chemical analysis for positive identification.

In addition to the estimated area of remaining oiled beach, several other important points were evident.

1) Surface oil was determined to be not a good indicator of subsurface oil.

2) Twenty subsurface pits were classified as heavily oiled. Oil saturated all of the interstitial spaces and was extremely repugnant. These "worst case" pits exhibited an oil mixture that resembled oil encountered in 1989 a few weeks after the spill – highly odiferous, lightly weathered, and very fluid.

3) Subsurface oil was also found at a lower tide height than expected (between 0 and 6 feet), in contrast to the surface oil, which was found mostly at the highest levels of the beach. This is significant, because the pits with the most oil were found low in the intertidal zone, closest to the zone of biological production, and indicate that our estimates are conservative at best.

Conclusion

The possibility of continuing low level chronic effects from the Exxon Valdez oil spill seem very real now, although measurable population effects would be very difficult to detect in wild populations. If there are continuing effects, it would be most likely restricted to populations residing or feeding in the isolated oil pockets. Sea otters and harlequin ducks fall

into this category. Researchers have been monitoring these populations' poor recovery in heavily oiled areas since the 1989 spill. The 2001 shoreline survey has provided new insights into possible sources of continued oil contamination. This has stimulated future studies that will focus on the bioavailability of the oil and its impacts on species such as sea otters, harlequin ducks, and their intertidal prey.



A pit containing a heavy oil residue.

We anticipate the significance of these results will be controversial and stimulate discussion. Is the oil significant and to whom? Are pink salmon or herring injured because of continued intertidal contamination? Are near shore predators, like otters or sea ducks, at risk because they prey in this zone? Are the area's subsistence users avoiding appropriate beaches, or are they avoiding all beaches? What can or should be done about the remaining oil? If more cleaning is requested or required, will it do more good than harm?

The last beach assessment was completed in September 2001. Supporting chemical analyses will be completed in fall 2002, and a final report with statistical analyses and conclusions will be completed by April 2002.

Article and pictures by Jeff Short, Stanley Rice, and Mandy Lindeberg.

* * *

Jewett speaks at ERIKA conference

Dr. Stephen Jewett was one of two keynote speakers at the ERIKA Oil Spill Conference at the University of Nantes, France, January 23–25, 2002. The tanker ERIKA broke in two off the coast of France in January 1999 and spilled nearly half as much oil as the Exxon Valdez spilled. Jewett's talk was titled "The Exxon Valdez experience: consequences, post-spill remediation techniques and efficiency."

* * *

Hoberg and Feder explore the macrobenthos of sites within Prince William Sound, Alaska

Following is a reprint of the Abstract and Introduction of the article The Macrobenthos of Sites within Prince William Sound, Alaska, Prior to the Exxon Valdez Oil Spill, by Max Hoberg and Howard Feder, published in 2002 by WILEY-VHC Verlag Berlin GmbH.

Abstract

Benthic fauna within three bays (Rocky and Zaikof Bays, and Port Etches) of outer Prince William Sound, Alaska are examined. The data represent the only detailed benthic faunal information available for the period prior to a major oil spill by the tanker Exxon Valdez within the sound. The spatial distribution of fauna determined by classification and ordination resulted in eight station groups. Stepwise multiple discriminant analysis demonstrated a relationship between station groups, sediment gain and size and nitrogen. Major faunal differences were observed within Rocky and Zaikof Bays between 1982 and 1990. The faunal differences between the two time periods demonstrate the extreme temporal variability that might be expected within Prince William Sound. The study serves as a cautionary note to avoid

conclusions about the effects of disturbance to the benthos on a single data set. An explanation for temporal differences within the bays is presented.

Introduction

The subtidal benthic fauna within Prince William Sound, in the region affected by the Exxon Valdez oil spill (EVOS) in March 1989, was not well documented prior to that event (Wolfe et. al., 1994). A few reports and reviews described the benthic infauna and epifauna within several bays and fjords of the sound and the fauna for the contiguous shelf of the Gulf of Alaska (Hoberg, 1986, Feder and Jewett, 1986, 1988). The available information suggested a relatively diverse fauna within the sound and adjacent waters. Subsequent to the EVOS, faunal data were collected and analyzed from a series of oiled and unoled subtidal sites within the outer sound (Feder and Blanchard, 1998). However, no previous data were available for most of the sites they sampled.

Tankers loaded with crude oil travel over 90 km from a terminal in Port Valdez through Prince William Sound before entering the Gulf of Alaska through Hinchinbrook

Entrance. The oil spill within the sound, emphasized that the potential for such an incident is always present where oil tankers operate in coastal marine waters (Anonymous, 1993). The data presented in this paper for three bays in western Prince William Sound (Port Etches, Zaikof Bay, and Rocky Bay) represent the only quantitative pre-EVOS information available for the western sound where most damage took place. The latter bays were not within the main trajectory of the EVOS (Royer et. al., 1990), but their faunal composition was similar to many of the bays impacted by the oil spill. Two of the bays (Zaikof and Rocky Bays) sampled in 1982 were occupied again at the same depths in 1990 (Feder and Blanchard, 1998).

This paper examines benthic fauna within three bays of western Prince William Sound prior to the EVOS, makes comparisons between two sites (Rocky and Zaikof Bays) between 1982 and 1990, suggests reasons for faunal changes at the latter sites between the time periods, and presents the only available list of benthic taxa for the outer sound.

Thank-you to our NOSB editors!

A big thank-you to the following IMS faculty, staff, and students who took time out of their very busy schedules to edit the many questions necessary for the National Ocean Science Bowl.

Tami Mau, Katie Murra, Heather

Patterson, Leandra de Sousa, Deena Jallen, Bill Williams, Jennifer Reynolds, Kate Hedstrom, Mette Nielson, Sarah Zimmermann, Dave Musgrave, Phil Marshall, Russ Hopcroft, Cheryl Hopcroft, Laura Slater, and Rob Cermak.



Bender and Neuman team up

Laura Bender has taken on the newly-created position of Academic Programs Manager for the School of Fisheries and Ocean Sciences. She will provide leadership, management and administrative oversight of SFOS academic programming including budget development and tracking, student support services and recruitment. This is an expansion of her old position and Laura would like to stress that she is still available to work with faculty, staff, and students. She considers these interactions to be the



Laura Bender

most important part of her job.

Filling Laura's old position is Christina Neuman. She will be taking over the daily functions of the office and working in tandem with Laura to keep the office running with the recruitment of new students, working with the current students, scheduling of classes, and all of the other numerous duties that are involved in the academic office. We are very lucky to have Christina promoted to this position even though we lost a great administrative assistant.



Christina Neuman

Publications



Merritt, M. F. 2001. Strategic plan for salmon research in the Kuskokwim River drainage. Alaska Department of Fish and Game, Fishery Special Publication No. 01-07, Anchorage.

Mathisen, O.A. and N.J. Sands. 2001. Density-Dependent Ocean Growth of some Bristol Bay Sockeye Salmon Stocks. In: Spatial Processes and Management of Marine Populations. Alaska Sea Grant College Program. AK-SG-01-02: 340-362.

Mathisen, O.A., J.J. Goering, E.V. Farley. 2000. Nitrogen and carbon isotope ratios in sockeye smolts. In: Verh. Internat. Verein. Limnol. Vol. 27, pp. 3121-3124.

Fish Habitat Vital to Ensuring Stable Populations

The National Marine Fisheries Service, an agency of the Commerce Department's National Oceanic and Atmospheric Administration, published final regulations in the Federal Register implementing the essential fish habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act, on January 17. The regulations provide guidelines for fishery management councils to identify and conserve necessary habitats for fish as part of federal fishery management plans. The regulations also establish coordination and consultation procedures to be used by

NOAA Fisheries and other federal agencies to protect habitats identified as EFH.

"The objective of the EFH program is to conserve and enhance the habitats that support sustainable fisheries and contribute to healthy ecosystems," said NOAA Fisheries Assistant Administrator Bill Hogarth. "Through this rule, NOAA Fisheries and the councils will work together with federal and state agencies, industries, fishery groups, conservation groups, and the general public to help stop the disappearance and degradation of fish habitats. This important rule brings us

together in support of healthy fish populations and habitats for future generations."

The final rule published on January 17th replaces an interim final rule that has been in effect since January 1998. In an extraordinarily public rulemaking process, NOAA Fisheries held five separate public comment periods while developing the regulations, and held more than 20 public meetings and workshops.

In the final rule, NOAA Fisheries makes changes to the regulations based on

See HABITAT, page 8

Funding

PLANNING LETTER REQUEST ONR HIGH LATITUDE DYNAMICS PROGRAM FOR FY 2003

From: ONR High Latitude Dynamics
Program (Code 322HL)

To: High Latitude Community Investiga-
tors

Subject: Call for Planning Letters for FY03

To optimally plan the High Latitude Dynamics Program in and beyond FY 03, it is requested that investigators seeking funding submit via email a planning letter providing advance intention of proposal submission. These letters are requested both from investigators who would be new to the ONR program and from those whose grants or contracts are anticipated to be renewed for FY 03. Investigators who are already incrementally funded for the period need not submit letters. Letters should be received at ONR by 15 March 2002, and letters received by that date will receive a response no later than 15 May 2002.

Responses to the letters will consist of expressions of encouragement or discouragement. Encouragement can be taken to mean that your intended proposal will be of interest to the program and has a significant chance (no worse than 50%) of being funded. Discouragement means that the chances of funding are lower, though you are free in any case to submit a formal proposal.

A planning letter should be no longer than two pages (10-point minimum font size) and should:

a. clearly describe the objectives and nature of the work being proposed; and

b. indicate the resources (time, equipment, funding) needed to carry out the work, keeping in mind that the High Latitude Dynamics program typically supports research projects two-to-five years in duration.

Investigators who would be new to the ONR program must submit an accompanying biographical sketch not to exceed two pages in length.

Electronic submissions are required, and should be sent to: HLD@onr.navy.mil.

Immediate acknowledgment of receipt will follow, so you need not send paper copy as backup.

All letters should be headed with the following information:

- Title of proposed research activity
- Name(s) of PI and co-PI(s)
- Mailing address
- Telephone number
- E-mail address

Preferred word processing formats: Rich Text Format (*.rtf), PDF (*.pdf), or Word 97 (*.doc).

The High Latitude Dynamics program investigates processes, primarily of a physical oceanographic nature, that are active in the Arctic.

Overarching objectives are to improve our understanding of ice mechanics and dynamics, air-sea-ice exchange processes, cross-shelf transport mechanisms, and turbulent mixing processes as they influence both upper ocean structure and deep convection. Topical emphases will be placed on mesoscale and sub-internal radius of deformation scale processes. In addition, a recent workshop on Operational Implications of an Ice-Free Arctic has

shown the need for considering views of an Arctic Ocean such as might result from long-term climate change. Geographical emphases fall on the continental margins, including marginal seas and the adjacent slopes, regions of steep bottom topography such as certain of the mid-ocean ridges, and the marginal ice zones. These objectives contribute to ongoing development of models in support of future fleet activities in the Arctic.

A joint effort is underway with the ONR Ocean Modeling Program (ONR 322OM) to develop the next generation Polar Ice Prediction System (PIPS 3.0) for operational use by the Navy/National Ice Center. This work is now entering an operational validation stage.

A new phase of the Submarine Ice Exercise (SCICEX) program was initiated in FY 2000 with the signing of a Memorandum of Agreement between the DoD and the NSF. This phase will typically not allow for accommodation of scientists on submarine deployments or for significant alterations to the vessels; however, opportunities are anticipated for measurements using expendable CTD probes and for obtaining water samples during transects across the Arctic Ocean. Scientists interested in receiving or processing data from these measurements should submit planning letters expressing their interests.

As part of a larger Navy effort, an ice camp is being planned for the Spring of 2003. Two weeks will be available for unclassified research.

In making estimates of costs for using the camp, you may assume that logistical costs will be covered once you depart Prudhoe Bay for the camp.

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thousands of written public comments and almost four years of experience implementing EFH through the interim rule. The revised regulations provide clearer standards for the councils to use in identifying EFH, additional guidance to help councils evaluate whether fishing activities may adversely affect EFH, and clearer procedures for federal agency consultations with NOAA Fisheries on actions that may impact EFH.

Congress added the EFH provisions to the Magnuson-Stevens Act in 1996. The eight regional fishery management councils and NOAA Fisheries subsequently identified EFH using the best scientific information available for each of the species managed under 41 fishery management plans across the nation. The councils and NOAA Fisheries will

use the final rule to revise and refine the EFH designations as additional information becomes available regarding the habitat requirements of federally managed fish species. The final rule will also guide the designation of EFH for species managed through any new fishery management plans.

"Fish populations around the country are experiencing the effects of lost coastal wetlands and seagrass beds, dammed rivers, contaminated sediments, and diminished water quality," Hogarth said. "The essential fish habitat provisions of the Magnuson-Stevens Act were developed to prevent future habitat problems before the finfish and shellfish that depend on healthy habitats suffer further declines."

A full-color version of our newsletter is available at: www.sfos.uaf.edu/
In order to view this version, you will need a copy of Adobe Acrobat Reader.

Editor's Corner: Got News?

Special thanks to the contributors of the material used in this newsletter.

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SFOS News

is produced by the
School of Fisheries and Ocean Sciences
Academic Services
University of Alaska Fairbanks
Fairbanks, AK 99775-7220

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