



NCSR NEWS



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NORTHWEST CENTER FOR
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COSEE-ALASKA: People, Oceans and Climate Change

Written by Nora Deans and COSEE-Alaska staff

"[Alaska] really is the bellwether, the canary in the mine; what we see over the next decade here and in the Arctic, the rest of the world will see in the next 25 years."

- Robert Corell, chair, Arctic Climate Impact Assessment for the International Arctic Council



Commercial fishing trawler recovering net
Photograph by Steve Barbeaux/NPRB

Why create a COSEE (Centers for Ocean Sciences Education Excellence) in Alaska, given its relatively small and remote population of 660,000?

Alaska is the U.S. Arctic, and as such, Alaska's coast - which, at 43,000 miles is the longest state coastline in the nation - is also one of the most sensitive ecosystems to a warming climate regime. A report recently released by the Intergovernmental Panel on Climate Change brought global political attention to the issue of climate change and how it will be felt throughout the world, and especially in the Arctic.

The polar bear - a major predator in Alaska - has been listed as a threatened species because of shrinking ice habitat in the Beaufort and Chukchi Seas.

New Arctic maritime transportation corridors could become accessible as seasonal sea ice coverage declines. Alaskan glaciers and ice sheets are melting at an unparalleled rate. Fish populations are shifting their geographic distribution patterns in response to increased ocean temperatures, potentially driving fishing fleets to new and potentially sensitive areas.

Commercial enterprises that depend on Alaska's ocean resources include the largest fishing port in the nation, Dutch Harbor, and the third largest fishing port, Kodiak. The value of Alaska's fish and shellfish harvest is approximately \$2 billion per year, and the seafood industry is Alaska's largest private employer. Fishing for wild salmon is the state's commercial fishing economic backbone and engages local residents from Ketchikan (on the border with Canada) north to Kotzebue (above the Arctic Circle). Tourism brings more than two million visitors to Alaska each year, and oil and gas exploration in Alaska's arctic and offshore areas is a significant contributor



Ships support oil and gas exploration
Photograph by Karna McKinney

to Alaska's employment, economy and U.S. energy supplies.



Alaska Natives can contribute to an understanding of environmental changes.

Photograph by Eli Gurarie

Alaskan coastal communities are directly experiencing the impact of a warming climate with more intense fall storms, increased coastal erosion, and instability from thawing permafrost, all of which are beginning to shift community behavior patterns.

Coastal communities have existed in Alaska for thousands of years and the knowledge of human interactions with the arctic environment is contained within those communities. Western "modern" science, however, has only recently (within the last 100 years) begun to quantify the interactions of humans and the environment in Alaska.

Eighty percent of Alaskans live on the coast and in some communities in Western Alaska, more than 600 pounds per person of subsistence-harvested animals and plants are consumed annually. Daily lives of Alaskans are impacted by weather, and as a result, traditional and local knowledge of natural cycles are strong in rural Alaskans. Five indigenous groups of Alaska Natives bring collectively thousands of years of place-based knowledge that can contribute to an understanding of our planet's changes.

Through its interactions with Alaska's coastal

communities and rural school districts and use of technology, COSEE-Alaska will help bring this vast, existing, historical knowledge to the forefront of scientific awareness and to the broader public. Linked with modern analytical and visualization tools, ocean and coastal climate change impacts will be translated into the global needs of education, economics, science, and culture.

Partnerships Among Scientists and Educators

COSEE-Alaska is a partnership involving the Alaska Ocean Observing System, the Alaska SeaLife Center, the North Pacific Research Board, the University of Alaska Fairbanks School of Fisheries and Ocean Sciences, the UAF Center for Cross-Cultural Studies, the Anchorage School District, and the Alaska Sea Grant Marine Advisory Program.

With both a regional (Alaska's arctic) and thematic (People, Oceans and Climate Change) focus, COSEE-Alaska seeks to increase ocean literacy both within and outside Alaska and to weave together western science and traditional knowledge about ocean climate change to share with the nation.

The COSEE designation is especially timely, given the rapidly changing Arctic climate being blamed for storms that are eroding the seacoast,



Sea ice is critical to polar bears survival.
Photograph by Steve Hillebrand

Meet the Author



altering fisheries, thawing permafrost, and melting sea ice that polar bears, walrus and seals need for survival.

“This program provides a great opportunity to share with the world the dramatic changes we’re experiencing in our region due to climate change and to help the Arctic research community connect directly with Alaskans, from fishermen, boaters, teachers and students to other marine stakeholders and the public,” said Molly McCammon. McCammon is the director of the Alaska Ocean Observing System, and led the COSEE planning efforts.

Ocean Science Fairs in Rural Coastal Communities

Launched in late August, 2008, COSEE-Alaska outreach activities will include workshops among scientists, teachers, and students; real and virtual field trips; and the creation of statewide Ocean Science Fairs. In October 2008, co-PI Dr. Ray Barnhardt and science fair consultant Alan Dick hosted an initial meeting of representatives from Alaska school districts to identify ocean science projects with substance and currency and to develop plans for establishing science fairs in remote rural coastal districts the first year. Three fairs are already underway: Lower Yukon-Kuskokwim, Unalaska, and Sitka. Ocean scientists in the region are working on science fair project ideas for these communities.

SEANET

Each year, hundreds of scientists from Alaska, the U.S. and other countries come to Alaska to participate in research projects. In many coastal communities, this annual influx of scientists provides an opportunity for local residents to directly interact with researchers. The Alaska Marine Science Symposium (AMSS), held annually in Anchorage, attracts more than 700 marine scientists from the U.S., Canada and Russia and serves as a useful opportunity for researchers to network and develop collaborations with marine educators, communications professionals and community members who all attend this 4-day public symposium in the cold, dark days of January.

COSEE Alaska will expand the annual Communicating Ocean Science workshop at the AMSS. We will use the workshop as an opportunity to formalize SEANET, a network of ocean scientists, marine educators, students, and community members involved in communicating

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Nora Deans is Director of Alaska’s Center for Ocean Sciences Education Excellence, based in Anchorage, Alaska. She also oversees the communication, education and outreach efforts for the Alaska Ocean Observing System (www.aos.org) and the North Pacific Research Board (www.nprb.org) and is leading the communication and education activities for a \$52 million, six-year research partnership with the North Pacific Research Board and the National Science Foundation focusing on the Bering Sea (www.bsierp.nprb.org). Nora has worked closely with scientists and educators to communicate ocean science at public aquariums and informal science centers for more than 30 years. She is director of the Alaska chapter of the Northwest Aquatic and Marine Educators and is a past president of the National Marine Educators Association and edited NMEA’s peer-reviewed *Current: The Journal of Marine Education* from 1987-1999. Nora launched and directed Monterey Bay Aquarium’s publishing program and has written and edited more than 80 books, publications, exhibitions, and videos about the oceans and Alaska.

COSEE (Centers for Ocean Sciences Education Excellence) is a NSF funded program network to increase public literacy in ocean research and science. The article COSEE-ALASKA: People, Oceans and Climate Change is reprinted with the authors permission.

Wynn W. Cudmore, Ph.D.

As federal agencies and the fishing industry struggle with how to achieve sustainable fisheries, those who market seafood are finding new ways to add appeal to their products. It has become common practice to change the names of those species that have been assigned a common name that might turn consumers away from the fish case and toward the meat aisle. Thus, silver hake magically becomes “whiting”, Patagonian toothfish becomes “Chilean sea bass”, and slimeheads become “orange roughy” in hopes that the consumer will find these names more appealing. Even the National Marine Fisheries Service (NMFS), the federal agency responsible for the management of marine fish, has contributed to the deception. The NMFS Underutilized Species Program initiated in the 1970s had the original intention of shifting more demand to species that were being discarded, yet were perfectly good to eat. In an effort to create a market for these less desirable species, it was often necessary to provide them with more attractive names. In the north Atlantic, for example, the deep sea angler was routinely discarded by fishermen who were after more traditional quarry such as Atlantic cod and haddock. More head and teeth than fillet, only the tail of the deep sea angler reached the grocery store where it became known as “monkfish.” Spiny dogfish, an abundant small shark with little market value, was renamed “rock salmon” or “cape shark” and became the preferred species for “fish and chips” in Great Britain.

At first glance, the renaming of fish species by the seafood industry may be seen as nothing more

than a creative way to increase market share by giving a species a name that is somewhat more appealing to the consumer. In addition, improving the image of a fish that had not been routinely consumed may make use of a species that would otherwise be discarded as bycatch. As a result, fishing pressure may be reduced on species more familiar to the consumer, contributing to the sustainability of fishery stocks.



The anglerfish shown here was renamed as “monkfish” for the marketplace.

Photograph by (c) Gavin Parsons

www.gavinparsons.co.uk / Marine Photobank.

There is, however, a darker side to these “extreme make-overs”. Renaming species may provide consumers with a confusing message concerning the abundance of some species. “Pacific red snapper”, for example, is commonly seen for sale throughout the western United States. In reality, there is no such species. “Pacific red snapper” is actually represented by as many as 13 species of

rockfish (*Sebastes* species), some of which have declined precipitously in recent years. Consumers who find “red snapper” routinely in fish markets may have a hard time being convinced that some of these species have declined to the point that they warrant special protection. Additionally, some of these renamed fish with “American names” come from foreign waters where regulations either do not exist or are not strictly enforced. The American consumer may, as a result, unwittingly contribute to the decline of a species they know nothing about.

Seafood certification programs, much like organic certification programs, are based on the premise that the consumer will make sustainable choices if they are given good information. Independent third parties such as the Marine Stewardship Council (MSC) have gone to great lengths to research species and determine which ones are being sustainably harvested. Those that meet certain criteria are provided with their seal of approval. Consumers who choose to purchase sustainably-caught seafood need only look for the MSC seal, knowing that it has been independently evaluated. However, for certification to be an effective conservation measure, it is imperative that the species under consideration for certification be properly identified. Assigning new market names to species confuses the process and may

provide the consumer with erroneous information. Additionally, recent studies using sophisticated DNA analysis have found that fish products are frequently mislabeled in the marketplace even when more familiar names are used. Farmed salmon, for example, was often labeled as “wild”, and tilapia, a farmed low quality fish, was sometimes substituted for fish of higher market value.

An examination of the consequences of renaming and improperly naming seafood species is an interesting opportunity for students to explore the relationship between natural resource management and the marketplace. NCSR is developing a number of new modules that examine marine fisheries declines including coverage of market-based solutions such as certification. In one module, “Where does your seafood come from?”, students examine seafood species available in local markets, determine their identity and investigate the degree to which they have been sustainably harvested.

Human Impacts on Marine Fisheries Summer Institute 2009

Applications for the 2009 NCSR summer institute are now available at the Center’s website: www.ncsr.org. The institute is scheduled for August 2 thru 7 at the University of Oregon’s Oregon Institute of Marine Biology (OIMB) in Charleston, Oregon. The institute’s program will focus on the impact of human actions on marine fisheries and their ecosystems ranging from overfishing to global climate change. More detail concerning the institute’s program can be found on our website.

The institute will be restricted to 12 college faculty. NCSR will provide attendees with lodging, meals and a \$600 stipend. Participants must provide their own transportation to the institute.

Individuals wishing to apply for attendance should complete the application on the NCSR website or request an application package via e-mail to ncsradm@chemeketa.edu. Applications are due no later than April 17, 2009 and applicants will be notified of their acceptance status no later than May 8, 2009.

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about research in Alaska's seas. SEANET establishes long-lasting collaborations among these interest groups and strengthens communication among scientists and informal and formal educators and the public.

The COSEE-Alaska grant culminates in a national ocean education and communication conference to be held in Alaska in 2012.

Alaska's Largest Village

COSEE-Alaska is based in downtown Anchorage, which is the state's economic hub, and can be considered one of Alaska's largest villages, with an Alaska Native population of 23,000 in 2004. This figure represents 11 percent of the Anchorage population and nearly a quarter of the statewide Alaska Native population. An advisory board made up of representatives of the academic community, industry, rural communities, and state and federal agencies provides input from around the region.

NCSR NEWS



Alaska's beauty is threatened by climate change

New Curriculum Modules Now Available

NCSR's latest product, *Illustrations of Interconnectedness in Ecosystems* has been published and is available. This module introduces the idea of interconnectedness among ecosystem components as a fundamental ecological concept and describes a number of scenarios that illustrate the concept.

The NCSR Fire Ecology and Management Series is now available. The series consists of six curriculum modules.

- *Ecological Role of Fire*
- *Historical Fire Regimes and their Application to Forest Management*
- *Anatomy of a Wildfire - the B&B Complex Fires*
- *Pre-Fire Intervention - Thinning and Prescribed Burning*
- *Post-Wildfire (Salvage) Logging - the Controversy*
- *An Evaluation of Media Coverage of Wildfire Issues*

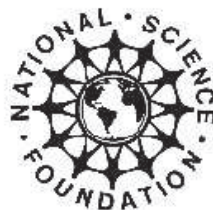
Also recently published are *An Evaluation of Genetically Modified Organisms* and *Poles Apart: A Pictorial Visit to the Arctic and Antarctic*. All materials are available for order or download from our website: www.ncsr.org.

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