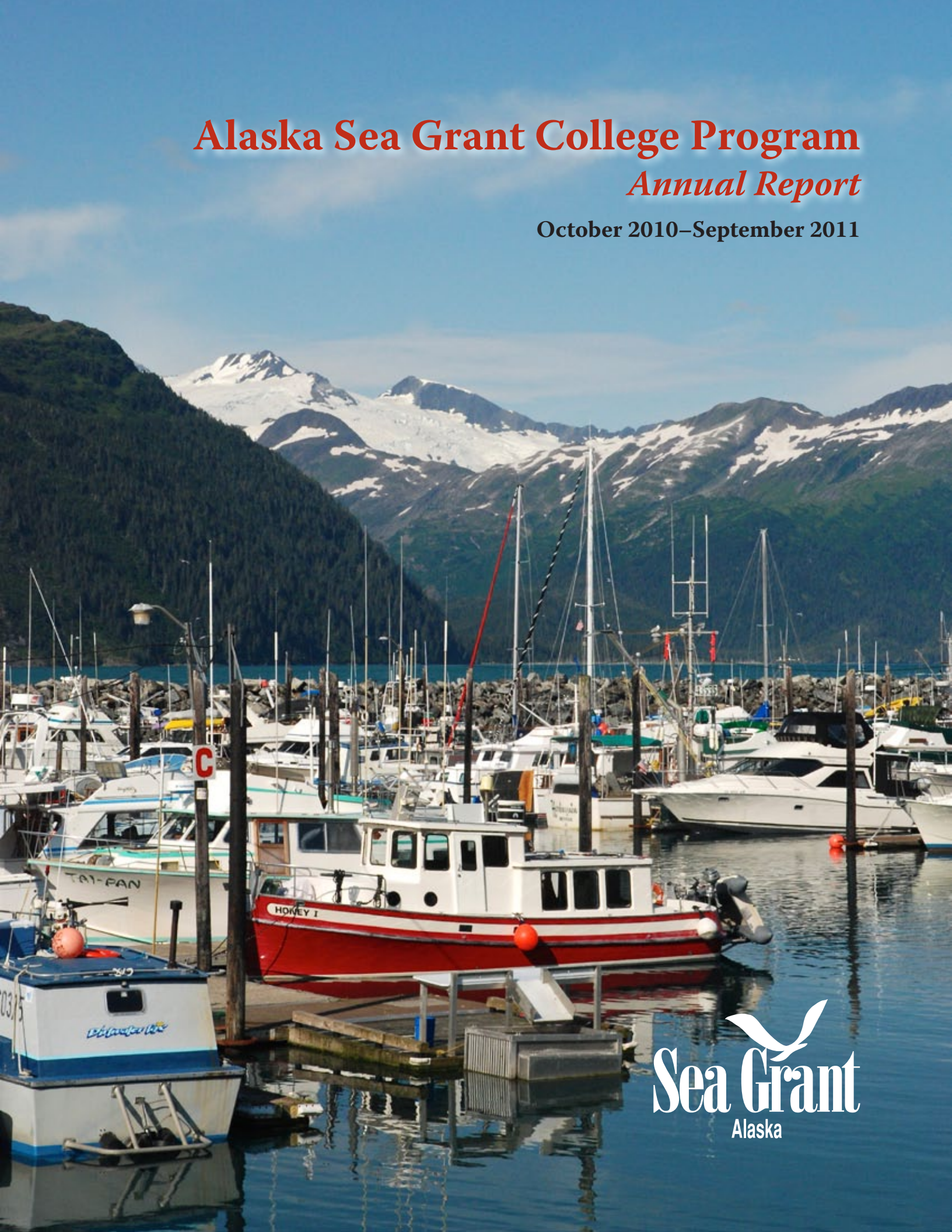
Alaska Sea Grant College Program

Annual Report

October 2010–September 2011



Sea Grant
Alaska

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Alaska Sea Grant College Program
Annual Report

Introduction

It's been an exciting year at Alaska Sea Grant. In this report, we highlight activities, accomplishments, and impacts of the past year achieved in pursuit of our mission to enable Alaskans, the nation, and the world to make wise use of marine and coastal resources.

To address our core research goals, Alaska Sea Grant–funded researchers and graduate students launched six new projects on Pacific ocean perch and herring, fisheries modeling to improve management of pollock, and new techniques for managing small salmon fisheries. Researchers also examined sea otter recolonization in southeast Alaska, zooplankton relationships to pink salmon survival, and patterns of gradual ecosystem change as a tool to predict sudden environmental change.

In our largest multi-partner, collaborative research project to date, the Alaska King Crab Research, Rehabilitation and Biology (AKCRRAB) program continued to improve red and blue king crab hatchery rearing techniques and examined hatchery and wild stock molting, genetics, habitat preferences, and predator relationships. This project utilizes the expertise of University of Alaska Fairbanks (UAF) and NOAA scientists, Alaska Sea Grant–funded graduate students and staff biologists, and the staff of the Alutiiq Pride Shellfish Hatchery in Seward.

On the extension front, Marine Advisory Program (MAP) agents and specialists based in nine coastal communities served more than 4,000 coastal residents with training and advisory services tailored to fishermen, processing workers, entrepreneurs, K-12 students, recreational boaters, and the general public.

In southeast Alaska, MAP agents set up an invasive species monitoring program, helped the Metlakatla Indian Community begin a geoduck farm, and provided Trade Adjustment Assistance training to dozens of shrimp fishermen hurt by foreign competition.

In Kodiak and the Aleutians, MAP agents helped seafood processors become more energy efficient, continued long-term studies of Steller sea lions and whales, and conducted community outreach aimed at preventing illness and death caused by paralytic shellfish poisoning.

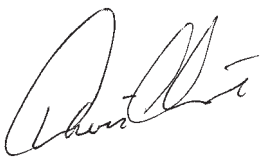
In western Alaska, MAP helped Kuskokwim fishermen improve salmon quality, increased local employment and cultural awareness through an archaeology project, and expanded public involvement in resource policy-making.

MAP was also active outside the state and the nation—answering the call for help following the Deepwater Horizon disaster in the Gulf of Mexico, and providing marine mammal identification training to fisheries observers in the African nation of Liberia.

Alaska Sea Grant's Education Services staff reached thousands of students, teachers, and interested public, delivering nearly 28,000 books, videos, and other education resources during the year. Education Services published 20 new titles, eight of them books, and expanded digital publishing efforts, offering nearly 90 as online PDFs.

Although funding remains a serious question for all federal agencies, we moved forward with our biennial research proposal process for 2012-2014. Our Research Review Panel met in February to review 34 pre-proposals for the funding cycle. Of these, 15 full proposals were invited and 14 were received and reviewed by our Research Technical Review Panel in September 2011. Based on the panel's rankings, four projects were selected for our 2012-2014 Omnibus Proposal.

In the pages that follow you will learn more about our research, extension, and education efforts conducted over the past year.



David Christie
Director

Cover photo of Whittier Harbor, Alaska, by Kurt Byers.

Program Highlights

Where are Sea Grant–supported students now?

Jodi Pirtle (Ph.D. 2010) is a post-doctoral research associate at the University of New Hampshire Center for Coastal and Ocean Mapping.

Peter-John Hulson (M.S. 2011) is set to finish his Alaska Sea Grant–funded Ph.D. work this fall and is working as a research fisheries biologist for NOAA Fisheries in Juneau.

David Runfola (M.S. 2011) is a subsistence resource specialist with the Alaska Department of Fish and Game.

Jeremy Kasper (Ph.D. 2011) is a post-doctoral guest investigator at Woods Hole Oceanographic Institution.

Bering Strait MAP agent Gay Sheffield and Unalaska agent Reid Brewer, at marine mammal stranding training.

Julie Matweyou is Alaska Sea Grant's new MAP agent in Kodiak. She filled a position that was vacant for 15 years.

New agents hit the docks in Nome and Kodiak

Gay Sheffield, former Alaska Department of Fish and Game marine mammal biologist, joined Alaska Sea Grant in early 2011 as a MAP agent for the Bering Strait region. Since then, Sheffield has been working with residents on marine safety, subsistence, marine mammals, fisheries, and community economic development. Sheffield is compiling a guide to resources on marine mammal regulations and policy, to help subsistence hunters better understand and follow marine mammal regulations. Sheffield also received a grant from National Sea Grant to conduct a Bering Strait marine transportation workshop, in partnership with the National Oceanic and Atmospheric Administration (NOAA) Alaska Regional Team.

After a 15-year absence, Kodiak once again has a MAP agent. Julie Matweyou, a Kodiak fisherman and environmental scientist, began her job in March 2011. Matweyou was an Alaska Sea Grant–funded graduate student; she graduated from the UAF School of Fisheries and Ocean Sciences in 2003, and is a former research technician with NOAA Fisheries. Since joining MAP, Matweyou has been conducting outreach and research on paralytic shellfish poisoning.

During 2010-2011, Alaska Sea Grant conducted or taught at more than 85 workshops and meetings, which drew 4,000 participants in 25 Alaska communities.

MAP agent extends marine mammal training to Liberia

MAP marine mammal specialist Kate Wynne joined four NOAA team members to provide observer training to 40 Liberian fishery biologists. Wynne presented instruction in marine mammal identification, bycatch reporting, and safety. In previous years, Wynne trained observers in Ghana and Senegal. Wynne's participation was part of a NOAA Fisheries program to train international fishery observers.

COURTESY OF KATE WYNNE

MAP marine mammal specialist Kate Wynne, and NOAA trainers, taught Liberian federal fisheries biologists during a three-week session in May 2011. Trained as observers, they will board foreign trawl vessels fishing in Liberian waters.

Commercial fishing groups donate to king crab research

In August 2011, four Alaska commercial fishing groups donated $25,000 to support the Alaska King Crab Research, Rehabilitation and Biology (AKCRRAB) program. Contributors include the Bering Sea Fisheries Research Foundation, Central Bering Sea Fishermen's Association, Aleutian Pribilof Island Community Development Association, and Groundfish Forum. Building on the September 2010 contribution of $10,000 from California-based Santa Monica Seafood, the donations are the fruit of increased outreach to, and interest from, crab harvesters and distributors. The donations enabled Alaska Sea Grant to create the Alaska King Crab Research Fund, managed by the University of Alaska Foundation.

Research, Education, and Extension

Healthy Coastal Ecosystems

Goal: Sustained, well-managed, and healthy marine, coastal, and watershed ecosystems in Alaska.

Marine invasive species detection network keeps close watch on our coasts

Some areas of the United States lack the capacity to detect and respond to marine nonindigenous species (NIS). A National Sea Grant–funded initiative partners Alaska Sea Grant with the Smithsonian Environmental Research Center to develop an early detection and rapid response framework specific to Alaska.

KURT BYERS

Gary Freitag shows a native sculpin and sea star caught in a trap that he monitors in Ketchikan, watching for invasive marine species.

Ketchikan MAP agent Gary Freitag established a volunteer citizen-science network that monitored 18 coastal sites in 2011. Freitag launched an online reporting system that provides protocols, identification guides, newsletters, mapping tools, an alert system for new records, and a forum. Freitag also tested eradication treatments for the tunicate *Didemnum vexillum*, which was discovered near Sitka in 2010.

Freitag has advanced invasive species education and outreach on two other fronts. He partnered with a cruise ship company to develop a citizen monitoring program for green crab near Ketchikan and Juneau. He also is helping the North Slope community of Barrow establish an invasive species citizen monitoring program. Freitag is collaborating with Peggy Cowan, Superintendent of the North Slope School District, to create science content that incorporates invasive species monitoring.

Helping Alaskans have a voice in resource policy

People in free societies must have a meaningful voice in their nation's policies. But how can you make your voice heard?

Izetta Chambers is a longtime fisherman and seafood business entrepreneur in Bristol Bay. She also holds a law degree. Since becoming the Bristol Bay MAP agent in 2009, she has helped fishermen market their seafood and find new local uses for fish processing waste. She also has helped people gain a voice in how their resources are managed. Chambers teamed up with faculty at the UAF Bristol Bay Campus to offer for-credit classes on the National Environmental Policy Act (NEPA), as well as public workshops on how people can become active in the environmental decision-making process. Chambers reports that 68 people have participated in the classes and workshops and at least seven people have offered testimony to agencies in response to proposed resource development or fisheries policy formulation.

Alaska Sea Grant–funded student finishes degree, lands job

For his master's degree, Alaska Sea Grant–supported student David Runfola set out to learn more about whitefishes in Alaska's Yukon River Delta. Runfola worked his research from two angles: he interviewed Yup'ik subsistence fishermen about their knowledge of whitefish species, and he studied the ecology and life history of Bering cisco.

KURT BYERS

This organic farm in Bethel composts salmon byproducts and uses them to grow vegetables to sell locally. History tells us that Native Americans taught the Pilgrims how to use fish to enhance crop growth. Similarly, Dillingham-based MAP agent Izetta Chambers develops soil enhancers from salmon processing byproducts and shares her techniques with residents.

Runfola's analysis of Bering cisco in the Black and Kun rivers showed that juveniles rear in the coastal marine delta where they feed on stickleback fish. His interviews demonstrated the need for greater awareness of traditional knowledge, and the importance of communicating this knowledge to fisheries scientists. Runfola defended his thesis, Combining Traditional Knowledge and Fisheries Science in a Study of Bering Cisco *Coregonus laurettae* in the Yukon River Delta, Alaska, and graduated in May 2011. He is now employed as a subsistence resource specialist with the Alaska Department of Fish and Game.

Alaska Sea Grant expands capability for stranded marine mammal response

Alaska's immense geographic area and remote, widely separated coastal communities make timely response to stranded marine mammals difficult or impossible.

In 2010, MAP marine mammal specialist Kate Wynne won a competitive NOAA Prescott Award to increase response capacity. With MAP personnel in nine coastal communities, it made sense to train several of them to respond to stranded marine mammals in their regions.

Utilizing the NOAA Prescott Award, Kate Wynne, Kodiak-based marine mammal specialist, trained MAP agents to respond to stranded marine mammals in four widely dispersed coastal regions that previously had little or no response capability.

Wynne trained MAP agents as responders in the Yukon-Kuskokwim Delta (Terry Reeve, Bethel), Bristol Bay (Izetta Chambers, Dillingham), Prince William Sound/Copper River Delta (Torie Baker, Cordova), and southeast Alaska (Sunny Rice, Petersburg). The agents also joined the Alaska Region Marine Mammal Stranding Network.

MAP received a grant to train agents as marine mammal stranding responders. Izetta Chambers (yellow, hood-up), Terry Reeve (dark jacket), Torie Baker (clear raingear), and others learn how to perform a seal necropsy at the Alaska SeaLife Center.

Alaska Sea Grant–funded researchers improve Alaska fisheries assessment models

Without good data and analysis in fisheries stock assessment, major errors in management can occur. Researchers Terrance Quinn, professor of fisheries at the UAF School of Fisheries and Ocean Sciences, and Alaska Sea Grant–supported Ph.D. student Peter-John Hulson, undertook two projects to improve age-structured assessment (ASA) models for several of Alaska's major fisheries.

In the first project, Dealing with Uncertainties in Integrated Age-structured Assessment Models, Quinn and Hulson examined the behavior and merits of ASA models for three fisheries. For Gulf of Alaska Pacific ocean perch, they found the most significant model errors from aggregation of multiple ages in schools. They studied Bering Sea walleye pollock in models, with the key result that population movement can often be estimated in the absence of individual fish movement data. Finally, the assessment model was applied to four southeast Alaska Pacific herring stocks.

DANA HANSELMAN

Alaska Sea Grant–supported research sheds light on the early life history of Pacific ocean perch (see photo) and other groundfish, information that helps fishery managers make better-informed decisions.

Efforts to improve ASA models continued in the Alaska Sea Grant project, Parsimony in Integrated Age-Structured Assessment Models: Modeling of Time-dependent Parameters and Uncertainty in a Changing Environment. Building on Hulson's model, the researchers added climate change effects into the simulations. Two types of simulation, involving the commonly predicted northward migration of walleye pollock as a consequence of Bering Sea warming, were evaluated. Quinn and Hulson recommend continuing development and evaluation of spatially explicit models, informed by increased tagging efforts to document changes in fish distribution.

RANDALL DAVIS, USFWS PERMIT MA-043219

Sea otters are as good as gold to marine wildlife viewing businesses. But in some Alaska locations they compete with human harvesters for highly valued marine invertebrates.

Will more sea otters mean fewer opportunities for fishermen?

Sea otters reintroduced into southeast Alaska have become more numerous and have expanded their range, with anticipated but unquantified social, environmental, and economic impacts to commercial fisheries and fishing-dependent communities.

In this Alaska Sea Grant project, Ginny Eckert, associate professor at the UAF School of Fisheries and Ocean Sciences; Sunny Rice, MAP agent in Petersburg; and Zac Hoyt, Alaska Sea Grant–funded Ph.D. student, are investigating the impact of sea otters on several commercially important species—geoduck clams, California sea cucumbers, red sea urchins, and Dungeness crab.

A highlight was collaborating in May 2011 with marine mammal scientist Verena Gill of the U.S. Fish and Wildlife Service (USFWS), in the capture of 31 sea otters at the southern edge of the sea otter range near Kake. The capture was funded in part by the North Pacific Research Board, and is a component of a larger USFWS project to examine otter health and their expansion into commercial fishing grounds. VHF radio tags were implanted in 30 sea otters, which allowed researchers to locate them and observe how their diets vary. The goal is to estimate the proportion of commercially important species in sea otter diets. Approximately 320 foraging dives have been observed.

Kenai studies establish mercury baseline

Mercury concentrations in aquatic, terrestrial, and atmospheric systems have increased worldwide. Researchers surveyed freshwater bodies on Alaska's Kenai Peninsula to determine the presence and concentration of mercury and methylmercury. They confirmed detectable concentrations of methylmercury and total mercury in water and sediment samples and identified areas and site types with elevated mercury levels in water and sediment.

This project leveraged additional financial assistance from the University of Alaska Anchorage Chancellor's Fund, and the collaboration of NOAA, U.S. Fish and Wildlife Service Kenai National Wildlife Refuge, and U.S. Geological Survey Mercury Research Lab. Cooperation from the Ninilchik Native Association, Inc., and the State of Alaska Captain Cook Recreation Area also made the project possible.

The research provides a baseline for monitoring mercury and methylmercury concentrations in wetlands in southcentral Alaska, and serves as a basis for future projects to enhance the understanding of relationships among aquatic, terrestrial, and atmospheric systems in response to mercury deposition.

MAP data contribute to Steller sea lion management

MAP marine mammal specialist Kate Wynne is one of several scientists who channel key data into the federal marine mammal management system. As she has done for many years, Wynne in 2011 provided shore-based counts of sea lions on the critical Long Island rookery near Kodiak Island by recording location and activity of branded sea lions. She photo-documented 54 sightings of pups that had been branded in 2010 and three branded mothers with pups.

Federal managers use Wynne's data to determine mortality, birthrate, age at first reproduction, age at weaning, and other health indicators to find out why Steller sea lions are not recovering quickly in parts of the Gulf of Alaska. The data are incorporated directly into federal management decisions on fisheries and ecosystem health policy and regulations.

PETERSBURG TEACHER HELPS SEA OTTER SCIENTISTS

Alaska Sea Grant support allowed Petersburg middle school science teacher Jo Ann Day to join UAF and USFWS scientists, graduate students, and veterinarians during a weeklong trip in May 2011 to capture sea otters in southern southeast Alaska. The sea otters were fitted with transmitters to track their range expansion and monitor feeding habits. Day observed the science and developed a teaching curriculum based on her experiences. She also kept a daily blog of her activities. Some excerpts:

Day 1: "The first day we spent a lot of time scouting for otters. Three skiffs were available for otter work and scouting. One group of people was getting the Jerry O ready for when an otter is captured. Another group was making sure the net was ready to set. My group was out scouting for otters and places to set the net. We would travel around and mark rafts or large groups of otters with the GPS and a data sheet. We saw well over 150 otters that day, but after a couple of initial net sets, no otters would be caught. It was a day of learning, set up, and practice. I have decided that catching otters is like herding cats that can swim underwater.

Day 5: "The morning started with setting nets in Saginaw Bay. It seems to be a good spot. After finding the pictograph in the cliffs, we stopped off for some horn coral fossil hunting. We found a few, but were cut short by the catching of the first otter of the day. I spent the rest of the day on the hospital boat watching the collecting of specimens and the surgery. After the first otter was caught, there was soon another and another, until five otters were caught for the day. Five otter surgeries really maxed out the hospital crew and it was 9 pm before they were finished. The compassion and caring of all the people working on these otters really is an amazing thing to see. I know I like animals, but these people are really dedicated and committed to their jobs and the caring for these otters."

Read all of Jo Ann Day's blog entries at http://web.me.com/joannday/Site/Blog/Blog.html.

SUNNY RICE

Petersburg teacher Jo Ann Day (right) a spent a week observing Alaska Sea Grant sea otter research in southeast Alaska, and developed related teaching materials.

King crab research program continues on several fronts


TODD PARIS

Alaska Sea Grant research biologist Jim Swingle shows off a blue king crab.

The Alaska King Crab Research, Rehabilitation and Biology (AKCRRAB) program is a multiagency, stakeholder, and coastal community effort established in 2006 to develop the understanding and technology to enhance depressed stocks of red and blue king crab. Over the past year, the program has made considerable progress in several areas.

David Tallmon, research associate professor at the UAF School of Fisheries and Ocean Sciences, leads an Alaska Sea Grant–funded project aimed at unraveling the genetics of red and blue king crab. UAF master's degree student Scott Vulstek completed work on the red king crab portion of the study and successfully defended his thesis in June 2011. Jennifer Stoutamore is conducting genetics work to identify population and mating structure in blue king crab as part of her UAF master's degree research.

Ginny Eckert, associate professor at the UAF School of Fisheries and Ocean Sciences, oversaw the annual king crab broodstock collection, larval hatch, and growout studies. Ben Daly and Jim Swingle, research biologists with Alaska Sea Grant, took charge of 20 adult egg-bearing female red king crab collected for broodstock by the Alaska Department of Fish and Game and reared hatched larvae to first juvenile stage, when the animals were shipped to other researchers for field experiments.


CELESTE LEROUX

Blue king crabs from the Pribilof Islands area.

Swingle and Daly raised a remarkable 50 percent of Bristol Bay red king crab larvae to the glaucothoe stage in 2009 and 2010, up from almost zero in 2007 and from 31 percent in 2008. In 2011, survival of Bristol Bay red king crab larvae to glaucothoe declined slightly to 43 percent, possibly due to a virus. However, survival of southeast Alaska red king crab larvae to glaucothoe was 60 percent.

Daly and Allan Stoner, research biologist with NOAA Fisheries, led a predation experiment at the Hatfield Marine Science Center in Newport, Oregon. Stoner sought to determine if nonlethal exposure of juvenile red king crab to predators increased the crab's natural defensive behavior and reduced predation. Preliminary results suggest that red king crab survival is enhanced by prior predator exposure.

Researchers Sherry Tamone, professor of marine biology at the UAF School of Fisheries and Ocean Sciences; Miranda Westphal, Alaska Sea Grant–funded master's degree graduate; Jodi Pirtle, Alaska Sea Grant–funded Ph.D. graduate; and Jim Swingle, Alaska Sea Grant staff research biologist, completed their studies of crab growth, molting, habitat preferences, tagging techniques, and predator relationships.

Sustainable Coastal Development

Goal: Diverse and sustainable coastal communities, where residents have the knowledge and skills they need to adapt to natural and man-made changes in resource use and availability.

MAP aquaculture specialist offers technology transfer, education, and planning to shellfish farmers and coastal communities

With funding from National Sea Grant, MAP aquaculture specialist Ray RaLonde traveled to southcentral and southeast Alaska to deliver his message that shellfish farming is an environmentally green, and potentially profitable, way to diversify Alaska's economy.

In October 2010 in Ketchikan, 35 shellfish farmers and people interested in starting farms took part in a training workshop funded by the grant, in which best management practices, marketing, and challenges facing the industry were discussed. In concert with the workshop, a public shellfish extravaganza event was held, attended by over 300 people. The event made the front page of the Ketchikan *Daily News*.

Geoduck growth study leads to start of commercial farming on Alaska Indian reservation

Geoduck farming is a huge business with a global demand valued at more than $100 million annually. In North America, most geoduck are farmed in Washington state and British Columbia. Southeast Alaska, with hundreds of miles of intertidal areas, represents an opportunity for geoduck farming business and employment diversification.

Geoducks are the largest burrowing clam in the world, averaging about one to three pounds at maturity. They can attain weights up to 15 pounds and grow to six feet in length. The large, meaty siphon is prized in Asia for its savory flavor and crunchy texture.

MAP aquaculture specialist Ray RaLonde, partnering with the Annette Island Reserve's Department of Natural Resources and the Alutiiq Pride Shellfish Hatchery, completed a seven-year growout study on the feasibility of geoduck farming on Annette Island. The island is home to 1,500 people of the Metlakatla Indian Community, predominantly Tsimshian Indian.

Applied research by Ray RaLonde, MAP aquaculture specialist, showed that commercial production of geoduck clams is possible in southeast Alaska, prompting the Metlakatla Indian Community to begin their first large-scale commercial geoduck farm.

The growout study tested clam culture practices and provided growth and survival data of cultured geoduck clams. As a direct result of this research, Metlakatla community leaders are starting their first large-scale commercial geoduck farm.

MAP agent helps coastal communities save their past

Quinhagak is a remote Yup'ik Eskimo village of 300 people on the edge of the Bering Sea in western Alaska. Coastal erosion has exposed a 9,000 year old village site north of the present community. In cooperation with local residents, archaeologists from the University of Aberdeen, Scotland, and Bryn Mawr College have been excavating the site since 2009 with many surprising results. In 2010, the dig produced nearly 10,000 pieces including 20-30 museum-quality artifacts. The dig provides a much-needed seasonal economic boost, employing nearly 30 residents as drivers, cooks, and construction crew. Elders and scientists are consulting on artifact identification, and a Yup'ik cultural anthropologist is working with elders to produce an oral history project about the excavation findings.

MAP agent Terry Reeve has provided invaluable communications and logistical support to the project leaders. According to Reeve, "The Yup'ik folks love the fact they are saving their cultural past—a step ahead of losing it to the rising coastal waters."

Safe and Sustainable Seafood Supply

Goal: Safe, sustainable, and sought-after seafood products providing stable economic returns to Alaska communities.

Goal: Commercial, sport, and subsistence fisheries will remain biologically and economically healthy, and remain a long-term economic force in coastal communities.

MAP seafood quality and marketing expertise helps entrepreneur in state seafood competition

The Alaska Symphony of Seafood is a prestigious competition that each year attracts a broad array of Alaska seafood products from small entrepreneurs to global seafood processors.

MAP seafood quality specialist Chuck Crapo and seafood marketing specialist Quentin Fong helped a new Kodiak business, Crabby Sisters, producer of gourmet king crab cakes, improve their products, packaging, and marketing.

Chuck Crapo, MAP seafood quality specialist, and Quentin Fong, seafood marketing specialist, helped more than 12 Alaska seafood businesses expand their product offerings, and assisted four new business startups.

As a result, Crabby Sisters won third place in the retail category in the 2011 Alaska Symphony of Seafood, besting many established seafood businesses. In a recent letter to the university, partners Brooke McLaughlin and Meghan Clark stated, "We have worked extensively with Quentin Fong, Chuck Crapo, and their graduate students for over the last one and a half years. They have guided us step by step with their expertise and mentorship. Without their support, we would not have brought our product to market in the manner we did."

SUNNY RICE

A Petersburg fisherman tries out his newly acquired maintenance skills on a custom-built refrigeration training unit, during a MAP workshop in the Petersburg Community Cold Storage facility.

MAP organizes refrigeration maintenance workshops for fishermen

Chilling fish onboard the fishing vessel is the first step in producing high quality seafood. Many fishermen use icing and refrigeration—including nearly 80 percent of Alaska's salmon seine vessels comprising 600 vessels harvesting nearly 300 million pounds of pink salmon each year. Fishermen want to learn how to maintain and troubleshoot their onboard systems so they can stay on the fishing grounds instead of waiting for repairs dockside, but until recently refrigeration training was not available in remote communities.

Since 2005, MAP has provided marine refrigeration workshops throughout Alaska. Classes are always full. During the past year, 50 skippers and crew took this eight-hour course, and evaluations continue to be extremely positive.

One Petersburg seiner stated, "I've been fishing for over 35 years, and this class has finally given me the answers I need to run and troubleshoot one of the most important and mysterious pieces of equipment on my boat. Thank you, MAP."

Torie Baker and Sunny Rice, MAP Cordova and Petersburg agents, responded to increased interest in small boat onboard refrigeration with workshops that helped fishermen troubleshoot and maintain their systems—saving fishermen time and money and ensuring the delivery of high quality seafood.

Slush-ice bags improve salmon quality on Kuskokwim Delta

Dozens of commercial salmon fishermen live and work in Alaska's remote Kuskokwim River Delta communities. Few have had access to ice or refrigeration for their small open fishing boats.

KURT BYERS

Terry Reeve worked with fishermen in his Bethel region and in Washington, in cooperation with Washington Sea Grant, to improve product quality by helping fishermen adopt the use of slush ice bags.

Terry Reeve, MAP agent based in Bethel, the largest community in the region, began working with Kuskokwim Seafoods LLC, Coastal Villages Seafoods, and fishermen to introduce slush-ice bags to boost fish quality. Reeve was instrumental in sourcing 1,000 slush-ice bags for fishermen and training fishermen how to use them.

In 2010 Kuskokwim Seafoods processed 400,000 pounds of salmon, and in 2011 they processed 800,000 pounds. Most of the Kuskokwim River fishermen used slush-ice bags during those seasons. As Reeve reports, "They are firm believers in promoting quality and in using the new slush-ice bags to cut down on handling, speed delivery at the dock, and improve fish quality."

Slush-ice bags provided by Bethel-based MAP agent Terry Reeve to fishermen on the Kuskokwim Delta improved the quality of salmon delivered to seafood processors.

Reeve also conducted workshops on behalf of Washington Sea Grant for the Lummi Tribe in Washington, which spurred the tribe to order 350 slush-ice bags for their fishermen.

MAP delivers Trade Adjustment Assistance training to shrimp fishermen

Alaska commercial shrimp fishermen have faced stiff competition from foreign shrimp fishermen and farmers. Because of low prices and lack of markets, only about 100 of the state's 300 permitted shrimp fishermen actually fished in recent years. Most of the permit holders live and work in southeast Alaska.

The U.S. Department of Agriculture (USDA) listed U.S. commercial shrimp fishermen as candidates for monetary compensation under the Trade Adjustment Assistance (TAA) program. To qualify for up to $12,000 in compensation, eligible fishermen must take 16 hours of industry-specific training and write a business plan that implements changes to their operation to make them more profitable and competitive, or moves them into a different line of work.

MAP business specialist Glenn Haight, Petersburg agent Sunny Rice, and MAP consultant Greg Fisk were funded by TAA to provide training and business planning to 89 commercial shrimp fishermen in six southeast Alaska communities.

MAP and partners develop freeze-drying method that enables new uses for pink salmon

Each year, Alaska fishermen catch more than 30 million pink salmon, the most abundant and least expensive Alaska salmon species. Most of the catch is packed into cans and made into frozen fillets. Finding new value-added uses for the salmon is a goal of both industry and Alaska Sea Grant.

With a grant from the U.S. Department of Agriculture, MAP seafood quality specialist Chuck Crapo, and partners, developed a new, faster freeze-drying process that can turn pink salmon into value-added products for use in everything from soups to salads.

With funding from the U.S. Department of Agriculture (USDA), Chuck Crapo, MAP seafood quality specialist; Alexandra Oliveira, UAF associate professor of seafood chemistry; Duy Nguyen from the University of Nha Trang, Vietnam; and Peter Bechtel, USDA Subarctic Agricultural Research Unit, created a process that cuts the freeze-drying time from 20 hours to about nine hours. The new process heat-treats the raw material to make the moisture in the salmon easier to remove. Researchers made freeze-dried pink salmon cubes, a tasty product that can be used in everything from soups to salads.

COURTESY OF ORSON SMITH

Coastal erosion is a readily observable effect of climate change along the Bering Sea coast, where it results from diminished or absent nearshore sea ice. In the past, nearshore ice served as a buffer between the erosive forces of winter storms and vulnerable shorelines.

Hazard Resilience in Coastal Communities

Goal: Healthy, safe Alaskans and resilient coastal communities in the face of marine and coastal hazards.

Videos, website, planning tools, community workshops help coastal communities plan for climate change

While people still debate the causes of climate change, MAP is helping where it counts the most—in the Alaska communities dealing with it every day.

Terry Johnson, MAP marine recreation specialist, wrote a 50-page manual on how small coastal communities can plan responses to climate change. He also created a planning tool for communities to ask the right questions and find the resources they need. The products are on a MAP climate change adaptation website, along with key adaptation steps, and four fact sheets: http://seagrant.uaf.edu/map/climate/index.php.

Johnson also held a climate change adaptation workshop in the Bristol Bay community of Newhalen, organized by the Newhalen Tribal Council.

MAP media specialist Deborah Mercy produced two videos. *Adapting to Climate Change in Alaska* describes community adaptations that maintain lifestyles and culture. The video was produced in partnership with the Alaska Ocean Observing System, the Alaska Marine Conservation Council, and COSEE Alaska. *Faces of Climate Change* showcases dramatic environment changes through interviews with scientists and Alaska Natives. The videos have been shown to the Alaska Northern Waters Task Force, and to Alaska community leaders to help them plan responses to environmental changes.

MAP helps RCAC bring peer counseling to U.S. Gulf Coast


KURT BYERS

Torie Baker was a community leader during the Alaska fishermen's response to the *Exxon Valdez* oil spill. Because of her experience, she was called upon last year to help residents of Gulf of Mexico states cope with stress caused by the Deepwater Horizon oil spill.

Before she became a MAP agent in 2003, Torie Baker was (and still is) a commercial salmon fisherman in Prince William Sound. She also was a first responder to the 1989 *Exxon Valdez* oil spill. In the 20 years following the Alaska spill, she led efforts involving research, litigation assistance, and oil spill response.

Soon after the Deepwater Horizon spill in 2010, Mississippi-Alabama Sea Grant asked for Baker's help to bring veterans of the *Exxon Valdez* spill to the Gulf Coast to share their experiences.

Baker partnered with Joe Banta, of the Prince William Sound Regional Citizen's Advisory Council (RCAC), a citizen watchdog group established after the Alaska spill. They met with Gulf Coast residents, health professionals, and government officials to explain the RCAC Peer-Listening Program, which trains residents to help spill victims deal with anger, depression, and family problems stemming from environmental disasters.

With Sea Grant in Mississippi, Alabama, and Louisiana, Banta and Baker trained more than 600 peer listeners in 27 workshops. Subsequently more than 7,000 people were trained by mental health organizations in four states.

LaDonn Swan, Mississippi-Alabama Sea Grant director, praised Alaska's timely response: "Transfer of Alaska's field-tested materials has been invaluable and will continue to be adapted. Surprisingly I find myself using these skills to also help scientists and researchers working on the spill cope with their personal emotions. And we are further customizing this material to deal with the community issues resulting from the devastating tornados which struck our state this spring."

The Anchorage *Daily News* lauded the MAP effort as one of the most important responses by Alaskans to the Gulf spill. "This visit by fishermen who experienced the *Exxon Valdez* spill in 1989 is good work. We hope it eases the pain of passage to whatever lies ahead for Gulf communities," read an editorial in the paper.

Baker and Banta also helped Mississippi-Alabama Sea Grant establish their own peer-listening program; see http://masgc.org/page.asp?id=588.

Energy audits improve efficiency in Alaska seafood processing plants

Energy costs are a significant portion of seafood processing plant costs. With rural electrical rates often above 60 cents per kWh, analysis of electrical usage and finding savings and efficiencies are essential. In response to requests for energy conservation assistance from processors, Torie Baker, Cordova-based MAP agent for Prince William Sound, and Chuck Crapo, MAP seafood quality specialist, launched a two-year project to help seafood processors better understand and evaluate energy use. The project is a partnership with the UAF Institute of Northern Engineering and is funded by the Alaska Energy Authority.

The research team received training in energy audit methods and then conducted energy audits at four large seafood plants. They also assembled energy-metering kits to lend to small seafood processors.

Two plants have begun implementing operational and equipment changes highlighted in the energy audit reports, and each has requested follow-up assistance after the 2011 season to document savings.

For more information about Alaska Sea Grant research, meetings and workshops, publications, and activities, visit alaskaseagrant.org and marineadvisory.org.

Marine Literacy and Stewardship

Goal: Alaska residents and visitors understand, appreciate, and safely and sustainably enjoy Alaska's marine and coastal environments.

COSEE Alaska helps scientists communicate research

Alaska Sea Grant's partnership with the National Science Foundation–funded Center for Ocean Sciences Excellence (COSEE) Alaska has, since its creation in 2008, focused on improving learning exchange among scientists, teachers, and students. In 2011, COSEE Alaska partnered with the North Pacific Research Board (NPRB) and the Alaska Ocean Observing System to cosponsor the fifth annual Communicating Ocean Science Workshop at the Alaska Marine Science Symposium. During the workshop, 60 educators and 50 scientists, as well as students, media, and community members, shared experiences and highlighted the best practices of ocean education and outreach programs.

COSEE spreads the word about Alaska Seas and Rivers Curriculum

Marilyn Sigman, COSEE Alaska program director, highlights the Alaska Seas and Rivers web-based curriculum during COSEE-organized Communicating Ocean Science workshops. In 2011, Sigman provided an overview of the website and its offerings during a workshop at the Kodiak Alaska Marine Science Symposium.

COSEE surveys Alaska teachers

In partnership with the International Arctic Research Center (IARC), COSEE Alaska surveyed teachers to discover resources and training needed for teaching climate change and marine education.

The survey findings suggest that key concepts of climate change and marine education are sprinkled throughout the K-12 curriculum in Alaska schools, but are not integrated into coherent approaches. More than 90 percent of respondents said that marine education and climate change are addressed in their school districts. Alaska teachers said they use standards-based science lessons, engage students in discussions about climate change and marine environments, and use hands-on activities. Their highest needs are Alaska-specific lessons aligned with standards, and issue-oriented curricula. Teachers identified field trips led by scientists as their highest support need.

COSEE ALASKA Teacher Academy: The Bering Sea Workshop

In October 2010, COSEE Alaska cosponsored a workshop with the North Pacific Research Board (NPRB), the Arctic Research Consortium of the United States, NOAA, and the National Science Foundation to bring together teachers and scientists working on the NPRB Bering Sea Ecosystem Project (BEST-BSIERP) with teachers from Alaska communities. The purpose was to create web-based activities, lesson plans, personal reflections, and photos for used by teachers to educate students about the Bering Sea ecosystem. The five-day workshop engaged nine teachers, and ten scientists who are experts on the Bering Sea ecosystem.

KURT BYERS

Sue Jeffrey (left) and Kate Wynne visit at the Kodiak Area Marine Science Symposium. Jeffrey, a Kodiak salmon fisherman and borough assembly member, was appointed by Governor Sean Parnell to the Alaska Board of Fisheries in 2011.

Kodiak Area Marine Science Symposium debuts

Marine mammal specialist Kate Wynne organized and hosted the first Kodiak Area Marine Science Symposium, held in April just a few days before the annual ComFish Alaska trade show. About 170 people attended the symposium, a unique forum for scientific exchange and public interaction on the island.

KURT BYERS

Kodiak educator Stacy Studebaker checks out a poster written by high school students, at the Kodiak Area Marine Science Symposium.

KURT BYERS

Alaska Sea Grant administrative assistant Karina Gonzalez, director Dave Christie, and UAF School of Fisheries and Ocean Sciences Dean Mike Castellini (foreground left to right) prepare to work the quiz bowl finals at the Alaska Region National Ocean Sciences Bowl. In 2011 we dispatched seven staff members to serve as quiz bowl officials, and MAP agents Reid Brewer, Gary Freitag, and Sunny Rice coached teams. Alaska Sea Grant is one of the primary sponsors of the Alaska Region NOSB.

KURT BYERS

Alaska Sea Grant teamed with UAF Summer Sessions and the Cooperative Extension Service to host Alaska's Land and Sea Summer Lecture Series, featuring five presentations by six Alaska Sea Grant presenters and five talks by CES presenters. Our lecturers were Marilyn Sigman, Kurt Byers, Ray RaLonde, Sunny Rice, Deborah Mercy, and Reid Brewer. RaLonde (in apron) concluded his lecture, Oysters A-Z, with a hands-on, how-to-shuck-an-oyster exercise.

Alaska Sea Grant partnership with ComFish continues

Alaska Sea Grant was a key sponsor of the 2011 ComFish Alaska speaker forums in Kodiak. During the annual three-day event, 13 talks were presented on seafood, turning fish waste into profits, fisherman safety, mining and fisheries, salmon habitat, marine coastal toxins, and a congressional update.

MAP made a good showing as speakers. Quentin Fong, seafood marketing specialist, acknowledged the strong salmon fishery in Alaska, but encouraged listeners to diversify to other seafood products. Terry Johnson, marine recreation and tourism specialist, presented energy saving tips for fishing vessel operators. MAP aquaculture specialist Ray RaLonde gave a talk on domoic acid, and Kodiak agent Julie Matweyou discussed paralytic shellfish poisoning in Alaska. In addition, the Alaska Sea Grant DVD *Ocean Fury: Tsunamis in Alaska* was shown, followed by talks on tsunami threats in the Kodiak area by Laura Kelly, U.S. Coast Guard Alaska Seismic Hazards Safety Commission, and Duane Dvorak, Kodiak Borough planner and emergency manager.

Education Services publishes new books, explores ways to reach larger audiences

Education Services published 20 new titles, distributed nearly 28,000 educational items worldwide, and generated about $102,000 in cost recovery. Alaska Sea Grant's *Field Guide to Common Marine Fishes and Invertebrates of Alaska* sold all 1,000 printed copies within 13 months.

Education Services retooled its online bookstore and database to serve up nearly 90 popular titles as low-cost or free PDFs. Judging by close to 1,000 downloads to date, people like them.

With more than 1,000 copies sold worldwide during the first three months of release, the Alaska Sea Grant–published Field Guide to Seaweeds of Alaska is the fastest-selling book in Alaska Sea Grant's 40-year history.

Alaska Sea Grant received $23,000 from outside sources to help fund publication production. In addition, two authors won grants from the Rasmuson Foundation—$19,000 to Anne Salomon for printing *Imam Cimiucia: Our Changing Sea*; and $14,000 to Stephen Jewett, research professor at the UAF School of Fisheries and Ocean Sciences, for production of *Sea Life of the Aleutians: An Underwater Exploration*. Jewett is a co-author on the book, which has received excellent reviews.

Education Services produced 16 news releases and distributed them to 200 media contacts in Alaska, Canada, and the Pacific Northwest. More than 170 articles on Alaska Sea Grant activities appeared in print, online, on television, and via radio. Of these, 92 articles stemmed from news releases, while the remainder resulted from contact with reporters, reporter-initiated efforts, publication announcements, MAP interaction with media, and *News Flash*, a newsletter about AKCRRAB research.

KURT BYERS

Alaska Sea Grant joined with Washington Sea Grant and the National Sea Grant Office to host an exhibit at the American Fisheries Society conference in Seattle, in 2011. A special event was the ASG "all-star" book signing, featuring four authors and Alaska artist Ray Troll, who created cover art for one of our field guides.

KURT BYERS

Alaska Sea Grant sales and marketing coordinator, Kathy Kurtenbach, shows publications to University of Alaska Fairbanks Chancellor Brian Rogers at the annual Holiday Open House. Each year Alaska Sea Grant partners with University of Alaska Press and UAF Marketing and Communications to host the event.

Seaweed book promotion a model for success

Field Guide to Seaweeds of Alaska is the fastest-selling book in Alaska Sea Grant's 40-year history, thanks to a focused promotional campaign and a longstanding need for such a guide. Within three months of its release in September 2010, more than 1,000 copies were sold worldwide, generating $23,000 in revenue.

The strong sales were the result of a promotional effort that involved authors Mandy Lindeberg, NOAA Fisheries biologist, and Sandra Lindstrom, University of British Columbia scientist, and everyone on the Education

KURT BYERS

Alaska Sea Grant hosted an exhibit at the 2011 Alaska Marine Science Symposium in Anchorage, which featured a book signing with Sandra Lindstrom (left) and Mandy Lindeberg, coauthors of *Field Guide to Common Seaweeds of Alaska*.

Services staff. Efforts included a postcard and poster; a website with sample pages, news, reviews, and audio interviews with the author; a news release, public lectures, and book signings; and social media including Facebook, Twitter, and blog.

The book garnered praise from around the world, including a comment from Dr. Michael Guiry, one of the world's leading authorities on seaweeds at the National University of Ireland: "It is superb; quite the best handbook I've seen. Congratulations!"

Lowell Wakefield symposia focus on ecosystem management and incorporating cultural values into fisheries management

The 26th Wakefield Fisheries Symposium, Ecosystems 2010: Global Progress on Ecosystem-based Fisheries Management, evaluated global progress toward ecosystem-based fisheries management. More than 108 people from 19 countries attended the meeting. The symposium achieved a general consensus on ecosystem-based fisheries management, and there was a convergence on broad ecosystem management objectives, principles, approaches, tools, and involvement of stakeholders.

"Thanks so much for the chance to present at this year's LW Symposium! I thought the quality of the presented research to be of a very high level," and "Many thanks for putting on such a stimulating and diverse symposium!" were responses from two satisfied participants.

The 27th Wakefield Fisheries Symposium, Fishing People of the North, Cultures, Economies, and Management Responding to Change, took place in September 2011. The meeting was the first Wakefield symposium to focus on the work of anthropologists, sociologists, Native knowledge experts, and other social scientists, and is the brainchild of Paula Cullenberg, MAP coastal community specialist and Alaska Sea Grant associate director. About 174 people attended, from ten states and seven nations.

One attendee listed the strengths of the symposium: "Number one was the overall quality and scope of the presentations. Number two was the willingness of individuals to meet each other and exchange ideas. Also having people from Alaska, Canada, Norway, Sweden, Iceland, Russia, and the western Pacific added considerably to the conference, both in terms of presentations and social interaction."

Alaska Sea Grant partnered with stakeholders, coastal communities to facilitate important meetings

4th Western Alaska Interdisciplinary Science Conference and Forum. In Bethel, scientists, educators, rural leaders, community members, and subsistence hunters and gatherers discussed science and environmental issues relevant to western Alaska.

KURT BYERS

Clare Swan (left) was a keynote speaker at the 2011 Wakefield symposium, Fishing People of the North. Her daughter, Bunny Swan-Gease performed a traditional song at the meeting. The symposium provided an opportunity for scientists and managers to meet and interact with the Native people who are most impacted by their decisions and actions.

13th Copper River Delta Science Symposium. This Cordova meeting sought to better integrate knowledge and plan Copper River Delta research on hydrology and geomorphology, avian nesting ecology, and trophic relationships. About 110 people attended, including school classes, managers, and researchers.

Southwest Alaska Salmon Science Symposium. This Anchorage symposium examined salmon research on freshwater habitats in southwest Alaska. Sponsors included the Alaska Department of Fish and Game, Nature Conservancy, Southwest Salmon Habitat Partnership, and the U.S. Fish and Wildlife Service. More than 100 attendees represented agencies, nonprofits, industry, public, private consultants, media, and legislative staff.

Alaska Sea Grant Marine Advisory Program Conferences, Workshops, Presentations, and Teaching, 2010-2011

Year	Date	Title	Instructor/presenter	Location	Attendees
2010	September	Entanglement and Disentanglement of Marine Mammals, Forum of Alaska Marine Issues	Brewer, Steve Lewis	Unalaska	70
2010	September	The Role of UAF Fishery Industrial Technology Center and MAP in the Alaska Seafood Value-Adding Chain	Fong	University of California Davis	22
2010	September	Invasive Species Monitoring Research Presentation	Freitag	Ketchikan	10
2010	September	Streamside Walk, Ohmer Creek, with U.S. Forest Service	Rice, Emil Tucker	Petersburg	6
2010	September	Coho Salmon in Southeast Alaska, with Alaska Department of Fish and Game	Rice, Leon Shaul	Petersburg	15
2010	September	Salmon in the Classroom Teacher Workshop	Sigman	Fairbanks	25
2010	September	History of Commercial Whaling in Kodiak and Western Gulf of Alaska	Wynne	Kodiak	48
2010	October	Salmon Take, Biology and Hatchery Class	Brewer	Unalaska	40
2010	October	Classroom Presentation, Fisheries Course	Chambers	New Stuyahok	8
2010	October	Worms and Vermicomposting	Chambers	New Stuyahok	55
2010	October	HACCP	Crapo	Kodiak	40
2010	October	North Pacific Marine Education and Training Program Workshop	Cullenberg	Anchorage	65
2010	October	Alaska Shellfish Farming, Technology and Business Training	RaLonde, Haight	Ketchikan	40
2010	October	Marine Biotoxins in Alaska Presentation, Alaska Environmental Health Association	RaLonde	Anchorage	40
2010	October	Bering Sea Ecosystem Professional Development Workshop	Sigman	Anchorage	31
2010	October	Tsunami Bowl Informational Meeting	Chambers	Dillingham	7
2010	November	Climate Change Adaptation Workshop	Johnson	Newhalen	5
2010	November	Profitable Harvest: Direct Market Forum	Chambers, Haight	Seattle	53
2010	November	Copper River Watershed Project 18-Month Salmon Habitat and Culvert Restoration along Cordova Roads, Presentation	Baker, T. Nuzzi	Cordova	21
2010	November	Bering Sea Octopus Research, Forum of Alaska Marine Issues	Brewer	Unalaska	57
2010	November	Otter Project Outreach Presentations	Rice, Hoyt	Craig	19
2010	November	Otter Project Outreach Presentations	Rice, Hoyt	Hydaburg	3
2010	November	Otter Project Outreach Presentations	Rice, Hoyt	Ketchikan	20
2010	November	Ecosystems 2010: Global Progress on Ecosystem-based Fisheries Management, 26th Wakefield Fisheries Symposium	Kruse	Anchorage	108
2010	November	Introduction to the National Environmental Policy Act	Chambers	Anchorage	25
2010	November	Energy Use in Fisheries: Improving Efficiency and Technological Innovations from a Global Perspective	Johnson	Seattle	35
2010	November	North Pacific Marine Education and Training Program Workshop	Cullenberg	Anchorage	65
2010	December	Household Budgeting	Fong, Dinstel	Kodiak	10
2010	December	Audubon Christmas Bird Count, Thursday Science Series	Rice, Pawuk	Petersburg	8
2011	January	Net Mending	Baker	Cordova	22
2011	January	Better Process Control School	Crapo	Anchorage	3
2011	January	Strategies for Buying and Selling a Fishing Business	Rice	Petersburg	13
2011	January	National Environmental Policy Act	Chambers	Kotzebue	13
2011	January	Thursday Science Series, Invasive Tunicates and Their Impact on Petersburg's Marine Ecosystem	Rice, Petersburg High School Tsunami Bowl Team	Petersburg	12
2011	January	Ocean Science Discovery Lab, Kodiak High School	Wynne	Kodiak	15
2011	January	Marine Mammal Identification and Recording for NMFS Groundfish Observers	Wynne	Anchorage	21
2011	January	Communicating Ocean Science Workshop, Center for Ocean Sciences Excellence (COSEE), Alaska Marine Science Symposium	Sigman	Anchorage	110
2011	February	Marine Refrigeration Class	Rice	Petersburg	21
2011	February	HACCP	Crapo	Anchorage	10
2011	February	Sanitation Control Procedures	Crapo	Anchorage	6
2011	February	Strong Communities, Vibrant Economies Workshop	Cullenberg, Crapo, Fong, RaLonde, Haight	Anchorage	40
2011	March	Octopus Research, Bureau of Land Management Fireside Chat	Brewer	Anchorage	60
2011	March	The Alaska Experience: A Hong Konger's Perspective	Fong	Hong Kong	52
2011	March	Marine Refrigeration Workshop	Baker	Anchorage	23
2011	March	13th Copper River Delta Science Symposium	Baker	Cordova	110
2011	March	Western Alaska Interdisciplinary Science Conference 2011	RaLonde, Reeve	Bethel	200

Year	Date	Title	Instructor/presenter	Location	Attendees
2011	April	National Environmental Policy Act Workshop	Chambers	Kokhanok	28
2011	April	National Environmental Policy Act Workshop	Chambers	Naknek	1
2011	April	Oil Spill Fishing Vessel Response Marine HAZWOP courses, Alyeska Ship Escort/Response Vessel System	Baker	Kodiak	80
2011	April	Southwest Alaska Salmon Science Symposium	Cullenberg	Anchorage	100
2011	April	Energy Efficiency talk, Alaska Longline Fishermen's Association	Johnson	Sitka	5
2011	April	Fuel Efficiency for Recreational Boaters, Great Alaska Sportsman Show	Johnson	Anchorage	15
2011	April	Groundfish Habitat Community Science lecture	Baker	Cordova	52
2011	April	Kodiak Area Marine Science Symposium	Wynne, Cullenberg, Brewer, Freitag, Matweyou, Sigman	Kodiak	170
2011	April	Kodiak ComFish	Fong, Johnson, RaLonde, Matweyou	Kodiak	32
2011	April	Omega-3 Fish Nutrition and Copper River Salmon Lipid Profiles lecture	Baker	Cordova	7
2011	April	Rotary Youth Leadership Award	Fong	Kodiak	62
2011	April	Two 10-hour Drill Conductor courses with AMSEA instructor Gary Lopez	Baker	Cordova	54
2011	April	Unalaska City School District Career Fair	Brewer	Unalaska	254
2011	April	Walrus Island State Game Sanctuary	Johnson	Eagle River	21
2011	April	Western Alaska Landscape Conservation Cooperative Science Workshop	Wynne	Anchorage	75
2011	April	Wrangell Health Fair	Rice	Wrangell	800
2011	May	AMSEA-Sponsored USCG Drill Conductor Marine Safety Training	Baker	Cordova	50
2011	May	GAP (Gulf Apex Predator) Studies in the Kodiak Area, Brown Bag Seminar at FITC	Wynne	Kodiak	19
2011	May	What Is Alaska Sea Grant Doing in West Africa?, Brown Bag Seminar at FITC	Wynne	Kodiak	18
2011	May	Climate Change Workshop	Chambers	Dillingham	30
2011	May	Careers in Fisheries and Marine Science, Including Opportunities at University of Alaska	Freitag	Ketchikan, Metlakatla	140
2011	May	Octopus Workshop for biology class	Brewer	Unalaska	9
2011	May	The Role of MAP/FITC in the Alaska Seafood Marketing System, University of Hawaii Hilo	Fong	Hilo, Hawaii	11
2011	May	Plankton presentation at Fawn Mountain Grade School	Freitag	Ketchikan	45
2011	May	Sea Week events	Chambers	Dillingham	42
2011	May	Sea Week with Eagle's View Elementary School	Brewer	Unalaska	100
2011	May	Fuel Efficiency in Fishing Vessels	Johnson	Cordova	15
2011	May	Fuel Efficiency in Recreational Vessels	Johnson	Cordova	10
2011	May	Identifying Kodiak's Marine Mammals, training for summer interns and volunteers	Wynne	Kodiak	14
2011	May	Life on the Beach, Alaska's Land and Sea Lecture Series	Sigman, Byers	Fairbanks	20
2011	June	Direct Marketing Workshop for Fishermen	Chambers	Naknek	21
2011	June	Marine Invasive Species, Thursday Science Series	Freitag, Rice	Petersburg	15
2011	June	Oysters A to Z, Alaska's Land and Sea Lecture Series	RaLonde	Fairbanks	13
2011	June	Trawlers, Trollers and Tenders: Commercial Fishing in Alaska, Alaska's Land and Sea Lecture Series	Rice	Fairbanks	18
2011	July	Forum of Alaska Marine Issues talk at the Museum of the Aleutians	Brewer	Unalaska	12
2011	July	Invasive Species Presentation, Barrow Arctic Science Consortium	Freitag	Barrow	12
2011	July	Kodiak Noon Rotary Presentation	Fong	Kodiak	34
2011	July	Home Canning Workshop	Chambers	Naknek	8
2011	July	National Environmental Policy Act Training in Coastal Alaska, presentation at Coastal Zone 2011 Conference	Chambers	Chicago	16
2011	July	Faces of Climate Change and Adapting to Climate Change, Alaska's Land and Sea Lecture Series	Mercy	Fairbanks	30
2011	August	Home Canning Workshop	Chambers	Dillingham	8
2011	August	Marine Mammal Identification, Sampling and Data Recording for NMFS Groundfish Observers	Wynne	Anchorage	18
2011	August	Pacific Giant Octopus community science presentation	Brewer	Fairbanks	90
2011	August	Pacific Giant Octopus: The Eight-Legged Wonder of the World, Alaska's Land and Sea Lecture Series	Brewer	Fairbanks	101
2011	September	Fishing People of the North: Cultures, Economies, and Management Responding to Change, 27th Wakefield Fisheries Symposium	Carothers/Criddle	Anchorage	174

Alaska Sea Grant Collaborative Partners, 2010-2011

Federal partners	
AmeriCorps	Volunteers in MAP
Consortium for Oceanographic Research and Education (CORE)	MAP and ASG support National Ocean Sciences Bowl by coaching teams and building website.
Department of Agriculture, Trade Adjustment Assistance Program	Funded TAA and Intensive Technical Assistance project for shrimp fishermen.
Department of Commerce, Pacific States Marine Fisheries Commission	Johnson is an advisor, and was on Energy Use in Fisheries Symposium steering committee; PSMFC organized the symposium. MAP coordinated with PSMFC to restart net recycling programs.
Department of the Interior, Bureau of Indian Affairs	Funded workshop on shellfish hazards
Environmental Protection Agency, Indian General Assistance Program (IGAP)	Chambers trained IGAP staff on climate change
National Institute for Occupational Safety and Health, Commercial Fishing Safety Program	Funded MAP man overboard DVD
National Oceanographic Partnership Program, Alaska Ocean Observing System	Advisory Committee member. MAP did outreach on a Prince William Sound large-scale experiment. Partner in MAP Faces of Climate Change DVD.
National Park Service	Advisory Committee member. They advise the MAP Climate Adaptation Project
National Science Foundation, Centers for Ocean Science Education Excellence (COSEE Alaska)	Fund MAP marine education specialist Sigman. Partner in MAP Faces of Climate Change DVD.
National Science Foundation, Global Ocean Ecosystems Dynamics Program (GLOBEC)	Collaborator in salmon/larvacean research project
NOAA Alaska Marine Mammal Stranding Network	Contribute samples and data to investigate marine mammal strandings/mortality
NOAA Alaska Regional Team	Funded climate change video produced by MAP
NOAA Fisheries	Advisory Committee member. Partner in Wakefield Symposium. Partner in reprinting ASG book, Marine Debris in Alaska. Funded Alaska King Crab Research, Rehabilitation and Biology Program. Partner in developing international fishery observer programs and study of marine mammal trophic interactions. Editor of Wakefield proceedings, Biology and Management of Exploited Crab Populations.
NOAA Office of Protected Resources	Collaborator with MAP on marine mammal stranding response data
North Pacific Fishery Management Council	Advisory Committee member. Helps fund Wakefield symposia and Alaska Young Fishermen's Summit. Cullenberg is member of Rural Community Outreach Committee. Editor of Wakefield proceedings, Biology and Management of Exploited Crab Populations.
North Pacific Research Board	Partner in book to be published by Alaska Sea Grant, Sea Stars of the Nearshore Aleutian Islands. Donated money for Wakefield Symposium. Partner in research on whale deterrents. ASG funded student awards at NPRB Alaska Marine Science Symposium. Kodiak Area Marine Science Symposium sponsor. Freitag and Sheffield are on the NPRB advisory panel.
Smithsonian Environmental Research Center	Collaborator with Freitag on invasive species monitoring.
U.S. Coast Guard	Baker is USCG local agent in Cordova
U.S. Fish and Wildlife Service	Advisory Committee member. Contribute samples and data to investigate sea otter mortality.
U.S. Forest Service	Partner on the Tongass Rainforest Festival in Petersburg. Baker is on the Prince William Sound Regional Advisory Committee. Cosponsored Boating without the Boys boating class in Cordova. Cosponsor of Copper River Delta Science Symposium.
U.S. Geological Survey	Advisory Committee member
USDA Agricultural Research Service	Kodiak Area Marine Science Symposium sponsor, provided papers and editing for ASG book on Byproducts
Local, state, and tribal partners	
Alaska Board of Fisheries	Sponsor and provided speakers at the Alaska Young Fishermen's Summit
Alaska Commercial Fishing and Agriculture Bank	Sponsor and provided a speaker at the Alaska Young Fishermen's Summit.
Alaska Cooperative Extension Service	Advisory Committee member. Collaborative partner in food sustainability project. Co-presented at a MAP workshop.
Alaska Department of Commerce, Community and Economic Development, Div. of Investments and Alaska Energy Authority	Participated in Alaska Young Fishermen's Summit and other related conferences. Advisor on MAP climate adaptation project.
Alaska Department of Commerce, Community and Economic Development, Office of Economic Development	Participated in and helped organize Alaska Young Fishermen's Summit, a session on regional seafood development associations, and joined other presentations.
Alaska Department of Education and Early Development	Partner in online curriculum published by Alaska Sea Grant, Alaska Seas and Rivers
Alaska Department of Environmental Conservation	RaLonde helps with PSP monitoring and communication.
Alaska Department of Fish and Game	Advisory Committee member. Partner in Wakefield Symposium. MAP works with ADFG on mariculture experiments. Editor of Wakefield proceedings, Biology and Management of Exploited Crab Populations.
Alaska Department of Natural Resources, Alaska Coastal Management Program, Div. of Alaska Coastal Zone Management	Presented at MAP coordinated Geoduck Harvesting and Marketing workshop. Collecting samples using the Mercury Scientific domoic acid field test kit as part of an NPRB project. RaLonde helped revise the Aquatic Farming Permit Application.
Alaska Department of Labor and Workforce Development	Cosponsored career education sessions presented by Freitag
Alaska Federation of Natives	MAP assists with Marketplace grants to help entrepreneurs
Alaska Native Tribal Health Consortium	Requested climate outreach from MAP
Alaska Office of Boating Safety	Partner (with Johnson) on Resurrection Bay supplement to Alaska Boaters Handbook. Johnson on the Alaska Boating Safety Council.
Alaska Seafood Marketing Institute	Chambers is on the ASMI Salmon Committee. MAP provides salmon data to ASMI.
Aleut Corporation	Funded ASG book, Sea Life of the Aleutians
Aleutian Pribilof Island Association	Funded ASG book, Sea Life of the Aleutians

Aleutian Pribilof Island Community Development Association	Funded crab research. Partner in Alaska Young Fishermen's Summit.
Alutiiq Museum	Distribute ASG educational products
Arliss Sturgulewski, former state senator	Advisory Committee member
Bristol Bay Borough	Advisory Committee member
Chugach Alaska Corporation	Funded ASG book, Our Changing Sea
Chugach Heritage Foundation	Funded ASG book, Our Changing Sea
City of Unalaska	Funded ASG book, Sea Life of the Aleutians
City of Homer	Contributed to the video Adapting to Climate Change in Alaska
City of Ketchikan	Contributed to the video Adapting to Climate Change in Alaska
City of Koyukuk	Contributed to the video Adapting to Climate Change in Alaska
City of Unalakleet	Contributed to the video Adapting to Climate Change in Alaska
Cook Inlet Regional Citizens Advisory Council	Supported ASG book on seaweeds. Kodiak Area Marine Science Symposium sponsor.
Fairbanks North Star Borough School District	Partner in Alaska Seas and Rivers curriculum development
Future Farmers of America, Alaska Chapter	Partner in aquaculture outreach project
Interior Distance Education of Alaska	Distribute ASG educational products to homeschoolers
Juneau School District	Helped develop Alaska Seas and Rivers online curriculum
Kachemak Bay National Estuarine Research Reserve	Partner on MAP climate adaptation project. Employees are collecting samples using the Mercury Scientific domoic acid field test kit as part of an NPRB project on shellfish safety.
Kake Tribal	Partner in sea otter/fisheries project
Kawerak, Inc.	MAP helped teach villagers, and teamed with Kawerak to host scientist talks
Kodiak Audubon Society	Kodiak Area Marine Science Symposium sponsor
Kodiak Chamber of Commerce	ASG was key sponsor of forums at ComFish
Kodiak Filipino-American Association	MAP faculty are on the Education committee
Kodiak Filipino Women's Council	Sponsored workshop, Introduction to Business Planning
Kodiak Women's Resource and Crisis Center	MAP taught financial management to women
Lower Kuskokwim School District	Helped develop Alaska Seas and Rivers online curriculum
Matanuska-Susitna Borough School District	Helped develop Alaska Seas and Rivers online curriculum
Metlakatla Indian Community	RaLonde partnered with them on geoduck research
Museum of the Aleutians	Team with MAP to host Forum of Alaska Marine Issues
Native Village of Kotzebue	Co-authored ASG book on Kotzebue Sound ecology
Ninilchik Natives Association	Partner in mercury in wetlands project
North Slope Borough School District	Advisory Committee member
North Slope Science Initiative	NSSI researchers participated in climate change adaptation workshop
Organized Village of Kake	Partner in aquaculture outreach project
Ounalashka Corporation	Funded ASG book, Sea Life of the Aleutians
Petersburg Economic Development Council	Cosponsored workshop on fishing business sales
Port Graham Village Council	Handled grant to print book Our Changing Sea
Pratt Museum	Funded ASG book, Our Changing Sea
Quinhagak Village Corporation	MAP advised them on equipment and logistics for archaeology project
Senator Joe Thomas, Alaska Legislature	Advisory Committee member
Southwest Alaska Municipal Conference	Cohosted workshop with MAP on community economies
The Imaginarium Science Discovery Center	Distribute ASG educational products
Unalaska School District	Provide MAP office space. MAP teaches in schools and has implemented valuable programs.
Western Regional Aquaculture Center	RaLonde is on Board of Directors

NGO partners

Alaska Fisheries Development Foundation	Partner in symposium and book Alaska Sea Grant published, A sustainable future: Fish processing byproducts
Alaska Marine Conservation Council	Advisory Committee member. Kodiak Area Marine Science Symposium and Wakefield sponsor. Partner in MAP Faces of Climate Change DVD.
Alaska Marine Safety Education Association	Director is MAP affiliate. Collaborator on videos and training. Cullenberg is AMSEA board chair.
Alaska SeaLife Center	Distribute ASG educational products. SeaLife Center staff help with sea otter research project.
Alaska Small Business Development Center	MAP brought director of Rural Outreach Program for Entrepreneurs in Bethel and Quinhagak to train residents in business development
Bering Sea Fisheries Research Foundation	Funded crab research
Ecotrust	Partner in workshop and book ASG published, Community Quota Entities. Cosponsor of Copper River Delta Science Symposium.
Friends of Petersburg Libraries	Partner in the Tongass Rainforest Festival in Petersburg
Groundfish Forum	Funded crab research
Gulf of Alaska Coastal Communities Coalition	Partner in workshop and book ASG published, Community Quota Entities. Partner in Alaska King Crab Research, Rehabilitation and Biology Program. Collaborator on MAP projects.
Marian Center, Kodiak	Fong is on Board of Directors. MAP collaborates to support economic development for immigrants.
Marine Conservation Alliance Foundation	Partner in Wakefield Symposium. Sponsor of Alaska Young Fishermen's Summit.
OceansAlaska	Freitag is on Board of Directors, actively developing the new mariculture education and research facility

NGO partners, continued

Pacific Coast Joint Venture	Cosponsored Copper River Delta Science Symposium
Petersburg Marine Mammal Center	Partner on large whale entanglement project, ASG sea otter project, and summer science lecture series. Rice is president of the PMMC board.
Rasmuson Foundation	Funded ASG books, Our Changing Sea and Sea Life of the Aleutians
Solutions That Endure	Advisory Committee member
Sydney and Dorothy Wynne Memorial Fund	Kodiak Area Marine Science Symposium sponsor
World Wildlife Fund	Funded Wakefield symposium. Advisor on projects.

Industry partners

Alaska Bering Sea Crabbers	Partner in ASG's Alaska King Crab Research, Rehabilitation and Biology Program
Alaska Charter Association	Contributed content to Charter Log newsletter
Alaska Miners Association	Advisory Committee member
Alaska Oyster Company	Collaborator in oyster yield project
Alaska Pacific Seafoods	Kodiak Area Marine Science Symposium sponsor
Alaska Shellfish Growers Association	Active on ASG's Alaska King Crab Research, Rehabilitation and Biology Program steering committee
Alyeska	Baker trained captains and crew in oil spill response HAZWOP
Allen Marine Tours	Works with MAP to provide ecotourism ocean data collection.
Alutiiq Pride Shellfish Hatchery	Partner in Alaska King Crab Research, Rehabilitation and Biology Program
Blue Starr Oyster Co	MAP helped with marketing, product quality
BP	Advisory Committee member. Partner in research project
Bristol Bay Regional Seafood Development Association	Advisory Committee member. Partner in Alaska Young Fishermen's Summit
Central Bering Sea Fishermen's Association	Funder and active on Alaska King Crab Research, Rehabilitation and Biology Program steering committee
Chugach Corporation	Funded book, Our Changing Sea
Conoco Phillips Earth Energy Partners Program	Helped fund book Alaska Clean Harbors Guidebook
Copper River Seafoods	MAP helped train workers and with plant operations
Copper River/Prince William Sound Marketing Association	MAP helps boost economy, quality, and future of fisheries there
Cordova District Fishermen United	Partner in Alaska Young Fishermen's Summit. Partner in developing fisherman safety packet
Dan Hull, F/V Gretchen S	Supported Alaska Young Fishermen's Summit. Advisory Committee member.
Don Cornelius	Partner in the Tongass Rainforest Festival in Petersburg
Favco Seafood	Cooperator on PSP work with MAP
Gastineau Guiding Service	MAP helped them develop pilot of a citizen science program: Cruise With Purpose; data and observations will be stored and used by scientists.
Henry Mitchell, Fisheries Consultant	Advisory Committee member
Icicle Seafoods Inc.	Partner in Alaska Young Fishermen's Summit and ASG sea otter/fisheries project.
Integrated Marine Systems	Partner in Marine Refrigeration courses
International Pacific Halibut Commission (U.S.)	Sponsor and provided speaker to Alaska Young Fishermen's Summit
Kachemak Bay Gear Shed	Partner in refrigeration workshops
Kachemak Shellfish Growers Cooperative	MAP is technical advisor
Kanektok River Adventures	MAP helped start their business
Kodiak Fish Company	Partner in Alaska Young Fishermen's Summit
Lofoten Fish Company	Partner in the Tongass Rainforest Festival in Petersburg
Norseman Maritime Charters	Funded ASG book, Sea Life of the Aleutians
Northern Southeast Regional Aquaculture Association	Advisory Committee member
Norton Sound Health Corporation	MAP partnered with to teach cold water emergencies
Petersburg Vessel Owners Association	Partner in Alaska Young Fishermen's Summit, whale entanglement project, and ASG sea otter project
Prince William Sound Aquaculture Association	MAP has helped with safety training, education, biology research
Prince William Sound Regional Seafood Development Association	Joined MAP in workshop on Regional Seafood Development Associations.
Princess Tours	Advisory Committee member. Funded MAP.
Resource Development Council for Alaska, Inc.	Advisory Committee member
Santa Monica Seafood	Funded Alaska King Crab Research, Rehabilitation and Biology Program
SeaFisk Consulting	Consultant on fisheries business projects and author of Does Diesel Have a Future in the Fishing Industry?
Sealaska Corporation	Advisory Committee member
Southeast Alaska Regional Dive Fisheries Association	Collaborator in sea otter/fisheries project
Trident Seafoods	Cosponsored net-mending class
United Fishermen's Marketing Association	Advisory Committee member
Wells Fargo Bank	Cosponsored workshop on fishing business sales.

Academic institution partners	
Alaska Vocational Technical Education Center	Partner in refrigeration workshops
Arctic Ocean Diversity Census of Marine Life project	Partner in book published by ASG, Illustrated Keys to Free-Living Invertebrates of Eurasian Arctic Seas and Adjacent Deep Waters
Fisheries and Oceans Canada, Maurice Lamontagne Institute	Editor of Wakefield proceedings book, Biology and Management of Exploited Crab Populations
East Carolina University	Co-authored ASG book on Kotzebue Sound ecology
Farallon Institute for Advanced Ecosystem Research	Collaborator in research project, variance as indicator in ecosystem reorganization
Hatfield Marine Science Center	Distribute ASG educational products. Collaborator on shellfish research.
International Council for the Exploration of the Sea (ICES)	Partner in Wakefield Symposium
NOAA/UAF Kasitsna Bay Laboratory	Collecting samples using the Mercury Scientific domoic acid field test kit as part of an NPRB project.
NOAA/UAF Alaska Center for Climate Assessment and Policy	Partner on MAP climate adaptation project and invasive species monitoring
North Pacific Marine Science Organization (PICES)	Partner in Wakefield Symposium
Prince William Sound Science Center	Cohosted science talks with MAP. Cosponsored Copper River Delta Science Symposium
University of Alaska Anchorage, Institute of Social and Economic Research	Partner in Wakefield Symposium
University of Alaska Anchorage, Kodiak College	Kodiak Area Marine Science Symposium sponsor
University of Alaska Fairbanks Summer Sessions	Cosponsored Alaska Book Festival. ASG staff served on planning committee.
University of Alaska Fairbanks, Department of Anthropology	Partner in Wakefield Symposium
University of Alaska Fairbanks, Kuskokwin Campus	Partner in Wakefield Symposium
University of Alaska Fairbanks, Pollock Conservation Cooperative Research Center	Partner in Wakefield Symposium
University of Alaska Foundation/Office of Academic Affairs	Kodiak Area Marine Science Symposium sponsor
University of Alaska Press	Book marketing partner. Funded book, Our Changing Sea
University of Alaska Southeast, Research Experiences for Undergraduate Students	Partner in sea otter/fisheries project
University of British Columbia	Partner in Wakefield Symposium
University of Tromso, Marine Research Institute	Partner in Wakefield Symposium
Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia	Partner in book published by ASG, Illustrated Keys to Free-Living Invertebrates of Eurasian Arctic Seas and Adjacent Deep Waters
Sea Grant Program partners	
Hawaii Sea Grant	Partner in book production: Hawaii-Pacific marine mammal and turtle guide
Rhode Island Sea Grant	Partner in book marketing: Atlantic marine mammal and turtle guide
South Carolina Sea Grant	Shrimp fishery information exchange with MAP
Washington Sea Grant	Provided research info on MAP slush bag endeavor
International partners	
Food and Agriculture Organization of the United Nations	Partner in Wakefield Symposium
Pacific Salmon Commission	Freitag is on the Catch and Escapement Committee

Alaska Sea Grant Awards October 2010–September 2011

PUBLICATIONS

Silver Award, 4 color popular publications category, Association for Communication Excellence (ACE) Critique and Awards Competition 2011: ***Field Guide to Seaweeds of Alaska***.

Second Place, soft/hard cover book category, National Association of Government Communicators (NAGC) Blue Pencil Competition 2011: ***Field Guide to Seaweeds of Alaska***.

American Library Association, Notable Government Documents 2011: ***Field Guide to Common Marine Fishes and Invertebrates of Alaska***, and ***Field Guide to Seaweeds of Alaska***.

Alaska Sea Grant Publications, October 2010-September 2011

PRINT AND ELECTRONIC BOOKS

Alaska Sea Grant. 2010. Community Quota Entities: Workshop Proceedings. Alaska Sea Grant, University of Alaska Fairbanks, AK-SG-10-04, Fairbanks. 82 pp.

Brewer, R., H. Chenelot, S. Harper, and S. Jewett. 2011. Sea Life of the Aleutians: An Underwater Exploration. Alaska Sea Grant, University of Alaska Fairbanks, SG-ED-71, Fairbanks. 156 pp.

Buzhinskaja, G.N., ed. 2011. Illustrated Keys to Free-Living Invertebrates of Eurasian Arctic Seas and Adjacent Deep Waters, Vol. 2. Nemertea, Cephalorhyncha, Oligochaeta, Hirudinida, Pogonophora, Echiura, Sipuncula, Phoronida, and Brachiopoda. Alaska Sea Grant, University of Alaska Fairbanks, AK-SG-10-03, Fairbanks. 168 pp.

Johnson, T. 2011. Climate Change Adaptation Planning for Individuals and Communities. Alaska Sea Grant Marine Advisory Program, University of Alaska Fairbanks, M-143, Anchorage. 24 pp.

Johnson, T. 2011. Climate Change Adaptation Planning Manual for Coastal Alaskans and Marine-Dependent Communities. Alaska Sea Grant Marine Advisory Program, University of Alaska Fairbanks, M-142, Anchorage. 49 pp.

Kruse, G.H., G.L. Eckert, R.J. Foy, R.N. Lipcius, B. Sainte-Marie, D.L. Stram, and D. Woodby, eds. 2010. Biology and Management of Exploited Crab Populations under Climate Change. Alaska Sea Grant, University of Alaska Fairbanks, AK-SG-10-01, Fairbanks. 572 pp.

Salomon, A., N. Tanape Sr., and H. Huntington. 2011. Imam Cimiucia: Our Changing Sea. Alaska Sea Grant, University of Alaska Fairbanks, SG-ED-70, Fairbanks. 123 pp.

Whiting, A., D. Griffith, S. Jewett, L. Clough, W. Ambrose, and J. Johnson. 2011. Combining Inupiaq and Scientific Knowledge: Ecology in Northern Kotzebue Sound, Alaska. Alaska Sea Grant, University of Alaska Fairbanks, SG-ED-72, Fairbanks. 71 pp.

VIDEOS

Mercy, D. 2011. Adapting to Climate Change in Alaska. Alaska Sea Grant Marine Advisory Program, Anchorage. M-135. 17 min

Mercy, D. 2011. Faces of Climate Change. COSEE Alaska, Alaska Marine Conservation Council, Alaska Ocean Observing System, Alaska Sea Grant. M-137. 23 min.

Mercy, D. 2011. Man Overboard: Prevention and Recovery. National Institute for Occupational Safety and Health. M-145. 17 min.

BROCHURES, FACT SHEETS

Alaska Sea Grant. 2011. Alaska Climate Change Adaptation Planning Tool. Alaska Sea Grant, University of Alaska Fairbanks, M-141, Fairbanks. 7 pp.

Alaska Sea Grant. 2011. Climate Change and Subsistence: What It Means to Alaskans and How We Can Adapt. Alaska Sea Grant, University of Alaska Fairbanks, M-139, Fairbanks. 2 pp.

Alaska Sea Grant. 2011. Ocean Acidification: What It Means to Alaskans and How We Can Adapt. Alaska Sea Grant, University of Alaska Fairbanks, M-138, Fairbanks. 2 pp.

Alaska Sea Grant. 2011. Permafrost Change: What It Means to Alaskans and How We Can Adapt. Alaska Sea Grant, University of Alaska Fairbanks, M-144, Fairbanks. 2 pp.

Alaska Sea Grant. 2011. Sea Level Rise and Storm Surge: What It Means to Alaskans and How We Can Adapt. Alaska Sea Grant, University of Alaska Fairbanks, M-140, Fairbanks. 2 pp.

Baker, T. and G. Haight. 2010. Tips for Managing Yearly Fishing Income. Alaska Sea Grant, University of Alaska Fairbanks, ASG-54, Fairbanks. 4 pp.

Fisk, G. 2010. Does Diesel Have a Future in the Fishing Industry? Alaska Sea Grant, University of Alaska Fairbanks, ASG-52, Fairbanks. 8 pp.

Johnson, T. 2010. Tips for Photographers, Birders, and Wildlife Viewers on Guided Trips. Alaska Sea Grant, University of Alaska Fairbanks, ASG-53, Fairbanks. 4 pp.

PEER-REVIEWED JOURNAL ARTICLES

Herter, H., B. Daly, J.S. Swingle, and C. Lean. 2011. Morphometrics, Fecundity, and Hatch Timing of Blue King Crabs *(Paralithodes platypus)* from the Bering Strait, Alaska, USA. Journal of Crustacean Biology 31(2):304-312.

Hulson, P.J.F., D.H. Hanselman, and T.J. Quinn II. 2011. Effects of Process and Observation Errors on Effective Sample Size of Fishery and Survey Age and Length Composition Using Variance Ratio and Likelihood Methods. ICES Journal of Marine Science 68(7):1548-1557.

Sathivel, S. 2010. Fish Oil Extraction, Purification, and Its Properties. In: C. Alasalvar, K. Miyashita, F. Shahidi, and U. Wanasundara (eds.), Seafood Quality, Safety, and Health Effects. Blackwell Publishing, Oxford, UK, pp. 423-430.

Sathivel, S., and D.E. Kramer. 2010. Microencapsulation, Nanoencapsulation, Edible Film, and Coatings Applications in Seafood Processing. In: C. Alasalvar, K. Miyashita, F. Shahidi, and U. Wanasundara (eds.), Seafood Quality, Safety, and Health Effects. Blackwell Publishing LTD, Oxford, UK.

Steiner, E.M., K.R. Criddle, and M.D. Adkison. 2011. Balancing Biological Sustainability with the Economic Needs of Alaska's Sockeye Salmon Fisheries. North American Journal of Fisheries Management 31:431-444.

Yin, H., K.M. Solval, J. Huang, P.J. Bechtel, and S. Sathivel. 2011. Effects of Oil Extraction Methods on Physical and Chemical Properties of Red Salmon Oils *(Oncorhynchus nerka)*. Journal of the American Oil Chemists Society, pp. 1-8. DOI 10.1007/s11746-011-1824-x

STUDENT THESES

Pirtle, J.L. 2010. Habitat Function in Alaska Nearshore Marine Ecosystems. Ph.D. dissertation, University of Alaska Fairbanks, SGT-11-02, 197 pp.

Runfola, D.M. 2011. Traditional Knowledge and Fish Biology: A Study of Bering Cisco in the Yukon River Delta, Alaska. Master's thesis, University of Alaska Fairbanks, SGT-11-01, 124 pp.

NEWSLETTERS

Daly, B., ed. 2011. News Flash 3(1-12). Alaska Sea Grant, University of Alaska Fairbanks, M-148, Fairbanks.

Johnson, T. ed. 2011. Charter Log Newsletter. No. 52, Summer 2011. Alaska Sea Grant, University of Alaska Fairbanks, M-147, Fairbanks.

Keller, S., ed. 2011. Fishlines 31(1-12). Alaska Sea Grant, University of Alaska Fairbanks, M-149, Fairbanks.

PROGRAM REPORTS

Alaska Sea Grant. 2010. Alaska Sea Grant Annual Report: October 2009-September 2010. Alaska Sea Grant, University of Alaska Fairbanks, AK-ADMIN-74, Fairbanks. 28 pp.

Alaska Sea Grant. 2010. Alaska Sea Grant College Program Annual Report. Alaska Sea Grant, University of Alaska Fairbanks, AK-ADMIN-69, Fairbanks. 32 pp.

CATALOGS AND TIDE TABLES

Alaska Sea Grant. 2011. 2011 Alaska Sea Grant Catalog. Alaska Sea Grant, University of Alaska Fairbanks, AK-ADMIN-75, Fairbanks. 48 pp.

Alaska Tide Book Company. 2011. 2011 Tide Tables: Southeastern Alaska. Alaska Tide Book Company and Alaska Sea Grant, University of Alaska Fairbanks, M-131, Fairbanks. 112 pp.

Alaska Tide Book Company. 2011. 2011 Tide Tables: Southcentral Alaska. Alaska Tide Book Company and Alaska Sea Grant, University of Alaska Fairbanks, M-129, Fairbanks. 112 pp.

Alaska Tide Book Company. 2011. 2011 Tide Tables: Western Alaska. Alaska Tide Book Company and Alaska Sea Grant, University of Alaska Fairbanks, M-130, Fairbanks. 112 pp.

Alaska Sea Grant News Releases October 2010-September 2011

Alaska Sea Grant Marine Advisory Program holds workshops to help public understand how environmental policy is made
20 October 2010

Seaweeds a passion for "nerdy" Juneau biologist
13 October 2010

Next phase of king crab research nets $460,000
3 December 2010

Southeast Alaska shrimp fishermen could receive up to $12,000
8 December 2010

Southeast Alaska food security subject of UAF research
9 December 2010

Alaska Sea Grant offers vessel refrigeration workshop training for fishermen
6 January 2011

Alaska coastal communities send high school teams to Seward for marine science face-off
2 February 2011

Alaska Sea Grant taps local biologist for Marine Advisory Program agent in Nome
3 February 2011

Alaska Sea Grant Marine Advisory Program floats fishermen training program, seeks public, industry comment
10 February 2011

Fishing vessel refrigeration workshop comes to Anchorage
17 February 2011

Kodiak lands new Alaska Sea Grant Marine Advisory Program agent
2 March 2011

Homer educator wins Ocean Literacy Award
9 March 2011

Marine Advisory Program launches website with tools, videos, resources to help coastal communities adapt to climate change
27 May 2011

UAF experts say shellfish toxin likely to be a problem again this year
28 May 2011

Alaska commercial fishing groups donate to king crab research
9 August 2011

Fishing People of the North symposium to discuss social, environmental change
6 September 2011

Alaska Sea Grant–Funded Graduate Students October 2010-September 2011

Student	Maj Professor	Deg	Date	Focus Area	Thesis Title
Currently funded students					
Justin Carney	Adkison	MS		Fisheries	Implications of a Fixed Fishing Schedule on Historic Fisheries of Sockeye Salmon *(Oncorhynchus nerka)* in Bristol Bay, Alaska
Ayla Doubleday	Hopcroft	MS		Marine Biology	The Seasonal and Interannual Patterns of Larvaceans and Pteropods in the Coastal Gulf of Alaska, and Their Relationship to Pink Salmon Survival
Lale Gurer	Fong	MS		Food Sci/Human Nutrition	Value Adding to Pink and Chum Salmon Fillets
Tammy Hoem Neher	Rosenberger	PhD		Fisheries	The Influence of Estuarine and Early Marine Habitats on Expression of Life History Characteristics of Coho Salmon Smolts in South-Central Alaska
Zachary Hoyt	Eckert	PhD		Fisheries	Recolonization, Prey Selection and Resource Competition by Sea Otters, *Enhydra lutris*, in Southern Southeast Alaska.
Peter-John Hulson	Quinn	PhD		Fisheries	Dealing with Uncertainties in Integrated Age-Structured Assessment Models
Melissa Johnson	Reynolds	PhD		Oceanography	Research on Benthic Habitat in Kachemak Bay
Christopher Manhard	Gharrett	MS		Fisheries	
Naim Montazeri	Himelbloom	MS		Seafood Science	Application of Commercially Refined Natural Liquid Smokes to Cold-Smoked Salmon as an Antilisterial Additive
Janelle Mueller	Mueter	MS		Fisheries	Impact of Spawner Age Composition of Sockeye Salmon on Future Recruits
Jennifer Stoutamore	Tallmon	MS		Fisheries	Spatial and Population Genetics of Blue King Crab *Paralithodes platypus*
Stuart Thomas	Oliveira	MS		Fisheries	Growth and Post-Harvest Quality of Selected Pacific Oysters *(Crassostrea gigas)* Cultured in Kachemak Bay, Alaska, and Puget Sound, Washington, in October 2009 and June 2010
Scott Vulstek	Tallmon	MS		Fisheries	Spatio-Temporal Population Genetic Structure and Mating System of Red King Crab *(Paralithodes camtschaticus)* in Alaska
Rachael Wadsworth	Criddle	MS		Fisheries	Stakeholder-Driven Research Priorities for the Aleutian Islands: Incorporating Stakeholder Input in Ecosystem-Based Management of Living Marine Resources
Recent graduates					
Jodi Pirtle		PhD	Fall 2010	Fisheries	Habitat Function in Alaska Nearshore Marine Ecosystems
Miranda Joan Westphal		MS	Summer 2011	Fisheries	Comparative Growth Physiology and Behavioral Ecology of Wild-Caught and Hatchery-Reared Juvenile Red King Crab *(Paralithodes camtschaticus)*
Jason Gasper		PhD	Summer 2011	Fisheries	Policy and Market Analysis of World Dogfish Fisheries and an Evaluation of the Feasibility of a Dogfish Fishery in Waters of Alaska, USA
Jesse Echave		MS	Fall 2010	Fisheries	First-Generation Effects on Development Time of Outcrossing between Geographically Isolated and Seasonally Isolated Populations of Pink Salmon *(Oncorhynchus gorbuscha)*
David Runfola		MS	Spring 2011	Fisheries	Combining traditional knowledge and fisheries science in a study of Bering cisco *(Coregonus laurettae)* in the Yukon River Delta, Alaska
Carey Vorholt		MA	Fall 2010	Seafood Sci/Nutrition	Injected or Vacuum-Tumbled Marinade Effects on the Shelf Life of Once- and Twice-Frozen Fresh Pacific Chum Salmon *(Oncorhynchus keta)* Fillets
Jeremy Kasper		PhD	Spring 2011	Oceanography	Idealized Modeling of Circulation Under Landfast Ice

Alaska Sea Grant Funding Sources, October 2010-September 2011

Base program funding		
NOAA/National Sea Grant Office	Sea Grant Core Funding	1,507,000
School of Fisheries and Ocean Sciences/UAF	State Operating and Match Funds	2,473,047
National Sea Grant		
NOAA/NSGO	Sea Grant Aquaculture Program 2010: Expanding Community-Based Shellfish Aquaculture Opportunities in Alaska through Technology Transfer, Education, and Planning Outreach to Shellfish Farmers	90,488
NOAA/NSGO	Implementing an Early Detection and Rapid Response (EDRR) Framework for Nonindigenous Marine Species in Alaska with Citizen Science	399,885
NOAA/NSGO	Sea Grant Aquaculture Research Program 2010: Red King Crab Aquaculture in Alaska—Release Strategies and Critical Ecosystem Interactions	303,359
NOAA/NSGO	Bering Strait Maritime Symposium	30,000
NOAA/NSGO	Marine Mammal Training and Capacity Building in West Africa	45,000
Federal agencies		
NOAA	King Crab Aquaculture and Enhancement in Alaska	199,800
NOAA	Field Guide to Cods, Grenadiers, and Other Fishes	14,839
NOAA/NMFS	Arctic Region Coordination Workshop	80,027
National Science Foundation	COSEE Alaska: People in a Changing Climate	150,000
State and local governments		
Alaska Energy Authority	Efficiency of Alaska Seafood Processing	114,288
Alaska Department of Fish and Game	Wakefield Symposium 2011	12,000
Academic organizations		
Bristol Bay Campus and USDA	Marine Advisory Program Agent Support	10,000
Kodiak College	Kodiak Area Marine Science Symposium 2011	100
University of Alaska Anchorage Institute of Social and Economic Research	Wakefield Symposium 2011	3,000
University of Alaska Center for Economic Development and USDA	Assistance to Cooperatives	30,000
University of Alaska Foundation and Office of Academic Affairs/BP/Conoco Phillips	Kodiak Area Marine Science Symposium 2011	5,000
Nongovernmental agencies		
Aleutian Pribilof Island Community Development Association (APICDA)	Alaska King Crab Research, Rehabilitation and Biology Program	5,000
Cook Inlet RCAC	Kodiak Area Marine Science Symposium 2011	2,000
Kodiak Audubon Society	Kodiak Area Marine Science Symposium 2011	50
North Pacific Fishery Management Council	Wakefield Symposium 2011	7,500
Industry and business		
University of Alaska Foundation	Marine Advisory Program Development Fund	75,259
Central Bering Sea Fishermen's Association	Alaska King Crab Research Rehabilitation and Biology Program	5,000
Groundfish Forum	Alaska King Crab Research Rehabilitation and Biology Program	5,000
United Fishermen's Marketing Association	Kodiak Area Marine Science Symposium 2011	200
Norseman Maritime Charters, LLC	Sea Life of the Aleutians: An Underwater Exploration, Book	2,000
Research organizations		
North Pacific Research Board	Avoiding and Responding to Humpback Whale Bycatch in Coastal Alaskan Fisheries: A Cooperative Approach, Phase I	150,000
Bering Sea Fisheries Research Foundation	Alaska King Crab Research Rehabilitation and Biology Program	10,000
North Pacific Research Board	Tagging Studies to Estimate Local Biomass, Growth, and Natural Mortality of Pacific Giant Octopus *(Enteroctopus dofleini)*	175,678
North Pacific Research Board	Field Studies in Support of Stock Assessment for the Pacific Giant Octopus *Enteroctopus dofleini*	18,151
North Pacific Research Board	Distribution, Movement, and Habitat Use on the Colonizing Front of the Southeast Alaska Sea Otter Population and the Effects on Fisheries	146,700
North Pacific Research Board	Characterization of the Salmon Bycatch in the BSAI Pollock Fisheries and Its Effects	393,449
North Pacific Research Board	Wakefield Symposium 2011	5,000
North Pacific Research Board	Kodiak Area Marine Science Symposium 2011	3,000
Income accounts		
	Publication Income	121,197
	Workshops Income	25,200
Total funding		**6,618,217**

Alaska Sea Grant Directory

ADMINISTRATION

David Christie	Director, Fairbanks
Adie Callahan	Program Coordinator, Fairbanks
Michele Frandsen	Program Manager, Fairbanks
Karina Gonzales	Administrative Assistant, Fairbanks

RESEARCH

Ben Daly	Research Biologist, Seward

EDUCATION SERVICES

Kurt Byers	Education Services Manager, Fairbanks
Carol Kaynor	Web and Database Coordinator, Fairbanks
Sue Keller	Publications Manager/Editor, Fairbanks
Kathy Kurtenbach	Sales and Marketing Coordinator, Fairbanks
Dawn Montano	Distribution Assistant, Fairbanks
Dave Partee	Communications Specialist/Web Developer, Fairbanks
Doug Schneider	Information Officer, Fairbanks

MARINE ADVISORY PROGRAM

Paula Cullenberg	Associate Director/MAP Leader/Coastal Community Development Specialist, Anchorage
Torie Baker	Marine Advisory Agent, Cordova
Asia Beder	Americorp VISTA Volunteer, Anchorage
Beverly Bradley	Program Coordinator, Anchorage
Reid Brewer	Marine Advisory Agent, Unalaska
Julie Carpenter	Administrative Coordinator/Fiscal Officer, Anchorage
Izetta Chambers	Marine Advisory Agent, Dillingham
Chuck Crapo	Seafood Quality Specialist, Kodiak
Jared Dillbeck	Administrative Assistant, Anchorage
Jerry Dzugan	MAP Affiliate Faculty, Sitka
Quentin Fong	Seafood Marketing Specialist, Kodiak
Gary Freitag	Marine Advisory Agent, Ketchikan
Terry Johnson	Marine Recreation and Tourism Specialist, Anchorage
Julie Matweyou	Marine Advisory Agent, Kodiak
Deborah Mercy	Program Development Media Specialist, Anchorage
Ray RaLonde	Associate Leader/Aquaculture Specialist, Anchorage
Terry Reeve	Marine Advisory Agent, Bethel
Sunny Rice	Marine Advisory Agent, Petersburg
Gay Sheffield	Marine Advisory Agent, Nome
Marilyn Sigman	Marine Education Specialist, Anchorage
Briana Witteveen	Marine Mammal Research Technician, Kodiak
Kate Wynne	Marine Mammal Specialist, Kodiak

Sea Grant Alaska

NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

UAF University of Alaska Fairbanks
School of Fisheries and Ocean Sciences
America's Arctic University

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