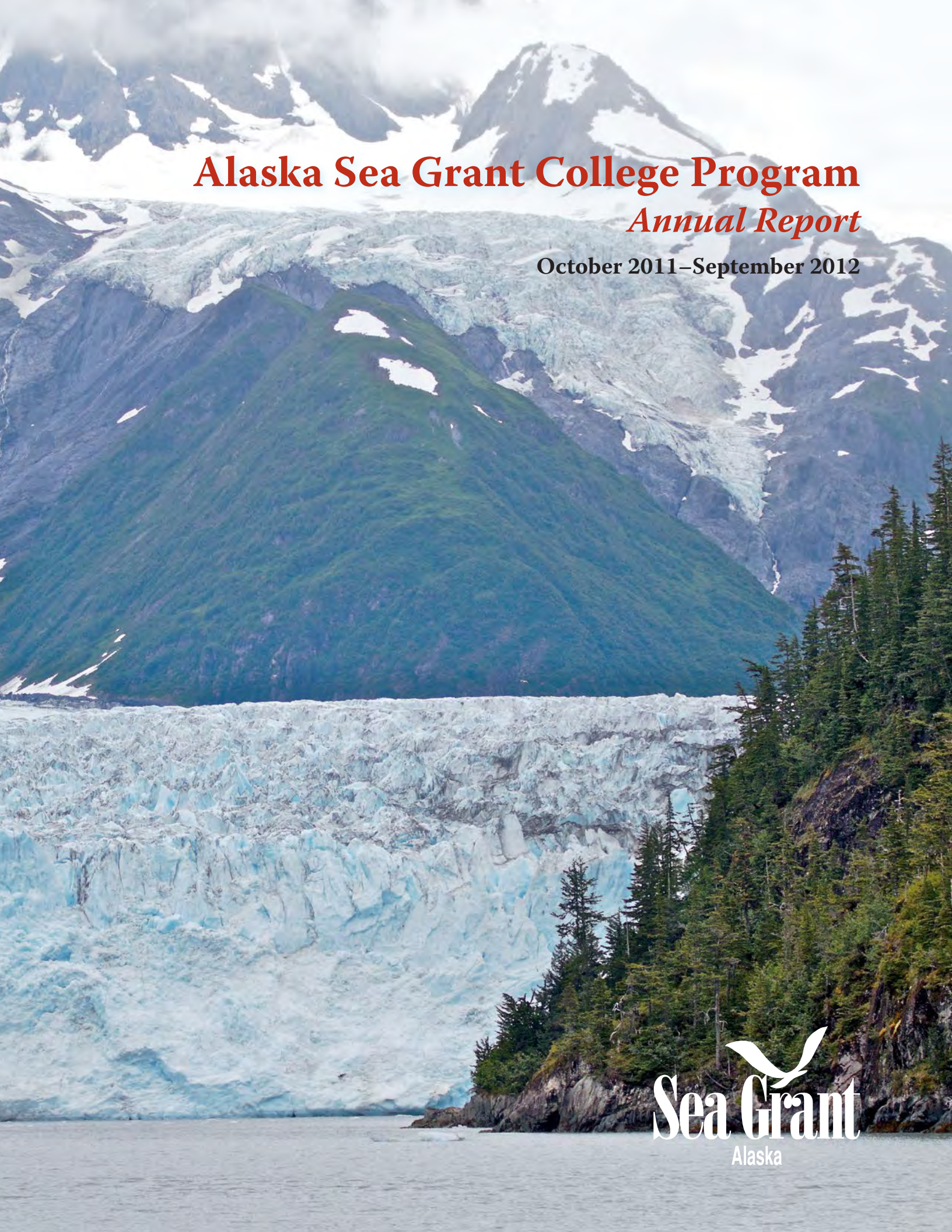


Alaska Sea Grant College Program

Annual Report

October 2011–September 2012

Sea Grant
Alaska

CONTENTS

Alaska Sea Grant College Program
Annual Report

Welcome


TODD PARIS

One of the high points of the year for Alaska Sea Grant was hosting more than 200 educators, administrators, communicators, and extension agents from throughout the national Sea Grant network at the biennial Sea Grant Week meeting, in September. For the first time, Sea Grant Week was held in Alaska and Alaska Sea Grant staff staged an excellent event.

Certainly a highlight of the meeting was seeing our Marine Advisory aquaculture specialist Ray RaLonde receive the Superior Outreach Program Award, presented by the national Sea Grant Extension Assembly in recognition of outstanding leadership, teamwork, and accomplishment by extension personnel. Nominated by West Coast extension directors, Ray received the award in recognition of his career-long pursuit of safe subsistence and personal use harvest of shellfish in Alaska, and his tireless devotion to diversifying through mariculture the economies of isolated coastal communities in southcentral and southeast Alaska. Congratulations from all of us to you, Ray.

Throughout the event, Alaska Sea Grant staff worked with Katie Lea, the Sea Grant Association fiscal/meeting coordinator, to provide a memorable week filled with professional development workshops, networking opportunities, and collaborative activities, all aimed at helping Sea Granters learn from each other so they can do an even better job when they get home to their constituents.

Doing better has always been a central theme within Sea Grant. This year the first National Sea Grant Performance Review Panel (PRP) will be reviewing all 33 programs to assess progress toward, and overall impacts of, their 2010-2013 strategic plans.

Measurable impacts have become part of the Sea Grant lexicon. It is no longer enough to fund worthy research, support students, hold workshops of interest to coastal stakeholders, or produce publications of use to scientists or coastal residents. We must show that these efforts actually had some meaningful—and quantifiable—impact.

Alaska Sea Grant has for the past couple of years been working hard to gather impacts. Amid declining budgets and rising costs, reduced staff, and ever-increasing workloads, we are making progress.

This annual report describes some of the important impacts and accomplishments of our work during the past year. Several of these impacts reflect improvements in the way Alaskans do business—lowering costs, improving efficiencies, and putting more dollars into the pockets of small business entrepreneurs and their communities. Other projects have shed new light on a scientific question, offered a new tool for fisheries management, or increased awareness and understanding of our marine environment and Alaska's role in the earth's ecosystem.

David Christie
Director

Cover photo of Prince William Sound, Alaska, by Dave Partee.

Program Highlights

FOUR NEW PROJECTS FUNDED FOR 2012-2014

Alaska Sea Grant is providing federal and state funds during 2012-2014 to four research projects and related graduate student traineeships that address important marine research needs in coastal Alaska. Details of each project are available at alaskaseagrant.org/projects.html.

One project will assist researchers with the Alaska King Crab Research, Rehabilitation and Biology Program. Ginny Eckert, associate professor of marine biology at the University of Alaska Fairbanks School of Fisheries and Ocean Sciences and AKCRRAB science team leader, will conduct biochemical, visual, and stress tests to better understand nutritional factors that affect healthy crab larvae reared in a hatchery setting, laying groundwork for evaluating the viability of crab enhancement. This project is funded under Alaska Sea Grant's Safe and Sustainable Seafood Supply strategic focus area.

Another research project will test whether strontium isotopes in commercially caught king salmon can be used to identify individual spawning tributaries of the Nushagak River in the Bristol Bay region. Matthew Wooller, associate professor of chemical oceanography at the UAF Water and Environmental Research Center and the School of Fisheries and Ocean Sciences, and graduate student Sean Brennan will conduct the research. This project is funded under our Healthy Coastal Ecosystems strategic focus area.

Also in the Bristol Bay region, Chanda Meek, UAF assistant professor of political science, and Helen Chythlook Aderman, marine mammal coordinator with the Bristol Bay Native Association, will document traditional knowledge and marine mammal harvest patterns of hunters in Togiak, Port Heiden, and Chignik Lagoon. Researchers will create traditional ecological knowledge maps of sea otter and bearded seal habitats, abundance, and harvests, and will help communities and managers evaluate the impacts of habitat change, industrial development, and changes in fishing pressure.

Alaska Sea Grant Marine Advisory Program in the news

- Bree Witteveen's research and whale census efforts around Kodiak Island were the subject of several feature stories aired over the summer on KMXT-Kodiak Public Radio.
- Reid Brewer's research on octopus was highlighted by *Scientific American* online.
- Kate Wynne's research on the effectiveness of pingers to deter whales from fishing nets was a featured story on KSFK Alaska Public Radio in Petersburg.
- Gay Sheffield's work with northwest coast residents to understand the causes of unusually high mortality in seal populations was highlighted in newspapers and on Alaska Public Radio during the summer.
- The Alaska Seafood Processing Leadership Institute and the Alaska Young Fishermen's Summit were spotlighted in statewide media as well as several seafood industry publications.
- Kate Wynne's Gulf Apex Predator-Prey project was featured in an article by Education Services manager Kurt Byers, in the October 2012 issue of *Pacific Fishing* magazine.
- In her annual Picks and Pans list for 2011, widely read Alaska seafood journalist Laine Welch selected Alaska Sea Grant Marine Advisory agents as her choice in the Best Fish Outreach category.
- A two-page spread on the underwater photo book, *Sea Life of the Aleutians: An Underwater Exploration,* by lead author Reid Brewer, appeared in the March 2012 issue of *Pacific Fishing* magazine.

KATE WYNNE

Bree Witteveen works with Kate Wynne on the Gulf Apex Predator-Prey (GAP) project to discover new knowledge about the ecosystem dynamics in the Gulf of Alaska.

This project is funded under our Healthy Coastal Ecosystems strategic focus area.

In southeast Alaska, MAP agent Sunny Rice, UAF associate professor Ginny Eckert, and doctoral student Zac Hoyt continue the Southern Southeast Alaska Sea Otter Project, begun in 2010 to better understand the impact of increasing sea otter populations on important geoduck clam, California sea cucumber, red sea urchin, and Dungeness crab fisheries. See alaskaseagrant.org/otter. They will expand their studies of sea otter diets and population expansion into additional areas. Rice interviews residents to gather local knowledge of population shifts, and to link this information to tagged otter data. The Alaska Sea Grant component is part of a larger effort with the North Pacific Research Board and U.S. Fish and Wildlife Service. This project is funded under the Healthy Coastal Ecosystems strategic focus area.

MAP GAINS FACULTY SEAFOOD OUTREACH

Brian Himelbloom, Alex Oliveira, and Scott Smiley, faculty members at the Kodiak Seafood and Marine Science Center, were welcomed to the Alaska Sea Grant Marine Advisory Program. Each has a 15% MAP assignment, meaning that their public service work is reported as part of UAF and MAP seafood extension effort. Protein chemist Brennan Smith, who recently joined the Kodiak faculty, will also contribute to MAP's extension activities in seafood nutrition.

Research, Education, Extension, Outreach—Making an Impact

Each of the goals of our strategic plan is assigned to one of four nationally mandated focus areas, or to a fifth—Marine Literacy and Stewardship—which incorporates many of our education and outreach activities.

Healthy Coastal Ecosystems

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

Healthy coastal ecosystems are essential to the well-being of all Alaskans—they provide us with food, and underpin the economies and cultures of our coastal communities. Under this focus area, Alaska Sea Grant supported diverse projects and activities such as monitoring for marine invasive species in southeast Alaska, and documenting mortality in seals afflicted with an unusual disease outbreak in the Arctic.

MAP responds to mysterious disease outbreak in ice seals

Beginning in fall 2011, residents of Alaska's north and west coasts began to notice an unusual number of ailing or dead ice seals. They exhibited lack of hair growth and skin sores, and live ones were lethargic. That prompted the federal government to designate the situation as an "unusual mortality event." The four species involved—spotted, ribbon, ringed, and bearded—are a critical subsistence resource for northern and western Alaska coastal communities, and an important prey for polar bears. Scientists remain unsure about the cause of the illness and continue to study the problem.

As word of the seal sickness spread throughout the affected region, Nome MAP agent Gay Sheffield, a longtime marine mammal biologist in the region, became a key point of public contact, working on outreach and response with communities and the Eskimo Walrus Commission, North Slope Borough, National Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service. She worked with federal, regional, Canadian, and


TERRY JOHNSON

Through June 2012, Gay Sheffield filed stranding reports on eight walruses to NMFS and the North Slope Borough.

Russian authorities to get reports of sick seals, obtain carcasses for necropsy, and provide outreach via posters, radio interviews, and public presentations. In spring 2012 through June she collected stranding reports and submitted them to NMFS and the North Slope Borough for 39 bearded seals, 16 ringed seals, eight walruses, and two spotted seals.

To get indispensible information from coastal communities on the occurrence and distribution of the seal sickness, Gay worked with Nome radio station KNOM to produce a public service announcement in five languages—English, Siberian Yupik, Russian, Iñupiaq (King Island dialect), and Yupik.

Alaska Native Elders' observations and knowledge recorded

Documenting and collecting Alaska Native traditional knowledge provide context and historical data that help scientists and residents better understand environmental change. Diomede Island residents have joined with Gay Sheffield to archive information on local walruses, including subsistence utilization, natural history, and cultural significance. Interviewing Diomede Elders began this year and will continue into 2013.

MAP looks out for Steller sea lions and bowhead whales in the Arctic

Steller sea lions are not new to the northern Bering Sea, but they are sticking around longer than before on their seasonal visits, according to Nome MAP agent Gay Sheffield. To document the longer stays, Gay is working with community residents, tribal governments, and the Alaska Department of Fish and Game to survey Steller sea lions near Gambell on St. Lawrence Island. Photographic documentation of sea lions branded as pups is providing new data on the species' distribution, movements, and life history. One of the sea lions photographed by Gay on St. Lawrence Island was born on Lowrie Island in the southeastern Gulf of Alaska, more than 2,000 miles from St. Lawrence Island. That discovery set a new long-distance travel record for a Steller sea lion born in Alaska. The surveys and interactions with local residents are part of a continuing collaboration.

Alaska Native communities that hunt bowhead whales are concerned about the health of bowhead populations and the quality of this essential subsistence food. As part of the North Slope Borough's bowhead whale health assessment program, Gay collects diet and biological information on bowheads during subsistence harvests on St. Lawrence Island and Barter Island, in collaboration with the Alaska Eskimo Whaling Commission.

Long-term data provide foundation for Gulf ocean model

Nearly 13 years of steady scientific observation and volumes of accumulated data are providing new insights on the marine mammals, seabirds, fish, and even humans living on or near Kodiak Island. The Gulf Apex Predator-Prey project (GAP) is a multi-agency project initiated in 1999 by Kate Wynne, MAP's longtime marine mammal researcher. Major funding comes from NOAA. The goal of the program is to answer trophic-level questions of immediate biological and economic concern in the western Gulf of Alaska. Kate and her science team have amassed a treasure-trove of information about the diverse marine ecosystem, from distribution and habitats of fin whales, Steller sea lion diets and habitats, seabird diets and growth, to fish survey data, stomach composition, physiology, and ecology.

In 2012, the metadata describing all available data sets collected in GAP efforts were compiled and organized into a database by MAP marine mammal specialist Bree Witteveen. This database is sparking new uses, such as development of a

marine predator-prey model for the western Gulf of Alaska. The GAP project is online at marineadvisory.org/gap.

Southeast nature tours expand offerings, tourists monitor invasive species

Alaska's cold waters provide some defense against the spread of marine invasive species, but there is definite potential for invasion by species that could disrupt ecosystems and threaten commercial, recreational, and subsistence resources. And the likelihood will increase as ocean temperatures warm. With funding from National Sea Grant, and in collaboration with the Smithsonian Environmental Research Center, Ketchikan MAP agent Gary Freitag worked with coastal tour operators to engage visitors in an invasive species monitoring program in southeast Alaska. Gary trained tour guides and developed a protocol for tour participants to scientifically sample and provide data to federal/state nonindigenous species monitoring programs.

Allen Marine Tours, a local excursion company, incorporated Gary's green crab monitoring and education component into its wilderness survival skills tour. During the three-hour tour, visitors check underwater traps for European green crab and other invasive species. Instructors explain the threat posed by invasive species. Visitors see, handle, learn about, and release a wide variety of marine creatures caught in the traps. For the initial 2011 season, two cruise ship companies presold the Allen Marine Tours offering to 134 clients.

Allen Marine Tours hosted 79 sampling events in 2011, a 20-fold increase in overall monitoring effort at no cost to resource agencies, placing dozens of additional eyes in the field and educating the public about Alaska's native marine ecosystems and the real threats posed by invasive species.

MAP helps Alaska ports gain clean harbor certification, identify solutions

Alaska's harbors and boat launches, like all harbors nationwide, face many pollution protection challenges. During the past year, MAP agent Terry Johnson worked with the Alaska Clean Harbors Advisory Committee to develop final criteria for Alaska Clean Harbors certification, which led to certification of Homer and Seward ports—the first ports in the state to achieve this distinction. Port officials in Juneau, Sitka, Kodiak, and Valdez are also working to meet certification criteria.

KURT BYERS

Bear-proof trash bins at Whittier.

Cordova MAP agent Torie Baker is helping to improve Cordova's harbor in response to concerned harbor users. With a group of volunteer residents, over 340 surveys were completed this summer by harbor users seeking ideas to improve harbor services; used antifreeze segregation and trash bin access emerged as top needs. As a result, the group continues to work with harbor staff to improve services. Baker is also involved in the fourth year of Cordova's fishing net recycling program. In a local group partnership originally facilitated by Baker, efforts by the city and a marine transport company have resulted in over 100,000 pounds of net collected and shipped to Washington state recyclers.

Divers clean Dutch Harbor's seafloor

Since 2005, Unalaska MAP agent Reid Brewer has led a community volunteer cleanup of the Dutch Harbor seafloor. Twice each year Reid leads 20 volunteer scuba divers in removing batteries and other hazardous debris. Over the last seven years they have removed more than seven tons of debris. Dutch Harbor is the largest fishing port in the United States by landing volume.

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.

Seafood is the economic lifeblood of most Alaska coastal communities. But to stay competitive, the seafood industry needs to innovate, reduce costs, and improve efficiency. Alaska Sea Grant supports networking and learning opportunities for young fishermen, training the next generation of skilled seafood processing leaders, and improving energy efficiency in fishing vessels and seafood processing plants. At the same time, Alaska Sea Grant is engaged in projects that improve training for, and promote careers in, many Alaska maritime industries.

Alaska Young Fishermen's Summit goes to the capital

The fourth Alaska Young Fishermen's Summit (AYFS)—three days of intensive leadership training focused on the next generation of Alaska's commercial harvesters—was held in February 2012. With over 50 fishermen from 18 Alaska coastal communities, the summit was held for the first time in Juneau while the legislature was in session, providing an opportunity for participants to interact with lawmakers, UAF and federal fisheries researchers, and state resource managers.

BEVERLY BRADLEY

Torie Baker, a veteran commercial fisherman, shares her wisdom at an Alaska Young Fisherman's Summit.

As part of the summit, organized and facilitated by MAP agents Torie Baker of Cordova and Sunny Rice of Petersburg, attendees met with their legislators, many for the first time. Seven participants testified before the Alaska Legislature's Special Fisheries Sub-Committee on challenges facing new entrants into Alaska's fisheries, and about their excitement for and commitment to their chosen professions. After the lively testimony, sub-committee Chair Steve Thompson (Fairbanks) remarked, "I was highly impressed by the young fishermen and women that came to Juneau to testify."

The testimony was instrumental in the unanimous passage of House Concurrent Resolution 18, which urged the legislature to support solutions to barriers to business capital, access to fisheries, and training needs faced by new commercial fishing entry permit holders in Alaska.

AYFS testimony also contributed to passage of Concurrent Senate/House Bill 261, which doubled the amount of certain state loan programs for commercial state entry permit and vessel purchases to $200,000. The bill was signed into law by Governor Parnell.

MAP "schools up" seafood processing industry managers

Developing the necessary skills in the next generation of seafood processing plant managers is critical for the Alaska seafood industry, just as it is in the harvesting sector. The Alaska Seafood Processing Leadership Institute (ASPLI), begun in 2009, received UA vocational programming support for a third institute in 2011-2012.

Led by MAP seafood specialist Chuck Crapo and program leader Paula Cullenberg, ASPLI provides technical, managerial, and leadership training for mid-career seafood processing employees who hold supervisory or leadership positions. This year's ASPLI began in fall 2011 with a 10 day training session in Kodiak focused on seafood processing technology, food safety, and production operations. The class reconvened in March 2012 for leadership training and a visit to the Boston International Seafood Show, the largest seafood trade show in the U.S. In all, 18 individuals representing 12 processing companies from nine coastal communities attended. After completion, 100% said they strongly or very strongly recommend ASPLI to others, and that it would be extremely or

very helpful in their careers. Two participants were mentored by former graduates, and attended this year's program at their recommendation.

Participant comments include, "ASPLI gave me a good view on how to be a good supervisor." "ASPLI staff are excellent resources for me to use. All others who attended the course are excellent resources for me to have."

Salmon as fertilizer

In Alaska's Bristol Bay, where fish waste is plentiful and fresh produce not so much, putting fish waste to use as local crop fertilizer makes sense. MAP agent Izetta Chambers, who serves on the Dillingham Planning Commission, helped develop a demonstration project in Naknek that safely and effectively composted over 2,300 pounds of fish waste during the 2011 salmon season. Izetta also is the author of Alaska Sea Grant's Sea Gram, *Safe and Effective Fish Waste Composting.* The bulletin describes the use of fish waste and its benefits as a low-cost, high-nutrient fertilizer that can enrich local soils and make growing vegetables a viable alternative to the supermarket. See alaskaseagrant.org/bookstore/pubs/ASG-55.html.

Improving fishing vessel energy efficiency

Commercial fishermen, sport fishing operations, and charter businesses are sensitive to fuel prices, which have increased significantly since 2007. While large oceangoing ships are evolving in design and operations in the face of rising fuel costs, many small working vessels employ decades-old technologies and there have been few substantive improvements in efficiencies.

KURT BYERS

Terry Johnson, who has operated both commercial fishing vessels and charter boats, advises boaters on what they can do to use less fuel and keep harbors clean.

Terry Johnson, MAP marine recreation and tourism specialist, has written extensively on commercial vessel outfitting, maintenance, and operations. In early 2011 Terry began addressing fuel and energy efficiency concerns as a result of a dozen community meetings with fishermen and recreational boaters. This year Terry is developing a vessel energy use self-audit template in cooperation with a marine architect and several industry groups.

Seafood processing energy audits help inform long-term investments

Energy costs in rural Alaska challenge all residents and businesses including seafood processing plants, which are often the economic backbone of coastal communities. Understanding energy costs and equipment efficiencies are key to profitability.

In 2010 MAP seafood specialist Chuck Crapo and Cordova MAP agent Torie Baker teamed with energy engineers at the UAF Institute of Northern Engineering to provide seasonal energy audits. In all, eight seafood processing plants representing various regions, processing capacities, and energy sourcing volunteered for the project. Now in its final data collection year, the team's work has helped plant personnel make better informed decisions on equipment replacement and understand equipment operation loads for maximum efficiency. Outreach to the industry will include trade shows, conferences, and a project website.

OceansAlaska opens for business

In July 2012, the nonprofit OceansAlaska Marine Science and Mariculture Center in Ketchikan opened for business. The center is designed to help diversify local and regional economies, as a leading research and training center for mariculture.

Ketchikan MAP agent Gary Freitag, president of the OceansAlaska board of directors, says OceansAlaska's first significant long-term impact will come from its shellfish research and development division. This year, 20,000 geoduck spat have been raised, and the facility hired a mariculture director, an assistant culturist, and an education

GARY FREITAG

OceansAlaska director and shellfish culturist, Tom Henderson, and an oyster farmer work on oyster spat in the facility's mariculture training unit.

and outreach coordinator. OceansAlaska also plans to raise millions of oyster seed for Alaska farmers. MAP aquaculture specialist Ray RaLonde is helping the facility develop a mariculture training curriculum and other oyster grow-out projects.

Encouraging Alaska Natives and rural Alaskans toward careers in marine science and fisheries

Less than 10% of state and federal marine science and fisheries employees are Alaska Native or come from rural Alaska. Hoping to reverse this statistic is the Alaska Marine Science and Fisheries Careers Coalition (AMSFCC), an informal network of employers, educators, and stakeholders working to enhance recruitment and retention in fisheries and marine science. The coalition helps implement the Magnuson Stevens Act section 109, which directs NOAA to develop a marine and fisheries training program focused on underserved populations.

Coordinated by MAP leader Paula Cullenberg, the coalition supports a public website with information for students, teachers, and employers, and recently they added the first online job board in Alaska dedicated to marine and fisheries internship and employment opportunities. VISTA volunteer Asia Beder also created a Facebook site, and added web pages that highlight role models and introduce career pathways, www.sfos.uaf.edu/future.

This year the coalition sponsored an internship program funded by a NOAA grant that paid summer employment for three college students. The students worked in Sitka, Kodiak, and Juneau with AMSFCC partners.

Alaska Sea Grant plays leadership role in UA coastal workforce plan

In close partnership with industry, the University of Alaska is developing an initiative to deliver more workplace training programs to Alaskans involved in fisheries, seafood, and other maritime industries. The UA Fisheries, Seafood and Maritime Initiative (FSMI) is a plan to address gaps in university training and workforce development opportunities in alignment with industry-identified needs. See alaska.edu/fsmi.

Assisted by MAP personnel, a working group of UA program heads and faculty is closely coordinating UA programs on fishing, seafood, and maritime employment and increasing the visibility of these career paths. Alaska Sea Grant associate director Paula Cullenberg chaired the FSMI working group, and seafood marketing specialist Quentin Fong is a member.

The Alaska Legislature voiced its support for the effort. In 2011 House Concurrent Resolution 18, which encouraged the initiative, was approved.

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.

Alaska waters supply about half the nation's domestic seafood harvest worth some $4.5 billion. So it's no surprise that Alaska must safeguard the quality of its seafood catch and promote the overall health of the fleet. In this regard, Alaska Sea Grant lent a hand with its nationally recognized Hazardous Analysis and Critical Control Point (HACCP) training and certification program, conducted research to better understand salmon genetics, helped entrepreneurs develop new seafood products, and improved culture methods for shellfish farmers.

Long-term research leads to discovery of pink salmon climate adaptation

During more than 30 years of research, much of it funded by Alaska Sea Grant, UAF professor Tony Gharrett collected genetic data from pink salmon in Auke Creek near Juneau. His work, and that of numerous graduate students who have passed through his lab, has deepened our understanding of the genetic diversity and resiliency of Alaska's salmon populations.

This invaluable storehouse of data recently allowed Tony, and UAF population ecology graduate student Ryan Kovach, to make an important discovery. The story begins in the 1980s with a unique genetic marker that Tony bred into late-migrating pink salmon, to distinguish them from early migrating salmon returning to Auke Creek. In 2010 Ryan and Tony noticed that late-migrating pink salmon returned to spawn nearly two weeks earlier than they had nearly 40 years earlier. Over the same period, the average temperature of the creek rose by more than one degree. Ryan determined that the number of late-migrating salmon to Auke Creek declined by at least 20% during this time. He was able to link this change in migration behavior to the salmon's genetic makeup, something that has not been accomplished before.

The evidence of genetic change was revealed in a three-fold decrease in the proportion of late returning salmon carrying the late-return genetic marker that Tony had placed in the salmon population decades before. The dramatic decline in the number of late-migrating salmon was coupled with the near disappearance of the marker in 2011.

"We show that there has been a genetic shift toward earlier migration timing through what appears to be natural selection against the late-migrating individuals in the population," Ryan said. He said the genetic changes evolved quickly, over just one to two generations, showing that organisms can adapt over short time spans, in this case staying ahead of climate change. The research was published in the *Proceeding of the Royal Society B*, England's prestigious scientific journal, and was highlighted in *Nature News and Comment.*

THOMAS C. KLINE

Alaska Sea Grant–funded graduate student Christopher Manhard studied the genetics of pink salmon to shed light on the relative fitness of different hybrids.

Auke Creek's annual pink salmon returns have been the subject of more than 14 graduate student studies, said Tony. Among the most recent was research completed by Alaska Sea Grant–funded Dion Oxman. Dion's doctoral thesis is on the genetic and environmental effects on developmental timing, otolith formation, and gill raker development. Dion incubated full and half-sibling families of pink salmon from Auke Creek, and third-generation outbred hybrids between Auke Creek females and Pillar Creek males from Kodiak Island. His results show that different biological attributes respond to genetic control and stress in different ways. His research provides scientists and fishery managers with better insight into how salmon stocks may lose genetic fitness and consequently decrease production through interbreeding.

In his master's thesis, Alaska Sea Grant–funded graduate student Christopher Manhard examined differences in fitness-related traits between genetically isolated early and late run Auke Creek pink salmon, and a first generation hybrid of the two. His research focused on salmon that were cultured in a common freshwater environment, released into the ocean together, and collected from their natal stream as adults. In even-numbered years, the survival of the control lines exceeded that of the hybrids, but in the odd years there was no difference. The results indicate that removal of the fine temporal genetic barrier between the natural populations may disrupt local adaptation and

potentially reduce biodiversity and productivity. Manhard will analyze second-generation salmon returns as he continues his research toward a doctoral degree.

Grad student developed fisheries assessment models for Gulf of Alaska fisheries

Alaska Sea Grant–funded graduate student Kray Van Kirk developed a multispecies age-structured assessment model for the Gulf of Alaska. He modeled age-specific predation mortality as a flexible function of predator and prey abundances that were fitted to stomach-content data. Modeled species include arrowtooth flounder, Pacific cod, walleye pollock, Pacific halibut, and Steller sea lions. Management strategy simulations demonstrated that multispecies harvest control rules and biological reference points are more conservative and more efficient at preserving stock abundance, while maintaining catch levels, than their single-species counterparts.

Variance tracking as a tool to predict fisheries instability, potential stock collapse

Fisheries stocks occasionally undergo abrupt shifts in response to fishing pressure, short-term environmental changes, and other unknown causes. These shifts can have devastating social and economic effects on fishing-dependent communities, but no technique exists to predict these events. Existing data show that collapses in fish stocks and commercial catches are often preceded by an increase in the amplitude of annual population variability.

Alaska Sea Grant–funded researchers Michael Litzow of the Farallon Institute, and Franz Mueter of UAF, conducted a retrospective variance tracking study for several Alaska commercial fisheries known to have declined or collapsed. They showed that this method could hindcast the collapse of a fishery up to five years before it actually closed, a finding that, if further validated, could become an important forecast tool for major fisheries. Results were included in the annual Stock Assessment and Fisheries Evaluation report for the North Pacific Fishery Management Council.

AKCRRAB ships 12,000 blue king crabs to researchers

The Alaska King Crab Research, Rehabilitation and Biology (AKCRRAB) program, working with the Alutiiq Pride Shellfish Hatchery in Seward, shipped over 12,000 juvenile blue king crabs to the NOAA Alaska Fisheries Science Center in Kodiak, marking the largest shipment of crab by the program to date, and the first shipment of blue king crabs.

NOAA scientists plan to conduct blue king crab research using the hatchery-cultured juveniles. They will investigate the thermal tolerance, upper temperature threshold, and fine scale growth at elevated temperatures to help predict how wild blue king crab stocks will fare in the face of global climate change. Researchers also will study predator-prey interactions and habitat requirements. Learn more about AKCRRAB online at alaskaseagrant.org/research/projects/initiatives/king-crab/general.

Alaska shellfish farmers adopt oyster culture bags

Like all businesses, Alaska shellfish farmers are constantly working to increase the quality of their products and reduce production costs. Among the challenges are the added time needed to grow a market size oyster in cold, northern waters, and higher cost of labor compared to other regions of the world. In 2009, MAP aquaculture specialist Ray RaLonde initiated a two-year study to test whether intertidal bags, a holding structure different from traditional mid-water lantern nets, can grow oysters faster using less manual labor. Four Alaska oyster farmers compared traditional grow-out methods to the bag system. Farmers constructed grow-out bags, followed procedures, and recorded labor costs. Ray ran the project and collected and measured oysters, tracked bag design changes, and collected and analyzed data.

Materials costs for the grow-out bag were about 70% less than for other gear types, and labor costs for maintenance were reduced by 80%. Labor required for the initial construction was six times greater than for traditional rafts and trays, but this was substantially offset by savings on maintenance.

The bag system produces oysters of significantly greater size and quality in the first year of growth, after which oysters are transferred to raft and tray culture for a second and final year of grow-out to market size. In southeast Alaska, three farms have converted to bag culture and 12 got approval for permit modifications. Sealaska Native Corporation, which initiated a major expansion into oyster farming in 2009, is converting existing farms and planning new farms to incorporate bag culture.

Ray presented the study results to shellfish farmers at the 2011 Shellfish Aquaculture Technology Workshop, and at the 2012 National Shellfisheries Association conference. The chapter Bag Culture of Oysters will be published in Ray's upcoming fourth edition of the *Alaska Shellfish Growers Manual*.

Aquaculture specialist helps bring PSP monitoring to the Aleutians, wins achievement award

Until recently, little was known about concentrations of PSP toxin in Aleutian subsistence harvested clams, mussels, and other shellfish. Few communities tested shellfish, and residents often shared their harvest with family and friends outside the region, which extended the risk. To address the problem, MAP aquaculture specialist Ray RaLonde, and Bruce Wright, chief scientist with the Aleutian Pribilof Islands Association (APIA), began a monitoring and education program in 2006.

Ray and Bruce trained residents to collect bivalves at subsistence harvest beaches near nine communities, and to get the samples screened for PSP. The effort included local education, a quality assurance plan, and regular communication of test results to communities and agencies by the Alaska Department of Environmental Conservation.

The monitoring program found significant concentrations of PSP in shellfish throughout the region, and advisories were routinely issued for King Cove, Unalaska, Sand Point, and Akutan. Based on the integration of community-based sampling, independent testing, and advisory systems strengthened, residents are more informed and able to stop their subsistence harvests as necessary thus preventing illness and possible fatalities. For these efforts, Ray and Bruce received the 2012 Outstanding Achievement Award at the annual Alaska Forum on the Environment in Anchorage.

MAP expands domoic acid and PSP research and monitoring

NOAA scientists predict that climate trends will expand the geographic range and duration of ocean conditions favorable to algal blooms in northern regions. This would make algal toxins such as domoic acid (the cause of amnesic shellfish poisoning) a growing concern in Alaska and add to the threat of paralytic shellfish poisoning (PSP) events.

To improve the safety of subsistence and commercially harvested shellfish, and provide timely information to harvesters, Ray RaLonde continued efforts to increase accuracy and decrease cost for domoic acid and PSP field testing.

Kodiak MAP agent Julie Matweyou, with a strong background in PSP work, became recognized as a local PSP expert during her first year on the job. She worked with subsistence and recreational shellfish harvesters, and helped economic development organizations analyze mariculture potential. Julie initiated a monthly mussel sampling program at a subsistence site and at a potential commercial site, using experimental equipment that dramatically reduces testing cost and provides real time data. Julie also delivered several community, tribal, and school presentations.

DAN BOGAN

Ray RaLonde (left) teaches community members how to test for domoic acid.

Helping small business

Quentin Fong and Chuck Crapo, MAP business and seafood quality specialists respectively, consulted with small businesses throughout Alaska, contributing expertise critical for successful economic diversification. Topics included live marketing, salmon drying methods, and seafood sourcing.

Peterson Plus Seafoods of Kodiak has attended MAP seafood marketing workshops and consultations since 2001. In 2010, the owner launched a business (www.petersonplus.com) with his son near San Francisco, where they sell their Alaska catch. This year the company expanded by distributing smoked seafood products for Kodiak Island WildSource, a value-adding company owned by the Sun'aq Tribe of Kodiak. Other businesses boosted by MAP include the launch of a poultry production facility and the expansion of custom cruise trips that bring Hong Kong residents to Kodiak, Anchorage, and southeast Alaska.

Wiki site a source for seafood start-ups

Using new ways to reach an increasingly mobile and digital fleet, Dillingham MAP agent Izetta Chambers built a Wiki site in support of start-up seafood businesses, processing, and direct marketing ventures. The site features state and federal licensing and processing forms and HACCP forms. Izetta has seen a steady increase in users (now about 50), and is working to link users to Alaska Sea Grant resources through the site at fishbusiness.pbworks.com. A recent user commented, "Thanks so much for this site—what a time saver!"

MAP is national leader in HACCP and seafood handling training

Commensurate with Alaska's dominance in U.S. seafood production volume and value, Alaska delivers a top-tier Hazard Analysis and Critical Control Point (HACCP) training and certification program to meet federal mandatory seafood safety regulations. The Alaska Sea Grant Marine Advisory Program is the oldest HACCP and federal sanitation training provider in Alaska, and was the first such program in the United States. This year MAP seafood specialist Chuck Crapo taught 13 HACCP/sanitation courses to 140 participants. This brings the total number of HACCP courses delivered by MAP trainers to 135 since 1997, with 1,460 people achieving certification.

KURT BYERS

Workers process sea cucumbers at a Ketchikan plant. The Marine Advisory Program provides federally required Hazard Analysis and Critical Control Point training to seafood processors.

MAP tests pingers to deter whales from fishing nets

Alaska humpback whale populations are growing by 6%-8% annually. With this increase, the chances of interacting with fishing gear rise as well. Whale collisions with fishing nets are costly and potentially dangerous for both whales and fishermen. In response, MAP is directing a multiyear research and outreach project to find ways for fishermen to avoid or deter interactions with humpback whales in southeast and southcentral Alaska.

In 2011, MAP marine mammal specialists Kate Wynne and Bree Witteveen, and Petersburg agent Sunny Rice, conducted a pilot study to measure the ability of a commercial audio device (pinger) attached to fishing gear to evoke behavior change in nearby humpbacks. The team distributed commercial pingers to setnet and driftnet salmon fishermen. The results suggest that humpback whales heard the pingers and avoided net collisions in several cases.

Efforts in 2012 included working with the U.S. distributor of the Australia-made pinger to develop a performance/experience questionnaire to distribute with each pinger purchased. The researchers also documented pinger sound characteristics in multiple habitats, recording responses of tagged whales and analyzing questionnaire responses.

Hazard Resilience in Coastal Communities

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

Recognizing potential and emerging hazards before they become threats to life or economic well-being allows communities to effectively focus attention and resources. Alaska Sea Grant projects address anticipated and actual hazards by providing marine safety training to fishermen, and helping coastal communities plan for and adapt to impacts of climate change.

TORIE BAKER

Fishermen practice survival techniques at the Alaska Young Fishermen's Summit.

Supporting a marine safety culture in Alaska

The number of commercial fishing fatalities in Alaska has dropped by more than 50% since the mid 1990s, but the number of nonfatal incidents such as man overboard, vessel losses due to flooding and fire, etc., continues to increase.

Marine safety training is still one of the top risk reduction strategies, and MAP is actively engaged in hands-on safety training throughout Alaska. In partnership with the Alaska Marine Safety Education Association (AMSEA), MAP provides various safety services, including training courses and information dissemination.

MAP agents Torie Baker, Julie Matweyou, Reid Brewer, and Gay Sheffield taught U.S. Coast Guard–approved AMSEA safety courses to more than 100 commercial fishermen. MAP leader Paula Cullenberg continued as chair of the AMSEA board of directors and helped start a Rural Water Safety Initiative within AMSEA.

Terry Johnson, MAP recreation and tourism specialist, serves on the Alaska Boating Safety Advisory Council and wrote a Resurrection Bay boating safety guide that was published by the Alaska Office of Boating Safety.

Climate change website adds new fact sheets

MAP agent Terry Johnson authored five new publications for the website, Living on Alaska's Changing Coast: Adapting to Climate Change in Coastal Alaska. The new publications explore fisheries effects, fisheries adaptations, harmful algal blooms, and species shifts, and feature an annotated resource list for communities. The publications, videos, and links are at marineadvisory.org/climate.

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.

Educating people about Alaska's coastal and marine resources is at the core of everything we do. But there are certain projects for which education is the chief objective. These include enhancing marine science learning among Alaska's youth, and producing publications and videos on topics ranging from a symposium proceedings volume on global progress in ecosystem-based fisheries management to short publications that help communities respond to coastal erosion and other effects of a changing climate.

Rural teachers learn how to raise salmon in the classroom

Each fall, rural Alaska teachers come to Fairbanks to learn how to raise salmon in their classrooms as a way to teach math, science, and environmental stewardship. Salmon is the focal point because of its economic and cultural relevance to rural communities and to the everyday lives of the students. Most of the 18 teachers at this year's training came from Yukon River villages. Marilyn Sigman, Alaska Sea Grant marine education specialist, and Peter Stortz, 4-H natural resource and youth development specialist, organize and facilitate the training. They tap expertise from the UAF School of Fisheries and Ocean Sciences, UAF Center for Alaska Native Health Research, U.S. Fish and Wildlife Service, and Center for Alaskan Coastal Studies. This year the Yukon River Panel Restoration and Enhancement Fund, Alaska Sea Grant, the Pacific Salmon Commission, and the (Alaska) Center for Ocean Sciences Education Excellence provided funding and other support.

UAA undergraduates win award for PSP monitoring

MAP agent Julie Matweyou partnered in Kodiak with Cindy Trussell, University of Alaska Anchorage assistant professor, to guide 13 undergraduate students enrolled in Cindy's microbiology class as they developed a paralytic shellfish poison (PSP) community monitoring program. As a result, the students won first place in the Kodiak College 2012 Showcase of Excellence group category.

Students were involved in all stages of the project, including sample collection, toxin extraction and testing, data analysis, and outreach. They gave public presentations at the UAF Kodiak Seafood and Marine Science Center–Kodiak National Wildlife Refuge brown bag seminar, and at the Rockmore-King Medical Clinic on the local U.S. Coast Guard base.

Helping rural and indigenous residents take part in environmental decision-making

Many of Alaska's residents live in remote coastal communities with a strong reliance on natural resources. But rural Alaskans often do not participate in resource management decisions that affect them because they lack an understanding of the policy and regulatory processes involved.

Izetta Chambers, an attorney, seafood processing entrepreneur, and MAP agent for the Bristol Bay region, developed a workshop based on the Council on Environmental Quality publication *A Citizen's Guide to the NEPA: Having Your Voice Heard*. The workshop provides coastal residents with the understanding and tools they need to participate in National Environmental Policy Act (NEPA) and North Pacific Fishery Management Council (NPFMC) processes. Izetta has delivered training workshops to 181 residents of Nome, Kotzebue, Kokhanok, Homer, Newhalen, Anchorage, Naknek, Dillingham, and Togiak.

Encouraging marine science among Alaska's youth

The MAP agent network, along with marine education specialist Marilyn Sigman, supported marine science education in schools, youth programs, and camps throughout Alaska.

MAP agents helped coach high school teams from Dillingham, Ketchikan, Petersburg, and Unalaska who participated in the 2012 Tsunami Bowl, the Alaska regional competition of the National Ocean Sciences Bowl.

In Ketchikan, Gary Freitag presented fisheries and marine science career workshops that were attended by 85 high school students. Gary also taught oceanography distance courses and gave several public presentations on plankton and tunicates.

In Unalaska, Reid Brewer continued his annual intertidal field camps for school-aged kids and hosted a number of marine science activities for K-12 students including the annual Tide Pool Posse field camp and intertidal ecology and coastal safety at the Qawalangin Tribe's annual culture camp. More than 100 students attended the camps and another 60 were involved with workshops. Reid also mentored four Unalaska high school students for the state science fair, where Unalaska student Noah Betzen won the state grand prize and was invited to present at the 2011 Intel International Science and Engineering Fair in Los Angeles.

COURTESY GARY FREITAG

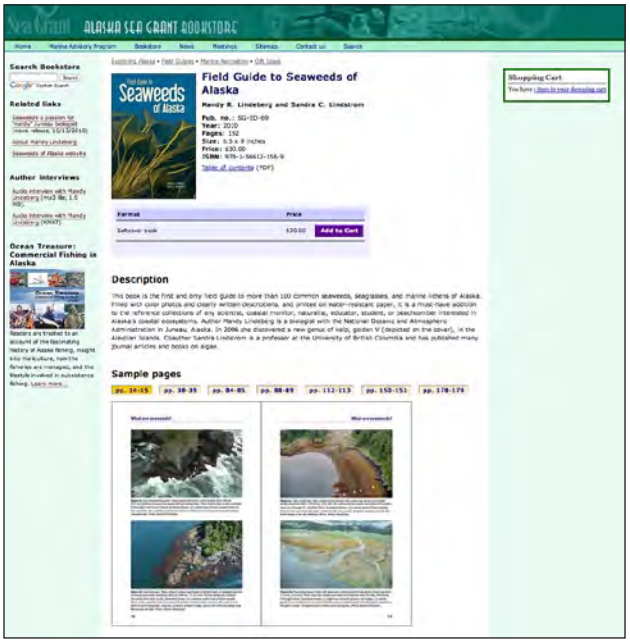
One of Gary Freitag's education efforts at OceansAlaska is working with students to run an autonomous underwater vehicle to conduct surveys and observations. Here Gary practices deploying the new AUV at a training session in San Diego.

In Kodiak, Julie Matweyou led tide pool ecology sessions with Rotary Youth Leadership Award student interns and 60 Kodiak High School students. She also led tide pool sessions for Hispanic elementary students, many of whom had never explored the outdoors in this way, for the Kodiak Association of Latin Women in Alaska. Julie trained Kodiak National Wildlife Refuge volunteers in tide pool ecology in support of the refuge's summer visitor programs.

Sea Grant modernizes online publication distribution and ordering

Alaska Sea Grant published 30 new and updated publications, including three newsletters. MAP produced four videos, which Alaska Sea Grant distributed. Alaska Sea Grant disseminated 26,000

"We distribute the *Care and Handling* pamphlet to all of our Bristol Bay fishermen at the beginning of the season and require that they keep one onboard for their crewmembers to refer to. As usual, thank you for maintaining this booklet and sending it to us. In addition, we require that all crewmembers watch the video. The past couple of years we have had 750+ individuals watch the movie. Again, thank you." — *Comment from Snopac Products about Care and Handling of Salmon: The Key to Quality*



"Fantastically easy. Marvelous resources. Well organized website. I have never seen any state organization as together as yours." — *Burst Whitson Inc. Accounting Service, Taos, New Mexico*

"I am a fisherman in Ugashik, Bristol Bay, Alaska, and plan to use this info to streamline my business, increase quality, and possibly start to direct market my fish." — *Comment from fisherman about Trading Up, Saving Taxes*

"My wife and I are Prince William Sound drift gillnetters and are very interested in direct marketing a portion of our catch so we can see if it is something we could do ourselves." — *Comment on the Fisherman's Direct Marketing Manual.*

educational items worldwide, and generated $113,000 in cost recovery through sales.

Most Alaska Sea Grant publications are available as hard copy and electronically as PDFs. Each year we make more of our older publications available as PDFs—in 2011 Alaska Sea Grant distributed 1,360 PDFs of 133 titles, most at no cost. Among publications available as PDFs are 20 conference/workshop proceedings, 30 Sea Gram bulletins, 16 climate change publications, 13 Marine Advisory bulletins, and 20 educational publications. For at least 12 proceedings books available as PDFs, articles can be ordered individually.

The now "fully dynamic" online bookstore allows web pages to be created instantly by updating database records. Tasks have been automated to make data entry more efficient and shortening the time needed to make new publications available for distribution through the bookstore.

YouTube video promotes Knauss Fellowship

For marine graduate students, one path to valuable professional experience is the prestigious Sea Grant Knauss Marine Policy Fellowship. The highly competitive fellowship provides eligible students with one year of paid experience in Washington, D.C., working on ocean issues with a U.S. Congressional staff or with an executive branch resource management agency. Up to 50 fellowships are awarded annually nationwide.

COURTESY C. SUCHMAN

Cynthia Suchman, executive director of the North Pacific Research Board, was a Knauss Fellow in 1999 and appears in our Knauss Fellowship recruiting video.

To recruit applicants, Education Services manager Kurt Byers conceptualized a video to promote the fellowship and helped MAP media specialist, Deborah Mercy, produce the lively 11-minute program. The National Sea Grant Office, the NOAA video production office, and other Sea Grant programs assisted. This video features testimonials from former Knauss Fellows. Watch the video at alaskaseagrant.org/knauss. Sea Grant programs around the country have been using the video in their fellowship recruiting efforts. As of September 2012, the video had been viewed more than 600 times.

The fellowship is open to any student enrolled toward a degree in a graduate or professional program, who has an interest in ocean or coastal resources and in national policy decisions.

Sea Week Curriculum joins CLEAN collection

Educators and scientists selected parts of Alaska Sea Grant's *Alaska Seas and Rivers* curriculum as among the nation's 480 best digital resources that increase science education and environmental awareness. The Climate Literacy and Energy Awareness Network (CLEAN) bestowed the honor on Investigations 1 and 4 from the *Alaska Seas and Rivers* online curriculum, grade 8. The CLEAN team vetted more than 15,000 online resources.

CLEAN is an organization of scientists and educators from the Cooperative Institute for Research and Environmental Sciences, the Science Education Resource Center, NOAA, and the Technical Education Research Centers, funded by the National Science Foundation.

Home school educators introduced to Alaska Sea Grant

Alaska Sea Grant hosted a booth at the Interior Distance Education Association (IDEA) Fair in Fairbanks. Each year this event provides a good opportunity to connect with hundreds of home school parents, and to showcase appropriate publications and the *Alaska Seas and Rivers* online curriculum. Over 1,000 publication/video catalogs were placed in welcome packets at the IDEA Fairs in Anchorage, Soldotna, Juneau, and Fairbanks.

Coming in 2013

Symposium set to discuss Bering Strait transportation

Alaska Sea Grant and Kawerak Inc. will hold a symposium February 5-6, 2013, to link Nome area residents with federal and state agencies and industry, involved in planning for increased industrial use of the Bering Strait transportation corridor.

Nome MAP agent Gay Sheffield and Kawerak leaders set up a steering committee and sent invitations and questionnaires to IRA (Indian Reorganization Act) Tribal Councils, seeking their top concerns regarding an increase in shipping traffic through the strait. The steering committee will use the feedback to determine the topics to be covered, partners to bring into the discussion, and speakers to be invited. The symposium is funded by a National Sea Grant initiative grant to foster collaboration with the NOAA Regional Team.

Alaska Sea Grant to help Shaktoolik village adapt to climate change

With funding from a National Sea Grant climate change grant, MAP agent Terry Johnson will partner with Glenn Gray and Associates, a natural resource consulting firm, to help the village of Shaktoolik decide how to respond to the growing threat of storm surge and shoreline loss. Options include reinforcing the shoreline, building an evacuation center, and starting the process of village relocation. Shaktoolik is on Norton Sound east of Nome.

This two-year community-driven project will build on efforts by Shaktoolik and partners to develop an adaptation plan that identifies risks and responses to climate change. It will result in a well-defined process that may be replicated by other at-risk communities in the region. A final report will document lessons learned, adaptation methods for Shaktoolik, potential funding sources, and a step-by-step action plan to implement the community's decision.

Symposium will look at responses to changing arctic ecosystems

Alaska Sea Grant and partners will host the 28th Wakefield Fisheries Symposium to improve understanding of responses of arctic marine ecosystems to climate change. Contributions will focus on understanding and managing living marine resources in a changing Arctic, and to managing human responses—locally, regionally, and globally—to changing arctic marine ecosystems. Researchers, resource managers, and resource users will convene in Anchorage, March 26-29, 2013, for the symposium, titled Responses of Arctic Marine Ecosystems to Climate Change. alaskaseagrant.org/conferences/2013/wakefield-arctic-ecosystems.

Boating trails may spur new industry segment

During summer 2011, recreation and tourism specialist Terry Johnson initiated a project to describe some important boating routes along the Gulf of Alaska coast. The first phase covers a stretch of about 500 nautical miles from Cape Spencer to Whittier. Terry spent three weeks traveling the region with his charter/sightseeing boat, taking notes, photographs, and video clips. He also reviewed literature on the geography, oceanography, natural history, human history, points of interest, and hazards of that part of the coast.

GREGG BURTON

For more than six decades the Yakutat and Southern Railroad hauled fish from the Situk River to the Yakutat cannery. Terry Johnson will highlight attractions such as this in his Gulf of Alaska coastal boating guide.

Terry will make use of his materials in talks to boating and other outdoor groups, and Alaska Sea Grant will publish an online boating guide. Terry sees the possibility that one day, boating guides to much of Alaska's coast will encourage people to visit less known areas, which could spur new businesses such as fuel stops, restaurants, and lodging.

Alaska Sea Grant Marine Advisory Program Conferences, Workshops, Presentations, and Teaching, 2011-2012

Year	Month	Title	Instructor/presenter	Location	Attendees
2011	September	North Pacific Fishery Management Council Process, Community Preparation	Brewer	Unalaska	20
2011	September	Fishing People of the North: Cultures, Economies, and Management Responding to Change	Carothers	Anchorage	174
2011	September	Marine Mammal Identification, Sampling, and Data Recording, at UAA Fishery Observer Training Center	Wynne	Anchorage	22
2011	September	USCG Helicopter Search and Rescue Site Visit, Prince William Sound Science Center-MAP Speaker Series	USCG/Baker	Cordova	20
2011	September	Oceanography, UAS, Semester Course	Freitag	Statewide (VCON)	18
2011	September	Boosting Alaskans in Fisheries and Marine Science Careers, Poster at American Fisheries Society Meeting	Sigman	Seattle	200
2011	September	Teacher-Scientist Ecosystem Workshop, Alaska Math and Science Conference	Sigman	Fairbanks	12
2011	September	Careers in Natural Resource Communications and Sea Grant	Byers	Ann Arbor, MI	23
2011	September	Science Club	Chambers	Dillingham	50
2011	September	Steller Sea Lions near Gambell, Alaska, during Late Fall 2010, National Park Service Beringia Days	Sheffield	Nome	
2011	October	Hazard Analysis Critical Control Point Workshop	Crapo	Anchorage	14
2011	October	Hazard Analysis Critical Control Point Workshop	Crapo	Anchorage	10
2011	October	USCG Helicopter Search and Rescue Site Visit	Baker	Cordova	20
2011	October	Sea Life of the Aleutians	Brewer	Homer	60
2011	October	Bering Sea Octopus Research	Brewer	Homer	100
2011	October	Progress of USFWS Endangered Species Projects	Klein/Brewer	Unalaska	20
2011	October	Introduction to National Environmental Policy Act and North Pacific Fishery Management Council: Workshop for Fishermen and Residents	Chambers	Homer	19
2011	October	Science Club	Chambers	Dillingham	48
2011	October	Conserving Fuel for Recreational and Charter Boaters	Johnson	Homer	15
2011	October	Priority Setting for the OceansAlaska Research Program	RaLonde	Ketchikan	18
2011	October	Shellfish Farming Technology Training Program	RaLonde	Ketchikan	33
2011	October	Environmental Monitoring, Alaska Sea Grant Aquaculture Technology Conference	RaLonde	Ketchikan	28
2011	October	Developing an Alaska Oyster: Results of the Molluscan Broodstock Program 1996-2009, Alaska Sea Grant Aquaculture Technology Conference	RaLonde	Ketchikan	28
2011	October	Completion Report on Intertidal Geoduck Aquaculture in Alaska, Alaska Sea Grant Aquaculture Technology Conference	RaLonde	Ketchikan	28
2011	October	Bag Culture of Pacific Oysters, Alaskan Shellfish Growers Association Annual Conference	RaLonde	Ketchikan	33
2011	October	Building an Alaska Shellfish Aquaculture Training Program, Alaskan Shellfish Growers Association Annual Conference	RaLonde	Ketchikan	33
2011	October	Alaska Seas and Rivers, Alaska Science Teachers Conference	Sigman/Trowbridge	Fairbanks	42
2011	October	Alaska Seas and Rivers, Alaska SeaLife Center Teacher Workshop	Sigman/Trowbridge	Seward	23
2011	October	Alaska Seas and Rivers, Rural Teachers In-service, Salmon in the Classroom	Sigman/Stortz/ Trowbridge/Devaney	Fairbanks	20
2011	October	Bering Strait Region: Changes and Status, Alaska Sea Grant Advisory Committee Meeting	Sheffield	Anchorage	40
2011	October	Statewide Marine Invasive Species, Alaska Sea Grant Advisory Committee Meeting	Freitag	Anchorage	40
2011	October	MAP's Role in the Filipino Community in Kodiak	Fong	Kodiak	20
2011	October	Whale and Longline Fisheries Interactions	Baker/Peterson	Cordova	29
2011	November	Onboard Marine Refrigeration Workshop, with Integrated Marine Services	Matweyou/Baker	Kodiak	30
2011	November	Alaska Marine Science and Fisheries Career Coalition, Alaska Chapter of the American Fisheries Society	Beder	Girdwood	20
2011	November	North Pacific Giant Octopus, Whalefest	Brewer	Sitka	150
2011	November	Biology, Ecology, Anatomy, for Scientists in the Schools	Brewer	Sitka	245
2011	November	I Know I Can, 2nd Grade Class	Chambers/BBC staff	Dillingham	22
2011	November	Smoking Fish at Home, Brown Bag Seminar	Crapo	Kodiak	35
2011	November	Seafood Workshops, Alaska Seafood Processing Leadership Institute	Crapo/Fong/Oliveira/ Himelbloom	Kodiak	18
2011	November	Anolis Lizards, Thursday Science Series	Hulabek/Rice	Petersburg	5
2011	November	Vessel Energy Audit Seminar, Pacific Marine Expo	Johnson	Seattle	25
2011	November	Walruses, Anchorage Lions Club	Johnson	Anchorage	15
2011	November	Meeting, NOAA Marine Mammal Observers, Saltwater Inc., and Gillnetters	Rice	Petersburg	12
2011	November	Tools for Studying Cetaceans, Whalefest	Witteveen	Sitka	150
2011	November	Presentation on Alaska Salmon in the Classroom, to Alaska Marine Science and Fisheries Careers Coalition Steering Committee	Sigman	Anchorage	15
2011	November	Men of the Iron Chink: Culture History of Alaska Cannery Labor, Community Lecture	Ringsmith/Baker	Cordova	54
2011	December	Post-Harvest Quality of Pacific Oysters, Pacific Coast Shellfish Growers Association	RaLonde	Salem, OR	80

Conferences, Workshops, Presentations, and Teaching, continued

2011	December	Seal Disease Presentation, to Climate, Ecosystems & Human Health Work Group	Sheffield	Nome (teleconference)	20
2011	December	Seal and Walrus Disease Outbreak, King Island Community Annual Meeting	Sheffield	Nome	30
2011	December	Kodiak Tourism Opportunities, to Hong Kong Helicopter Club	Fong	Hong Kong	80
2011	December	Marine Mammal Identification, Sampling, and Data Recording, at UAA Fishery Observer Training Center	Wynne	Anchorage	18
2012	January	Understanding the Legislative Process, UAF Alaska Native and Rural Development	Chambers/Davis	Juneau	12
2012	January	Sampling for Marine Nonindigenous Species in Alaska with a Citizen Science Approach, UAF Institute of Marine Science Seminar	Freitag	Fairbanks	20
2012	January	Hazard Analysis Critical Control Point Workshop	Crapo	Anchorage	14
2012	January	Ocean Acidification Roundtable	Foy/Matweyou	Kodiak	25
2012	January	Ocean Acidification Roundtable	Mathis/Chambers	Dillingham	17
2012	January	Sampling for Marine Non-Indigenous Species in Alaska: Citizen Science Approach to Monitoring	Freitag	Fairbanks	30
2012	January	Mock Board of Fish, High School Aquaculture Class	Rice/Stone/Hepler/Dersham	Petersburg	8
2012	January	Seal Disease Outbreak in the Bering Strait, Several Public Talks	Sheffield	Nome	155
2012	January	Spectacled Eiders, Bering Sea and Climate Change, Community Talk	Lovern/Sheffield	Nome	71
2012	January	Alaska as Seen from Unmanned Aircraft, Community Talk	Walker/Sheffield	Nome	20
2012	January	Studying the Pacific Giant Octopus, Alaska Marine Science Symposium	Brewer	Anchorage	100
2012	January	Seal Disease: Arctic Pinniped Disease Workshop, Alaska Marine Science Symposium	Sheffield	Anchorage	80
2012	January	Using Blue Mussels to Test for Domoic Acid Toxicity in Subsistence Bivalves, Alaska Marine Science Symposium	RaLonde	Anchorage	300
2012	January	Communicating Ocean Sciences, Alaska Marine Science Symposium	Sigman/Dublin	Anchorage	110
2012	January	Gulf of Alaska Ecosystem Workshop, Alaska Marine Science Symposium	Deans/Sigman et. al.	Anchorage	500
2012	January	Communicating Science session, UAF School of Fisheries and Ocean Sciences Graduate Course	Sigman	Fairbanks	15
2012	January	Tsunami Bowl Presentation and Quiz Bowl, Unalaska Mighty Molluscs and Unalaska City Council	Brewer	Unalaska	30
2012	February	Seal Disease, Rotary Club	Sheffield	Nome	25
2012	February	Seal Disease, Norton Sound Health Corporation Regional Environmental Conference	Sheffield	Nome	60
2012	February	Seal Disease, Alaska Marine Mammal Stranding Network Annual Meeting	Sheffield	Nome	50
2012	February	Pacific Fisheries Technologists Meeting	Crapo/Oliveira	Anchorage	68
2012	February	The Move from the Farm to an Industry, Pacific Fisheries Technologists Meeting	RaLonde	Anchorage	68
2012	February	Alaska Young Fishermen's Summit	Rice/Baker	Juneau	48
2012	February	Net Mending Basics	Rice	Petersburg	9
2012	February	Net Mending Class	Baker	Cordova	25
2012	February	Net Mending	Cullenberg	Petersburg	22
2012	February	Smoked Seafood for Fun and Profit	Oliveira/Crapo/Himelbloom	Kodiak	21
2012	February	Hazard Analysis Critical Control Point Workshop	Crapo	Anchorage	2
2012	February	Shaping Fisheries: Skills for Participating in the Public Process, Alaska Forum on the Environment	Cullenberg	Anchorage	37
2012	February	Direct Marketing of Fish, Panel Presentation at Wild Seafood Exchange	Chambers	Bellingham, WA	50
2012	February	Alaska Sea Grant Harmful Algal Bloom Projects, World Aquaculture Society	RaLonde	Las Vegas	38
2012	February	Marine Safety for Fishermen	AMSEA/Sheffield	Nome	5
2012	February	Survival Stories, Northwestern Alaska Career and Technical Center	Sheffield	Nome	6
2012	February	Outreach and Education, Sikuliaq Science Meeting, Ocean Sciences 2012	Sigman	Salt Lake City	45
2012	February	Outreach to Alaska Coastal Communities, Sikuliaq Science Meeting, Ocean Sciences 2012	Sheffield	Salt Lake City	45
2012	February	Bering Sea Ecosystem Workshop, Poster at Ocean Sciences 2012	Sigman	Salt Lake City	200
2012	February	Biology of Marine Mammals, UAF Northwest Campus	Sheffield	Nome	8
2012	February	Presentation to Norton Sound Pacific Cod Fishery Development	Sheffield	Nome (teleconference)	11
2012	February	Marine Wildlife Viewing, Anchorage Lions Club	Johnson	Anchorage	12
2012	February	Inside Waters Management Plan for Walleye Pollock, Thursday Science Series	Tsunami Bowl Students/Rice	Petersburg	12
2012	February	Communicating Science sessions (2), UAF School of Fisheries and Ocean Sciences Course	Sigman	Fairbanks	15
2012	February	Harmful Algal Blooms in Alaska, UAF Kodiak Center–Kodiak National Wildlife Refuge Brown Bag	Matweyou	Kodiak	15
2012	March	Onboard Marine Refrigeration, Integrated Marine Systems	Baker	Homer	25
2012	March	Fishing Vessel Insurance FAQ Lunch Seminar, Wells Fargo Marine Insurance and Cordova District Fishermen United	Baker	Cordova	18
2012	March	Northern Pinniped Unusual Mortality Event Update, Western Alaska Interdisciplinary Science Conference	Sheffield	Dillingham	30
2012	March	Food Security Panel Chair, Western Alaska Interdisciplinary Science Conference	Chambers	Dillingham	19
2012	March	Marine Mammal Identification, Sampling, and Data Recording, UAA Fishery Observer Training Center	Wynne	Anchorage	11
2012	March	Preliminary Results of the Sea Otter Capture Project, Petersburg Marine Mammal Center Annual Meeting	Rice	Petersburg	12
2012	March	Seal Disease, NOAA Unusual Mortality Event Communications Subgroup	Sheffield	Nome (teleconference)	12

Conferences, Workshops, Presentations, and Teaching, continued

2012	March	Data Synthesis, Bowhead Whale Feeding Ecology Workshop	Sheffield	Seattle	20
2012	March	Saving Money at the Fuel Dock, Great Alaska Sportsman Show	Johnson	Anchorage	11
2012	March	Shellfish Aquaculture on the Annette Island Reserve; Expanding Knowledge of Paralytic Shellfish Poison and Domoic Acid Toxins in Alaska; Intertidal Bag Culture of Pacific Oysters for Alaskan Farmers; Extension as a Focus of Research, at National Shellfisheries Association Annual Meeting	RaLonde	Seattle	130
2012	March	Economic and Environmental Efficiency: The Case for Alaskan Pacific Oyster Industry, at National Shellfisheries Association Annual Meeting	Fong	Seattle	55
2012	March	Leadership Training, Alaska Seafood Processing Leadership Institute	Crapo/Cullenberg	Anchorage	18
2012	March	DHA in Marine Organisms, UAF Fisheries Division Seminar	Oliveira	Juneau	20
2012	March	Drill Conductor Class for Fishermen, Alaska Marine Safety Education Association	AMSEA/Matweyou	Kodiak	14
2012	March	Using Slush Bags to Promote Salmon Quality, Business of Fish Workshops	Reeve	Dillingham	
2012	March	Sperm and Killer Whale Predation on Longline Fisheries, Petersburg Marine Mammal Center annual meeting/Thursday Science Series	Peterson/Rice	Petersburg	12
2012	March	Marine Mammals in Prince William Sound, Prince William Sound Science Center	Kara Johnson/Baker	Cordova	9
2012	March	Communicating Ocean Science Workshop, Kachemak Bay Science Conference	Sigman	Homer	12
2012	March	Alaska Seas and Rivers, Kachemak Bay Science Conference	Trowbridge	Homer	6
2012	March	Combining Inquiry and Community through Scientist-Teacher Partnerships, National Science Teachers Association Annual Conference	Sigman	Indianapolis, IN	25
2012	April	Field Sampling Techniques, Women in Science, Girl Scout Anniversary	Baker/Bidlach	Cordova	20
2012	April	What Fun a Biologist Can Have, Women in Science, Girl Scout Anniversary	Wynne	Kodiak	15
2012	April	Sanitation	Crapo	Anchorage	30
2012	April	Hazard Analysis Critical Control Point Workshop	Crapo	Anchorage	5
2012	April	Hazard Analysis Critical Control Point Workshop	Crapo/Rice	Petersburg	15
2012	April	Hazard Analysis Critical Control Point Workshop	Crapo	Kake	5
2012	April	Hazard Analysis Critical Control Point Workshop	Crapo	Yakutat	5
2012	April	North Pacific Fishery Management Council Process, ComFish Alaska	Experts/Matweyou/AMCC	Kodiak	50
2012	April	Research on Whale Entanglement and Fishing Gear Avoidance, Thursday Science Series	Wynne	Cordova	26
2012	April	Research on Whale Entanglement and Fishing Gear Avoidance, Kodiak National Wildlife Refuge Brown Bag	Wynne	Kodiak	22
2012	April	Reducing Whale Bycatch	Wynne/Rice	Petersburg	16
2012	April	Reducing Whale Bycatch: Use of Pingers	Wynne/Rice	Petersburg	4
2012	April	Marine Mammal Info for Bear Guides, Kodiak College Bear Guide and Viewing Class	Wynne	Kodiak	14
2012	April	AMSEA Drill Instructor Course	Matweyou	Kodiak	13
2012	April	AMSEA Drill Instructor Course (two courses)	Baker/Lopez/Tirell/Boyle	Cordova	47
2012	April	Ship Escort Response System (SERVS) Fishing Vessel Spill Response Training	Baker	Kodiak	110
2012	April	Citizen Science European Green Crab Training, Allen Marine Tours	Freitag	Sitka	30
2012	April	How to Do Business in China Workshop, State Trade and Export Promotion Program	Fong/Crow/Dong/Gilbert		13
2012	April	Introduction to Starting a Specialty Food Business	Fong/Idzorek	Fairbanks	17
2012	April	Harmful Algae and Toxins; Shellfish Biology and Beach Monitoring; Shellfish Aquaculture Opportunities; Ocean Acidification and Shellfish; Domoic Acid Testing Lab, Alaska Tribal Marine Science Workshop	RaLonde	Kasitsna Bay	65
2012	April	Shellfish of Alaska; Paralytic Shellfish Poisoning; Oyster Farming, to Elementary and High School Students	RaLonde	Akutan	10
2012	April	Board of Fisheries Process; Direct Marketing; Salmon Marketing, for Bristol Bay Economic Development Corporation Business of Fish	Chambers	Dillingham	51
2012	April	PSP Pilot Study for Monitoring Program in Kodiak, UAF Kodiak Center–Kodiak National Wildlife Refuge brown bag and Rockmore-King Medical Clinic at U.S. Coast Guard base	Matweyou/Trussell/ UAA Kodiak students	Kodiak	25
2012	May	Hazard Analysis Critical Control Point Workshop	Crapo	Kodiak	15
2012	May	pH Measurement: Basic Theory, Measurement, and Instrument Maintenance	Crapo	Kodiak	16
2012	May	Hazard Analysis Critical Control Point Workshop	Crapo	Kodiak	15
2012	May	Northern Sea Mammal Illness Observation, to Local Environmental Observer (LEO) Network, to 8 communities	Sheffield	Nome (webinar)	
2012	May	Paralytic Shellfish Poisoning in Kodiak, Kodiak Refuge Visitor Center	Matweyou	Kodiak	9
2012	May	Kodiak Seafood and Marine Science Center Presentations and Hands on Activities for Middle School Students	Oliveira/KSMSC Staff	Kodiak	136
2012	May	Dockside Discovery for Elementary Students and Teachers	Brewer	Unalaska	187
2012	May	Crustacean Workshop for First Graders	Brewer	Unalaska	30
2012	May	Ocean Science Discovery Lab for Fourth Graders	Matweyou	Kodiak	50
2012	May	Marine Science Presentations for Fifth Graders, UAS I'm Going to College	Freitag	Ketchikan	51
2012	May	Marine Science Presentations for Eighth Graders, UAS Career Day	Freitag	Ketchikan	125
2012	May	Changing Shorelines and Fossil Marine Reptiles of Southeast Alaska, Thursday Science Series/Little Norway Festival	Baichtal/Rice	Petersburg	80

Conferences, Workshops, Presentations, and Teaching, continued

2012	May	MAP Overview, PSP, Training for Commercial Fishermen, Marine Literacy, Seafood and Maritime Initiative, at the Kodiak Archipelago Rural Regional Leadership Forum	Matweyou	Kodiak	30
2012	May	Oceanography and Marine Sciences, to Akutan High School Class	RaLonde	Anchorage	5
2012	May	Introduction to Kodiak Area Marine Mammals, to Kodiak National Wildlife Refuge summer interns	Wynne	Kodiak	15
2012	June	Underwater World of the Aleutian Islands, Alaska's Land and Sea Lecture Series	Brewer	Fairbanks	80
2012	June	What Is Alaska Sea Grant Doing in West Africa? Alaska's Land and Sea Lecture Series	Wynne	Fairbanks	18
2012	June	Hazard Analysis Critical Control Point Workshop and Sanitation	Crapo/Chambers	Naknek	3
2012	June	AMSEA Diver-Dredger Safety Course	Sheffield/Trowbridge	Nome	22
2012	June	Update on Seal/Walrus Unusual Mortality Event, Tsunami Debris	Sheffield	Shishmaref	60
2012	June	Sick Seal Unusual Mortality Event, to Koyuk Indian Environmental General Assistance Program (IGAP)	Sheffield	Nome (teleconference)	10
2012	June	Kodiak Seafood and Marine Science Center, to Kodiak Borough Assembly/City Council	Cullenberg	Kodiak	
2012	June	Panel on Integration of Traditional Knowledge, National Marine Educators Association Conference	Sigman	Anchorage	25
2012	June	Keynote Presentation, National Marine Educators Association Conference	Brewer	Anchorage	350
2012	June	Arctic Ocean Ecosystem Workshop for Researchers and Teachers	Sigman	Barrow	30
2012	June	Permafrost: Is It Permanent? Community Talk	Sungjim Nam/Sheffield	Nome	18
2012	July	Alaska Coastal Sentries, Robot Watch for Submarine Invasion by Alien Creatures, Alaska's Land and Sea Lecture Series	Freitag	Fairbanks (VCON)	14
2012	July	Thar She Blows! Whale Research around the Emerald Isle	Witteveen	Fairbanks (VCON)	27
2012	July	Marine Invasive Species Monitoring in Alaska Training Workshop	Freitag/McCann	Ketchikan	20
2012	July	Marine Invasive Species—Have They Made It to Kodiak? Ft. Abercrombie Summer Naturalist Series	Matweyou	Kodiak	16
2012	July	Safe and Effective Response for Disentanglement of Large Whales	Lyman/Wynne	Kodiak	10
2012	July	Social Transitions and Well-Being in Kodiak's Fisheries and Communities, Community Talk	Carothers/Himelbloom	Kodiak	12
2012	July	Eastern Bering Sea Groundfish Slope Surveys, NOAA Northern Fur Seal Curriculum, Community Talk	Goddard/Brewer	Unalaska	12
2012	July	Intertidal Ecology and Marine Mammal Anatomy, Qawalangin Tribe Culture Camp	Brewer	Unalaska	67
2012	August	Fish Waste Utilization Projects in Bristol Bay, Alaska's Land and Sea Lecture Series	Chambers	Fairbanks (VCON)	8
2012	August	Hazard Analysis Critical Control Point Workshop	Crapo	Naukati Bay	5
2012	August	Boating Without the Boys	Baker/Gehlbach	Cordova	11
2012	August	Post Mortems on Alaska Unusual Mortality Event Animals, to Alaska Northern Pinniped UME Working Group	Sheffield	Nome (teleconference)	20
2012	August	Alaska Maritime and Fisheries Industry: Training Needs, to UA President Gamble	Escort Team/Freitag	Ketchikan	35
2012	August	Personal and Business Finance, Semester Course at UAF Bristol Bay	Chambers	Dillingham	6
2012	August	Shellfish Aquaculture, Shellfish Anatomy and Biology, Oceanography, Water Quality Monitoring, Training for Aquaculture Apprentices	RaLonde	Kake	5
2012	August	Training for Community-Based PSP Monitoring, for Kachemak Bay Estuarine Research Reserve	RaLonde	Homer, Ninilchik, Port Graham, Seldovia	20
2012	August	Alaska Paralytic Shellfish Poisoning Epidemiology Case Studies, Kodiak Alutiiq Museum Lecture Series	Matweyou	Kodiak	9
2012	August	MAP, Marine Safety Training, Talk at Kodiak USCG Auxiliary	Matweyou	Kodiak	16
2012	August	Science at Sea, Strait Science Series Public Talk	Whitledge/Sheffield	Nome	21
2012	September	AMSEA Drill Conductor Course (three courses)	Brewer	Unalaska	23
2012	September	Sea Grant Week 2012	Christie	Girdwood	206
2012	September	Adventures in the Aleutians Presentation	Brewer	Girdwood	72
2012	September	Sea Grant Week Nature Hikes (two), Angling Float Trip	Johnson	Girdwood	60
2012	September	Canning Food Workshop	Chambers	Dillingham	5
2012	September	Canning Food, Presentation at Sustainable Living Symposium	Chambers	Dillingham	27
2012	September	AMSEA Drill Conductor Course (three courses)	Brewer	Unalaska	23
2012	September	Alaska Maritime National Wildlife Refuge Projects, Community Talk	Benson/Brewer	Unalaska	22
2012	September	Bowhead Whales, Presentation at Harold Kaveolook School	Sheffield	Kaktovik	17
2012	September	Whales of Alaska, Presentation at St. Michael's Country Day School	Sheffield	Newport, RI	24
2012	September	Kodiak Area Whale Research, Community Talk	Witteveen	Kodiak	50
2012	September	Live Underwater Viewing via OceansAlaska ROV	Freitag/Morgan	Ketchikan	100

Alaska Sea Grant Collaborative Partners, 2011-2012

Federal partners	
AmeriCorps Vista	Volunteer in MAP
National Ocean Sciences Bowl	MAP and ASG coached teams and built website
Department of Agriculture, Natural Resources Conservation Service	Funded oyster culture research
Department of Commerce, Pacific States Marine Fisheries Commission	Johnson is an Alaska commissioner. MAP coordinated with PSMFC on 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
Marine Mammal Commission	Funded book production for Marine Mammal Guidelines, Bering Strait Region, Alaska
National Oceanographic Partnership Program, Alaska Ocean Observing System	Advisory Committee member. Cosponsored climate change videos.
National Park Service	Advisory Committee member. NPS advises MAP Climate Adaptation Project
National Science Foundation, Centers for Ocean Science Education Excellence (COSEE Alaska)	Funded MAP marine education specialist Sigman
National Science Foundation, Global Ocean Ecosystems Dynamics Program (GLOBEC)	Collaborator in salmon/larvacean research project
NOAA Alaska Marine Mammal Stranding Network	MAP members contributed samples and data to investigate marine mammal strandings/mortality
NOAA Climate Monitoring and Diagnostics Laboratory	Funded Project Partnerships to Increase Coastal Alaskan, Particularly Alaska Native Student, Participation in NOAA-Related Marine and Fisheries Sciences
NOAA Fisheries	Advisory Committee member. Funded Alaska King Crab Research, Rehabilitation and Biology Program. Office of Aquaculture funded Alaska Oyster Growers Manual and research. Partner in developing international fishery observer programs and study of marine mammal trophic interactions. Partner in Wakefield Symposia. Editor of Wakefield proceedings, Global Progress in Ecosystem-Based Fisheries Management. Wynne is in NMFS Alaska Scientific Review group.
NOAA Kachemak Bay Estuarine Reserve	RaLonde trains PSP monitors
NOAA National Marine Mammal Laboratory	Partner with Sheffield in bowhead whale study. Partner on project, Community-Based Marine Mammal Conservation in Bristol Bay.
NOAA Office of Protected Resources	Collaborator with MAP on marine mammal stranding response data
North Pacific Fishery Management Council	Advisory Committee member. Cullenberg is member of Rural Community Outreach Committee. Funded Wakefield symposia and Alaska Young Fishermen's Summit. Editor of Wakefield proceedings, Global Progress in Ecosystem-Based Fisheries Management.
North Pacific Research Board	Funded Wakefield Symposia. Funded projects on tagging octopus, Abraxis toxin testing, PacMARS. ASG funded student awards at NPRB Alaska Marine Science Symposium. Freitag and Sheffield are on the NPRB advisory panel.
Smithsonian Environmental Research Center	Collaborator with Freitag on invasive species monitoring
U.S. Arctic Research Commission	Funded Wakefield Symposium
U.S. Army Corps of Engineers	Contributed content for ASG book Responses to Coastal Erosion in Alaska in a Changing Climate
U.S. Bureau of Ocean Energy Management (BOEM)	Funded Wakefield Symposium. Supported 2012 National Marine Education Association Conference.
U.S. Coast Guard	Baker is on USCG Commercial Fishing Industry Vessel Safety Advisory Committee
U.S. Fish and Wildlife Service	Advisory Committee member. Contributes samples and data to investigate sea otter mortality. Partner on Alaska Salmon in the Classroom training and on Community-Based Marine Mammal Conservation in Bristol Bay.
U.S. Forest Service	Partner on Tongass Rainforest Festival in Petersburg. Baker is on the Prince William Sound Regional Advisory Committee. Cosponsored Boating Without the Boys class in Cordova.
U.S. Geological Survey	Advisory Committee member, partner on project Developing Strontium Isotope Maps of Alaska Rivers to Track Pacific Salmon Migrations
U.S. Naval Academy	Contributed content for ASG book Responses to Coastal Erosion in Alaska in a Changing Climate
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. Partner in food sustainability project and Alaska Salmon in the Classroom training. Co-presented at a MAP workshop.
Alaska Department of Commerce, Community and Economic Development, Div. of Investments	Participated in Alaska Young Fishermen's Summit and related conferences
Alaska Department of Commerce, Community and Economic Development, Office of Economic Development	Participated in and helped organize Alaska Young Fishermen's Summit
Alaska Department of Environmental Conservation	RaLonde helps with PSP monitoring and communication. Partner in Alaska Oyster Growers Manual and research.
Alaska Department of Fish and Game	Advisory Committee member. MAP works with ADFG on mariculture experiments. Partner in Alaska Oyster Growers Manual. Funded Wakefield Symposia. Editor of Wakefield proceedings, Global Progress in Ecosystem-Based Fisheries Management.
Alaska Department of Natural Resources	Presented at MAP-coordinated Geoduck Harvesting and Marketing workshop. Collecting samples using the Mercury Scientific domoic acid field test kit for NPRB project. RaLonde helped revise Aquatic Farming Permit Application. Partner in Alaska Oyster Growers Manual. Contributed content for ASG book Responses to Coastal Erosion in Alaska in a Changing Climate.
Alaska Department of Labor and Workforce Development	Cosponsored career education sessions presented by Freitag

Local, state, and tribal partners, continued

Alaska Department of Transportation and Public Facilities	Contributed content for ASG book Responses to Coastal Erosion in Alaska in a Changing Climate
Alaska Division of Geological and Geophysical Surveys	Contributed content for ASG book Responses to Coastal Erosion in Alaska in a Changing Climate
Alaska Energy Authority	Advisor on MAP project Energy Efficiency of Alaska Seafood Processing Plants
Alaska Federation of Natives	MAP assisted with Marketplace grants to help entrepreneurs
Alaska Native Tribal Health Consortium	Requested climate outreach from MAP
Alaska Office of Boating Safety	Johnson is on Alaska Boating Safety Council. Johnson wrote a boating safety guide for Resurrection Bay.
Alaska Seafood Marketing Institute	Chambers is on the ASMI Salmon Committee. Crapo is on the Technical Committee. MAP provides salmon data to ASMI.
Aleutian Islands Shipping Risk Assessment	Brewer is on Public Advisory Committee
Aleutian Pribilof Island Community Development Association	Funded crab research. Partner in Alaska Young Fishermen's Summit.
Aleutian Pribilof Islands Association	Partner in PSP monitoring and education project
Alutiiq Museum	Distributed ASG educational products
Annette Island Indian Reserve	Partner in oyster culture research
Arliss Sturgulewski, former state senator	Advisory Committee member
Bristol Bay Marine Mammal Council	Partner on project Community-based Marine Mammal Conservation in Bristol Bay
Bristol Bay Native Association	Researcher on ASG-funded project
Bristol Bay Borough	Advisory Committee member
Chignik Lagoon Village Council	Partner on project, Community-Based Marine Mammal Conservation in Bristol Bay
City of Dillingham	Chambers is Planning Commission member
City of Shaktoolik	Partner in project Climate Change Adaptation for an At-Risk Community
Eskimo Walrus Commission	Sheffield collaborates on marine mammal disease information
Future Farmers of America, Alaska Chapter	Partner in aquaculture outreach project
Ice Seal Committee	Sheffield collaborates on marine mammal disease information
Interior Distance Education of Alaska	Distribute ASG educational products to homeschoolers
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 for 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. Partner in project Climate Change Adaptation for an At-Risk Community. Funded Project Inalit Traditional Knowledge of Walrus in the Bering Strait.
Kenai Peninsula Borough	Contributed content for ASG book Responses to Coastal Erosion in Alaska in a Changing Climate
Kodiak Filipino-American Association	Matweyou is alternate chair
Kodiak Filipino Women's Council	Sponsored workshop Introduction to Business Planning
Kodiak Women's Resource and Crisis Center	MAP taught financial management to women
Museum of the Aleutians	Brewer is on board of directors. Museum and MAP host Forum of Alaska Marine Issues
Native Council of Port Heiden	Partner on project Community-Based Marine Mammal Conservation in Bristol Bay
Native Village of Shaktoolik	Partner in project Climate Change Adaptation for an At-Risk Community
New Stuyahok Village	Partner on project Developing Strontium Isotope Maps of Alaska Rivers to Track Pacific Salmon Migrations
Norton Sound Economic Development Corporation	Partner in Alaska King Crab Research, Rehabilitation and Biology Program
North Slope Borough	Funded projects Bowhead Whale Feeding in the Western Beaufort Sea and Quantification of Ship Strike, and Line Entanglement from Examinations of Harvested Bowhead Whales
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
Pacific Aquaculture Caucus	RaLonde is on the board of directors
Petersburg Economic Development Council	Cosponsored workshop on fishing business sales
Port of Dutch Harbor Convention and Visitors Bureau	Brewer is on board of directors
Pribilof Islands, Communities of St. Paul and St. George	Partners in Alaska King Crab Research, Rehabilitation and Biology Program
Qawalangin Tribe	Brewer teaches at annual culture camp
Qayassiq Walrus Commission	Partner on project Community-Based Marine Mammal Conservation in Bristol Bay
Senator Joe Thomas, Alaska Legislature	Advisory Committee member
Shaktoolik Native Corporation	Partner in project Climate Change Adaptation for an At-Risk Community
Southwest Alaska Municipal Conference	Cohosted workshop with MAP on community economies
Togiak Traditional Council	Partner on project Community-Based Marine Mammal Conservation in Bristol Bay
Unalaska School District	Provide MAP office space.
Western Regional Aquaculture Center	RaLonde is on board of directors

NGO partners

Alaska Clean Harbors Advisory Committee	Johnson is a member
Alaska Marine Conservation Council	Advisory Committee member. Supported Alaska Young Fishermen's Summit and Wakefield Symposia. Cosponsored climate change videos. Johnson is an advisor to AMCC.
Alaska Marine Safety Education Association	AMSEA director is MAP affiliate. Cullenberg is AMSEA board chair. AMSEA collaborates on videos, book, and training.
Alaska SeaLife Center	Distributed ASG educational products. SeaLife Center staff help with sea otter research project.

NGO partners, continued

Alaska Small Business Development Center	MAP recruited 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
BeringWatch, Pribilof Islands	Wynne is on scientifc advisory board
Cook Inlet Keeper	RaLonde is on Water Quality Monitoring Program advisory board
Cordova Historical Society	Baker is treasurer of the trustees
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 Alaska King Crab Research, Rehabilitation and Biology Program
Marian Center, Kodiak	Fong is treasurer of board of directors. MAP supports economic development for immigrants.
Marine Conservation Alliance Foundation	Partner in Wakefield Symposium. Sponsor of Alaska Young Fishermen's Summit.
Northwest Aquatic and Marine Educators	Supported 2012 National Marine Education Association Conference
OceansAlaska	Freitag chairs board of directors
Petersburg Marine Mammal Center	Partner on large whale entanglement project, ASG sea otter project, and summer science lecture series. Rice is vice president of the board.
Pew Environment Group	Partner in Wakefield Symposium
SEANET	Sigman chairs the steering committee
Solutions That Endure	Advisory Committee member
Unalaska Divers Association	Brewer is board chair
World Wildlife Fund U.S. and Canada	Funded Wakefield symposium. Advisor on projects.
Yukon Delta Fisheries Development Association	Reeve advised Rural Training Programs

Industry partners

Alaska Bering Sea Crabbers	Partner in 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
Alaskan Shellfish Growers Association	Active on Alaska King Crab Research, Rehabilitation and Biology Program steering committee. RaLonde partners with ASGA on shellfish research and publications.
Alaska Tide Book Company	Copublisher on regional tide table books
Alaska Trollers Association	Funded Alaska Young Fishermen's Summit
Alaska Whitefish Trawlers Association	Funded Alaska Young Fishermen's Summit
Alyeska Pipeline Services	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	Partner in oyster culture research. MAP helped with marketing, product quality.
BP	Advisory Committee member
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
Chinook Insurance Group, LLC	Funded Alaska Young Fishermen's Summit
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
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 for citizen science program
Henry Mitchell, Fisheries Consultant	Advisory Committee member
Howe Corporation	Funded Project Shelf Life Extension of Seafoods in Retail Display Cases
Icicle Seafoods Inc.	Partner in Alaska Young Fishermen's Summit and ASG sea otter/fisheries project
Integrated Marine Systems	Partner in marine refrigeration workshops
International Pacific Halibut Commission (U.S.)	Sponsor and provided speaker to Alaska Young Fishermen's Summit
IsoForensics Inc.	Partner on project Developing Strontium Isotope Maps of Alaska Rivers to Track Pacific Salmon Migrations
Kachemak Bay Gear Shed	Partner in refrigeration workshops
Kachemak Shellfish Growers Cooperative	MAP is technical advisor
Kodiak Fish Company	Partner in Alaska Young Fishermen's Summit
Kruzof Fisheries LLC	Funded Alaska Young Fishermen's Summit
Lofoten Fish Company	Partner in the Tongass Rainforest Festival in Petersburg
Northern Southeast Regional Aquaculture Association	Advisory Committee member
Norton Sound Health Corporation	MAP partnered with NSHC to teach cold water emergencies
Pearl of Alaska Shellfish Farm	Partner in oyster culture research and the Alaska Shellfish Growers Manual
Peter Pan Seafoods, Inc.	Partner on project Developing Strontium Isotope Maps of Alaska Rivers to Track Pacific Salmon Migrations

Industry partners, continued

Petersburg Vessel Owners Association	Partner in Alaska Young Fishermen's Summit, whale entanglement project, and ASG sea otter project
Peterson Plus Seafoods	MAP assisted business start-up and growth
Prince William Sound Aquaculture Corporation	MAP helped with safety training, education, biology research
Prince William Sound Regional Seafood Development Association	Joined MAP in workshop
Princess Cruises	Advisory Committee member. Funded MAP, Alaska Young Fishermen's Summit
Resource Development Council for Alaska, Inc.	Advisory Committee member
Santa Monica Seafoods	Funded Alaska King Crab Research, Rehabilitation and Biology Program
SeaFisk Consulting	Consultant on fisheries business and energy efficiency projects
Sealaska Corporation	Advisory Committee member
Southeast Alaska Regional Dive Fisheries Association	Collaborator in sea otter/fisheries project
Trident Seafoods	Cosponsored net-mending class
Tenass Pass Shellfish Company	Partner in oyster research and Alaska Shellfish Growers Manual
United Fishermen of Alaska	Funded Alaska Young Fishermen's Summit
United Fishermen's Marketing Association	Advisory Committee member
Webber Marine and Manufacturing, Inc.	Funded Alaska Young Fishermen's Summit
Academic institution partners	
Alaska Vocational Technical Education Program	Partner in refrigeration workshops
Farallon Institute for Advanced Ecosystem Research	Collaborator in research project Variance as Indicator in Ecosystem Reorganization
Hatfield Marine Science Center	Distributed ASG educational products. Collaborator on shellfish research.
International Council for the Exploration of the Sea (ICES)	Partner in Wakefield Symposium
National Institutes for Water Resources	Partner on project Developing Strontium Isotope Maps of Alaska Rivers to Track Pacific Salmon Migrations
NOAA/UAF Kasitsna Bay Laboratory	Collecting samples using the Mercury Scientific domoic acid field test kit for 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
Pacific Seafood Processors Association	Funded Alaska Young Fishermen's Summit
Prince William Sound Science Center	Cohosted science talks with MAP. Baker chairs Institutional Animal Care and Use Committee
University of Alaska Technical and Vocational Education Program	Help fund Alaska Seafood Processing Leadership Institute
University of Alaska Anchorage, Fishery Observer Training Center	Wynne trained NOAA fisheries observers
University of Alaska Anchorage, Institute of Social and Economic Research	Partner in Wakefield Symposium
University of Alaska Fairbanks, Department of Anthropology	Partner in Wakefield Symposium
University of Alaska Fairbanks, Institute of Northern Engineering	Partner in project Energy Efficiency of Alaska Seafood Processing Plants
University of Alaska Fairbanks, Kuskokwin Campus	Partner in Wakefield Symposium
University of Alaska Fairbanks, Pollock Conservation Cooperative Research Center	Funded Wakefield Symposium, PacMARS project, and book production for Fishing for Pollock in a Sea of Change
University of Alaska Press	Book marketing partner
University of Alaska Southeast, Research Experiences for Undergraduate Students	Partner in sea otter/fisheries project
University of Alaska Southeast, Fisheries Technology Program	Freitag is on advisory committee
University of British Columbia	Partner in Wakefield Symposium
University of Tromso, Marine Research Institute	Partner in Wakefield Symposium
University of Utah ICP MS Metals Lab	Partner on project Developing Strontium Isotope Maps of Alaska Rivers to Track Pacific Salmon Migrations
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: Guide to Marine Mammals and Turtles of the U.S. Atlantic and Gulf of Mexico
International partners	
Department of Fisheries and Oceans Canada	Partner in Wakefield Symposium
Food and Agriculture Organization of the United Nations	Funded travel for Wakefield Symposium
Pacific Salmon Commission	Funded Project K-12 Educators to Support Yukon River Salmon Stewardship in Rural Alaska. Freitag is on the Joint Chinook Technical Committee
Yukon River Panel	Funded Project K-12 Educators to Support Yukon River Salmon Stewardship in Rural Alaska.

Alaska Sea Grant Awards October 2011–September 2012

Ray RaLonde was awarded the nationwide Sea Grant Extension Assembly's 2012 Superior Outreach Program Award. RaLonde won for his outstanding efforts toward building a program where Alaska Native tribes, shellfish farmers, coastal communities, state agencies, and legislators work together to (1) enhance safe harvest of shellfish and (2) diversify the economies of isolated coastal communities in southcentral and southeast Alaska.

Ray RaLonde and **Bruce Wright** (Aleutian Pribilof Islands Association) were awarded the 2012 Outstanding Achievement Award by the Alaska Forum on the Environment, for research on the Aleutian Pribilof Islands Paralytic Shellfish Poisoning (PSP) Project. The project helps Alaska coastal communities that harvest subsistence shellfish better respond to the health threat and minimize poisoning risk. See www.apiai.com/psp.asp.

Deborah Mercy won the Alaska SeaLife Center's 2012 Ocean Media Award for writing, directing, editing, and producing marine educational videos in Alaska for over 25 years. Mercy's work has been used by trainers to save lives at sea, by fishermen to maintain businesses during hard economic times, and by community residents planning for environmental change.

The **Alaska Sea Grant Education Services staff**, led by **Kurt Byers**, won the Alaska SeaLife Center's 2012 Ocean Literacy Award, for publishing books, videos, teaching materials, news stories, and online information for mariners, coastal communities, educators, and the public, as well as hosting Wakefield symposia for more than two decades.

PUBLICATION AWARDS

The ***Alaska Seas and Rivers*** online curriculum was recognized by the National Science Foundation's Climate Literacy and Energy Awareness Network. Two grade 8 lessons were selected for the CLEAN award after a rigorous review by climate scientists and educators; only 480 resources were selected from 15,000.

The book ***Imam Cimiucia: Our Changing Sea*** won the 2012 Alaskana Award, sponsored by the Alaska Library Association. The Alaskana award honors outstanding works about Alaska that make a significant contribution to the understanding of Alaska and exhibit originality, depth of research, and knowledge of Alaska.

Imam Cimiucia: Our Changing Sea won the 2012 first place award by the National Association of Government Communicators, in the hard/soft cover book category. NAGC is a nonprofit professional network of federal, state, and local government employees who disseminate information within and outside government.

Sea Life of the Aleutians: An Underwater Exploration, by Reid Brewer, Heloise Chenelot, Shawn Harper, and Stephen Jewett, won first place for graphic design from the National Association of Government Communicators. Monica Pessino, Santa Barbara, California, designed the book.

KURT BYERS

Imam Cimiucia: Our Changing Sea won state and national awards in 2012.

Alaska Sea Grant Publications, October 2011-September 2012

PRINT AND ELECTRONIC BOOKS

Alaska Sea Grant. 2012. Alaska Oyster Growers Manual, Draft 4th edn. Alaska Sea Grant and Alaskan Shellfish Growers Association, AN-19. 364 pp.

Garza, D. 2012. Common Edible Seaweeds in the Gulf of Alaska, 2nd edn. Alaska Sea Grant, University of Alaska Fairbanks, SG-ED-46. 61 pp.

Johnson, T. 2012. Annotated Resources on Climate Change Adaptation for Alaska Communities. Alaska Sea Grant, University of Alaska Fairbanks, M-161. 14 pp.

Kruse, G.H., H.I. Browman, K.L. Cochrane, D. Evans, G.S. Jamieson, P.A. Livingston, D. Woodby, and C.I. Zhang, eds. 2012. Global Progress in Ecosystem-Based Fisheries Management. Alaska Sea Grant, University of Alaska Fairbanks, AK-SG-12-01. 396 pp.

Smith, O.P., and M.K. Hendee. 2011. Responses to Coastal Erosion in Alaska in a Changing Climate: A Guide for Coastal Residents, Business and Resource Managers, Engineers, and Builders. Alaska Sea Grant, University of Alaska Fairbanks, SG-ED-75. 120 pp.

VIDEOS

Mercy, D. 2011. Disappearing Sea Ice. Alaska Ocean Observing System, Alaska Marine Conservation Council, and COSEE Alaska. MAPV-68. 10 min.

Mercy, D. 2011. Introduction to Climate Change. Alaska Ocean Observing System, Alaska Marine Conservation Council, and COSEE Alaska. MAPV-67. 6 min.

Mercy, D. 2011. Life on the Ice. Alaska Ocean Observing System, Alaska Marine Conservation Council, and COSEE Alaska. MAPV-69. 6 min.

Mercy, D., and K. Byers. 2011. Launch Your Career with a NOAA Sea Grant John A. Knauss Marine Policy Fellowship. Alaska Sea Grant, University of Alaska Fairbanks. M-153. 11 min.

BROCHURES, FACT SHEETS

Alaska Sea Grant. 2011. Alaska Sea Grant Brochure. Alaska Sea Grant, University of Alaska Fairbanks, AK-ADMIN-78.

Alaska Sea Grant. 2012. Fisheries Effects: What They Are, and May Be, in the Future. Alaska Sea Grant, University of Alaska Fairbanks, M-157. 2 pp.

Alaska Sea Grant. 2012. Harmful Algal Blooms: What They Mean to Alaskans and How We Can Adapt. Alaska Sea Grant, University of Alaska Fairbanks, M-158. 2 pp.

Alaska Sea Grant. 2012. Species Shifts: What They Mean for Alaskans, and How We Can Adapt. Alaska Sea Grant, University of Alaska Fairbanks, M-159. 2 pp.

Baker, T. 2012. Ocean Acidification and Fisheries: Alaska's Challenge and Response. Alaska Seas & Coasts 6:1-12.

Chambers, I. 2011. Safe and Legal Fish Waste Composting in Alaska. Alaska Sea Grant, University of Alaska Fairbanks, ASG-55. 4 pp.

Johnson, T. 2012. Fisheries Adaptations to Climate Change. Alaska Sea Grant, M-162, University of Alaska Fairbanks. 8 pp.

Johnson, T. 2011. Fishing Vessel Energy Efficiency Self-Audit Workbook. Alaska Sea Grant, University of Alaska Fairbanks, M-154. 10 pp.

Johnson, T. 2011. Fuel-Saving Measures for Fishing Industry Vessels. Alaska Sea Grant, University of Alaska Fairbanks, ASG-57. 16 pp.

Johnson, T. 2011. Saving Fuel on Your Recreational or Charter Boat. Alaska Sea Grant, University of Alaska Fairbanks, ASG-56. 8 pp.

Meyer, S. 2012. Angler's Guide to the Rockfishes of Alaska: Biology and Fishery Management, 3rd edn. Alaska Sea Grant, University of Alaska Fairbanks, SG-ED-40. Brochure.

PEER-REVIEWED JOURNAL ARTICLES

Cohen, C.S., L. McCann, T. Davis, L. Shaw, and G. Ruiz. 2011. Discovery and Significance of the Colonial Tunicate *Didemnum vexillum* in Alaska. Aquatic Invasions 6(3):263-271.

Copeman, L.A., A.W. Stoner, M.L. Ottmar, B. Daly, C.C. Parrish, and G.L. Eckert. 2012. Total Lipids, Lipid Classes, and Fatty Acids of Newly Settled Red King Crab (*Paralithodes camtschaticus*): Comparison of Hatchery-Cultured and Wild Crabs. J. Shellfish Research 31(1):153-165. http://dx.doi.org/10.2983/035.031.0119

Daly, B., J. Swingle, and G.L. Eckert. 2012. Dietary Astaxanthin Supplementation for Hatchery-Cultured Red King Crab, *Paralithodes camtschaticus*, Juveniles. Aquacult. Nutr. http://dx.doi.org/10.1111/j.1365-2095.2012.00963.x

Daly, B., J. Swingle, and G.L. Eckert. 2012. Increasing Hatchery Production of Juvenile Red King Crabs (*Paralithodes camtschaticus*) through Size Grading. Aquaculture 364-365:206-211. http://dx.doi.org/10.1016/j.aquaculture.2012.08.034

Daly, B., A.W. Stoner, and G.L. Eckert. 2012. Predator-Induced Behavioral Plasticity of Juvenile Red King Crabs (*Paralithodes camtschaticus*). J. Exp. Mar. Biol. Ecol. 429:47-54. http://dx.doi.org/10.1016/j.jembe.2012.06.010

Long, W.C., J. Popp, K.M. Swiney, and S.B. Van Sant. 2012. Cannibalism in Red King Crab, *Paralithodes camtschaticus* (Tilesius, 1815): Effects of Habitat Type and Predator Density on Predator Functional Response. J. Exp. Mar. Biol. Ecol. 422-423:101-106. http://dx.doi.org/10.1016/j.jembe.2012.04.019

Stoutamore, J.L., C.N. Love, S.L. Lance, K.L. Jones, and D. Tallmon. 2012. Development of Polymorphic Microsatellite Markers for Blue King Crab (*Paralithodes platypus*). Conservation Genet. Resour. http://dx.doi.org/10.1007/s12686-012-9668-8

Swiney, K.M., W.C. Long, and S.L. Persselin. 2012. The Effects of Holding Space on Juvenile Red King Crab, *Paralithodes camtschaticus* (Tilesius, 1815), Growth and Survival. Aquacult. Res. http://dx.doi.org/10.1111/j.1365-2109.2012.03105.x

NEWSLETTERS

Keller, S., ed. 2012. Fishlines 32(1-12). Alaska Sea Grant, University of Alaska Fairbanks, M-155.

Daly, B., ed. 2012. News Flash 4(1-12). Alaska Sea Grant, University of Alaska Fairbanks, M-164.

Johnson, T., ed. 2011. Charter Log Newsletter. No. 53, December 2011. Alaska Sea Grant, University of Alaska Fairbanks, M-160.

Johnson, T., ed. 2012. Charter Log Newsletter. No. 54, March 2012. Alaska Sea Grant, University of Alaska Fairbanks, M-165.

PROGRAM REPORTS

Alaska Sea Grant. 2011. Alaska Sea Grant Annual Report: October 2010–September 2011. Alaska Sea Grant, University of Alaska Fairbanks, AK-ADMIN-76. 28 pp.

Wadsworth, R., and K.R. Criddle. 2012. Stakeholder-Based Regional Marine Research Plan for the Aleutian Islands. Alaska Sea Grant, University of Alaska Fairbanks. AK-ADMIN-79. 77 pp.

MAGAZINE ARTICLES

Byers, K. March 2012. Discovery in the Aleutians. *Pacific Fishing* magazine.

Byers, K. October 2012. Gulf Apex Predator-Prey Program. *Pacific Fishing* magazine.

CATALOG AND TIDE TABLES

Alaska Sea Grant. 2012. 2012 Alaska Sea Grant Catalog. Alaska Sea Grant, University of Alaska Fairbanks, AK-ADMIN-77. 32 pp.

Alaska Tide Book Company. 2012. 2012 Tide Tables: Southcentral Alaska. Alaska Tide Book Company and Alaska Sea Grant, University of Alaska Fairbanks, M-150. 112 pp

Alaska Tide Book Company. 2012. 2012 Tide Tables: Southeastern Alaska. Alaska Tide Book Company and Alaska Sea Grant, University of Alaska Fairbanks, M-151. 112 pp.

Alaska Tide Book Company. 2012. 2012 Tide Tables: Western Alaska. Alaska Tide Book Company and Alaska Sea Grant, University of Alaska Fairbanks, M-152. 112 pp.

Alaska Sea Grant News Releases October 2011-September 2012

Alaska high school students prepare for 2012 ocean science competition
18 October 2011

Alaska Sea Grant Marine Advisory Program to bring popular fishing vessel refrigeration workshop to Kodiak
31 October 2011

Alaska Young Fishermen's Summit deals on hotels and scholarships for travel and lodging expire soon!
9 January 2012

APPLY NOW! Sea Grant Knauss Marine Policy Fellowship like "rocket fuel" for career
9 January 2012

Sea Grant ID's right whale off Kodiak
9 January 2012

Ocean acidification publication from Alaska Sea Grant
9 February 2012

Alaska Sea Grant wins awards
23 February 2012

Alaska Sea Grant book wins Alaska Library Association's Alaskana Award
24 February 2012

March coastal events roundup
01 March 2012

Fishing vessel refrigeration training coming to Homer on March 27
02 March 2012

Alaska Sea Grant announces new marine research projects
22 March 2012

MAP shares Alaska Forum award for Aleutian toxin monitoring
22 March 2012

UA developing workforce training plan for Alaska fisheries, seafood and maritime industries
18 April 2012

Alaska Sea Grant–Funded Graduate Students October 2011-September 2012

Currently funded students

Student	Maj. professor	Deg.	Focus area	Thesis title
Sean Brennan	Wooller	PhD	Oceanography	Evaluating the Use of Strontium Isotopes (87Sr/86Sr) to Track Fish Migrations and Population Structure of Chinook Salmon *(Oncorhynchus tshawytscha)* in the Nushagak River
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
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
Melissa Johnson	Reynolds	PhD	Oceanography	Research on Benthic Habitat in Kachemak Bay
Christopher Manhard	Gharrett	MS	Fisheries	A Test of Local Adaptation in Hybridized Pink Salmon *(Oncorhynchus gorbuscha)*
Jennifer Stoutamore	Tallmon	MS	Fisheries	Spatial and Population Genetics of Blue King Crab *Paralithodes platypus*
Rachael Wadsworth	Criddle	MS	Fisheries	Incorporating Stakeholder Input into Research Priorities for the Aleutian Islands

Recent graduates

Huseyin Biceroglu	Smiley	MS	Interdisciplinary Studies/ Seafood Science and Nutrition	Biochemical and Microbiological Assessments of Dried Alaska Pink Salmon, Red Salmon and Pacific Cod Heads
Ben Daly	Eckert	PhD	Fisheries	Red King Crab *(Paralithodes camtschaticus)* Hatchery Culture and Ecological Requirements: Applications for Stock Enhancements
Lale Gurer	Fong	MS	Food Science and Human Nutrition	Value Adding to Pink and Chum Salmon Fillets
Corrine Hicken	Stekoll	MS	Fisheries	Delayed Effects of Oil Exposure on Fish
Peter-John Hulson	Quinn	PhD	Fisheries	Dealing with Uncertainties in Integrated Age-Structured Assessment Models
Naim Montazeri	Himelbloom	MS	Seafood Science	Refined Liquid Smoke: A Potential Antilisterial Supplement to Cold-Smoked Sockeye Salmon *(Oncorhynchus nerka)*
Janelle Mueller	Mueter	MS	Fisheries	Effects of the Age-Composition of Spawning Sockeye Salmon on Future Returns of Sockeye Salmon to Bristol Bay, Alaska
Dion Oxman	Gharrett	PhD	Fisheries	Genetic and Environmental Effects on Developmental Timing, Otolith Formation and Gill Raker Development in Pink Salmon from Auke Creek, Alaska
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

Alaska Sea Grant Funding Sources, October 2011-September 2012

Base program funding		
NOAA National Sea Grant Office	Sea Grant Core Funding	1,507,000
UAF School of Fisheries and Ocean Sciences	State Operating and Match Funds	2,496,200
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 Nonidigenous 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
NOAA NSGO	Sea Grant Climate Adaptation 2011: Shaktoolik Alaska—Climate Change Adaptation for an At-Risk Community	99,984
NOAA NSGO	Alaska Sea Grant Community Environmental Hazard Response Resources: Online Information and Training	59,990
NOAA NSGO	Responding to Whale Entanglement: Advice and Updates for Alaskan Fishermen	11,198
Federal agencies		
Marine Mammal Commission	Book production for Marine Mammal Guidelines, Bering Strait Region, Alaska	26,380
National Science Foundation	COSEE Alaska: People in a Changing Climate	100,000
NOAA	Book Production for Field guide to Cods, Grenadiers, and Other Fishes	14,839
NOAA Alaska Fisheries Science Center	Support for 2013 Wakefield Fisheries Symposium	10,000
NOAA Climate Monitoring and Diagnostics Laboratory	Partnerships to Increase Coastal Alaskan, Particularly Alaska Native Student, Participation in NOAA-Related Marine and Fisheries Sciences	27,557
NOAA NMFS	Arctic Region Coordination Workshop	80,027
U.S. Arctic Research Commission	Support for 2013 Wakefield Fisheries Symposium	5,000
U.S. Department of Agriculture	Trade Adjustment Assistance Program Delivery for Alaska Shrimp Fleet	80,668
State and local governments		
North Slope Borough	Bowhead Whale Feeding in the Western Beaufort Sea	64,000
North Slope Borough	Quantification of Ship Strike and Line Entanglement from Examinations of Harvested Bowhead Whales	22,653
Nongovernmental agencies		
Kawerak Inc.	Inalit Traditional Knowledge of Walrus in the Bering Strait	18,929
North Pacific Fishery Management Council	Support for 2013 Wakefield Fisheries Symposium	7,500
Industry and business		
Howe Corporation	Shelf Life Extension of Seafoods in Retail Display Cases	99,431
International organizations		
Pacific Salmon Commission	K-12 Educators to Support Yukon River Salmon Stewardship in Rural Alaska	32,966
Research organizations		
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	Evaluation of the Abraxis Saxitoxin Enzyme-Linked Immunosorbent Assay (ELISA) for Testing Subsistence Alaska Shellfish	193,223
North Pacific Research Board	Pacific Marine Arctic Regional Synthesis (PacMARS)	173,160
Pollock Conservation Cooperative Research Center	Alaska Seafood Industry K-12 Curriculum	40,219
Pollock Conservation Cooperative Research Center	Book production for Fishing for Pollock in a Sea of Change: A Historical Analysis of the Bering Sea Pollock Fishery	20,800
Income accounts		
Publication Income		113,000
Workshops Income		87,085
Total funding		**6,436,219**

Alaska Sea Grant Directory

ADMINISTRATION

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

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	Interim MAP Leader/Marine Advisory Agent, Cordova
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
Sunny Rice	Marine Advisory Agent, Petersburg
Gay Sheffield	Marine Advisory Agent, Nome
Marilyn Sigman	Marine Education Specialist, Anchorage
Briana Witteveen	Marine Mammal Specialist, 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

alaskaseagrant.org

AK-ADMIN-80