

# Alaska Sea Grant

2015-2016

ANNUAL REPORT



# Letter from THE DIRECTOR

*Dear Friends,*

Rapid changes to Alaska's environment and economy are challenging our coastal communities. This year, Alaska Sea Grant recruited a coastal community resilience specialist supported through a collaborative partnership with the Alaska Ocean Observing System, the Alaska Center for Climate Assessment and Policy, National Sea Grant, the NOAA Climate Office, the National Ocean Service, and the National Weather Service. Davin Holen is working with tribes and communities on climate change adaptation and partnering with other Sea Grant coastal resilience specialists around the country. We appreciate this creative partnership.

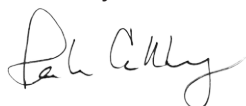
Alaska Sea Grant partnered with the Southwest Alaska Municipal Conference to launch an Alaska Manufacturing Extension Partnership (MEP). Funded by the US Department of Commerce, there is a MEP in every state designed to support small and mid-sized manufacturers. In Alaska, seafood dominates manufacturing and our partnership with SWAMC enables us to support training and technical assistance based at the Kodiak Seafood and Marine Science Center, led by Chris Sannito and Quentin Fong. Over 175 seafood processors statewide received training and assistance this year. It is the first partnership in the nation between a Sea Grant program and a MEP.

As the state works to diversify its economy, Alaska Sea Grant supports maximizing the value of our natural resources to Alaskans. This year, we have encouraged local access to fisheries, provided leadership and professional training for our next generation, and encouraged economic diversification. Mariculture has potential for growth and Alaska Sea Grant has stepped up, funneling national funds for extension and research as well as supporting the Alaska Mariculture Task Force.

Two longtime communications staff, Deborah Mercy and Carol Kaynor, retired this year and program manager Adie Callahan started a new career path. We welcomed Tara Borland as our program manager, and our new communications manager will start in early December.

In this report, we share examples of our work from fall 2015 through summer 2016, made possible through the support of NOAA National Sea Grant, the University of Alaska Fairbanks, our strong Advisory Committee, and many partnerships across the state and nation.

Sincerely,



Paula Cullenberg, Director  
Alaska Sea Grant



## Vision

Alaska will sustain its vibrant marine, coastal, and watershed ecosystems, with strong coastal communities and people who make decisions using science-based and traditional knowledge for the social and economic benefit of all Alaskans.

## Mission

Alaska Sea Grant's mission is to enhance the wise use and conservation of Alaska's marine, coastal, and watershed resources through research, education, and extension.



## Alaska Sea Grant Advisory Committee

**James Balsiger** ALASKA REGIONAL ADMINISTRATOR  
NOAA NATIONAL MARINE FISHERIES SERVICE

**Steve Borell** CONSULTANT  
BORELL CONSULTING SERVICES LLC

**Kaja Brix (alternate)** ASSISTANT REGIONAL ADMINISTRATOR,  
PROTECTED RESOURCES DIVISION  
NOAA FISHERIES ALASKA REGION

**Peggy Cowan** RETIRED SUPERINTENDENT  
NORTH SLOPE BOROUGH SCHOOL DISTRICT

**Pete Esquiro** RETIRED  
NORTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION

**Kelly Harrell** EXECUTIVE DIRECTOR  
ALASKA MARINE CONSERVATION COUNCIL

**Lea Klingert** PRESIDENT  
COMMERCIAL FISHING AND AGRICULTURE BANK

**Jennifer Lincoln** DIRECTOR  
ALASKA PACIFIC OFFICE  
NIOSH DIVISION OF SAFETY RESEARCH

**Molly McCammon** EXECUTIVE DIRECTOR  
ALASKA OCEAN OBSERVING SYSTEM

**Vera Metcalf** DIRECTOR  
ESKIMO WALRUS COMMISSION

**Henry Mitchell** FISHERIES CONSULTANT

**Kris Norosz** GOVERNMENT AFFAIRS DIRECTOR  
ICICLE SEAFOODS

**Daniel O'Hara** FORMER MAYOR  
BRISTOL BAY BOROUGH

**Amanda Painter** OPERATIONS MANAGER  
ALLEN MARINE TOURS

**Mary Pete** Director, KUSKOKWIM CAMPUS  
UNIVERSITY OF ALASKA FAIRBANKS

**Alice Ruby** MAYOR  
DILLINGHAM

**Ralph Samuels** VICE PRESIDENT OF GOVERNMENT  
AND COMMUNITY RELATIONS  
PRINCESS CRUISES/HOLLAND AMERICA

**Fred Schlutt** DIRECTOR  
COOPERATIVE EXTENSION SERVICE  
UNIVERSITY OF ALASKA FAIRBANKS

**John Shively** EXECUTIVE COMMITTEE MEMBER  
RESOURCE DEVELOPMENT COUNCIL

**Christopher Siddon** MARINE FISHERIES SPECIALIST  
ALASKA DEPARTMENT OF FISH AND GAME

**Jeffrey Stephan** MANAGER  
UNITED FISHERMEN'S MARKETING ASSOCIATION

**Dave Witherell** DEPUTY DIRECTOR  
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

# Healthy Coastal Ecosystems

For millennia, humans have used seasonally abundant natural resources on Alaska's coast to meet their subsistence, cultural, and economic needs. Today, our coastal ecosystems face unprecedented challenges. Alaska Sea Grant supports research and education aimed at maintaining our healthy coastal ecosystems.

## Understanding marine mammal health in Alaska

Marine Advisory agents and specialists contributed to a better understanding of the health of marine mammal populations in Alaska by responding to die-offs of large whales, documenting harmful algae toxins, and collecting data on an orca-killed Steller sea lion.

In May 2015, marine mammal specialists Kate Wynne and Bree Witteveen responded to several dead fin whales near Kodiak. Wynne and Witteveen contacted other scientists and for several months documented the carcasses and pursued possible causes for the deaths. Kodiak agent Julie Matweyou coordinated testing for presence of harmful algal bloom toxins. By the end of 2015, 45 large whale strandings had been recorded in the western Gulf of Alaska, nine times the total for 2014. In August 2015, NOAA declared the whale deaths to be an [Unusual Mortality Event](#) and appointed Witteveen the UME coordinator. A year later, UME researchers were relieved that no replication of whale deaths had occurred.

The recently discovered presence of domoic acid and saxitoxin in marine mammals living in the US Arctic has important implications because it might impact the health and population size of whales and walrus harvested locally throughout northern and western Alaska. Nome Marine Advisory agent Gay Sheffield and 14 coauthors published an article documenting this discovery in the journal *Harmful Algae*. Sheffield provided samples for the study from ice seals harvested for subsistence or stranded dead in the Bering Strait region. At Sheffield's request, the information has been shared with nearby Russian communities that hunt in the same region.

In Ketchikan, agent Gary Freitag performed a necropsy on a Steller sea lion killed by a pod of orca whales. This is the first time in the United States that biologists have had access to a fresh orca-killed Steller sea lion—this one landed on the beach out of the orcas' reach.

Alaska Sea Grant Marine Advisory agents who respond regularly to stranded marine mammals and contribute to the NOAA stranding database include Freitag, Sheffield, Melissa Good in Unalaska, Sunny Rice in Petersburg, and Kate Wynne (professor emeritus) based in Juneau.



## Studying estuaries and fishes

The health of marine ecosystems is intricately tied to estuaries, which provide habitat for juvenile fishes at the interface of land and sea. Alaska Sea Grant-funded researcher Anne Beaudreau and University of Alaska Fairbanks graduate students Douglas Duncan and Emily Whitney are studying feeding, growth, and survival of fishes in Southeast Alaska estuaries.

Whitney, who earned an MS in fisheries in August 2016, studied how fish diets differ among estuaries in watersheds with and without runoff from glaciers. Understanding the effect of glacier melt on estuary ecosystems is important because 95% of the glaciers

in Southeast Alaska are thinning or retreating. As the glaciers continue to melt, this understanding will help researchers evaluate how estuary habitat and community composition are likely to change.

Duncan is studying predation on salmon smolts newly released from a hatchery near Juneau. This work will provide insight into where and when juvenile salmon are at greatest risk of predation. Results will inform hatchery release strategies to reduce predation risk to smolts.

Beaudreau's estuarine research is funded by Alaska Sea Grant in partnership with the Douglas Island Pink and Chum hatchery and the National Science Foundation through the Alaska Experimental Program to Stimulate Competitive Research (EPSCoR).



# Sustainable Fisheries and Aquaculture

Alaskans depend on the harvest of fish, shellfish, and other marine resources for food and to support the economy. Alaska Sea Grant plays a leadership role in developing innovative technologies for fishing, aquaculture, seafood processing, and consumer safety to ensure a safe and sustainable supply of seafood products.

## Investing in seaweed culture and shellfish culture and enhancement, to grow Alaska's economy

With edible kelp driving a \$5 billion industry worldwide, Alaska shellfish farmers are exploring seaweed as a new product in their industry. In December 2015 about 40 farmers learned about kelp growing methods, markets, and biology at a workshop offered by the Alaska Shellfish Growers Association and supported by Alaska Sea Grant.

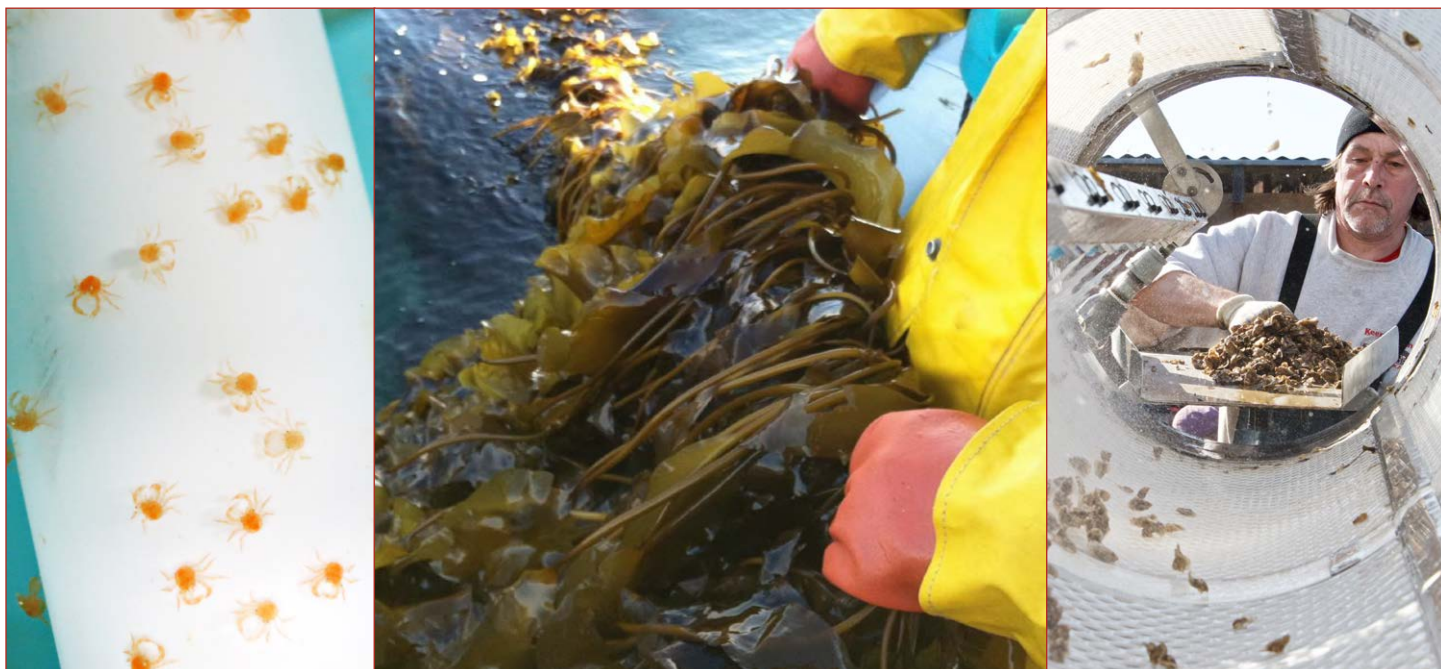
Nine Alaska shellfish farmers in Southeast and Southcentral Alaska are participating in a pilot project to cultivate seaweed with support from Alaska Sea Grant through NOAA–National Sea Grant funding. In summer 2016 Marine Advisory agent Gary Freitag helped contractor Pacific Shellfish Institute distribute floating gear and equipment to the farms. Other partners are contractor Carter Newell, a shellfish farmer from Maine; the Alaska Shellfish Growers Association; and OceansAlaska.

In fall 2016, University of Alaska Southeast researcher Michael Stekoll was awarded National Sea Grant Aquaculture program funding for a two-year project to address questions about cultivating kelp at higher latitudes.

The Alaska King Crab Research, Rehabilitation and Biology (AKCRRAB) program, now 10 years old, is an Alaska Sea Grant partnership with fishermen's groups, coastal communities, and agencies that is evaluating the feasibility of culturing red and blue king crab in a hatchery to enhance depleted wild stocks. Communication of successful research results and progress via newsletters, media, websites, presentations, and 28 peer-reviewed publications provided support in testimony for January 2016 legislation for shellfish enhancement introduced by Governor Bill Walker. The bill was held over until next session.

In February 2016 Governor Walker established the Alaska Mariculture Task Force and named Paula Cullenberg, Alaska Sea Grant director, as one of its 11 members. The goal is to build the shellfish and sea plant farming economy in coastal communities.

Alaska Sea Grant has invested over \$3 million in support of shellfish aquaculture, salmon hatchery research, shellfish enhancement, and now seaweed culture in the last 10 years, through research, extension, and student fellowships.



## Alaska Sea Grant seafood specialists approve local food manufacturers' methods in service to state

Seafood and other food processors in Alaska add value to resources and provide economic diversity in coastal communities across the state. In 2015 the Alaska Department of Environmental Conservation formally recognized that Marine Advisory seafood specialists

Chris Sannito and Brian Himelbloom serve as “process authorities,” and can evaluate processing methods and provide an approval letter to a company stating their process is effective and will result in safe food. Companies need the letter to satisfy Alaska DEC and US Food and Drug Administration requirements before they can sell their food to the public. Alaska DEC said the Kodiak Seafood and Marine Science Center (University of Alaska Fairbanks), where the specialists do their work, is a valuable resource to the Alaska food processing industry and to the many consumers who are kept safe by the training in safe food processes that it facilitates.

Over the last year, Sannito and Himelbloom have worked with at least 11 Alaska companies to develop and approve their process techniques. For example, they have considered a company's ingredients, cooker volume, batch temperatures, and packaging, and they have used equipment in the company's kitchen to test times and temperatures for effectiveness. In addition to seafood, they have helped processors with shelf-stable marinade, syrup, and sauce products.

Sannito and Himelbloom fill a longstanding role provided in the past by Chuck Crapo and Alex Oliveira, former Marine Advisory seafood experts.



# Resilient Communities and Economies

High energy costs, climate change, economic resiliency, extractive resource development, water safety, and food security and safety are all issues of concern to Alaska's coastal residents, who make up more than 70 percent of the state's population. Alaska Sea Grant works to increase the resilience of Alaska coastal communities by strengthening marine economic sectors while addressing physical well-being and social values.



## Supporting Alaska's fishing industry

Fish and shellfish harvested off of Alaska make up over 60% of all seafood harvested in the United States. The 2014 harvest of 5.7 billion pounds had a total ex-vessel value of \$1.9 billion. We focus on sustaining the resource and supporting Alaska harvesters through research on stocks and management, and education and outreach on business management, safety, and health.

## Sustaining Alaska's fisheries resources

Alaska Sea Grant-funded research contributes new knowledge to support fisheries management in a changing environment. Among current projects:

- Long-term records and effects of climate change on Alaska Peninsula sockeye salmon
- Impacts of marine fish predators on juvenile salmon in Southeast Alaska
- How variations in fishing vessel trips can serve as a proxy for shifting stocks
- Early detection tools to track abrupt ecosystem change and decreased ecological resilience in groundfish and crustaceans
- State vs. federal management regimes for inshore groundfish
- Using isotope analysis to determine stream of origin for stock assessment

## Ensuring access to Alaska's fisheries

Loss of permits and quota compounded by fewer young fishermen is a critical concern for Alaska's coastal economies. The 2016 workshop, "[Fisheries Access for Alaska: Charting the Future](#)," organized by Alaska Sea Grant and partners, addressed state policy and potential solutions to the loss of permits from rural Alaska. "The topic of this meeting is one of the most important public policy matters to pursue today," said Alaska Lt. Governor Byron Mallott to 100 attendees.

Research project "[Graying of the Fleet in Alaska's Fisheries: Defining the Problem and Assessing Alternatives](#)" has identified the high cost of entry, limited opportunities to get started fishing, and juggling the fishing work schedule with other employment as key factors that deter young fishermen from entering the Alaska commercial fishing industry.

## Providing skill training and resources to fishermen

The [improved FishBiz website](#) provides business tools for commercial fishermen who are considering entering, expanding, or leaving the industry. Fishermen in Alaska and nationwide learn from web tutorials and spreadsheets how to decrease costs and increase catch value, and about the economic sustainability of fisheries.

In 2015 and 2016, we held fishing vessel drill conductor training in two communities and outboard engine repair in three communities to enhance the skills of harvesters.



## A new face to work with communities to address coastal resilience

Alaska's coastline, communities, and resources are experiencing rapid change. Through a creative partnership with seven funders, we hired a new Marine Advisory faculty specialist this year with expertise in coastal community resilience. Davin Holen, an anthropologist with a long history of work in rural Alaska, joined the Marine Advisory faculty in early 2016. His position is funded cooperatively by Alaska Sea Grant; the Alaska Ocean Observing System; NOAA's Climate Program, Coastal Management Program, and Weather Service; National Sea Grant; and the Alaska Center for Climate Assessment and Policy (University of Alaska Fairbanks).

Holen has built partnerships this year with the Nome Eskimo Community, the Central Council of Tlingit and Haida, the Sitka Tribe, the Aleutian Island/Bering Sea



LCC, and the US Forest Service. He has met with local residents to encourage dialogue about strategies to adapt to climate change impacts.

A 2016 workshop organized by Holen highlighted science and monitoring activities for culturally important resources identified by Southeast Alaska tribes—salmon, yellow cedar, berries, shellfish, and cultural sites. About 80 participants

helped draft a plan for mitigation, monitoring, and adaptation strategies to be undertaken by tribes in the next year. The next step is to plan for a 2–3 generation time span, followed by plans that would carry to the end of the century.

## Pioneering health research on commercial fishermen

In the commercial fishing industry, long hours, repetitive physical work, fatigue, and cold conditions all contribute to health issues that have not been well documented or understood.

Cordova Marine Advisory agent Torie Baker was the key connection between researchers and fishermen for a 2015 pilot study that documented health habits and chronic health challenges in the industry.

Baker assisted researchers at the University of Washington School of Public Health in testing health monitoring equipment, developing and administering an online health survey, and recruiting volunteers for in-season physical exams. She staffed a booth at the

Cordova Community Health Fair, attended by 260 people; collected completed surveys; and distributed activity trackers to fisherman volunteers. As a result of her efforts, nearly 100 commercial salmon fishermen participated in the study.

Researchers found a prevalence of shoulder rotator cuff injuries, significant levels of sleep apnea (thus further compounding safety concerns related to fatigue management), and widespread evidence of noise-induced, non aging-related hearing loss. Both during and after the project, Baker connected researchers with local health care providers and facilitated a return visit by investigators to present results to the community. Interest in continuing health investigations is high among the research team, funders, and the local fishing community. The project was funded by the National Institute of Occupational Health and Safety (NIOSH).



# Environmental Literacy and Workforce Development

The need for current information based on research and traditional local knowledge is becoming more urgent for Alaskans. Alaska Sea Grant serves as an important conduit for transmitting information about the marine and coastal environment to Alaskans and visitors alike. Alaska Sea Grant's role in workforce development includes both training and career awareness, and leadership in bringing employers, educators, and stakeholders together to identify and act on workforce strategies.

## K–12 students get their feet wet and learn about Alaska Seas and Watersheds

Alaska Sea Grant expanded the Alaska Seas and Watersheds school grants during the 2015–2016 school year from three coastal communities (Anchorage, Dillingham, Yakutat) to ten, adding Juneau District, Stedman Elementary in Petersburg, Unalaska Elementary and Middle Schools, Mt. Eccles Elementary and the junior and senior high school in Cordova, Naukati and Coffman Cove Schools in the Southeast Island School District, and Hydaburg School.

One hundred and twenty-five K–12 teachers in Anchorage, Petersburg, Cordova, and Unalaska received professional development, which in turn increased classroom instruction about Alaska's seas and watersheds and student participation in field trips. Forty-three teachers in schools receiving grants led Sea Week field trips for more than 1,000 students in spring 2016.

For the first time, Alaska Sea Grant sponsored an online "Get Your Feet Wet" education event. Sixty-two teachers



in 24 communities registered classes and described their plans for field trips in spring 2016, involving about 1,200 students. Teachers received a Sea Grant poster, links to education resources including webinars on salmon and sea otter ecology, and a certificate of recognition for their class.

Coming up this school year will be partnerships with schools in seven more communities—four in the Kenai Peninsula Borough (McNeil Canyon Elementary in Homer and Ninilchik, Razdolna and Kachemak Selo Schools) and three in Chugach District (Tatitlek, Chenega Bay, and Whittier Schools).

## Alaska Sea Grant Marine Advisory agents engage K–12 students locally

The Dockside Discovery program in Unalaska finished its seventh year, led by Marine Advisory agent Melissa Good—172 students toured the harbor to learn how marine life supports the community and families.



Kodiak Marine Advisory agent Julie Matweyou continues to engage students in paralytic shellfish poisoning education, and shellfish collection and testing, to encourage safe harvest of shellfish resources. Eighty-five middle school students participated this year.

Seven Ketchikan high school students were trained by agent Gary Freitag on research vessel operations and other maritime skills. During a cruise Freitag showed the students real-time images of marine debris on the seafloor via a remotely operated vehicle (ROV).

Melissa Good and Petersburg agent Sunny Rice continued coaching local National Ocean Science Bowl teams. NOSB in Alaska brings together 20 teams from across the state, sponsored by the University of Alaska Fairbanks College of Fisheries and Ocean Sciences and Alaska Sea Grant.

## Building leadership and capacity in Alaska's maritime economy

Building leadership skills to add capacity to Alaska's maritime workforce has for decades been a role filled by Alaska Sea Grant.



### Alaska Seafood Processing Leadership Institute

In the [Alaska Maritime Workforce Development Plan](#), seafood processing companies identified plant managers, production managers, and quality control managers as high-need occupations.

We held the [5th Alaska Seafood Processing Leadership Institute](#) for 18 mid-level managers, who were identified by nine companies as having leadership skills worth investing in. The 80-hour program provided technical training and leadership and management skills. When asked how they would use the ASPLI leadership session, one participant said, "Daily, in every meeting and on the processing floor." All participants said they would "very strongly" recommend ASPLI to others.



Over the past 10 years more than 70 seafood processing professionals from 24 companies have participated in ASPLI. Many graduates are current plant managers in Ketchikan, Unalaska, Homer, Nome, and Unalakleet. ASPLI is supported by industry-paid tuition and University of Alaska technical vocational education funds.

### Alaska Young Fishermen's Summit

Over 70 commercial fishermen attended the [6th Alaska Young Fishermen's Summit](#) in Juneau in 2016 to learn best practices for building a strong modern fishing business and network with industry peers and leaders. The summit is tailored to new fishermen who have been running their fishing business for at least five years.

"Hearing from the 46 presenters and having the opportunity to speak with our legislators have been extremely helpful. There is no way to replace an experience like this," said one attendee. Participants interacted with leaders in finance, marketing, and fisheries policy, as well as Summit alumni. Governor Walker addressed the group, which was a Summit first.

Hosting the Summit in Juneau also enabled participant exposure to the Alaska State Legislature. "The Alaska Young Fishermen's Summit is all about building future leaders in coastal Alaska," said Representative Bryce Edgmon from Dillingham.



### High-demand training for seafood processing workforce

Alaska Sea Grant continues to respond to industry demand by expanding our seafood processing training. From September 2015 to September 2016, a total of 174 participants attended 10 seafood classes in smoked seafood, HACCP, seafood processing leadership, better process control, sanitation procedures, and roe processing. Trainings were held in Anchorage, Kodiak, and Petersburg.

# Alaska Sea Grant Fellows

## Three state fellows begin 2016 positions

Three new Alaska Sea Grant State Fellows—Sarah Apsens, Jane Sullivan, and Jennifer Marsh—are already at work gaining professional experience in marine policy. All are fisheries graduate students at the University of Alaska Fairbanks College of Fisheries and Ocean Sciences.

The Alaska Sea Grant State Fellowship, launched in 2015, offers soon-to-graduate or recently finished graduate students the opportunity to begin their careers in marine and coastal policy. The program matches fellows with hosts in state or federal agencies in Alaska for a 12-month paid fellowship. Alaska Sea Grant shares the cost of the fellow stipends with the agency hosts.

MS student Sarah Apsens is a fish biologist at the National Park Service in Anchorage. She will be contributing to the development of a long-term monitoring protocol for lagoons in western arctic park lands. The National Park Service is a new host this year.



*Sarah Apsens*

Jane Sullivan, who recently earned her MS in fisheries, is a fishery analyst with the NOAA Sustainable Fisheries Division in Juneau. She will work on the Observer Program annual deployment plan, looking at bycatch and creating interactive graphics.



*Jane Sullivan*

Jen Marsh, PhD student, is a fisheries biologist at the NOAA Fisheries Habitat Conservation Division in Anchorage. Her focus will be on identifying and conserving essential fish habitat through environmental analyses, to update national guidance policies.



*Jennifer Marsh*

In its second year, the fellowship has grown from two students to three. First-year fellow Matt Robinson, who worked for the North Pacific Fishery Management Council, was recently hired by the Bristol Bay Economic Development Corporation. Marysia Szymkowiak spent a year working for NMFS Sustainable Fisheries and is currently working as a contractor for the North Pacific Fishery Management Council.

## Two Alaska students awarded marine policy fellowships in DC

Kelly Cates and Charlotte Regula-Whitefield, graduate students at the University of Alaska Fairbanks, will be heading to Washington, DC, in February 2017 as Sea Grant Knauss Fellows.

The two Alaskans are in a select group of 65 fellows nominated by Sea Grant programs around the country. The one-year fellowship provides an opportunity to work on marine resources and national marine policy issues as a first step toward launching their careers. The 2016 Alaska Sea Grant Knauss Fellow, Erin Shew, is currently working at the White House Center for Environmental Quality.



*Kelly Cates*

Cates, a master's student in fisheries at the College of Fisheries and Ocean Sciences, has been studying humpback whales to create baseline data for future management decisions. Regula-Whitefield, a fisheries PhD student at CFOS, helped establish a sea cucumber aquaculture program that developed into a larger working group for Alaska and Washington, the first of its kind in both states.

Cates and Regula-Whitefield will join other fellows in the capital in November 2016 for interviews and placement. Cates is interested in working in the executive branch of the federal government, and Regula-Whitefield will be headed to the legislative side.



*Charlotte Regula-Whitefield*

# Students Working on Alaska Sea Grant Projects

Alaska Sea Grant places a strong emphasis on training the next generation of scientists and marine resource professionals. Our research funding provides opportunities for graduate students—many of whom leverage funding from other sources—to obtain advanced degrees in a variety of fields. The following graduate students worked on Alaska Sea Grant-funded research projects during 2015 and 2016.

**Asia Beder** MS FISHERIES (GRADUATED)

*Nutrition and Condition of Red King Crab Larvae: Enhancement of King Crabs to Improve Sustainability of Alaskan Coastal Communities*

**Amanda Blackburn** MS OCEANOGRAPHY

*Application of Seafloor Geology to Benthic Habitat Research*

**Richard Buzard** MS GEOLOGY

*Developing Long-Term Records of Sea Level Fluctuations and Barrier Beach Evolution to Enhance Understanding of Ongoing and Future Coastal Change*

**Ellen Chenoweth** PHD FISHERIES

*Recovering Humpback Whales and the Future of Alaska's Hatcheries, Fisheries and Coastal Communities*

**Jesse Coleman** PHD FISHERIES

*Graying of the Fleet in Alaska's Fisheries: Defining the Problem and Assessing Alternatives*

**Douglas Duncan** MS FISHERIES

*Navigating the Predator Gauntlet: Impacts of Nearshore Marine Fishes on Hatchery and Wild Juvenile Salmon in Southeast Alaska*

**Thomas Farrugia** PHD FISHERIES (KNAUSS FELLOW 2015–16)

*Economic Viability of a Directed Skate Fishery in the Gulf of Alaska*

**Zachary Hoyt** PHD FISHERIES (GRADUATED)

*Impacts of Sea Otter Recolonization on Marine Resources and Coastal Communities in Southern Southeast Alaska*

**Sonia Ibarra** PHD FISHERIES

*Sustainability of Coastal Communities and Sea Otters: Harvest and Future Management of Sea Otters*

**Jillian Jablonski** MS INTERDISCIPLINARY

*Incorporating Environmental Change in Planning for Healthy Coastal Ecosystems and Economies*

**Wendel Raymond** PHD FISHERIES

*Sustainability of Coastal Communities and Sea Otters: Harvest and Future Management of Sea Otters*

**Marta Ree** MS FISHERIES

*Exploring Linkages Between Marine and Freshwater Ecosystems to Predict Sockeye Salmon Responses to Climate Change and to Inform Enhancement Options on Kodiak Island, Alaska*

**Alicia Rinaldi** MS FISHERIES

*Assessing the Costs and Benefits of Whale Watching in Juneau, Alaska*

**Danielle Ringer** MA INTERDISCIPLINARY

*Graying of the Fleet in Alaska's Fisheries: Defining the Problem and Assessing Alternatives*

**Sarah Traiger** PHD MARINE BIOLOGY

*Habitat Degradation Due to Melting Glaciers: Effects of Glacial Discharge on Kelp Bed Community Recruitment and Succession in Kachemak Bay*

**Jordan Watson** PHD FISHERIES

*Capturing Spatial Behaviors of Observed and Unobserved Fishing Over Time Using Vessel Monitoring System Data*

**Emily Whitney** MS FISHERIES (GRADUATED)

*Tracking Energy Flow to Fishes in Glacially Influenced Estuaries of Southeast Alaska*

**Benjamin Williams** PHD FISHERIES

*Parallel and Divergent Fishery Management Structures in State and Federal Waters*



# Snapshots from 2016–2018 research projects

**Coastal erosion** is anticipated to increase in coming years. For the project [“Bristol Bay Residents Taking a Stake in Shoreline Erosion Monitoring,”](#) researchers are working with participants from 13 Bristol Bay communities to monitor erosion using time-lapse cameras that take photographs of stakes. Analysis of repeat photos will detect shoreline change, yielding data that can be used by communities for mitigation or adaptation strategies. The project is led by the Alaska Division of Geological and Geophysical Surveys, Alaska Sea Grant Marine Advisory Program, and Bristol Bay Native Association.



**Estuaries provide critical habitat** for marine fishes, birds, and other animals but are vulnerable to multiple human-introduced stressors. [“Incorporating Environmental Change in Planning for Healthy Coastal Ecosystems and Economies”](#) investigates Copper River Delta waterbird distribution and breeding success, in response to the aquatic invasive plant *Elodea canadensis* and temperature increases associated with climate change. The results will improve Alaska’s capacity for science-based climate change adaptation. Researchers from the University of Alaska Anchorage, Loyola University of Chicago, and University of Notre Dame lead the project.

**Humpback whale populations** in Alaska are increasing alongside a fast-growing whale watching industry. [“Assessing the Costs and Benefits of Whale Watching in Juneau, Alaska”](#) will help to foster a mutually beneficial industry for tour operators, local communities, whales, and coastal ecosystems. Here Ali Rinaldi, University of Alaska Fairbanks fisheries MS student, uses a theodolite (a surveying instrument with a rotating telescope) to track humpback whales in the presence and absence of whale watch vessels. The project is led by researchers at the University of Alaska Southeast and University of Alaska Fairbanks.



**The economic sustainability** of fishery management structures is of utmost importance to the Alaska fishing industry, communities, and stakeholders. [“Parallel and Divergent Fishery Management Structures in State and Federal Waters”](#) investigates economic impacts from potential pollock fishery management scenarios. Here graduate student Benjamin Williams speaks at the ComFish Alaska trade show where he gathered stakeholder input. Researchers at the University of Alaska Fairbanks and Alaska Department of Fish and Game lead the project.

# 2015–2016 Alaska Sea Grant by the Numbers



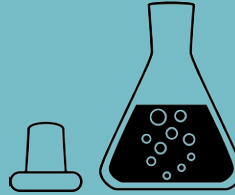
**1,600**

K–12 students and 133 educators learned from marine education programs



**18**

graduate students worked on Alaska Sea Grant-funded research projects



**5**

were employed this year in their field

**330**

fishermen and seafood processors trained in safety, product development, and technology to improve their business



**363**

jobs were sustained or created



**87**

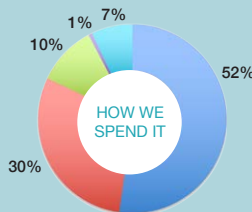
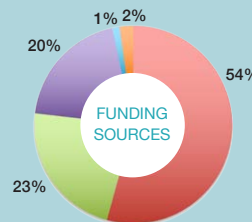
businesses were sustained or created

## Funding sources

ASG core funds <i>federal and match</i>	\$3,123,744
University of Alaska funds	\$1,295,355
Grants	\$1,136,700
Donations <i>cash and in-kind</i>	\$73,274
Program income <i>publications, workshops</i>	\$127,662

## Expenditures

Marine Advisory Program/communications	\$3,031,747
Research and student fellowships	\$1,727,335
Education and state fellows	\$597,586
Program development	\$37,521
Program administration	\$409,906



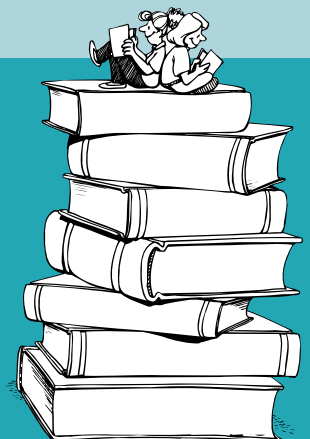
**167**

local, tribal, state, federal, international, NGO, industry, academic, and government partners worked with Alaska Sea Grant



**15,000**

books, brochures, newsletters, and journal articles were distributed around the state and world





# Alaska Sea Grant Directory

## Program Management

**Paula Cullenberg**, Director  
**Tara Borland**, Program Manager  
**Beverly Bradley**, Marine Advisory Program Manager  
**Jared Jeffrey**, Fiscal Coordinator  
**Astrid Rose**, Program Assistant  
**Terri Schimmack**, Administrative Assistant

## Research

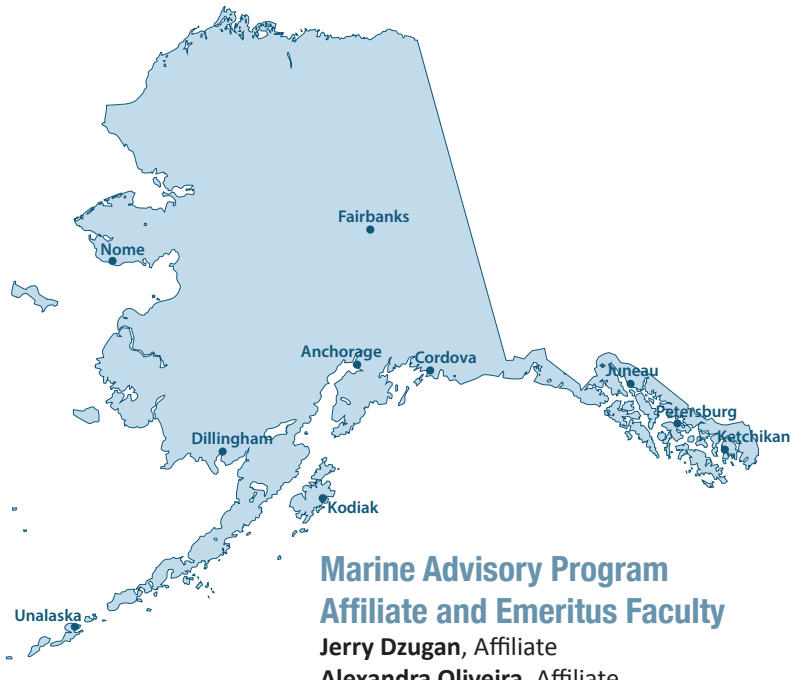
**Ginny Eckert**, Associate Director for Research  
**Michele Frandsen**, Research Coordinator

## Education and Communications

**Carol Kaynor**, Communications Coordinator  
**Sue Keller**, Publications Manager/Symposium Coordinator  
**Dawn Montano**, Publications Specialist  
**Dave Partee**, Communications and Web/Database Developer  
**Marilyn Sigman**, Marine Education Specialist

## Marine Advisory Program

**Sunny Rice**, Program Leader/Marine Advisory Agent, Petersburg  
**Torie Baker**, Associate Leader/Marine Advisory Agent, Cordova  
**Gabe Dunham**, Marine Advisory Agent, Dillingham  
**Quentin Fong**, Seafood Marketing Specialist, Kodiak  
**Gary Freitag**, Marine Advisory Agent, Ketchikan  
**Melissa Good**, Marine Advisory Agent, Unalaska  
**Brian Himelbloom**, Seafood Specialist, Kodiak  
**Davin Holen**, Coastal Community Resilience Specialist, Anchorage  
**Terry Johnson**, Marine Recreation and Tourism Specialist, Anchorage  
**Julie Matweyou**, Marine Advisory Agent, Kodiak  
**Chris Sannito**, Seafood Technology Specialist, Kodiak  
**Gay Sheffield**, Marine Advisory Agent, Nome



## Marine Advisory Program Affiliate and Emeritus Faculty

**Jerry Dzugan**, Affiliate  
**Alexandra Oliveira**, Affiliate  
**Susan Sugai**, Affiliate  
**Bree Witteveen**, Affiliate  
**Chuck Crapo**, Emeritus  
**Ray RaLonde**, Emeritus  
**Kate Wynne**, Emeritus

*Thanks to staff, faculty, researchers, and others who provided photos for this report.  
 All photos are copyrighted and should not be reproduced without permission.*



COLLEGE OF FISHERIES  
 AND OCEAN SCIENCES

University of Alaska Fairbanks