

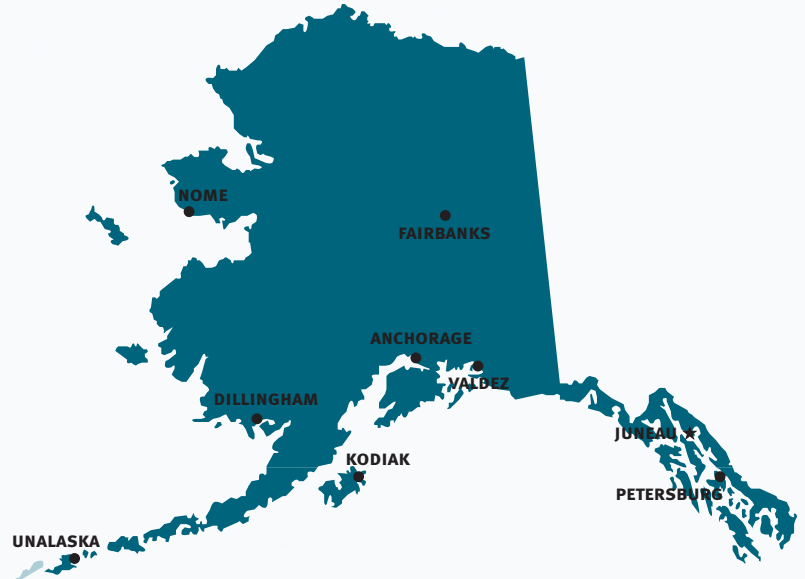
Alaska Sea Grant

2020-2021 Annual Report



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Photographers. Front cover Dawn Montano (Valdez). P 4 courtesy of Jesse Gordon (Sitka). P 6 courtesy of Elizabeth Figus (Kake). P 7 courtesy of Alf Pryor (Kodiak). P 8 Gay Sheffield (Western Alaska). P 9 Beverly Bradley (Nome). P 10 courtesy of Alaska Seafood Marketing Institute. P 11 (left) courtesy of Jesse Gordon (right) courtesy of Matt Callahan. P 12 Hannah Wilson (Juneau). P 13 courtesy of Seagrove Kelp Co. (Southeast Alaska). P 14 Deborah Mercy (Bethel). P 15 stock photo. P 16 Gabe Dunham (Bristol Bay). P 17 courtesy of Mandy Anderson (Unalaska). P 18 Nathaniel Wilder (near Kotzebue). P 19 courtesy of Eliza Searcy. P 22 Deborah Mercy (Prince William Sound). P 23 overlay Dawn Montano (Seward) Back cover overlay Beverly Bradley (Homer).

THE EBB AND FLOW OF 2020-2021



Alaska Sea Grant champions research to address emerging issues and pressing needs, provides training and technical assistance to Alaska's coastal industries, supports student fellowships and internships, and shares information about Alaska's coastal and marine resources through education and outreach, and more. We are thrilled to share highlights of our activities and accomplishments in these areas from the past year.

As the COVID-19 pandemic continues, Alaska Sea Grant has made it a priority to offer up-to-date resources, information and support for fishermen, the seafood industry and coastal communities. We adapted workshops, educational and outreach programming, science talks, and conferences for online or hybrid delivery, with the unexpected benefit of increasing the reach of our programming.

Diversity, equity and inclusion (DEI) are an integral part of our work and culture. This year we articulated how we are working to incorporate DEI principles internally, and how we will continue to incorporate DEI concepts in more of what we do. We created a new paid summer Community Engaged Internship program and sponsored four undergraduate students who worked on local research, outreach and public engagement projects in Alaskan communities.

Our program ebbs and flows, like the tide. Gary Freitag, Alaska Sea Grant's Marine Advisory Program agent based in Ketchikan, rode the

ebb tide and retired in June after 13 years of providing technical assistance and marine-related education and outreach for Southeast Alaska communities. The flood tide brought us a new colleague in Valdez. Leigh Lubin started in September as our education specialist. Leigh has over two decades of experience instructing in classrooms, outdoors, in rural Alaska, as well as overseas.

In other staff news, Gabe Dunham shifted his focus to statewide fisheries issues and is now based in Juneau. Alaska Sea Grant is recruiting a new Marine Advisory Program agent in Dillingham to fill the gap left by Gabe's migration.

The Alaska Sea Grant State Fellowship program, in its seventh year, is hosting eight fellows working with agencies and other coastal organizations. This year's projects include outreach to address harbor pollution, efforts to elevate indigenous voices in climate change issues, analysis of emerging renewable technologies, and more.

In the following pages we elaborate and share more highlights of our work across four focus areas: Sustainable Fisheries and Aquaculture, Healthy Coastal Ecosystems, Resilient Communities and Economies, and Ocean Literacy and Workforce Development. These are just a few of the many things we do to support healthy coastal resources, strong economies, and vibrant communities in Alaska. Thank you for your support and interest.

Ginny Eckert, Alaska Sea Grant Director



D

Diversity: Demographic representation and appreciation of individual, social, economic, and cultural differences.

E

Equity: A state, quality, or ideal of being fair and just.

I

Inclusion: A state, quality, or ideal of being a part of a group or structure where the inherent worth and dignity of all people are recognized and respected.



SUPPORTING DIVERSITY, EQUITY AND INCLUSION

This year we set out to articulate how diversity, equity and inclusion (DEI) are integral parts of our work and organizational culture. Included in the statement is the following:

Alaska Sea Grant champions diversity, equity, and inclusion by recruiting, retaining, and preparing a diverse workforce, and proactively engaging and serving the diverse populations of coastal communities. Alaska Sea Grant is committed to building inclusive research, extension, communication, and education programs that serve people with unique backgrounds, circumstances, needs, perspectives, and ways of thinking. Alaska Sea Grant encourages diverse participation with regards to age, race, ethnicity, national origin, gender identity, sexual orientation, disability, culture, religion, citizenship type, marital status, education level, job classification, veteran status, income, and socioeconomic status.

Alaska Sea Grant is working to incorporate DEI principles internally and in the work we do throughout the state. We recognize our work does not end with this statement, and we continue to explore how we can integrate DEI in all that we do, from expanding internship and fellowship opportunities to historically underrepresented groups, to acknowledging and incorporating multiple ways of knowing into more aspects of our work. We need to continually strive to improve, and we welcome guidance on how we can do better.

You can find [our statement of diversity, equity and inclusion](#), including a list of our values, goals, and plans for implementation, on our website.



NEW INTERNSHIP OPENS DOORS FOR RURAL STUDENTS

During summer 2021, Alaska Sea Grant supported four interns under a new Community Engaged Internship (CEI) program. This program provides training and mentorship to undergraduate students by involving them in place-based projects that respect and integrate local ways of knowing.

Davin Holen, Alaska Sea Grant's coastal community resilience specialist, helped develop CEI as part of Sea Grant's commitment to diversity, equity and inclusion (DEI). The program has achieved national recognition for achieving DEI objectives, including recruiting a diverse workforce, engaging and serving diverse communities, and building inclusive programs that serve people with unique backgrounds, circumstances, needs, perspectives and ways of thinking.

The first class of interns included two students from Kake, one from Kodiak, and one from Palmer. Each 8–10 week internship project in the student's home community provided technical experience and training, as well as additional structured mentorship, professional development and skills training.

Cairone Reft of the Alutiiq Tribe of Old Harbor, who interned with Kodiak MAP agent Julie Matweyou, said, "One of the best things about this internship was getting to meet and connect with so many different people in the marine science world. It was eye-opening and I learned a variety of new skills."



HEALTHY COASTAL ECOSYSTEMS





CAUSE OF SEABIRD DIE-OFFS STILL UNKNOWN

For the fifth year in a row, Alaska Sea Grant MAP agent Gay Sheffield has been investigating unusual seabird deaths in Western Alaska in collaboration with Bering Strait residents, Kawerak Inc., the U.S. Fish and Wildlife Service and others. Sheffield, who is based in Nome, responds to questions and concerns from coastal communities in the Bering Strait region, including reports of marine mammal strandings and deaths.

“The one commonality is the birds are emaciated due to a lack of food,” said Sheffield. U.S. Geological Survey necropsy reports confirm that the bird carcasses have empty stomachs and little or no fat on their bodies. Examination and testing have ruled out infectious diseases and harmful algal toxins as the cause of these seabird die-offs.

Researchers are still trying to answer why seabirds are starving. Climate change is likely to be a factor. With the reduction in sea ice quality, extent and duration, the thermal barrier of cold water that separates the northern and southern Bering Sea ecosystems has transitioned northwards, resulting in dramatic changes in this region.

It’s not just the birds that are hungry. Coastal residents harvest many seabird species and their eggs for subsistence, an important source of nutrition for the summer months. Seabird die-offs are an indicator of the health of Alaska’s ocean ecosystems, and also a food security concern for coastal residents throughout the Bering Strait region.



REGIONALLY RELEVANT SCIENCE

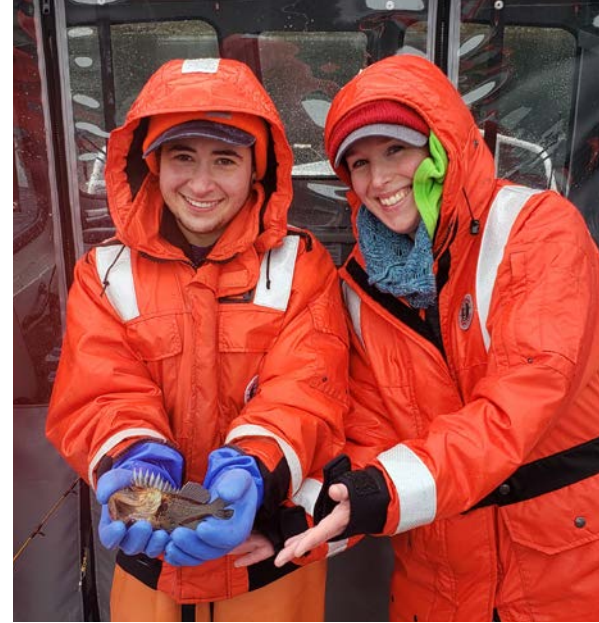
Alaska Sea Grant sponsored the Western Alaska Interdisciplinary Science Conference (WAISC), and the Kodiak Area Marine Science Symposium (KAMSS) as online events in 2021.

Normally convening in a Western Alaska community such as Nome, Dillingham, or Unalaska, WAISC brings together local and indigenous knowledge of subsistence-based communities and other scientific research relevant to Western Alaska. This year's conference focused on threats and opportunities in the face of a changing climate, and featured more than 50 speakers. Registration was free for all participants, with funding from Alaska EPSCoR.

KAMSS provided an opportunity for researchers to share with the Kodiak community. The symposium included oral and poster presentations in marine science and related fields pertinent to the region's coastal communities, including fisheries, harmful algal blooms, marine birds and mammals, and crabs. Alaska Sea Grant, the Kodiak Public Library, the Kodiak National Wildlife Refuge and Kodiak 4-H coordinated activities to engage Kodiak youth in marine science.



SUSTAINABLE FISHERIES AND AQUACULTURE



INFORMING ROCKFISH MANAGEMENT WITH LOCAL ECOLOGICAL KNOWLEDGE

Over 35 species of rockfish live in the waters off the coast of Alaska. Rockfish have been harvested for subsistence for thousands of years, and commercially and recreationally fished since the early 1800s.

Alaska Sea Grant researchers Jesse Gordon and Anne Beaudreau are working to shed more light on nearshore rockfish fisheries in Alaska and how they have changed over the past 50 years. In particular, their work is demonstrating how local ecological knowledge has the potential to augment scientific knowledge, improving the information we have about rockfish and how we manage them.

Beaudreau and Gordon conducted more than 40 interviews with fishery managers, commercial fishermen and sport fishermen in Kodiak and Sitka about changes in rockfish abundance and compared these reports with harvest data from the Alaska Department of Fish and Game. Together these sources highlight geographic differences in rockfish fisheries and the importance of including diverse perspectives in the assessment and management of rockfish.

Because rockfish are slow to reproduce, they are vulnerable to overfishing and require sound management to keep populations healthy. Local ecological knowledge can provide information to better inform management decisions.



FESTIVAL PROMOTES ALASKA-GROWN SHELLFISH AND SEAWEED

Alaska Sea Grant hosted the first Alaska Shellfish and Seaweed Festival in May, featuring online presentations celebrating and promoting the mariculture industry in Alaska and the delicious shellfish and seaweed products grown here.

The event was planned to be held in person in several communities around the state. COVID-related health and safety concerns shifted the event online.

Melissa Good, Alaska Sea Grant's mariculture specialist, kicked off the program with an introduction to mariculture in Alaska, the types of products being farmed, and where farms are currently located. The week ended with a presentation about the promising future of mariculture in Alaska by Julie Decker, Executive Director at the Alaska Fisheries Development Foundation.

Throughout the week, presentations and videos explored commercial farms and farming practices, subsistence harvesting and traditional ways of preparing seaweed, oyster and seaweed recipes, beers made from Alaska-grown oysters and kelp, and a discussion of wines to pair with oysters and other seafoods.

Recordings of the festival are available on Alaska Sea Grant's [Shellfish and Seaweed Growers Project Facebook page](#).



NEW TOOLS TO HELP NAVIGATE AQUACULTURE PERMITTING

Alaskans' interest in the mariculture industry is growing. In 2016, state permitting agencies received only four aquatic farm applications. From 2017–2020, it jumped to 64. Mariculture includes the cultivation of shellfish, such as oysters, and seaweeds, used in a variety of foods, fertilizers and biofuels.

The mariculture industry in Alaska has great economic potential, and the Governor's Mariculture Task Force set a goal of growing it into a \$100 million industry in 20 years. The task force also identified barriers for entry of new farmers, including permitting. Farmers are required to file multiple permits with at least four different state and federal agencies, sometimes more depending on the project. This results in a confusing and time-consuming process.

To address this barrier, Alaska Sea Grant State Fellow, Hannah Wilson, worked with Alicia Bishop at the NOAA Fisheries Alaska Region to create user-friendly tools to guide applicants through the permitting process. A working group of state and federal agencies involved in permitting aquatic farms reviewed each permitting step and drafted tools to help navigate the process. Prospective and existing farmers then reviewed the materials for usability.

Wilson and Bishop are completing a PDF guide for distribution at the Alaska Sea Grant bookstore and a website that provides a one-stop-shop for prospective shellfish and seaweed farmers with steps, advice, links and directions for each of the permitting applications.



RESILIENT COMMUNITIES AND ECONOMIES



SUPPORTING SAFER SUBSISTENCE HARVESTS THROUGH IMPROVED FORECASTING

Pacific walrus are an important subsistence resource for Arctic communities. As temperatures warm in the Arctic, receding sea ice and changing weather patterns are making traditional walrus hunts harder and more dangerous.

A partnership among the National Weather Service, the University of Alaska Fairbanks, and the Eskimo Walrus Commission established the online Sea Ice for Walrus Outlook (SIWO) in 2010. SIWO provides weekly reports, called Outlooks, during the spring sea ice season about weather, ice, and other conditions that affect the northern Bering Sea and southern Chukchi Sea regions. UAF Assistant Professor Nathan Kettle is leading a team to evaluate the forecasting tool to understand if it can better support subsistence hunters and coastal communities, and bring local and traditional knowledge together with Western science to support decision making.

Kettle and UAF graduate student Amy Hendricks are conducting interviews with coastal residents, sea-ice forecasters and other experts to understand how SIWO is being used and how it might facilitate better communication among its users and across communities.

“This research highlights the value of community-informed science” said Hendricks. “We’re asking what are the needs of the communities as far as weather data and support, but also what insight can the communities provide to make that science better.”



ASSESSING COVID RISK AND RESPONSE IN THE BRISTOL BAY COMMERCIAL SALMON FISHERY

Each summer, around 13,000 people from outside the state travel to the Bristol Bay region of Western Alaska to participate in the world's most valuable wild salmon fishery. In 2020, the pandemic led to concerns about how best to manage public health in a small community that depends on a large seasonal workforce coming from outside the community.

Davin Holen, Alaska Sea Grant's coastal community resilience specialist, and colleagues assessed pandemic-related planning needs for the Nushagak salmon fishery. They developed pandemic preparedness scenarios for local residents and decision-makers, using data from online surveys to better understand the costs and benefits of different mitigation policies.

The surveys assessed perceived risk, responses to policy, and compliance. The first survey of fisherman, processors, and residents in summer 2020 received almost a thousand responses. The researchers used these to provide information to decision-makers to better inform strategies to combat the spread of COVID-19 within the community and among fishery harvesters and processors.

In summer 2021, two follow-up surveys showed that vaccine mandates increased the number of vaccinations, and that processors with high vaccination rates were able to operate with fewer disruptions during 2021.



ENVIRONMENTAL LITERACY AND WORKFORCE DEVELOPMENT



SUPPORTING ALASKA'S YOUNG FISHERMEN

The Young Fishermen's Development Act was signed into law in January 2021, to preserve the nation's fishing heritage by training and assisting the next generation of commercial fishermen. The bill, proposed by the Fishing Communities Coalition, received bipartisan support and was championed by Alaska's congressional delegation.

The bill addresses challenges faced by new entrants in the fishing industry. Competitive grants will fund local and regional initiatives supporting fishermen. Initiatives may include programs, workshops, and services for fishermen on topics such as seamanship, marketing, and fisheries management.

Alaska Sea Grant is working on a project to scope needs in the state and inform future activities under the Young Fishermen's Development Act. The project, Food from the Sea: Supporting the Next Generation of Alaska's Seafood Harvesters and Growers, identifies needs and develops strategies for training new entrants for Alaska's commercial seafood harvesting and growing industries. Alaska Sea Grant has been deeply involved in seafood career development, including creating the Alaska Young Fishermen's Summit in 2007, and is uniquely poised to engage stakeholders and partners in this planning process that will help new entrants start and conduct successful businesses.

"The fishing industry is the largest private employer in Alaska and is critical to the state's economy and communities' well-being," said Ginny Eckert, Alaska Sea Grant Director. "We at Alaska Sea Grant and the University of Alaska look forward to increasing support for this industry at the state and national level through this new grant program."



ALASKA SEA GRANT RESEARCH TRAINEES

Reyce Bogardus PhD geoscience
Increasing the capacity of Alaskan coastal communities to adapt and respond to storm-driven coastal hazards

Kristopher Carroll MS interdisciplinary geospatial data science
Climate-driven Arctic coastline modeling: improving erosion forecasts for communities

James Currie MS marine biology
Geographic variation of nearshore carbonate chemistry in the Gulf of Alaska

Kristopher Ford MS civil engineering
Arctic risk management network: linking regional practitioners and researchers to improve mitigation through participatory action research by community monitors about erosion, surges, and nearshore sea ice loss as mutual priorities

Amy Hendricks PhD Atmospheric Sciences
Supporting coastal community resilience in Alaska: an evaluation of the sea ice for walrus outlook

Jesse Gordon MS fisheries
Integrating local ecological knowledge and survey data to improve assessment and management of rockfishes in Alaska

Erika King MS fisheries
Reassessing hatchery mating policy in Alaska: is non-selective mating unnatural?

Jamie Musbach MS fisheries
*Metabolic and growth physiology of early life history stages of the northern spot shrimp, *Pandalus platyceros**

Drew Porter MS marine biology
Copper toxicity to Bristol Bay sockeye salmon larvae under field-relevant water quality conditions

Chris Sergeant PhD fisheries
Assessing the resilience of Southeast Alaskan salmon to a shifting freshwater environment

Brian Ulaski PhD marine biology
The importance of seaweed wrack as habitat and resource

ALASKA SEA GRANT STATE FELLOWSHIP PROGRAM

Class of 2020



JoMarie Alba
*NOAA Alaska Fisheries
Science Center*



Nichole LaRoche
National Park Service



Angela Moran
*North Pacific Fishery
Management Council*



Hannah Wilson
Alaska Sea Grant

Class of 2021



Tav Ammu
Alaska Sea Grant



Ashley Bolwerk
*NOAA Fisheries Habitat
Conservation Division*



Becca Cates
*NOAA Alaska Fisheries
Science Center*



Hannah-Marie Garcia
Alaska Conservation Foundation



Noelle Helder
*Alaska Center for
Energy and Power*



Jamie Neusbach
*National Marine Fisheries
Service Protected Resources
Division*



Kyle Neumann
*NOAA Alaska Fisheries
Science Center*



Hannah Wilson
NOAA Fisheries

KNAUSS MARINE POLICY FELLOWSHIP



Ann-Christine Zinkann

Executive Fellow, 2020

International Ocean Liaison, NOAA Ocean Observing and Monitoring Division

The John A. Knauss Marine Policy Fellowship offers a professional opportunity to graduate students with an interest in national policies that affect ocean, coastal, and Great Lakes resources. Every year, successful applicants from around the country are matched with hosts in the legislative and executive branches of the U.S. government for a one-year paid fellowship in Washington, D.C.

Alaska Sea Grant asked our most recent Knauss alumna, Dr. Ann-Christine Zinkann, to share what she learned from her experience. Dr. Zinkann said that over the course of her fellowship she was able to learn about current research, the workings of NOAA and of international agencies, meeting facilitation, U.S. interests in ocean observing, and the technologies used to observe the ocean. She also said her fellowship helped guide her on a career path that she had not previously considered.

Dr. Zinkann earned a PhD in marine biology from the University of Alaska Fairbanks in May 2020, while serving as a Knauss fellow in the Global Ocean Monitoring and Observing (GOMO) Program at NOAA. When her fellowship concluded in January, Dr. Zinkann continued to work professionally in her host office.

“Had I not applied for the Knauss fellowship, I wouldn’t be where I am today,” she said.



ADVISORY COMMITTEE

Chair: **Lea Klingert**, President, Commercial Fishing and Agriculture Bank

Assistant Chair: **Jeff Kauffman**, Vice President, Central Bering Sea Fishermen's Association

Barb Amarok, Director, University of Alaska Fairbanks
Northwest Campus

James Balsiger, Alaska Regional Administrator, NOAA
National Marine Fisheries Service

Kaja Brix, Arctic Program Director, NOAA Fisheries Alaska
Region (Alternate for James Balsiger)

Michael Brubaker, Director for Community
Environment and Health, Alaska Native Tribal Health
Consortium

Diana Evans, Deputy Director,
North Pacific Fishery Management Council

Nicole Kimball, Vice President,
Pacific Seafood Processors Association

Michael Kohan, Seafood Technical Program Director,
Alaska Seafood Marketing Institute

Scott Lindsey, Acting Regional Director, NOAA National
Weather Service

Vera Metcalf, Director, Eskimo Walrus Commission at
Kawerak, Inc.

Hazel Nelson, Board of Directors, Bristol Bay Native
Corporation

Kris Norosz, Petersburg

Pete Pinney, Acting Director, Agriculture, Natural
Resources and Extension, UAF

Dave Reggiani, Aquaculture Expert,
Prince William Sound Aquaculture Corporation

Ralph Samuels, Vice President of Government and
Community Relations, Princess Cruises/Holland America

Chris Siddon, Marine Fisheries Scientist, Alaska
Department of Fish and Game

Dee Williams, Deputy Regional Director, US Geological
Survey

Sheyna Wisdom, Executive Director, Alaska Ocean
Observing System

ALASKA SEA GRANT BY THE NUMBERS



7,274
K-12 students educated
in marine science

44
K-12 educators trained



41
Businesses
sustained or created



700
Fishermen/processors
trained



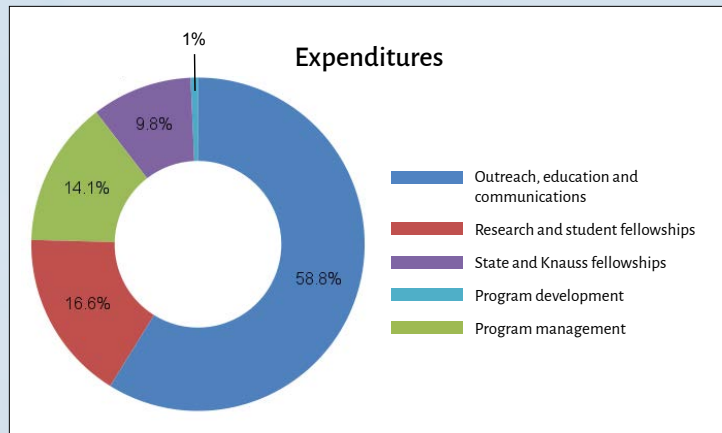
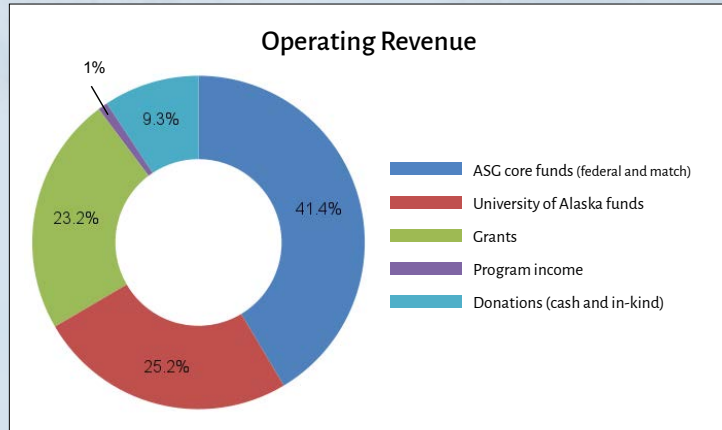
143
Jobs sustained
or created



21
Graduate students
worked on Alaska Sea
Grant-funded research



4,549
Publications distributed



Operating Revenue	
ASC core funds (SG Federal)	\$2,011,306
University of Alaska funds	\$1,221,721
Grants	\$1,125,430
Program income	\$45,749
Donations (cash and in-kind)	\$452,000

Expenditures	
Outreach, education & communications	\$1,992,216
Research and student fellowships	\$561,817
Program management	\$478,263
State and Knauss fellowships	\$330,264
Program development	\$24,072

ALASKA SEA GRANT FACULTY AND STAFF



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