



**ALASKA SEA GRANT**  
2017-2018 Annual Report

# YEAR IN REVIEW

It's been a year of new beginnings and sad farewells at Alaska Sea Grant.

We wished longtime director Paula Cullenberg well as she launched into retirement in March after 15 years of service as Marine Advisory Program leader and then director of Alaska Sea Grant. Cullenberg is now a professor emeritus with the University of Alaska Fairbanks (UAF). She brought enthusiasm, vision and three decades of experience in commercial fisheries, program management, and rural economic development to the position.

After a national search, the university selected Heather Brandon to be the new Alaska Sea Grant director. Before joining Sea Grant, Brandon was a foreign affairs specialist for NOAA's Office of International Affairs and Seafood Inspection. She has also worked for World Wildlife Fund, Juneau Economic Development Council, Pacific Fishery Management Council, and Alaska Department of Fish and Game. Brandon hit the ground running in late August and is bringing fresh ideas and new leadership to the program.

We also said goodbye to our veteran editor and writer Sue Keller, who served the university for 35 years. She helped launch Fishlines, our monthly newsletter, in 1981 and kept it

going ever since. Keller handled the production of more than 170 publications.

Our recreation and tourism specialist Terry Johnson also retired. He spent 26 years on the UAF faculty and authored 35 publications for Alaska Sea Grant including books, how-to bulletins, posters, brochures, websites and newsletters to assist Alaska commercial and recreational fishermen.

Our marine education specialist Marilyn Sigman is now working part-time with plans for retirement. We are reviewing options for keeping our marine education program going under tight budget conditions. Sigman published a book this year, *Entangled: People and Ecological Change in Alaska's Kachemak Bay* (University of Alaska Press).

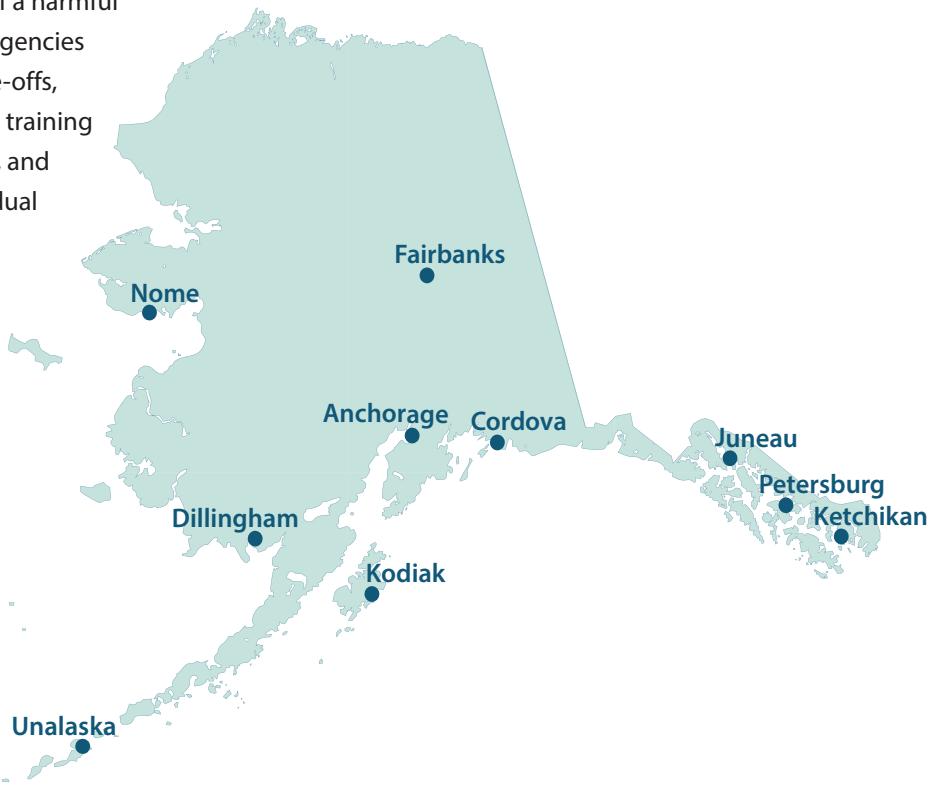
Faculty members Julie Matweyou and Gary Freitag received academic promotions in May. Matweyou, our Marine Advisory agent in Kodiak, received tenure and associate professor, and Freitag, our agent in Ketchikan, became a full professor.

We would like to acknowledge the 18 years of service to Alaska Sea Grant by Michele Frandsen, who most recently served as our research coordinator. She is leaving in November after 30 years of working at UAF. We thank her and wish her well in her future endeavors.

On the work front, we continued to fulfill our mission of enhancing the sustainable use and conservation of Alaska's marine, coastal and watershed resources through research, education and outreach. Among the highlights: the discovery of new invasive species, the launch of a harmful algal bloom network, assistance to tribes and agencies responding to marine mammal and seabird die-offs, support for new industries such as mariculture, training seafood industry leaders and young fishermen, and highlighting the financial challenges for individual entry to Alaska's commercial fishing industry.

We launched a redesigned website in February that showcases our work. You can read stories there about what our agents, funded-graduate students and fellows are up to and find information about our wide range of classes, training, events, curricula, fellowships and research. If you haven't already, subscribe to our blog at the bottom of the home page and connect with us on Facebook, Twitter and Instagram. We welcome your ideas and suggestions for how to improve what we do.

Thank you for supporting Alaska Sea Grant. We've been working in Alaska since 1970 to support science, education and workforce development and hope to continue to serve Alaska, its people, and the nation for decades to come.



# *Scientists use app to engage citizens in study about bivalves and climate change*

Clam populations throughout Alaska have steadily declined for over 20 years, affecting subsistence, recreational and commercial harvesters. The exact causes of the decline are unknown. Suspected factors include habitat changes, environmental stressors, predation and, possibly, ocean acidification.

Under the supervision of University of Alaska Fairbanks assistant professor Amanda Kelley, PhD student Ashley Rossin is studying the effects of ocean acidification on littleneck clams and cockles, two species harvested for subsistence across the state. Both Kelley and Rossin are with the College of Fisheries and Ocean Sciences.

With funding from Alaska Sea Grant, they are examining the physiological effects on the clams in a laboratory setting, and then comparing them to environmental conditions in the field. Kelley and Rossin are also collecting data from citizen scientists across the state.

The team created a project on the app Epicollect5 to allow community members to post clam observations from the coasts using their mobile devices. Anyone walking along a beach can use the app to record their location, note what species they're seeing, fill out information about the environment, and add images.

By collecting these observations, the scientists hope to gain a better understanding of current clam populations, and how those may change in future years. More information is on the project website: <https://five.epicollect.net/project/clam-survey>.

The public can view the current observations through the Epicollect5 project page, or see the updated list on the Local Environment Observer (LEO) Network website.





# HEALTHY COASTAL ECOSYSTEMS

# Whale watching impacts on humpbacks

Whale watching is a booming business in Alaska's capital. Over the past nearly 20 years, the number of whale-watching boats in the waters around Juneau has roughly doubled.

The business is valued at about \$35 million annually and its rise parallels that of the cruise ship industry, whose presence in Southeast Alaska has grown enormously over the last couple of decades.

How are the region's humpback whales responding to this increased attention? Ali Schuler, a University of Alaska Fairbanks master's student in the College of Fisheries and Ocean Sciences, is attempting to answer that question with assistance from her academic adviser Heidi Pearson, University of Alaska associate professor. With funding from Alaska Sea Grant, Schuler spent the last two summers closely monitoring whales from two research stations near Juneau. From her preliminary data, Schuler has found that whale-watching boats are causing the whales to change some of their behavior and movements.

"In the presence of vessels, the whales move at higher speeds indicating a possible vessel-avoidance strategy," Schuler said.

Schuler expects to publish findings and graduate in 2019.







## *Investigating threats from invasive species in the Aleutians*

Some exciting science detective work is going on in the Aleutian Islands, home to 1,100 miles of remote marine habitat and some of the world's richest fishing grounds. Because this sensitive region is vulnerable to the introduction of invasive and potentially harmful marine

species, Alaska Sea Grant is participating in research to determine the threat level now and into the future. The research is prompted in part by warming ocean temperatures and growing international vessel traffic, including nearly 2,000 cargo carriers that make more



than 4,600 transits through Unimak Pass annually, said Melissa Good, Alaska Sea Grant's Marine Advisory agent in Unalaska.

"Western Alaska is at high risk of invasive species multiplying in our region" Good said. "The conditions are ripe."

With additional funding from the Smithsonian Environmental Research Center, NOAA Fisheries

Habitat Conservation Office and the Smithsonian Global Genome Initiative, two projects are under way: a citizen science Plate Watch program and a collection of Unalaska's marine invertebrates for DNA analysis. The projects are the result of increased awareness of the Bering Sea's susceptibility to marine invasive species.





## *UAF student completes salmon predation study*

Very few juvenile salmon return to spawn. Many are consumed by larger fish that eat them as they migrate from rivers or hatcheries to the ocean.

That's a problem for hatcheries that release millions of young salmon, called smolts, into the waters of coastal Alaska. Alaska Sea Grant funded Anne Beaudreau's research on chum salmon predation by two common nearshore fish species, Dolly Varden and staghorn sculpin. Beaudreau is a faculty member in the College of Fisheries and Ocean Sciences.

The researchers, including University of Alaska Fairbanks student Douglas Duncan, found that both predators consumed lots of chum salmon. In fact, their stomachs were consistently full with a variety of items, including salmon.

For his master's degree, Duncan spent three years studying whether the release of hatchery fish can act as a "dinner bell," attracting predators to release sites. Duncan concluded that Dolly Varden and sculpin were abundant at a variety of times, not just when hatchery salmon were released.

But neither species is the "smoking gun" of salmon mortality at marine entry, Duncan found. There are likely many challenges to salmon during their marine phase and more work is needed on this important, but less understood, part of their life cycle.

The private nonprofit salmon hatchery, Douglas Island Pink and Chum (DIPAC), helped support this project.

# *Keeping salmon streams healthy in Southeast Alaska*

Salmon sustain Alaskans economically, culturally and nutritionally. In Southeast Alaska, these iconic fish depend upon a healthy temperate rainforest for spawning and rearing.

As climate change occurs, streams that support salmon are changing. Stream temperatures are rising and discharge volume is changing too. In the coming decades, climatologists predict increasing air temperatures, increased annual rain accumulation, and less snow in the region. How are salmon being affected? New research funded by Alaska Sea Grant is aimed at helping answer this question and ensure that Southeast Alaska salmon runs remain healthy.

The project involves developing a salmon lifecycle model that will help fishery managers identify which streams should be monitored more closely for flooding, low flow, temperature and other factors. The research will form the basis of University of Alaska Fairbanks College of Fisheries and Ocean Sciences graduate student Christopher Sergeant's doctoral thesis. Partners include the U.S. Forest Service and the Southeast Alaska Watershed Coalition.



A photograph of a wooden bridge spanning a stream in a forest. The bridge is made of dark wood with a reddish-brown lower section. The stream is surrounded by mossy rocks and fallen leaves. The background is a dense forest of tall trees.

Alaska communities depend on salmon whether it's economically or for subsistence or recreation. So (this research) is going to be important to residents, to fish managers and to scientists both here and in other places. We're lucky to have a lot of salmon here, and what we learn in Alaska can inform endangered populations further south and in the Pacific Northwest.

— Christopher Sergeant



**RESILIENT COMMUNITIES AND ECONOMIES**



## *Alaska Sea Grant helps launch network to combat death by marine toxins*

Phytoplankton blooms can sometimes turn poisonous and even deadly. When this occurs, they are called harmful algal blooms.

Harmful algal blooms (HABs) produce a toxin that, when concentrated in the tissues of filter-feeding bivalves like clams, oysters and mussels, can be fatal to anyone who eats a contaminated piece of shellfish. Seabirds, marine mammals and other wildlife can also be poisoned.

In Alaska, HABs may be becoming more common due to warming ocean temperatures, changes in rainfall and weather patterns and other factors.

A group of Alaskans—including state officials, tribes, nonprofit organizations and researchers—has recently come together to try to combat these marine toxins. The goal is to keep Alaskans who collect and eat shellfish as safe as possible with up-to-date information.

Given Alaska's sweeping coastline—nearly 34,000 miles—that's a tall order. But members of the newly formed Alaska Harmful Algal Bloom Network hope that through information sharing and technology, they can make a dent. Alaska Sea Grant helped launch the HABs Network and maintains a leadership role.

## *Documenting climate change in America's northernmost city*

As temperatures in the Arctic rise and sea ice disappears, Utqiagvik is experiencing severe erosion. Buildings and critical infrastructure are threatened in the whaling community formerly known as Barrow. These include a utilidor, a three-mile-long artery that handles water, sewer, telephone, fiber-optic cable, and electricity. If the utilidor is disabled or destroyed, Utqiagvik's residents would face an immediate public health crisis.

"You'd have 4,000 people who all of a sudden couldn't wash their hands," said longtime Utqiagvik resident and archaeologist Anne Jensen.

To boost Utqiagvik's ability to manage climate change threats, Alaska Sea Grant is supporting research by the University of Alaska in partnership with the North Slope Borough and local citizen scientists. Much of the work is being done on the beach and along a gravel berm—a man-made structure that washes away and gets rebuilt with each major storm—that separates the Arctic Ocean and the town.

Citizens are being trained to take shoreline measurements and collect other data to document what's happening along their coast. In addition, an Argus video camera will capture images to document wave conditions and water levels. Data collected will be used to calibrate and validate the storm surge, coastal flooding and coastal erosion forecasting system.

Researchers hope to improve forecasting so that in the event of a large storm, more accurate information can be provided to the North Slope Borough Risk Management Office and emergency responders can better respond to control erosion and flooding.





“

*The weather is definitely not the same as it was 20 years ago. It's been a big concern not just because of erosion but because of subsistence and our way of life.*

”

—Stacy Bowen  
Utqiagvik resident

## *Alaskans report uptick in potential shark activity*

Something new is happening in the cold waters of Northern and Western Alaska. Unusual injuries such as bite marks and flipper amputations are showing up on seals in the Bering Strait, Chukchi Sea and Beaufort Sea regions.

Ice-associated seals and Steller sea lions in particular appear to be in contact with a predator not typically observed in these waters, according to a group of scientists, hunters and subsistence managers who are watching the trend.

Who do they think is the likely culprit? Sharks.

Several species are known to visit the western and northern coasts of Alaska, including the sleeper shark, dogfish shark, Greenland shark and salmon shark. A variety of northern shark species seem to be following the movements of prey species venturing farther north due to warmer ocean temperatures.

That's according to a group of scientists and observers from Alaska Sea Grant, the North Slope Borough Department of Wildlife Management, Kawerak Inc. and Ocean Associates Inc. that has been recording injuries and attacks on pinnipeds through stranding data, aerial survey sightings, marine mammal hunter observations and bycatch.

"People are providing information on harvested seals with amputated flippers because they don't normally see that. These are not the marks of a killer whale.





Killer whales have pegged teeth—the injury pattern would be different and community members are noting these are novel injuries,” said Gay Sheffield, the Alaska Sea Grant Marine Advisory agent based in Nome.

Sheffield and others presented a scientific poster about shark–pinniped interactions at the Alaska Marine Science Symposium in Anchorage last January.

The poster, titled “Sharks and shark predation on ice seals and sea lions: Preliminary results from the Bering Strait and the North Slope regions, Alaska,” has a table that lists shark sightings, strandings and bycatch dating back to 1950. It shows increased reports from 2010 onward.





## *Building resilience in the Y-K Delta*

The Yukon-Kuskokwim Delta of Western Alaska is one of the most rural parts of the United States. With 56 villages scattered across some 50,000 square miles, the Y-K Delta region is abundant with wild fish and game, upon which its predominately Yup'ik residents heavily depend.

Although rich in culture and history and despite a growing population, the Y-K Delta is one of the most underserved regions of Alaska. Many residents choose to stay because of strong kinship ties and the continuity of subsistence practices that provide healthy wild foods and cultural enrichment.

As in other parts of coastal Alaska, the Delta is being affected by climate change. Rising temperatures, thawing permafrost, flooding and erosion are a few of the problems the region is facing. The village of Napakiak lost about 75 feet of coastline in recent storms, threatening key buildings and infrastructure.

Alaska Sea Grant is partnering with tribes, U.S. Fish and Wildlife Service, State of Alaska, U.S. Army Corps of Engineers, Agnew::Beck Consulting, and Nautilus Impact Investing to help Delta communities plan for the hazards they are likely to face in future years. Workshops were held in Bethel, the regional hub community, in March and August 2018 and an action plan is being developed.

“The goal is to help build resilience for Y-K Delta resources and the people who depend upon them. Tribal and community leaders, regional organizations, individuals, researchers and public resource managers are developing practical adaptation strategies. These projects are tangible and could happen in the short-term but have lasting impacts,” said Davin Holen, Alaska Sea Grant’s coastal community resilience specialist.



**SUSTAINABLE FISHERIES AND AQUACULTURE**



## *Graying of the fleet research wins award*

Alaska Sea Grant–supported researchers won a national award at Sea Grant Week in Portland, Oregon, in September 2018 for a study on how to boost access to Alaska commercial fisheries by young and rural residents.

The Sea Grant Association, comprised of Sea Grant program directors from 33 coastal universities, presented its “Research to Application” award to Alaska Sea Grant director Heather Brandon who accepted it on behalf of the investigators for the project, *Graying of the Fleet in Alaska’s Fisheries: Defining the Problem and Assessing Alternatives*.

The award honors an individual research project or a body of research, funded or implemented by a state Sea Grant program, that has elevated public understanding and responsible use of the nation’s ocean, coastal or Great Lakes resources.

Based on detailed ethnographic research in Bristol Bay and Kodiak, Alaska, and a global review of changes in fishery systems, the research identified barriers to entry by young fishermen and makes suggestions on how to improve access to entry. The project included videos, public service announcements, a public report and academic journal articles. The project team was led by Courtney Carothers, associate professor at the University of Alaska Fairbanks, College of Fisheries and Ocean Sciences; Rachel Donkersloot, Alaska Marine Conservation Council; and Paula Cullenberg, retired Alaska Sea Grant director. They were supported by graduate research assistants Danielle Ringer and Jesse Coleman and undergraduate student Alexandra Bateman, all of UAF.

More information about this research is available at [fishermen.alaska.edu](http://fishermen.alaska.edu).

## *Study: Alaska fishermen suffer high rate of health problems*

Alaska salmon fishermen have significantly higher rates of certain health problems than the general population, according to a new study conducted by the University of Washington School of Public Health in partnership with Alaska Sea Grant. The study identified noise-induced hearing loss, rotator cuff disorders and fatigue possibly associated with sleep apnea as being prevalent in this workforce.

The study began in early 2015 when Torie Baker, Alaska Sea Grant Marine Advisory agent based in Cordova, and members of Cordova District Fishermen United invited 600 salmon gillnet permit holders to answer health questions before and during the fishing season.

The research is among the first of its kind in the United States, according to the study's authors. The peer-reviewed study was published in April 2018 in the *Journal of Agromedicine*.





## *Producing leaders*

This year marked the 10th anniversary of the Alaska Seafood Processing Leadership Institute, developed by Alaska Sea Grant to grow and strengthen leadership in Alaska's seafood processing sector. In these 10 years, nearly 100 mid-level managers, selected and sponsored by their employers, have attended training.

This year's 18 graduates participated in a week of training in November 2017 and again in March 2018. They worked on a plant project of their choosing with a mentor during the intervening months, and 10 of the students attended Seafood Expo North America in Boston.

"The 2018 graduates overall seemed exceptionally motivated, energetic and eager to participate in the series of topics presented," said Quentin Fong, Alaska Sea Grant seafood marketing specialist. Fong, based in Kodiak, is lead organizer for the course.

Sam Nothstine, expeditor at Kwik'pak Fisheries in Emmonak, Alaska, said the most useful part of the training was the session taught by independent leadership trainer Al Bolea. Nothstine learned from Bolea's first-hand stories about how he became a chief executive in the oil industry and the decisions he made on the job.

"He encouraged us to be communicative and challenge others, and not to retreat from issues," said Nothstine.

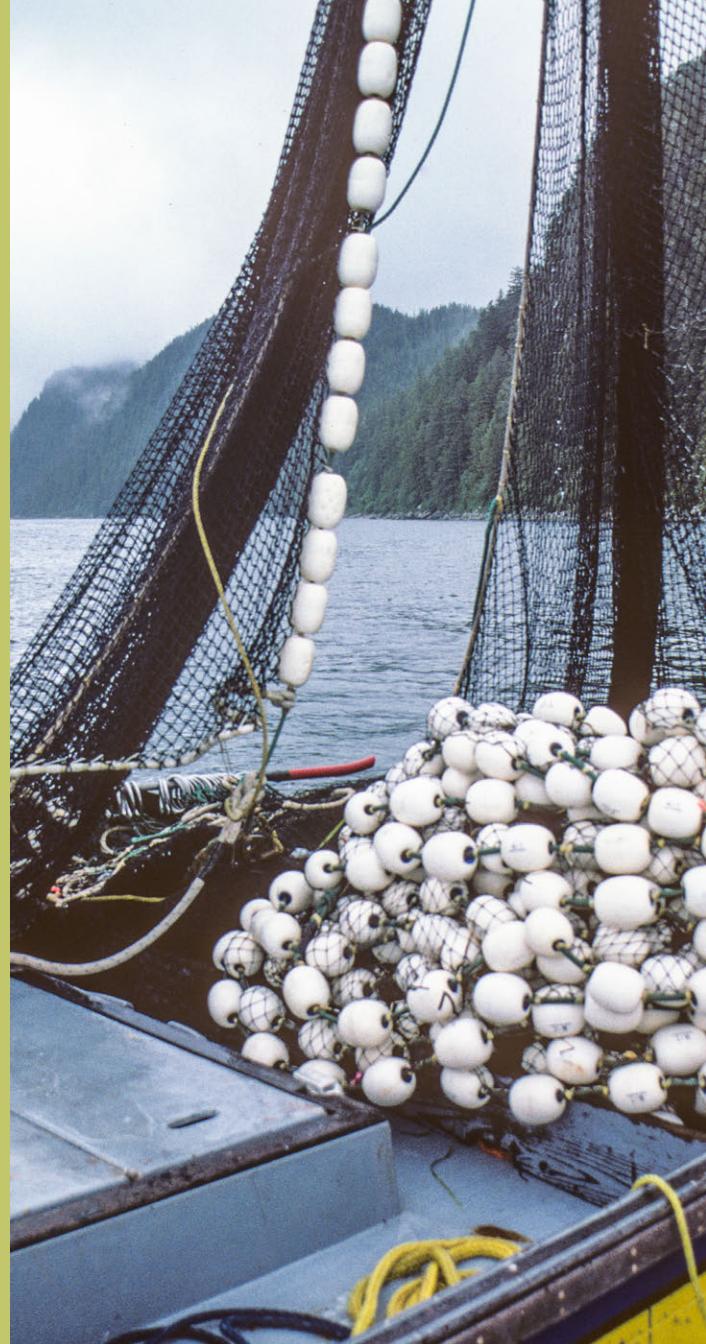
# *Interactive map of Alaska commercial fisheries launched*

Alaska's commercial fisheries are vast and lucrative. With a dockside value of \$1.7 billion in 2016, the industry employs more than 29,000 people. To help fishermen and others understand more about the state's 180-plus commercial fisheries, Alaska Sea Grant has developed an interactive Alaska fisheries map. It features target species, gear, locations, seasons and more.

Sunny Rice, Alaska Sea Grant's Marine Advisory agent in Petersburg, spearheaded the project to complement the business tools available on our FishBiz website.

"Building the interactive map was a collaborative effort that allowed us to take advantage of the geographic diversity in our program," said Rice. "Our agents from Nome to Unalaska to Kodiak and Prince William Sound drew on their knowledge of local fisheries to make sure we had a tool that made sense for Alaska fishermen."

The interactive map allows users to search 183 different fisheries by region, target species and fishing gear. They can also search by limited entry, catch share, Individual Fishing Quota and other categories to help determine costs of entry.





## *Growing the blue economy*

Alaska Sea Grant is helping to develop Alaska's emerging mariculture industry, considered a key part of the state's "blue economy."

The blue economy is a term that refers to various economic uses of the ocean, including marine transportation, fisheries, energy, tourism and aquaculture.

Alaska Sea Grant's director serves on the state's Mariculture Task Force, a group of industry, academic, tribal and government representatives charged with developing a plan to promote businesses that sustainably cultivate kelp, seaweed, geoducks, oysters, red crab and sea cucumbers.

The task force released its development plan in August 2018. It recommended a series of steps Alaska could take to grow a \$100 million industry in 20 years. The plan includes five priorities: increase profitability, expand participation, refine regulations, establish accessible funding, and conduct necessary research to create a thriving mariculture industry worth \$100 million by 2040.

"With more than 30,000 miles of clean, nutrient-rich coastline, Alaska is an ideal environment for creating a robust mariculture industry that will bolster the economy of our coastal communities and state," said Ginny Eckert, associate director of research for Alaska Sea Grant.

# ENVIRONMENTAL LITERACY AND WORKFORCE DEVELOPMENT





## *Sea Grant releases new edition of direct marketing guide for fishermen*

The Sea Grant programs in Alaska and Washington collaboratively released an updated edition of the popular “Fishermen’s Direct Marketing Manual” this year.

The manual is a how-to guide and reference book for commercial fishermen who wish to bypass processors and wholesalers and sell their catch directly to brokers, restaurants and other buyers. As the business climate of the seafood industry evolves, many fishermen are choosing to directly market their catch to capture more value.

The softcover book, also available as a free download, helps readers think through numerous issues so they can decide whether this business model is right for them. First published

in the 1990s, the manual also provides much of what they need to know to launch a new business or fine-tune an existing one. It’s become a trusted, go-to resource for hundreds of fishermen and seafood entrepreneurs.

“When I began selling a portion of my catch, the ‘Fishermen’s Direct Marketing Manual’ was my single most valuable resource in navigating that brand-new arena. Now, 10 years later, I still refer to it as a comprehensive guide and reference,” said Shannon Ford, owner of Two If By Seafoods, based in Washington and Alaska.

The book was edited by Terry Johnson and Sue Keller with contributions from several Sea Grant colleagues, regulators and other content experts.

# *Training the next generation of citizen scientists*

Educating children about the marine and freshwater environments around them is an important part of what Alaska Sea Grant does. One way we accomplish this is by participating in or leading summer science camps.

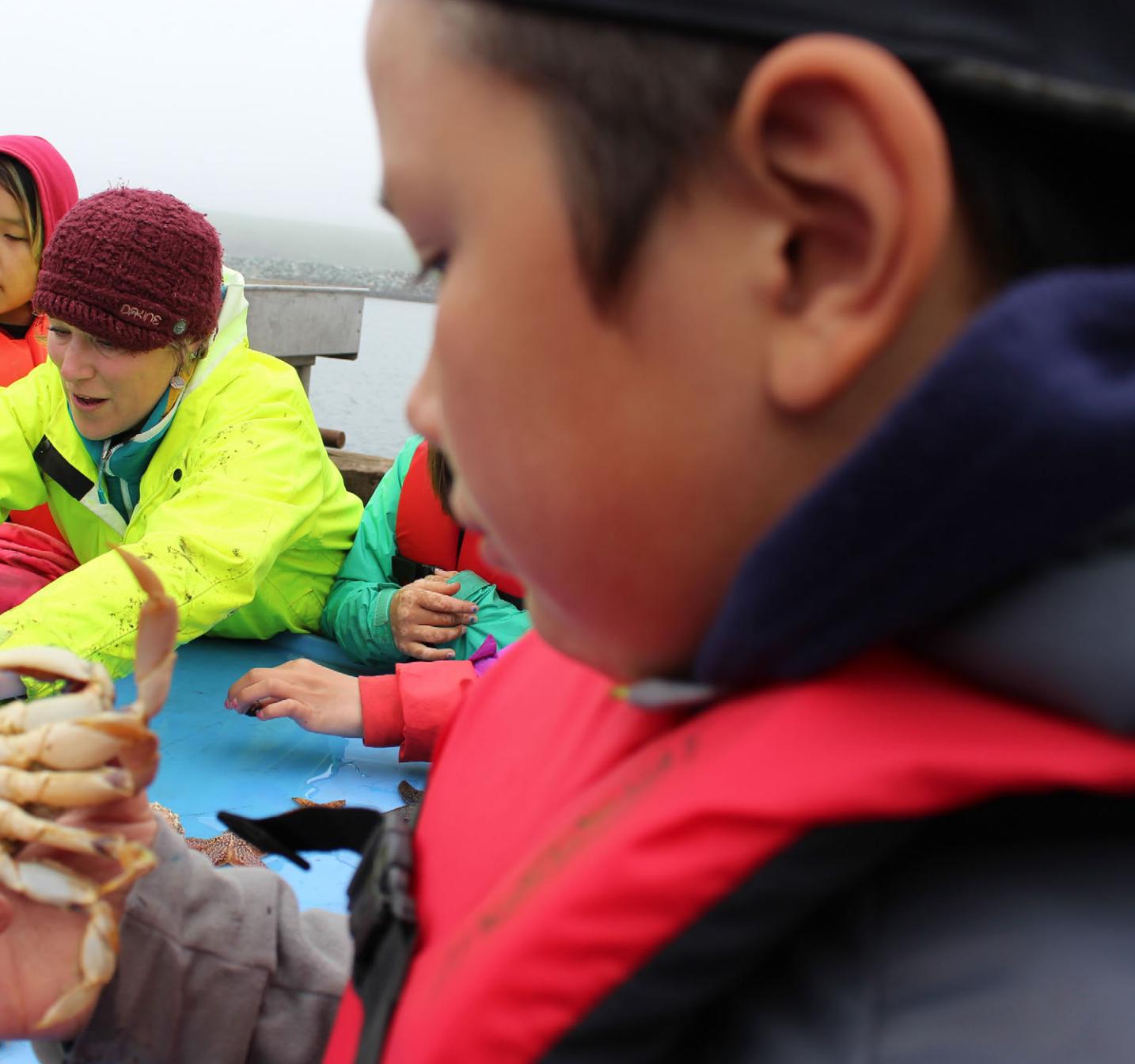
During the summer of 2018, our agents worked with elementary, middle and high school students during science camps in communities including St. Paul, Dillingham and Petersburg.

We also made classroom visits, took students out on research trips and worked one-on-one with interns.

In Unalaska and Ketchikan, local students also participated in Plate Watch, a program designed to create a standardized method for discovering invasive species and provide a platform for people to report and learn about invasive species in their area.

“Encouraging kids to participate in this research not only fosters a curiosity about science and the ocean environment but also provides them with the experience and tools to further investigate that world,” said Melissa Good, Unalaska-based Alaska Sea Grant Marine Advisory agent.





# *Engaging teachers in Northern Gulf of Alaska research*

Our marine education specialist, Marilyn Sigman, is developing K–12 education programs for the Northern Gulf of Alaska long-term ecological research site.

The NGA-LTER, as it's called, is a National Science Foundation-funded research site area that runs from the mouth of the Copper River to Kodiak Island. Educational outreach to young students as well as undergraduate and graduate students is a critical element.

The Northern Gulf of Alaska is a highly productive subarctic Pacific marine biome. The NGA-LTER builds on more than 40 years of oceanographic sampling along the Seward Line.

The Seward Line transect, across the Continental Shelf, is a long-term observation program that began in 1998 to better understand how this marine ecosystem responds to climate variability.

During the first year of the project, Sigman worked on developing an online component for the LTER Schoolyard Series, science curriculum materials that draw on the LTER's data resources. For example, Sigman designed a “for educators” page on the LTER website that includes links to relevant teaching materials, many of them developed by Alaska Sea Grant.





## *New guide helps beachcombers stay on right side of the law*

Beachcombers are drawn to items they find on the shore, and often can't resist taking home a souvenir.

On Alaska beaches, marine mammal remains are often a prized find but collecting them can be a complicated legal matter unless the person is Alaska Native. Factors to be considered include ethnicity, land ownership, and the animal's status under the Marine Mammal Protection Act.

To make matters easier to understand, Alaska Sea Grant's Gay Sheffield, based in Nome, compiled a two-page reference guide, *Collecting Dead Marine Mammal Parts while Beachcombing*. It's available as a free download at our online bookstore.

## *Developing K–12 marine education*

Alaska Sea Grant continues to work with school districts across the state to improve marine education taught to our K–12 students.

We collaborated with teachers in the Juneau, Cordova, Chugach, and Anchorage school districts over the last year to add 18 new marine education lesson plans. The plans align with Next Generation Science Standards (NGSS) and are available on our website. They are one outcome of our mini grants to 10 school districts over the last four years which funded professional-development workshops for teachers. These workshops bolstered the teachers' use of Alaska Sea Grant educational resources as well as their skills in developing lesson plans that align with NGSS.



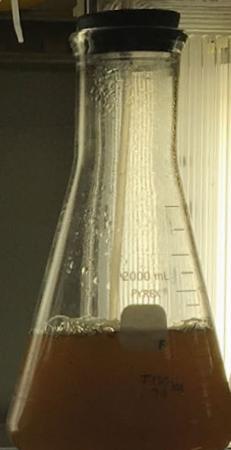
# *New research funded by Alaska Sea Grant*

Alaska Sea Grant selected six research projects for funding during 2018–2020.

The researchers are receiving a combined \$1.3 million to study a range of topics to help Alaskans understand, conserve and sustainably use the state's rich marine and coastal resources. The research is intended to advance knowledge in Sea Grant's focus areas including healthy coastal ecosystems, sustainable fisheries and aquaculture, and resilient communities and economies. Six graduate students will be involved with the research, contributing to the next generation of science professionals in Alaska.

"We received 47 pre-proposals and 18 full proposals. The six that we funded ranked highest in a rigorous peer-review process and will address critical needs for Alaska marine and coastal research," said Ginny Eckert, Alaska Sea Grant's associate director of research. "The investigators work within the University of Alaska system as well as Alaska agencies and nonprofits with expertise in marine and social sciences."

More information about the six newly-funded research projects is available on our website. Research topics include ocean acidification, rockfish, kelp reproduction, northern spot shrimp, Arctic risk management and salmon resilience to climate change.



# *New Alaska Sea Grant-funded graduate students dive into research*

Six graduate students from the University of Alaska became research fellows last summer and this fall with funding from Alaska Sea Grant.

The students are working on projects that address scientific issues in Alaska coastal communities and ecosystems.

Jesse Gordon is working with associate professor Anne Beaudreau on a project titled, "Integrating local ecological knowledge and survey data to improve assessment and management of

rockfishes in Alaska." Jesse is a master's student based in Juneau.

Master's student Jamie Musbach is working with professor Sherry Tamone of the University of Alaska Southeast on the project, "Metabolic and growth physiology of early life history stages of the northern spot shrimp, *Pandalus platyceros*."

Chris Sergeant, a doctoral student based in Juneau, is working with Jeffrey Falke, Ryan Bellmore,



Jesse Gordon



Jamie Musbach



Chris Sergeant

Rebecca Bellmore, and Davin Holen to assess the resilience of southeast Alaskan salmon to a shifting freshwater environment.

In Fairbanks, PhD candidate Ashley Rossin is working with assistant professor Amanda Kelley to examine the effects of ocean acidification on native Alaska bivalves.

“All of these research projects will contribute to the growing body of scientific knowledge we have about Alaska. And they will directly and indirectly benefit the people who live in nearby communities and the state as a whole,” said Heather Brandon, director of Alaska Sea Grant.

More than 300 students have worked toward advanced degrees on Alaska Sea Grant–funded research projects since the late 1970s.

In addition to these four new graduate students, two others continue their research with support from Alaska Sea Grant. For her master’s project, Marta Ree is exploring sockeye salmon responses to climate change on Kodiak Island, under Beaudreau and assistant professor Peter Westley. Brian Ulaski continues his master’s work with associate dean Brenda Konar on “Kelp reproduction and harvest rebound in Kachemak Bay, Alaska.”



Ashley Rossin



Marta Ree



Brian Ulaski

# *Alaska Sea Grant State Fellows Class of 2017 recaps accomplishments*

The Alaska Sea Grant State Fellowship entered its fourth year this fall.

The program offers participants one-year placements within government agencies and other host organizations so they can acquire on-the-job experience in the planning and implementation of marine resource policies and programs in Alaska. Their supervisors provide mentorship and opportunities for involvement in substantive issues that contribute to the fellow's professional goals.

The highly successful program has helped launch new careers and professional directions. For some recent examples, we checked in with our 2017 fellows.

Sara Cleaver spent her fellowship at the North Pacific Fishery Management Council. A graduate of Duke University, Cleaver worked on the Bering Sea Fishery Ecosystem Plan and collaborated on an environmental assessment and regulatory impact review allowing a new gear type for commercial halibut fishing in the Bering Sea. She also helped create a book

of amendment summaries for the Gulf of Alaska Groundfish Fishery Management Plan.

"I enjoyed working with a large group of agency employees to understand potential environmental impacts as well as talking with industry representatives to understand the perspective of many stakeholders, and then making sure all of this information was communicated effectively to decision makers," said Cleaver, describing her involvement with one of the council's regulatory actions.

Upon the successful completion of her fellowship, Cleaver accepted a two-year contract as a fishery analyst with the council.

Danielle Meeker served as a fellow in the Office of former Lieutenant Governor Byron Mallott in Juneau. She focused on designing and developing the first State of Alaska Climate Change Strategy, which has been in progress since October 2017. She also helped to design and manage the governor's climate change website.

“My biggest accomplishment was working as half of our two-person climate policy team to draft Administrative Order 289, facilitate the work of the Climate Action Leadership Team, and engage with state agencies and a wide range of stakeholders to advance the state’s response to climate change. However, during my time in the office, I prepared briefings and recommendations on topics as far-ranging as Alaska’s priorities for the 2018 Farm Bill to the population and migration of the Porcupine caribou herd to the need for more electric vehicle charging infrastructure across the state.”

Meeker recently accepted a full-time policy and program analyst position in the lieutenant governor’s office.

Kim Ovitz was placed with NOAA Fisheries, Protected Resources Division, in Anchorage. Her



Sara Cleaver



Danielle Meeker



Kim Ovitz



Genevieve Johnson

primary role was to assist with the management and outreach needs of Alaska's endangered Cook Inlet beluga whale population. Ovitz relocated to Kenai for two months where she conducted daily beluga monitoring sessions and anthropological interviews with long-time area stakeholders.

"My biggest accomplishment was designing and facilitating a mixed-methods and multi-disciplinary research effort which examined beluga distribution and human activities occurring in the lower Kenai River," Ovitz said.

"This was a particularly rewarding experience as I had the opportunity to connect with and learn from locals who possess immense knowledge of the Kenai River ecosystem. The results of this study ultimately enhanced our understanding of springtime beluga distribution in the lower Kenai River and helped to identify stressors that may shape belugas' access to this critical habitat," she said.

Since completing her fellowship in August, Ovitz headed to Flagstaff, Arizona, to assist the U.S. Fish and Wildlife Service in sampling efforts of the endangered humpback chub population in the Little Colorado River at the bottom of the Grand Canyon.

Genevieve Johnson completed her fellowship at the NOAA Alaska Fisheries Science Center in Juneau.

In June she presented her work on juvenile chum salmon at the 2018 Coastwide Salmonid Genetics Meeting in Mukilteo, Washington. Johnson also helped the genetics department of her host organization set up its first DNA sequencing run on its new MiSeq instrument.

"That was an exciting accomplishment," said Johnson. "I am grateful for the opportunities the fellowship afforded me to meet and collaborate with people in my field."

Johnson is now back at UAF finishing her master's degree in fisheries and working as a teaching assistant in ichthyology, the branch of zoology that focuses on fish. She plans to defend her thesis later this semester. She focused on the genetic population structure of Tanner crab in Alaska.

Alaska Sea Grant is excited to see where these former fellows go and will continue to keep an eye on the work they are doing to help shape marine policy for our state.

# ADVISORY COMMITTEE

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

**Assistant Chair: Jeff Kauffman** Vice President  
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and Director UAF Cooperative Extension Service,  
University of Alaska Fairbanks

**Carven Scott** Regional Director  
NOAA National Weather Service

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

**Greg Siekaniec** Regional Director, USFWS Alaska

**Dee Williams** Deputy Director  
US Geological Survey

# Alaska Sea Grant-funded graduate student and research fellows

**Richard Buzard** MS Geology (recent graduate)  
*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 (recent graduate)  
*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 (recent graduate)  
*Economic Viability of a Directed Skate Fishery in the Gulf of Alaska*

**Jesse Gordon** MS Fisheries  
*Integrating Local Ecological Knowledge and Survey Data to Improve Assessment and Management of Rockfishes in 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*

**Jamie Musbach** MS Fisheries  
*Metabolic and Growth Physiology of Early Life History Stages of the Northern Spot Shrimp, *Pandalus platyceros**

**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*

**Ashley Rossin** PhD Marine Biology  
*Potential for Resilience – Examining the Effects of Ocean Acidification on Native Alaskan Bivalves*

**Alicia Schuler** MS Fisheries  
*Assessing the Costs and Benefits of Whale Watching in Juneau, Alaska*

*Chris Sergeant* PhD Fisheries  
*Assessing the Resilience of Southeast Alaskan Salmon to a Shifting Freshwater Environment*

*Ann Thomson* MS Fisheries  
*Applied Research for a New Seaweed Aquaculture Industry in Alaska*

*Sarah Traiger* PhD Marine Biology (recent graduate)  
*Habitat Degradation Due to Melting Glaciers: Effects of Glacial Discharge on Kelp Bed Community Recruitment and Succession in Kachemak Bay*

*Brian Ulaski* MS Marine Biology  
*Kelp Reproduction and Harvest Rebound in Kachemak Bay, Alaska*

*Jordan Watson* PhD Fisheries (recent graduate)  
*Capturing Spatial Behaviors of Observed and Unobserved Fishing Over Time Using Vessel Monitoring System Data*

*Benjamin Williams* PhD Fisheries (recent graduate)  
*Parallel and Divergent Fishery Management Structures in State and Federal Waters*



# ALASKA SEA GRANT BY THE NUMBERS



**1,729**

K-12 students educated in marine science

**934**

K-12 educators trained



**168**

Businesses sustained or created



**183**

Fishermen/processors trained



**177**

Jobs sustained or created



**13**

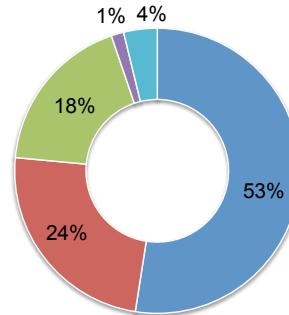
Graduate students worked on Alaska Sea Grant-funded research



**6,671**

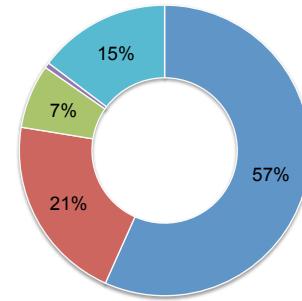
Publications distributed

## Operating Revenue



- ASG Core Funds (federal and match)
- University of Alaska Funds
- Grants
- Donations (cash and in-kind)
- Program Income

## Expenditures



- Outreach, Education and Communications
- Research and student fellowships
- State and Knauss Fellowships
- Program Development
- Program Management

## Operating Revenue, Year 4 Omnibus (partial FY18)

ASG Core Funds (federal and match)	\$2,721,798
University of Alaska funds	\$1,245,201
Grants	\$949,125
Donations (cash and in-kind)	\$73,582
Program Income	\$197,150

## Expenditures

Outreach, Education & Comms	\$2,434,912
Research and Student Fellowships	\$896,707
State and Knauss Fellowships	\$305,788
Program Development	\$25,601
Program Management	\$632,411



University of Alaska Fairbanks

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### *Program Administration*

Heather Brandon, Director  
 Tara Borland, Program Manager  
 Beverly Bradley, Marine Advisory Program Coordinator  
 Jared Jeffery, Fiscal Coordinator  
 Astrid Rose, Program Assistant  
 Terri Schimmack, Administrative Assistant

### *Research*

Ginny Eckert, Associate Director for Research

### *Education and Communications*

Paula Dobbyn, Communications Manager  
 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, Retired, Kodiak  
 Davin Holen, Coastal Community Resilience 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	Chuck Crapo, Emeritus
Alexandra Oliveira, Affiliate	Paula Cullenberg, Emeritus
Susan Sugai, Affiliate	Terry Johnson, Emeritus
Patricia Tester, Affiliate	Ray RaLonde, Emeritus
Bree Witteveen, Affiliate	Kate Wynne, Emeritus

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AK-ADMIN-100

<https://doi.org/10.4027/asg1718ar.2018>