

University of Alaska Fairbanks **College of Fisheries and Ocean Sciences**

Decadal Plan 2017



COLLEGE OF FISHERIES
AND OCEAN SCIENCES

University of Alaska Fairbanks



Foreword

Over 50 years ago, the Alaska State Legislature established the Institute of Marine Science to provide a program of education and research in physical, chemical and biological oceanography, and related fields. The School of Fisheries and Ocean Sciences was created in 1987 to unify statewide academic and research programs in fisheries and ocean sciences, including the Institute of Marine Science, across the University of Alaska system. Over the course of 30 years, the School became a regional and world-class research center, founded on strong academic programs, and providing outstanding service to Alaska and the nation.

Building on that momentum, the transformation to the College of Fisheries and Ocean Sciences (CFOS) in 2016 was the result of a growing student body and expansion of degree programs, major funded research programs, and the national responsibility of operating the Global Class research vessel *Sikuliaq*. With a focus on the North Pacific and Arctic, CFOS researchers study inland freshwater, coastal and deep ocean environments that extend from Antarctica to Greenland.

The College is one of the largest academic and research organizations in Alaska. From Nome to Ketchikan and Fairbanks to Unalaska, its footprint includes a dozen locations serving students, local communities and the fishing industry throughout Alaska and beyond. The College has a bright future, and I am pleased to see that reflected in the College of Fisheries and Ocean Sciences Decadal Plan.

Susan Henrichs

Provost

◀ *A transition zone between kelp beds and urchin barrens off of the Aleutian Islands. Photo by Brenda Konar.*



Introduction

The University of Alaska Fairbanks College of Fisheries and Ocean Sciences is a major contributor to research and training of new scientists and technicians in fisheries, marine biology, and oceanography. The College is also involved with numerous scientific committees that provide critical advice to state and federal government agencies. For example, CFOS contributes significantly to fisheries and the fishing industry in Alaska, which is the state's largest private employer with roughly 60,000 workers in the seafood industry. For context, approximately two-thirds of the nation's fisheries landings are harvested off Alaska, with a wholesale value over \$4 billion.

At the same time, Alaska's oceans, coasts and connecting inland waters are under increasing pressure from external forcing and environmental change. This pressure is resulting in a rapidly changing Arctic through declining sea ice, increasing acidification of ocean waters, shifts in aquatic food-web dynamics, and an even greater need to ensure a sustainable fishery. Changes to these inland and ocean ecosystems have far-ranging implications not only for Alaska's aquatic environmental health, economy and national security but also for the entire nation.

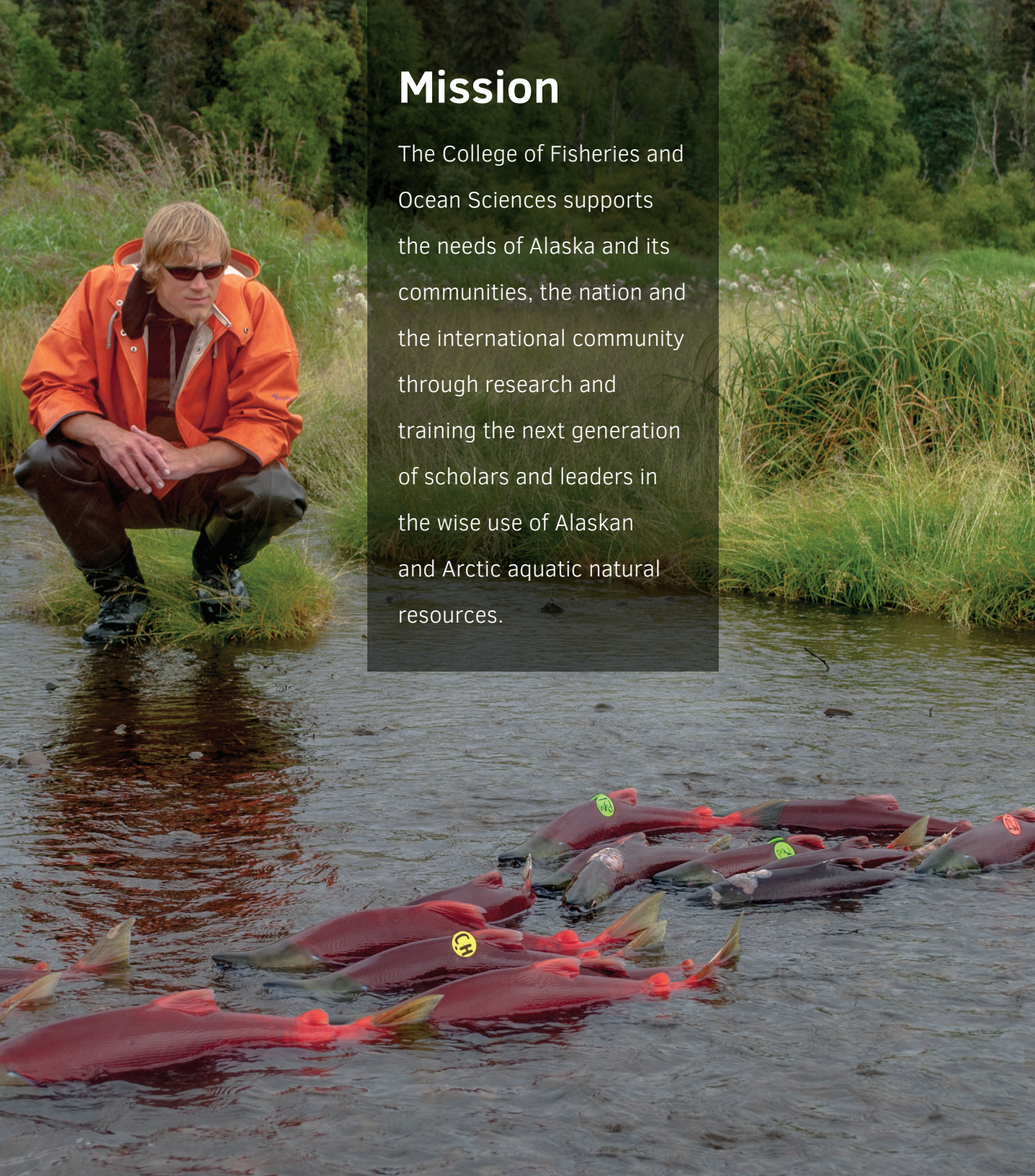
Coincident with these environmental changes and socio-economic and policy challenges has been the recent sharp decline in financial resources in Alaska. This poses a serious threat to the viability of CFOS and

▲ *Graduate student Sarah Traiger counts the number and kind of species on her SCUBA transect. Photo by Jacob Metzger.*

warrants a concerted and sustained effort to adapt in the face of these challenges. To do so effectively and efficiently requires a set of clear priorities to help navigate the difficult decisions and choices facing the College and ensure that it thrives during the current uncertainty and in the future.

This Decadal Plan provides an articulation of CFOS's mission, vision, and strategic priorities for achieving excellence in academics, research and service, leveraging state investments through strong partnerships, and sustaining critical infrastructure. Outlined in this Plan are key long-term goals in academics, research and service of the College; these three areas define our core responsibilities to Alaska and the nation.

The priorities described in this document were established as part of an all-hands faculty and staff retreat held in September 2016, through continued discourse within and external to the College, and with guidance from the CFOS Dean's Executive Committee. This Decadal Plan therefore reflects the collective input of the College and a shared vision of its future.

A man with blonde hair, wearing an orange jacket, sunglasses, and waders, is crouching in a shallow stream. He is looking down at several sockeye salmon that are lying on the stream bed. The salmon are bright red with yellow tags on their fins. The background shows a lush green forest and tall grasses along the stream bank.

Mission

The College of Fisheries and Ocean Sciences supports the needs of Alaska and its communities, the nation and the international community through research and training the next generation of scholars and leaders in the wise use of Alaskan and Arctic aquatic natural resources.

Vision

As one of the largest combined research and academic organizations in the University of Alaska system in terms of personnel and budget, and one of the most diverse Colleges in both geographic reach and academic mission, we seek to be a:

- World-class ocean and inland aquatic research and educational organization, recognized as such by peers in the academic community and funding agencies.
- Primary source of knowledge, operational expertise, and basic and applied research to manage freshwater, estuarine and ocean resources in Alaska, including the Arctic.
- Source of well-trained and highly motivated graduates to staff organizations and agencies, in particular those in Alaska responsible for management of Alaskan and Arctic waters and their renewable resources.
- College of choice for faculty and students with interests in waters off Alaska, including the Arctic, and their renewable resources.
- Trusted steward of state and national research and education facilities.

◀ Graduate student Casey McConnell examines a sockeye salmon migration in Hansen Creek. Photo by John Simeone.

Strategic Priorities

Academics

Implicit in the transition to the new College of Fisheries and Ocean Sciences is the expansion of our student body and growth of our academic programs at both the undergraduate and graduate level. The College has matriculated over 650 undergraduate and graduate students, many of whom now have important roles in academic, state and federal agencies, industry and non-profit organizations around the state and the world. Our academic programs are well integrated with our research strengths to address the complexity of research needs in both ocean and freshwater ecosystems. Undergraduate students have many experiential learning opportunities to participate in ongoing research projects conducted within the College and other UAF programs, and graduate students conduct their own research under the expert guidance of CFOS faculty. We seek to build on this strong integrated program to further develop our academic offerings to meet growing needs and national interests. With this in mind, we endeavor to:

- Grow our student enrollment and demographic diversity while maintaining high quality undergraduate and graduate instruction.
- Create opportunities to attract new students in career technology and certificate programs, including undergraduate research opportunities, scholarships, research and teaching assistantships, and internships.
- Develop new degree programs that address gaps in our curriculum and leverage the strengths of existing faculty, including the joint Bachelor of Science in Fisheries and Ocean Sciences with UAS, the non-thesis Master of Marine Studies, graduate degrees in Marine Policy and Resource Management, and programs focused on Arctic climate science in collaboration with other UAF units.
- Contribute to workforce development and outreach in fisheries and ocean sciences by providing continuing education programs for non-degree seeking individuals.
- Identify opportunities to add new expertise to our faculty through President's Professorships, philanthropic endowed professorships, partnerships with Alaskan agencies and industry, and through federal agency programs.



▲ Graduate student Brian Ulaski holds up a water sample from the Chukchi Sea. Photo courtesy of Caitlin Bailey.

- Incorporate R/V *Sikuliaq* into ongoing and future educational opportunities to train both undergraduate and graduate students in shipboard scientific techniques and oceanographic research.
- Strategically plan for all academic programmatic needs, including videoconferencing, scholarships, and major program changes as charged to the CFOS Academic Working Group.
- Increase capacity to offer flexible options for students, such as by providing interdisciplinary programs and remote, online accessible programs and courses.



◀ *R/V Sikuliaq crew members and researchers transition to perform science operations. Photo by Mark Teckenbrock.*

Research

A core function of CFOS is to meet local, state, national and international research needs to foster sustained, wise use of Alaska's inland waters, coastal waters, and oceans. Externally funded research is essential for program continuity and growth, in addition to promoting the natural and economic health of our state and nation. The College conducts field, laboratory and modeling studies in the general disciplines of fisheries, marine biology and oceanography, with much of this activity occurring on research vessels (e.g., R/V *Sikuliaq*), at remote field camps, at the Lena Point Facilities, and at the Kasitsna Bay Laboratory. Research projects range from hypothesis-driven mechanistic studies to long-term monitoring and large multidisciplinary, integrative studies. While much of our research focuses on North Pacific and Arctic waters, we are also engaged in studies that extend well beyond Alaska. Research is thus an essential complement to our teaching and service. A priority of the College is for all faculty to have an active research agenda. To excel in research, we endeavor to:

- Foster greater collaboration between existing faculty, especially those located on different campuses through joint seminars, all-hands faculty meetings, and facilitating research gatherings at major science conferences.
- Increase interdisciplinary research by encouraging faculty to develop large integrative studies through the CFOS Research Working Group.
- Increase externally funded research to help leverage state budget investments in CFOS while reinvesting a portion of generated indirect cost revenue in support of faculty research.

- Increase collaboration with external sponsors and stakeholders who have a shared interest in the outcome of our research; for example, by establishing major collaborations such as with the Pollock Conservation Cooperative Research Center, Coastal Marine Institute, and Kasitsna Bay Laboratory.
- Identify opportunities for faculty to develop the next big ideas for funding agencies and philanthropic donors to consider supporting.
- Expand research capacity by working with the Vice Chancellor for Research to ensure CFOS researchers are aware of research opportunities, recruiting more research faculty, and by addition of tenure-track faculty through opportunities such as the President's Professorships and innovative federal programs.
- Maximize R/V *Sikuliaq* chartered sea days by ensuring it is a highly sought after research vessel by Arctic researchers, while also enhancing CFOS use of R/V *Sikuliaq*, with the goal of 20% of the ship's time to involve CFOS faculty and students supported by grant proposals.
- Support the development of state-of-the-art research techniques and instrumentation by CFOS faculty and staff.

Oceanography technician Brita Irving adjusts an autonomous underwater vehicle in Resurrection Bay outside Seward. Photo by Peter Winsor.





◀ *Sea otters feeding in Tokeen Bay near Prince of Wales Island. Photo by Deborah Mercy.*

Service

Service is an essential component of the work of CFOS faculty, including university, professional and public service. Faculty participate in university service that assures CFOS and UAF operate efficiently, and professional service is required for reviews of grant proposals, manuscripts, and participating in professional scientific organizations that foster our science programs. Most externally visible is our public engagement, which is oriented to meet the needs of Alaska and its people through application of knowledge and expertise. An important goal of our strategy as a College is achieving a close coupling between academic programs and research through our primary outreach arms, Alaska Sea Grant and the Marine Advisory Program. We strive to support entrepreneurialism and economic diversification within the state, and to increase ocean literacy for the general public and K-12 students in Alaska. The College values and supports faculty and staff who desire to assume positions of leadership, both within UAF and externally. We take pride in our faculty and staff who have achieved such positions and actively promote such opportunities.

Our plan for service is to:

- Actively engage with stakeholder groups, including K-12 students and teachers, legislators and government agencies, other researchers (both internal and external to CFOS), and the media.

- Strengthen recognition by state, national and international stakeholders and policy makers that CFOS is a primary knowledge base for North Pacific and Arctic fisheries and ocean sciences.
- Meet the needs of Alaska and its people through application of fisheries and ocean sciences expertise in resource management and policy decision-making.
- Foster integration between researchers and Marine Advisory Program faculty to engage stakeholders in research and teaching throughout Alaska.
- Support opportunities for faculty and staff participation on panels, boards and advisory committees to provide scientific advice and expertise at state, federal and international levels.

▼ *A school of juvenile Chinook. Photo by Lara Horstmann.*



Partnerships

Implicit in our mission is the desire to establish formal and informal partnerships for collaboration and mutual support. The State of Alaska places great importance on protecting and better understanding its fisheries and changing oceans and coasts. As such, partnerships with federal and state agencies as well as industrial consortia, academic institutions, tribal entities, donors and philanthropic organizations are effective for development of mutually beneficial research programs. We similarly seek partnerships with organizations in the state that share common interests and enhance joint capacity and provide for opportunities for shared services, facilities and data. Over the past decade, over \$10M in philanthropic giving to the College has enriched our research and academic programs. From groundbreaking research conducted by faculty and students to new student performance awards, fellowships, scholarships and travel funding, philanthropy continues to be of great value to CFOS. To further enhance our partnerships, we intend to:

- Actively and regularly engage with our partners, stakeholders and supporters through face-to-face, online and written communication.
- Maintain a diversity of partners to include community and tribal organizations, internal and external researchers, federal and state agencies, as well as donors and philanthropic organizations.
- Increase involvement with groups that partner with federal agencies to further expand and strengthen effective partnerships.
- Expand our formal and informal research, teaching, entrepreneurial and operational relationships with other fisheries and ocean science academic institutions.
- Identify, research, cultivate, ask and steward current and potential CFOS donors to strengthen donor support.



▲ Walrus on an ice floe in the Chukchi Sea.
Photo by Tanja Schollmeier.



▼ Sunrise over the R/V *Sikuliaq* in the Shelikof Strait.
Photo by Mark Teckenbrock.

Infrastructure

A priority of the College is to ensure ongoing support for the sustained use of our key research and teaching assets, centers and facilities. The arrival of R/V *Sikuliaq* has moved CFOS to a higher level as it has taken on the role of a Global Class research vessel operator. In a similar way, robust experimental and analytical resources can significantly increase the number and types of opportunities available for collaborative groups, programs, and individual researchers. Our strategy includes the further development and/or acquisition of key facilities and instrumentation, both through ownership and collaboration. The following research, teaching and outreach programs, institutes, centers and facilities are important components of the success of the College.

Alaska Sea Grant

Alaska Sea Grant is a marine education, research and outreach program helping Alaskans to wisely use, conserve and enjoy Alaska's coastal resources. It is part of a national network of Sea Grant programs and is supported by the National Oceanic and Atmospheric Administration, CFOS, and the University of Alaska Fairbanks.

Coastal Marine Institute

The Coastal Marine Institute was established through a cooperative agreement between the University of Alaska and the U.S. Department of the Interior Bureau of Ocean Energy Management to study coastal topics associated with the development of natural resources in Alaska's outer continental shelf.

Institute of Marine Science

The Institute of Marine Science (IMS) functions as the central research

organization within the College. Research conducted by faculty in CFOS's three departments (Fisheries, Marine Biology, and Oceanography) is administered through IMS, which also serves as the home unit for CFOS research faculty.

Kasitsna Bay Laboratory

The Kasitsna Bay Laboratory is a National Oceanic and Atmospheric Administration-owned and CFOS-operated coastal research and teaching facility that includes a running seawater lab, a cold room, multiple classrooms, housing facilities, and access to pristine habitats. It is home for the University of Alaska Scientific Diving Program, a host of field courses, and active research projects.

Kodiak Seafood and Marine Science Center

The Kodiak Seafood and Marine Science Center supports seafood processing training workshops and applied research to benefit Alaska's commercial fisheries and seafood processing industry. It includes a pilot seafood processing plant, supports research on ocean ecosystems, and is also host to undergraduate and graduate level CFOS classes.

Lena Point Fisheries Facility

The Lena Point Fisheries Facility in Juneau houses CFOS fisheries faculty, staff and students. It has research laboratories ranging from computer labs to wet labs with running seawater and tanks, and is co-located with the National Oceanic and Atmospheric Administration Ted Stevens Marine Research Institute, promoting collaboration on fisheries and ocean science research, instruction, and outreach.

Marine Advisory Program

The Marine Advisory Program (MAP) is a statewide outreach and technical assistance program. MAP faculty live and work in coastal communities and engage Alaskans on a wide range of coastal issues related to jobs, training and community-based science.

Ocean Acidification Research Center

The Ocean Acidification Research Center conducts research on the extent and environmental impact of ocean acidification, particularly in Alaskan waters. Its mission is to determine the broader climate drivers that are leading to decreases in ocean pH, and the impacts of these changes on marine organisms.

Pollock Conservation Cooperative Research Center

The Pollock Conservation Cooperative Research Center was established to improve knowledge about the North Pacific Ocean and Bering Sea through research and education, focusing on the commercial fisheries of the Bering Sea and Aleutian Islands.

Rasmuson Fisheries Research Center

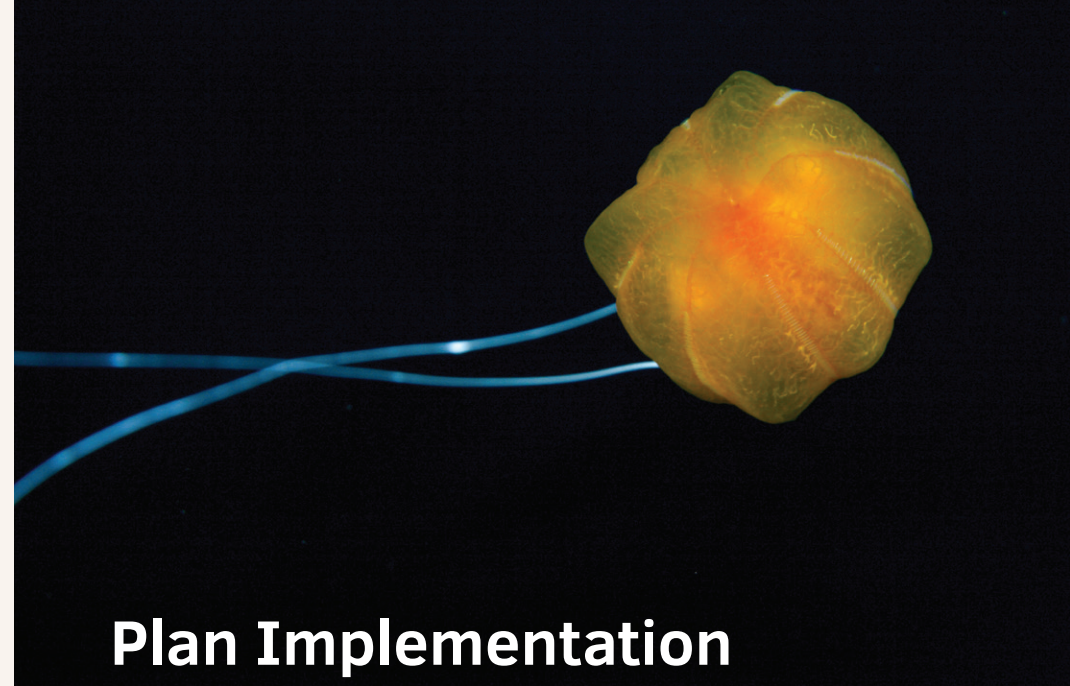
The Rasmuson Fisheries Research Center helps support graduate student research that contributes to the scientific knowledge base of Alaska's ocean environs and resources.

Seward Marine Center

The Seward Marine Center supports R/V *Sikuliaq* and a host of ocean sciences research and monitoring activities.

R/V *Sikuliaq*

R/V *Sikuliaq* is a 261-foot, ice-capable Global Class oceanographic research vessel owned by the National Science Foundation and operated by CFOS that brings scientists to the ice-covered waters off Alaska and the polar regions.



Plan Implementation

While this Decadal Plan outlines a long-term strategy to strengthen and grow our future research, academic and service activities, implicit is the recognized need to adapt and be flexible to near-term opportunities. Implementation of this Plan will be achieved on an annual basis by establishing a set of near-term essential goals; this effort commenced in 2016 with the formation of the new College operating structure.

Despite the current state budget challenges, overall the College is well positioned to deliver continued excellence in freshwater and ocean science instruction, research and service well into the future.

▲ *A ctenophore collected by the Global Explorer ROV in the Chukchi Borderlands. Photo courtesy of Caitlin Bailey.*



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