



**NOAA**  
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# NOAA Fisheries Alaska Fiscal Year 2021 Aquaculture Accomplishments

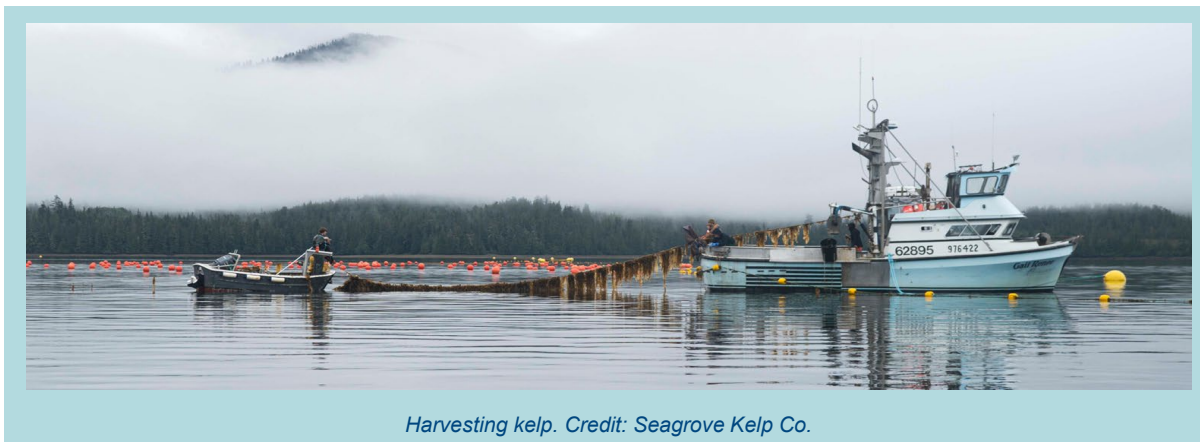


## The Alaska Region (AKR) prioritized the following focus areas in Fiscal Year 2021 (not in rank order):

- **Improve existing permitting processes for marine aquaculture in state waters**
- **Employ genetics to protect natural populations**
- **Advance the understanding of the interactions of aquaculture and the environment**
- **Improve production efficiency and wellbeing**
- **Build partnerships to increase outreach and education capacity**



This report highlights updates on the actions that supported each of the above AKR priorities, as well as updates on other notable accomplishments over the last year.



# Goal 1: Regulatory Efficiency

## Improve Existing Permitting Processes for Marine Aquaculture in State Waters

### Develop Standard Mitigation Measures

The Alaska Region's Protected Resources and Habitat Conservation Divisions, in conjunction with the Regional Aquaculture Coordinator, developed standard mitigation measures for

Endangered Species Act and Essential Fish Habitat consultations related to aquaculture projects. The Alaska Region engaged with NOAA's Aquaculture Interaction Working Group (AIWG) to ensure national consistency of standard measures to mitigate adverse interactions between marine aquaculture projects and ESA-listed species and designated critical habitat, and Essential Fish Habitat. Finalized measures were shared



*Humpback whale dives near Juneau. Credit: NOAA Fisheries (permit #14245)*

with state and federal agencies to help front-load the consultation process and reduce permitting timelines. These recommended measures are posted on the Alaska Region's Aquaculture Permitting [webpage](#).

### Develop Permitting Portal and Regulatory Guidance Document for Aquaculture Permitting in Alaska

The NOAA Fisheries Alaska Regional Office, in partnership with Alaska Sea Grant, formed an interagency working group with U.S Fish and Wildlife Service, U.S. Army Corps of Engineers, Alaska Department of Natural Resources, Alaska Department of Fish and Game, and Alaska Department of Environmental Conservation to reduce barriers to aquaculture leasing and permitting. This working group focused on the development of an Alaska aquaculture permitting

guidance document and companion aquaculture permitting portal. These products are anticipated for release in Fall of 2021. The portal and guidance document address barriers to development of the aquaculture industry in Alaska by providing clear, step-by-step instructions for completing state and federal authorizations to start a farm or renew, amend, or transfer an aquaculture lease or permit. The materials also provide guidance on getting started and siting guidance, as well as a list of resources for farmers from loan sources to growing guidance. Subsequent phases of the project may explore revamping the permitting process to allow applicants to apply for all authorizations in the same general application online. This will require facilitating a high level of interagency buy-in and cooperation.

## Develop and Operate a NMFS Alaska Aquaculture Team

A NOAA Fisheries Alaska Aquaculture Team was created with participants from the Regional Office, Alaska Fisheries Science Center, and Office of Aquaculture. The team is chaired by the Regional Aquaculture Coordinator. The team's function is to increase coordination and collaboration across divisions within the Regional Office and the Science Center, and to implement strategic aquaculture priorities. A goal of this team is to further aquaculture development in Alaska through regulatory efficiencies and research. The NOAA Fisheries Alaska Aquaculture Team will develop strategic approaches to prioritizing aquaculture activities, and will coordinate with other state and federal agencies and stakeholders as appropriate.

These actions enable NOAA Fisheries to communicate and coordinate more effectively in regard to aquaculture research, consultation efficiencies, and outreach.



*Visiting the Seagrove Kelp Co. farm in Doyle Bay. Credit: NOAA Fisheries*



# Goal 2: Tools for Management

## Advance the Understanding of Interactions of Aquaculture and the Environment

### Develop Mitigation to Minimize Herring Spawning Events on Kelp Farms (in progress)

A Pacific herring (*Clupea pallasii*) spawning event in Spring 2020 on farmed kelp destroyed the majority of the crop from the largest kelp aquaculture operation in the country, worth



Herring roe on kelp. Credit: Seagrove Kelp Co.

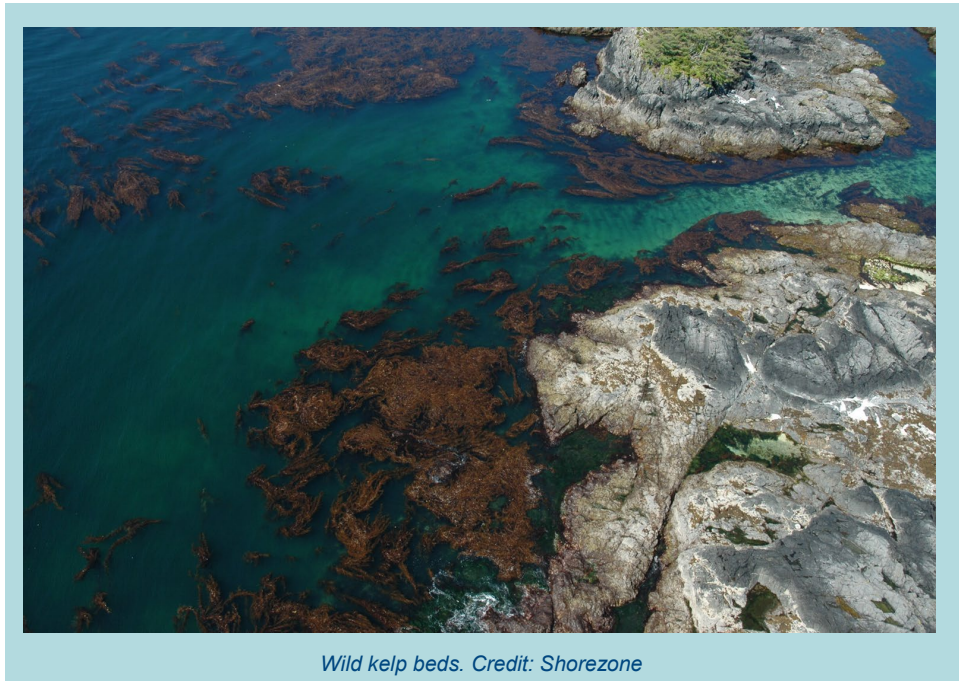
approximately \$300,000.

To ensure continued sustainability and expansion of aquaculture operations in Southeast Alaska and help meet the directives of the Executive Order on Promoting American Seafood Competitiveness and Economic Growth, there is a critical need for methods that safely deter herring but do not interfere with nutrient supply, harass marine mammals, or result in excessive fouling or cost. The Alaska Fisheries Science Center was

successful in receiving an internal grant to study acoustic deterrence devices and effects on herring. The first phase of the project included acquiring supplies and conducting preliminary acoustic deterrence tests on herring in a laboratory setting. This was completed during Summer 2021. Phase 2 will look at durability of selected deterrence devices and testing in the field on spawning herring in Spring 2022.

## Alaska Aquaculture Action Plan and Alaska Fisheries Science Center Aquaculture Strategic Plan

The Alaska Regional Office and Alaska Fisheries Science Center coordinated on the development of a Joint Aquaculture Action Plan and FY21 priorities which supports the [Alaska Geographic Strategic Plan](#) and aligns with NOAA Fisheries' [Marine Aquaculture Strategic Plan](#). We used the Action Plan to support funding for herring deterrence work, kelp population structure exploration, the Alaska Aquaculture Permitting portal to improve permitting efficiency, and forming the Alaska Aquaculture Team for improved coordination and collaboration.



Wild kelp beds. Credit: Shorezone

The Alaska Fisheries Science Center is in the final stages of development of a research-focused strategic plan to guide future cross-divisional research that address the needs of the aquaculture industry, regulatory agencies, and coastal communities.

## Employ Genetics to Protect Natural Populations

### Determine Population Structure of Alaskan Kelp Species

An improved understanding of the population genetic structure of kelp species that are currently farmed in Alaska is a high priority for management. The goal of this project is to investigate the fine-scale population structure of sugar kelp, *Saccharina latissima*, the most commonly farmed kelp species in Alaska. It is vital to understand patterns of population structure in Alaskan kelp to inform regulation of kelp aquaculture and ensure that the genetic integrity of wild populations are maintained. Currently researchers are investigating (A) the degree of relatedness among sugar kelp plants used as broodstock; (B) the genetic diversity of the farmed kelp; and (C) fine-scale population structure of wild sugar kelp within 100 km of farms. The results of this project will provide data to evaluate the current regulatory requirements for kelp farming in Alaska. During summer 2021, researchers are collaborating with industry partners to collect samples from Southeast Alaska, Prince William Sound, and Kodiak. These same partners will collect broodstock samples in the fall and outplants next spring and analysis of the samples will begin in spring of 2022.

# Goal 3: Technology Development and Transfer

## Improve Production Efficiency and Wellbeing

### Conduct Oyster Seed Quality and Grow Out Experiments

One of the major challenges faced by oyster farmers in Alaska is consistent supply of larval/juvenile (seed) oysters. Further, shellfish growers in Alaska have indicated that



*Salty Lady Seafood Co. pacific oysters near Juneau.  
Credit: NOAA Fisheries*

inconsistent and/or poor seed quality leads to poor juvenile survival. There is a need to establish Alaska oyster broodstock that suits local conditions. This was identified as an industry need during the NOAA Fisheries Alaska Mariculture Workshop. We propose to secure seed from all suppliers available to Alaskan farmers and to conduct seed quality and grow-out experiments at Auke Bay Lab. However, state regulations currently prohibit research institutions in Alaska from purchasing and growing oyster seed, as they are not commercial farms. The RAC and AFSC Aquaculture Research Lead collaborated with state partners to draft a request to change this regulation and receive a grow-out permit for oyster research at the AFSC lab. The request has been submitted to the Board of Fish for review and if approved, the project will commence in 2023.



# Goal 4: Informed Public

## Building Partnerships to Increase Outreach and Education Capacity

### Improving Diversity and Inclusion in Aquaculture through Dulse Farming Youth Education (in progress)

At the request of an educator in the Alaska Native community of Klukwan, the AKRO Aquaculture Coordinator and the AFSC Aquaculture Research Lead are helping develop materials and curriculum to grow K̄'aach' (red ribbon algae, *Palmaria mollis*), in a K-12 classroom in Klukwan. K̄'aach' is an important traditional and subsistence food for the Tlingit people of Southeast Alaska and is currently threatened by nearshore contamination, climate change, and increased harvesting pressures. The project was awarded an ICAF Diversity and Inclusion grant and focuses on priorities of the Klukwan community: stewardship of wild crops, community access to traditional foods for subsistence and ceremony, income generation, and youth education. Currently the NMFS project leads are developing a tumble culture tank suitable for deployment in classrooms and will transport the tank to Klukwan and begin the classroom portion of the project in Spring 2022. Once the tank is in place, students will be responsible for tasks including near-daily nutrient additions and weekly water changes, growth measurements, and harvests. The rearing of K̄'aach' will be combined with curriculum on the species' life cycle and ecology along with lessons on traditional uses and cultural importance.



Dr. Jordan Hollarsmith, AFSC Mariculture Research Lead, holding a piece of red ribbon algae from the tumble culture. Credit: NOAA Fisheries

If successful, this project may serve as a pilot for subsequent community and tribal engagement in the growing of traditionally and locally important seaweeds and educational opportunities. In addition, this project may increase interest and engagement in commercial aquaculture operations by Alaska native communities.



## **Collaborated with the State of Alaska and Aquaculture Industry on Advancing Aquaculture in Alaska**

Both the Alaska Regional Aquaculture Coordinator and Alaska Fisheries Science Center Mariculture Research Lead participated as ex-officio members of the Alaska Governor's Mariculture Task Force, providing expertise and scientific support. NOAA Fisheries provided two grant awards to support the work of the Task Force. The Task Force brought focused attention to mariculture development in Alaska, developing a Final Report to Governor Dunleavy and providing a five year action plan summary, identified future needs, and opportunities and challenges in advancing mariculture in Alaska.

Final Report: [Final Report to Governor Dunleavy Produced by the Alaska Mariculture Task Force 2021](#)