

Alaska's Seafood Future

Community Resilience Through Workforce
Development and Research Innovation

Action Agenda to:

Develop a Seafood Workforce Training Program

Engage Youth in Seafood Processing Careers

Re-establish Seafood Applied Research



Alaska Research Consortium (ARC)
alaskaresearchconsortium.org

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Alaska's Seafood Future Action Agenda

- ✓ Develop a Seafood Workforce Training Program in Alaska
- ✓ Engage Alaska's Youth in Seafood Processing Careers
- ✓ Re-establish Seafood Applied Research in Alaska

By Alaska Research Consortium

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Dear Alaskans,

The Alaska Research Consortium (ARC) is a 501(c)(3) community/industry organization formed in July 2016 that advocates for sustainable fisheries, marine science, and the blue economy in the North Pacific. ARC engages with a wide range of stakeholders whose aim is long-term economic opportunities through a sustainable seafood industry. This, in turn, supports Alaska's economy and its coastal communities.

Alaska's Seafood Future - Community Resilience through Workforce Development and Research Innovation is a project of the ARC. The Action Agenda and information in this report is the culmination of an 18-month project to identify priorities and action steps to:

- ✓ **Develop a Seafood Workforce Training Program in Alaska**
- ✓ **Engage Alaska's Youth in Seafood Processing Careers**
- ✓ **Re-establish Seafood Applied Research in Alaska**

These action steps can and should be implemented collaboratively by the seafood processing industry and related businesses, educators and trainers in Alaska and federal, state, local and tribal governments. Leveraging the resources of each partner can move Alaska's economic strength forward for years to come.

I would like to express my appreciation to those individuals critical to the development and completion of this project. They include:

Paula Cullenberg, acting Executive Director, Alaska Research Consortium

Kris Norosz, our contractor and Alaska seafood consultant

Nicole Kimball, Pacific Seafood Processors Association

Michael Kohan, formerly with Alaska Seafood Marketing Institute

Leauri Moore, North Pacific Seafoods, Inc.

Quentin Fong, Alaska Sea Grant, University of Alaska Fairbanks

Tom Lance, Sun'aq Tribe of Kodiak

Cari-Ann Carty, Alaska Safety Alliance

I would also like to thank everyone who participated in this project by completing the survey, participating in workshops and providing information. And finally, ARC would like to acknowledge the financial support of the U.S. Economic Development Administration, including the help of Shirley Kelly and Sharon Metiva, Matson Lines, and industry donors to ARC as funders of this project. We hope that the Alaska's Seafood Future project will support Alaska's economy and communities through a strong seafood industry.



Sincerely,

Jay Stinson, President
Alaska Research Consortium



Alaska's seafood industry is critical to the resilience of coastal communities across the state. Sustaining this valuable industry in Alaska will require a skilled seafood workforce, young people who pursue seafood careers, and applied research to support innovation and solve technical questions and challenges.

Alaska's seafood industry is the state's largest private workforce with approximately 60,000 individuals directly employed in harvesting and processing each year. Annually, Alaska's seafood enterprise contributes over \$172M in taxes, fees and self-assessments to fund state, local and federal governments. Seafood harvesting and processing are often the primary source of private income and jobs in many coastal communities.¹

Alaska's seafood processing industry, with over 166 shore-based plants, 49 catcher-processor vessels and 10 large floating processors, accounts for 70% of Alaska's manufacturing employment with 26,000 workers annually. While many of these workers are seasonal and come from outside our state, approximately 7,500 Alaskans participate in the seafood processing workforce. Over 40 occupations are supported by the processing sector.¹

However, the seafood processing industry and its workforce are not widely understood in Alaska and are underserved and underrepresented in the three focus areas of this project: workforce training opportunities, youth career exposure and applied research.

Alaska's Seafood Future: Community Resilience through Workforce Development and Research Innovation is a project of the Alaska Research Consortium (ARC), a community/industry

organization, with support from the U.S. Economic Development Administration and industry contributors and partners. The project is focused on creating a coordinated and collaborative approach among public and private entities to:

- ✓ Develop a Seafood Workforce Training Program in Alaska
- ✓ Engage Alaska's Youth in Seafood Processing Careers
- ✓ Re-establish Seafood Applied Research in Alaska

To develop this Action Agenda, ARC surveyed seafood processing leaders, receiving responses from 46 seafood plant managers and three catcher/processor companies, representing over 15,000 workers. Ongoing programs were reviewed and gaps were identified. Draft action steps were developed with our project partners and further enhanced through discussions with stakeholders from industry, government, community groups and educational institutions. The full report outlines the project and provides details on each action step.

¹The Economic Value of Alaska's Seafood Industry, January 2020. Alaska Seafood Marketing Institute

Alaska's Seafood Future Action Agenda

Fundamental to all of these action steps are three overall recommendations:

- Recognize the economic value and workforce impact of Alaska's seafood industry across the state.
- Develop relationships and build partnerships between the Alaska seafood industry, researchers, educators/trainers and governments.
- Commit time and funding to support Alaska's seafood industry and workforce.

Develop a Seafood Workforce Training Program in Alaska

Alaska's seafood processing industry often uses on-the-job training for its workforce, but that alone is not enough to meet its needs. As markets and products change, regulatory requirements grow, technical operations become more complex, and

personnel turns over, there is a consistent demand for both basic and advanced training. However, seafood workforce training opportunities in Alaska are minimal for the approximately 26,000 seafood processing industry workers.

ACTION STEPS

1. Align workforce training with employer and employee needs.
2. Encourage funding sources to target and support seafood processing workforce training.
3. Use the University of Alaska's Kodiak Seafood and Marine Science Center (KSMSC) as a hub for seafood workforce training while also offering targeted classes elsewhere in the state.
4. Amplify and improve existing, related programs offered by the University of Alaska (UA), Alaska Vocational Technical Center (AVTEC) and other training centers to include the seafood processing industry.
5. Develop new programs to fill gaps in seafood processing workforce training needs.
6. Actively recruit from training programs to industry positions.
7. Consider development of an intensive, and possibly credentialed "Seafood Processing Career Academy".

Engage Alaska's Youth in Seafood Processing Careers

Increasing the employment of Alaska residents in skilled seafood processing industry careers is a primary focus of the Alaska's Seafood Future project. Skilled occupations provide higher wages, opportunity for advancement and year-round employment. Alaskans can and should fill these positions. Creating awareness among young people about the careers available in the seafood processing industry points them to future employment opportunities and provides encouragement for them to remain in the state. This contributes to community resilience and stability.



ACTION STEPS

1. Commit time and funding to provide seafood career exposure for Alaska's youth.
2. Develop relationships between seafood companies and local schools and regional training centers. Create formal school-business partnerships on a local or regional basis.
3. Create and share information about seafood processing careers with young people.
4. Refresh and regularly update the Seafood Career Streams information at the Alaska Department of Labor and Workforce Development.
5. Ensure inclusion of Alaska's seafood industry in the state's Career and Technical Education (CTE) Plan and related state and national CTE programs and resources.
6. Explore development of a comprehensive youth seafood processing careers program or ensure that seafood careers become part of an established program.



Re-establish Seafood Applied Research in Alaska

Currently, there are no University of Alaska researchers who work on seafood quality, product development, byproduct use, full utilization and process technology. Limited partnerships between Alaska Sea Grant Marine Advisory faculty members and researchers from other universities have resulted in some work on seafood product development and quality control. However, much work remains undone due to a lack of capacity for seafood science research at the University of Alaska system. This is concerning since seafood processing represents over 70% of the state's manufacturing sector. The Alaska's Seafood Future project found that many seafood managers in Alaska recognize the need for research, but do not understand how to relay priorities to researchers and help get the research conducted.

ACTION STEPS

1. Develop an ongoing and consistent way to identify and prioritize Alaska seafood research and development needs.
2. Leverage the mission and facilities of the Kodiak Seafood and Marine Science Center to develop an applied seafood research/ocean cluster hub for Alaska.
3. Leverage private and public funds to support research of importance to Alaska's seafood industry.
4. Expand research focus areas to represent the multi-dimensions of "Alaska seafood."

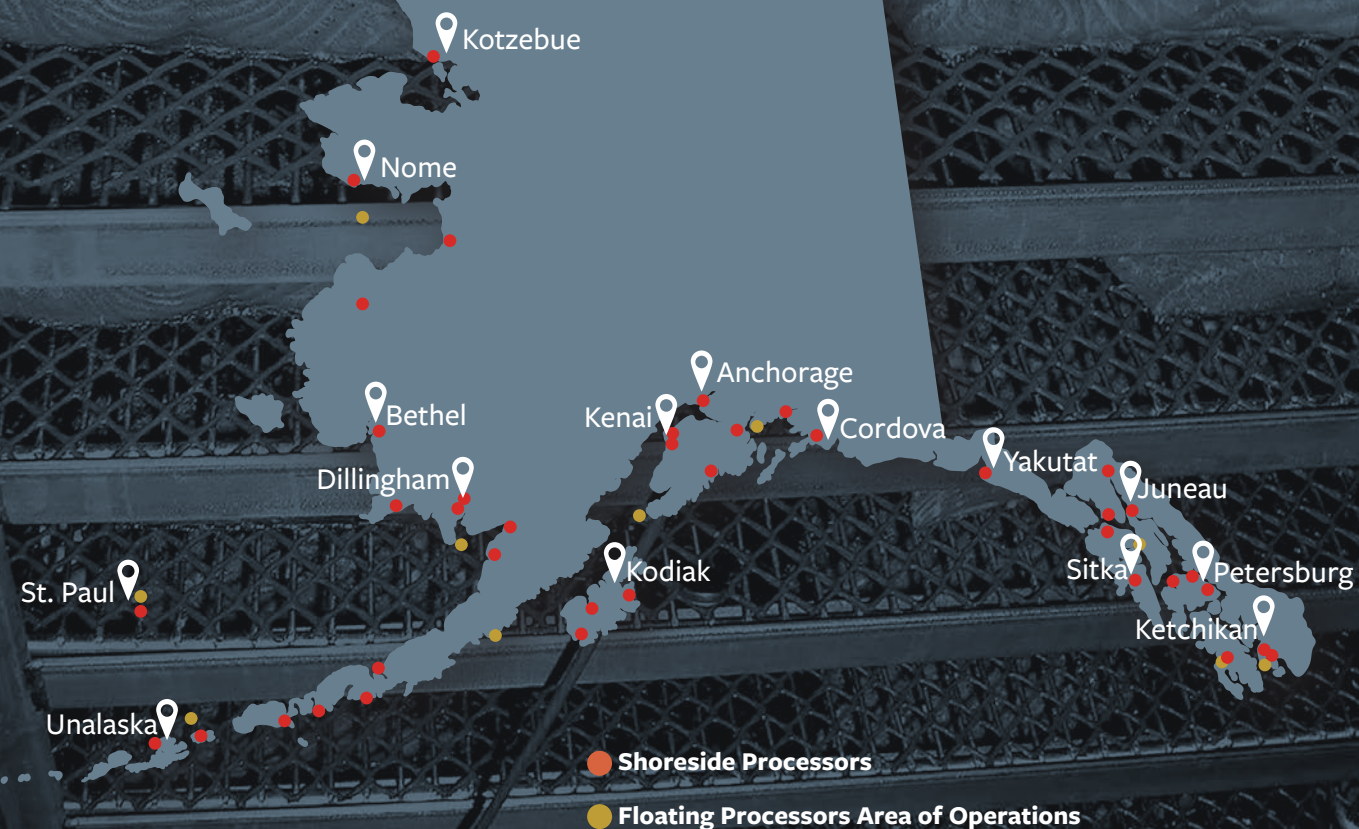
Next Steps

The Alaska's Seafood Future Action Agenda, designed to support Alaska's seafood processing industry through workforce training, youth career awareness and seafood applied research, is the product of over 18 months of work by the Alaska Research Consortium. What happens next, and when, will depend on leadership, commitment and action by the Alaska seafood processing industry; local, tribal, state and federal governments; the University of Alaska; AVTEC and other regional training centers; and local schools and communities. The Alaska Research Consortium will advocate for these steps to be enacted, recognizing the vital role of the Alaska seafood processing industry in the state's economy and the well-being of our communities.

Alaska's Seafood Future Action Agenda

Alaska's seafood processing industry, with over 166 shore-based plants, 49 catcher-processor vessels and 10 large floating processors, accounts for 70% of Alaska's manufacturing employment with 26,000 workers annually. Seafood harvesting and processing are often the primary source of private income in many coastal communities.

The Economic Value of Alaska's Seafood Industry, January 2020.
ALASKA SEAFOOD MARKETING INSTITUTE



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However, the seafood processing industry and its workforce are not widely understood in Alaska and are underserved and underrepresented in the three focus areas of this project: workforce training opportunities, youth career exposure and applied research.

Other industries operating in Alaska such as healthcare, oil and gas, and mining have successfully partnered with educators and trainers to align learning opportunities with employer needs, create a pipeline for employment and engage Alaska's youth in career opportunities. A sustained commitment that includes collaboration and good communication is needed to develop a similar partnership between the Alaska seafood processing industry, educators and trainers and governments.

¹ The Economic Value of Alaska's Seafood Industry, January 2020. Alaska Seafood Marketing Institute

The Alaska Maritime Workforce Development Plan

The Alaska Maritime Workforce Development Plan, created in 2014 by a large group of stakeholders, including maritime businesses, seafood and fishing industry groups, state agencies, and education and training providers serves as “a call to action ... to enable Alaska’s maritime sector to remain economically vibrant, ensure that Alaskans are qualified to fill these skilled and well-paid positions, and increase the number of Alaskans in this workforce.” The Plan’s overarching objective is to help sustain and enhance the economy of Alaska and its communities through three goals and five strategies.

Alaska Maritime Workforce Development Plan Goals

- » Develop a responsive workforce that enables the maritime sector to remain a substantial contributor to the state.
- » Guide Alaska’s workforce to discover and prepare for the wide range of employment opportunities in the maritime sector.
- » Increase the number of Alaskans working in skilled maritime occupations.

Alaska Maritime Workforce Development Plan Strategies

- » Grow awareness of occupations and develop career pathways.
- » Improve workforce readiness.
- » Train Alaskans for maritime careers.
- » Support recruitment and retention.
- » Promote sustained industry engagement.

The Alaska seafood industry competes for consumers with providers of other protein sources such as beef and poultry, as well as with other seafood producing countries, creating an ongoing need for applied research. Specific research targets include innovation to respond to global markets, ensuring food safety and quality, full utilization of the resource, and maintaining Alaska seafood’s international reputation. Private and government funds should be leveraged to build capacity and maximize benefits of seafood applied research in Alaska.

Alaska’s Seafood Future Project

Alaska’s Seafood Future project is an in-depth look at Alaska’s seafood processing sector in the context of the Alaska Maritime Workforce Development Plan. This Action Agenda described below complements work done in other sectors of the state’s maritime economy.

Phase 1 of the Alaska’s Seafood Future project started with a comprehensive survey of seafood processing leaders. The Alaska Seafood Processing Needs Assessment was sent to 75 plant managers and 15 offshore catcher/processor companies in spring and summer 2020. Forty-six individual plant managers or HR managers responded, working for



22 companies in 25 communities across Alaska. Three catcher-processor companies, representing 25 vessels, also responded to the survey. Altogether, survey responders represented over 15,000 seafood workers at the peak of their season.

In Phase 2, ARC reviewed the current status of seafood processing workforce training, career youth engagement and seafood applied research in Alaska. Programs in Alaska that focus on different industries but could serve as models were reviewed. The information gained in Phase 2 was merged with survey results to develop a draft agenda of key action steps.

In December 2020, three workshops were held via webinar (rather than in-person due to the COVID-19 pandemic) to discuss and critique the draft action steps. Over 65 individuals participated in one or all of the workshops representing seafood companies, trade associations, community organizations, Alaska Native tribes, Alaska Regional Development Organizations (ARDORs), Community Development Quota (CDQ) groups, local and state government, University of Alaska and regional training center, AVTEC. Input from the workshops was used to adjust and enhance the Alaska’s Seafood Future Action Agenda.

The Alaska’s Seafood Future Action Agenda identifies steps to develop a seafood processing workforce training program, engage with Alaska’s youth about careers in seafood processing and re-establish a seafood applied research program in Alaska.

The recommendations and steps detailed in the report need to be implemented by collective actions of the seafood processing industry and related businesses, educators and trainers in Alaska, community organizations and federal, state, tribal and local governments. Leveraging the resources of each partner to carry out these steps will contribute to Alaska’s economic strength and to the resilience of our coastal communities for years to come.

Survey responders were from these companies, representing over 15,000 employees:

Alaska Glacier Seafoods, Inc.	Kwik’Pak Fisheries
Alaska Seafood Company	Leader Creek Fisheries
APICDA	North Pacific Seafoods
Arctic Storm Management Group	Ocean Beauty Seafoods
Coastal Cold Storage, Inc.	Ocean Peace, Inc
Copper River Seafoods	O’Hara Corporation
E&E Seafoods, Inc.	Peter Pan Seafood, Co.
Icicle Seafoods, Inc.	Sitka Sound Seafoods
International Seafoods of Alaska, Inc.	Silver Bay Seafoods
Kodiak Island Wildsource	Tonka Seafoods
Kruzof Fisheries	Trident Seafoods
Kvichak Fish Co.	UniSea, Inc.
	Westward Seafoods

Overall Action Recommendations

- Recognize the economic value and workforce impact of Alaska’s seafood industry across the state.
- Develop relationships and build partnerships between the Alaska seafood industry, researchers, educators/trainers and governments.
- Commit time and funding to support Alaska’s seafood industry and workforce.



Develop a Seafood Workforce Training Program in Alaska

Building skills in workers who make seafood processing a career is a strategic investment for Alaska. Supporting this workforce through training opportunities is one way to enable seafood processing to remain a vital industry that provides essential economic support to coastal communities and the state overall.

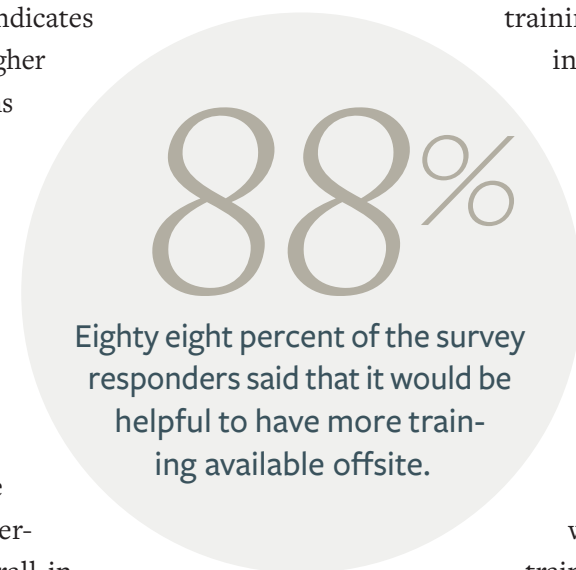
Training is critical to ensure that workers have the evolving skills needed to do their jobs as effectively and efficiently as possible. It enables workers to move into skilled positions that provide higher pay. Recent analysis by the University of Alaska on the impacts of workforce training in the oil and gas industry indicates that training leads to a higher level of retention of Alaskans and higher salaries. For example, 89% of graduates with a Process Technology AAS degree are working in Alaska within a year of graduation as well as 82% of those with a welding degree. These numbers are significantly above the percentage of Alaskans overall in these positions.¹

Alaska's seafood processing industry often uses on-the-job training for its workforce but that alone is not enough to meet needs. As markets and products change, regulatory requirements grow, technical operations become more complex, and

personnel turns over, there is a consistent demand for both basic and advanced training. However, seafood processing training opportunities in Alaska are minimal for the approximately 26,000 seafood processing workers.

To understand the need for workforce training in the seafood processing industry, the Alaska's Seafood Future project in 2020 surveyed seafood processing leaders working at 46 seafood processing plants and 3 catcher/processor companies across the state, representing over 15,000 workers. Eighty eight percent (88%) of the survey responders said that it would be helpful to have more training available offsite. Priorities

ranged from technical skills such as quality control, ammonia refrigeration and Baader equipment operations; electric and mechanical skills; vessel and maritime skills; healthy and safe operations; to leadership, supervision and other human resource management skills.



¹ The Oil and Gas Industry and UA Graduates Fast Facts, 2020

Training Priorities of Alaska's Seafood Industry

A range of priority training needs were identified by Alaska's Seafood Future survey respondents. They include:

- Quality Control/HACCP/Sanitation
- Supervision/Leadership/Human Resources
- Refrigeration, particularly Ammonia Refrigeration
- OSHA/HAZWOPER/Industrial Safety
- Technical and Mechanical Skills
- Maritime Skills
- Others such as - ESL, math, business, Lean Manufacturing, Baader, process line mechanics

Quality Control / HACCP / Sanitation

Quality control training was the most frequently mentioned priority and is critical to the ongoing safety and reputation of Alaska's seafood products. Two classes, Hazard Analysis Critical Control Point (HACCP) and Better Process Control School (BPCS) are taught regularly in Alaska by Alaska Sea Grant.

HACCP is a systematic approach to identifying and controlling biological, physical and chemical hazards related to the procurement, storage, handling, production and distribution processes that can cause a food product to be unsafe. A HACCP plan is required by all seafood processors. HACCP training, while not required, is encouraged to help companies develop their HACCP plan and meet the permitting requirements of the Alaska Department of Environmental Conservation (DEC) and the Food and Drug Administration (FDA). HACCP training is often required by third party certifying bodies (such as the British Retail Consortium, or BRC). Most wholesale customers of Alaskan seafood products require seafood companies to maintain third-party certification.

A two-day HACCP class has been offered for many years by Alaska Sea Grant. In addition, Part 1 of HACCP training can be taken online with Part 2 offered as a virtual online class or more commonly (pre-COVID) in a classroom setting. HACCP training uses materials developed by the HACCP Alliance, an industry trade association. HACCP classes are generally offered in Kodiak or Anchorage or upon request in a coastal community or plant. A one-day Sanitation class is available on demand from Alaska Sea Grant.

Better Process Control School (BPCS) is a 24-hour class that teaches principles of thermal processing, equipment requirements, container closure evaluation, and record keeping for glass jars and cans. It is designed for retort operators (which are used in canneries), quality assurance technicians, and home canners. It is also useful for personnel in plants that pack and thermally process low acid foods and acidified foods in hermetically sealed containers. The course addresses both flexible pouch and traditional can retort operations and includes hands-on training with thermal processing equipment. The class satisfies FDA requirements. Attendees receive a certificate on successful completion. It is offered by Alaska Sea Grant once a year, generally in Anchorage.

Supervisory/Leadership/Human Resources

Eighty seven percent (87%) of survey responders identified "supervisory skills" as a highly desired skill that employees could acquire from training. Seventy six percent (76%) identified "developing future leaders", 61% identified "conflict management" and 54% prioritized "preventing harassment and discrimination". All of these topics are in the area of human resource skills needed to manage personnel at a seafood processing plant or on a

catcher/processor, regardless of the size and backgrounds of the plant's employees.

Currently, Alaska Sea Grant offers the Alaska Seafood Processing Leadership Institute (ASPLI) every other year. The program includes 80 hours of directed training providing a broad overview of the Alaska seafood industry with a focus on individual leadership development. Between the fall and spring sessions, each participant completes a project at their home company under the guidance of a company mentor. ASPLI has been offered six times with almost 100 participants from 29 companies operating in Alaska. The program has been attended by employees in a range of positions with supervisory or lead titles such as plant manager, quality control lead, production manager and freezer foreman.

Other than ASPLI, there are no supervisor/leadership/interpersonal training programs specific to the seafood industry available in Alaska.

Refrigeration, particularly Ammonia Refrigeration

Refrigeration Engineer and Technician is one of nine high-need occupations identified by the seafood processing sector in the Alaska Maritime Workforce Development Plan, published in 2014. It was identified again as a high-need occupation by the Alaska's Seafood Future survey in 2020. Refrigeration engineers and technicians provide safe installation, operation and maintenance of industrial mechanical refrigeration and freezer systems, facilitate improvements, test and flush refrigeration systems, ensure that policies and safety standards are met, and implement analysis and modification of procedures as needed. Employers noted the extreme difficulty in finding trained and experienced refrigeration personnel. Alaska's seafood processing industry, with over 166 shore-based plants, 49 catcher-processor vessels and 10 large floating processors, accounts for 70%

Seafood processing facilities require a workforce with a wide range of skills and experience:

- » Entry level workers who need to learn species-specific knowledge, food safety, food quality, workplace safety and interpersonal skills.
- » Mid-level workers who need to learn supervisory skills, basic math and accounting skills, intermediate species knowledge, problem-solving, regulations and policies related to employment (anti-harassment and anti-discrimination, wage and hour, employee safety regulations), food safety and environmental compliance.
- » Technical workers with skills and experience related to fish tickets, payroll, intermediate accounting, recruitment and retention of workers, industrial refrigeration (anhydrous ammonia and fluorocarbon refrigerants), plumbing, carpentry, electrical, pumps, engines, boilers, hydraulics, pneumatics, conveyors, food safety and quality programs, workplace safety, environmental compliance, industry regulations.
- » Plant leaders and managers with skills and experience related to plant operations, market demands, budgeting and forecasting, governmental, customer and third-party audits, mentoring and leading teams, production flow and line design, problem solving, conflict resolution, overarching policies and regulations, harvesting methods and equipment, fleet management.

of Alaska's manufacturing employment¹ and almost exclusively uses ammonia for the refrigeration of seafood. Ammonia is less expensive, biodegradable and safer to use than hydro-chlorofluorocarbons (such as Freon), which are being phased out across the industry.

Businesses that use anhydrous ammonia at amounts greater than 10,000 pounds must follow detailed Occupational Safety and Health Administration (OSHA) regulations known as Process Safety Management (PSM) and the Environmental Protection Agency's (EPA) Risk Management Plan (RMP). These regulations are complex and refrigeration engineers often require significant training to understand the requirements.

The Refrigerating Engineers & Technicians Association (RETA) is a national trade organization involved in the design, operation and service of industrial refrigeration systems. It provides training to both experienced operators and those who have recently entered the field as well as testing and certification in meeting its standards for operation. This certification, while not required to operate refrigeration systems, provides an assurance to OSHA that standards will likely be met. It also clarifies training and levels of knowledge for employers. However, RETA membership and certification can be a significant cost to companies.

The Garden City Ammonia Program in Garden City, Missouri is one of the only and the most commonly used ammonia refrigeration training programs for Alaska seafood processors. Garden City offers: Process Safety Management, RETA certificate, Boiler Tech I and II, NH₃ (ammonia) safety training, Ammonia operator 1, 2 and 3. Classes are not specific to seafood processing production. Travel is an additional expense in sending personnel to Garden City for training. iWorkWise (based in Seattle) offers Process Safety Management (PSM) training both in-person and

online on contract to companies. Non-ammonia refrigeration training is offered by the Alaska Vocational Technical Center (AVTEC) in Seward as well as the University of Alaska Anchorage's Mat-Su campus.

Refrigerated seawater systems (RSW) are used by harvesting vessels, seafood tenders and floating processors to chill seafood onboard. Training in RSW systems is currently offered on an on-demand schedule by Marine Refrigeration Solutions.

There is no training offered regularly in Alaska related to industrial ammonia refrigeration operations, maintenance, regulatory requirements or safety for seafood processing.

OSHA / HAZWOPER / Safety

The federal Occupational Safety and Health Administration (OSHA) is part of the United States Department of Labor and is responsible for protecting worker health and safety. In the food and beverage manufacturing industry, there are a multitude of practices that have different OSHA regulations, standards, hazard recognition and possible solutions that may apply.

OSHA regulations affect each industry differently, depending on safety hazards associated with each job site, resulting in a variety of training needs for each industry. OSHA training has benefits beyond meeting requirements and keeping employees safe. It leads to healthier employees with more peace of mind, which increases productivity. It increases morale, which reduces turnover and the need for time and resources spent on recruiting and training replacements. And it lessens time away from the job by productive workers due to injury and illness. This is all in addition to helping protect a company from liability retribution by OSHA, who can levy heavy fines for violations of its regulations.

The state worker safety regulatory body, Alaska Occupational Safety and Health (AKOSH), offers

¹ The Economic Value of Alaska's Seafood Industry, January 2020. Alaska Seafood Marketing Institute



employers a free, two-day seafood training session for supervisors and management personnel in the seafood processing industry. Online OSHA training courses are offered through the American Safety Council and other sources.

HAZWOPER is an acronym which stands for Hazardous Waste Operations and Emergency Response. HAZWOPER training is required under OSHA standard 29 CFR Part 1910.120.

According to OSHA, the HAZWOPER standard applies to five groups of employers and their employees. It specifically includes any employees who are exposed to hazardous substances and who are engaged in several operations including clean-up, treatment, storage and disposal of hazardous waste. In addition, workers involved in an emergency response operation dealing with hazardous waste and workers who have to perform duties at a waste site where hazardous contamination may be present are equally expected to be fully trained and protected.

Employees and employers covered by the OSHA HAZWOPER standard are required to take the initial HAZWOPER training which consists of a 24 or 40-hour course. Depending on job type and experience, the 24-hour course may meet the HAZWOPER training requirement. Every year after the initial training requirement has been met, workers are required to take an 8-hour HAZWOPER refresher course.

HAZWOPER training is available at AVTEC in Seward and at various sites at the University of Alaska, and online from a number of providers around the country including iWorkWise based in Seattle, HAZWOPER Training and others. Targeted training in HAZWOPER for seafood processors is preferable but is limited in Alaska.

Safety training in general, including firefighting and first aid/CPR was also identified as training needed by the seafood processing industry. The Alaska Marine Safety Education Association (AMSEA) provides training and information on reducing injury and death in maritime activities. AMSEA offers United States Coast Guard (USCG) Drill Instructor training as well as training in vessel stability and damage control, ergonomics and injury prevention.

The North Pacific Fishing Vessel Owners Association (NPFVOA) based in Seattle offers a range of maritime safety training, including: Drill Instructors, Standards of Training, Certification and Watchkeeping (STCW), firefighting, first aid and HAZWOPER. Most classes are offered in Seattle, but they have held training classes in Alaska periodically.

First aid training is available through a number of contracted sources. Many plants send their employees to Seattle for this training or bring a first aid trainer up to Alaska.

Technical and Mechanical skills

A number of technical, electrical and mechanical training programs exist in Alaska. None are designed to target the seafood processing workforce, but still could provide valuable training. See Programs and Classes listed in the Appendix.

Several programs at the University of Alaska offer a range of technical and mechanical skills that would be of value to the seafood workforce or could serve as models for or be adapted to the seafood processing industry.

The University of Alaska Southeast Maritime Training Center (UAS) in Ketchikan offers a Maritime & Multi-Skilled Worker (MMSW) program. MMSW is a series of courses that leads to the U.S. Coast Guard Marine Oiler Credential: “Qualified Member of the Engine Department” (QMED). Students in the MMSW Program learn the basics of maintenance and repair of diesel engines, hydraulics, refrigeration, and marine electrical as well as welding skills. UAS partners with the Alaska Marine Highway System and other employers to find sea time internships for all interested students.

The Prince William Sound College (part of UAA) offers an occupational endorsement certificate (OEC) in Millwright. A professional Millwright is highly skilled in precision instrumentation, welding, construction, blueprint reading, turbines, generators, rigging, conveyor systems, safety, and more. Millwrights are experts at installing, maintaining, and repairing all sizes of industrial machinery. The OEC in Millwright trains students in each of these areas and is based on curriculum certified by the National Center for Construction Education and Research (NCCER) and has oversight by Alaska Millwright and Machine Erectors Local 1501.

The Associate of Applied Science (A.A.S.) degree in Process Technology is a two-year program designed to prepare individuals for employment as an operations technician in the process industry.

“Process industry” by definition includes oil and gas production, mining and milling, transportation and refining, chemical manufacturing, power generation, utilities, wastewater treatment facilities maintenance, and food processing. Process Technology is offered at the University of Alaska Fairbanks’ Community and Technical College in Fairbanks and at the University of Alaska Anchorage’s Kenai Peninsula College. Currently, emphasis in this program is on oil and gas process technology.

Maritime Skills

U.S. Coast Guard (USCG) approved maritime classes are required for workers on catcher-processors and floating processors operating off of Alaska. The Alaska Vocational Technical Center (AVTEC) in Seward and the University of Alaska Southeast Maritime Training Center in Ketchikan both offer USCG approved maritime classes.

Other Classes

A number of other training needs were identified in the survey. Some are available around the state such as English as a second language (ESL), math skills, and Excel/business classes. However, none currently target the seafood processing industry workforce. Adapting these classes to meet the content needs and availability of seafood workers would be useful.

Several specific classes mentioned (Lean Manufacturing, Multivac, Baader, process line mechanics) are specific to the seafood processing industry. Training classes in these areas are not currently available in Alaska but could be brought to the state on an intermittent basis.

A list of programs and classes available to Alaska’s seafood processing industry can be found in the Appendix. Many of these classes could be adapted to seafood processing workforce needs, adjusted to fit seafood processing schedules or brought to Alaska on an itinerant basis. Lacking to date has been a central site and staff providing coordination and communication.

Challenges with Developing a Seafood Workforce Training Program in Alaska:

- » Many of the larger companies that process Alaska seafood are headquartered outside of Alaska and HR staff are often located out of state. A sizeable number of processing workers come to Alaska from out of state or from other countries with H-2B visas. These workers often cycle out after a year or two. However, there are many Alaskan professionals in the seafood processing industry (ASMI estimates that over 7,300 Alaskans work in the seafood processing industry¹) and they often hold the higher paid, more permanent and skilled management and maintenance jobs at a facility.
- » Many positions held in the seafood processing industry do not require a traditional “degree” or “certification.” There are notable exceptions to this, but overall, many seafood processing professionals have had a mixture of non-traditional training and hands-on, on-the-job experience to propel themselves up the ladder. Demand for training is apparent, but without requirements for degrees or certifications, risks to training entities can be higher, reducing their incentive to offer classes.
- » Despite noting that a number of people in their facility have the potential for advancement, 70% of survey responders said that their company did not have any clear process for advancement. Some companies indicated they increased salaries for advanced training. However, only 31% included any type of internship or apprenticeship program for employees.
- » Seafood processing plants are often intensely busy, responding to the availability of the resource, and in many cases, the work is seasonal. After the season, the workforce may leave the company and/or the region and scatter across the globe. During the season, sending workers to training is difficult and costly.
- » There are over 166 seafood processing plants in communities across the state, 49 catcher-processors and 10 floating-processors operating offshore of Alaska, ranging widely in size, operations, methods of processing, species processed and seasons. It can be challenging to offer classes that fit the needs and schedules of such diverse companies.
- » Alaska’s geography and small population makes it difficult to hold in-person classes. While the University of Alaska’s Kodiak Seafood and Marine Science Center and a number of regional training centers such as AVTEC are dedicated to this mission, many participants have to travel to attend classes adding to the overall expense and time commitment required for training.
- » Personnel at Alaska’s seafood processing plants are often highly diverse culturally, speak a range of languages, and vary significantly in age and educational background. Training effectiveness requires flexibility to adapt to this diversity in learning styles.
- » Training entities in Alaska, such as the University of Alaska and regional training centers are often short on resources.
- » Unlike a number of key industries in Alaska, training entities and the seafood processing industry have not created strong partnerships. There is limited understanding of the seafood processing industry among Alaskan educators and trainers and vice versa.
- » Federal and state funding to support workforce training is often not specifically directed toward the seafood processing industry. This is due, in part, to a limited understanding of the industry and its workforce priorities.

WORKFORCE TRAINING ACTION STEPS

1. Align workforce training with employer and employee needs.

Alaska's Seafood Future project recommends that educators and trainers:

- Develop ongoing systems to ensure communication between program designers, trainers, seafood employers and employees.
- Incorporate seafood processing industry advisors in program development and evaluation.
- Provide consistent outreach and communication about available training.

2. Encourage funding sources to target and support seafood workforce training.

Several funding opportunities exist that have the potential to support seafood processing workforce training development, coordination and delivery.

Technical Vocational Education Program fund

Alaska's Technical Vocational Education Program fund (TVEP) established by legislation in 2000 and managed by the Alaska Department of Labor and Workforce Development (DOLWD), distributes training funds to technical and vocational education entities across Alaska. TVEP funds are obtained from 0.16% of employee unemployment insurance contributions. In the last several years, the annual TVEP fund has been approximately \$12M.

Seafood processing employees contribute a significant amount of dollars annually to the state's TVEP fund. The Alaska Department of Labor and Workforce Development noted that from FY16-FY18, workers using NAICS code 3117 (Seafood Product Preparation and Packaging) annually contributed approximately \$670,000 to the fund. While the University of Alaska and AVTEC have expended a percentage of their TVEP funds on fisheries and maritime training over the last few years, funds dedicated to directed seafood processing workforce training have been minimal (i.e., the University averaged \$64,000 per year at directed seafood workforce training from FY 14-20 or about 1.2% of the University's overall TVEP allocation).

State Training and Employment Program (STEP)

A variety of federally funded workforce training opportunities are available and administered by the Alaska Department of Labor and Workforce Development such as the STEP program. These

programs could be directed toward the seafood processing workforce if pursued by a particular company or education and training organization.

Self-funding by Industry

Many seafood companies often contract directly with trainers to meet their essential workforce training needs. Of those surveyed, 56% of responders noted that their company has a budget for training their workers. Seafood companies have a track record of paying fees for classes. For example, in 2019, industry paid full cost (\$20,000) to host a Baader machine operations trainer from Germany. Fees to attend the Alaska Seafood Processing Leadership Institute are over \$2,000 per person. Given the high interest in increased training and the history of providing support for offsite classes, industry fees can be built into a workforce training budget.

Given the high interest in increased training opportunities, and the track record of providing support for off-site classes, it makes sense to assume that seafood companies would pay for training fees as part of a workforce training budget. Missing has been the administrative staff to coordinate and offer training.

Alaska's Education Tax Credit (ETC)

If a business owes the State of Alaska a tax liability and it makes a contribution to qualified educational institutions in Alaska, it may be eligible for a credit against its state taxes. The program offers up to a 50% tax credit for eligible contributions and the total tax credit may not exceed \$1M per taxpayer, per year. The Education Tax Credit will expire in 2025 unless additional legislation is passed.

Alaska's Seafood Future project recommends that the seafood processing industry, educators and trainers:

- Advocate for TVEP funds to target seafood processing workforce training.
- Leverage private funds with government and education/training program funding for both development and delivery of training.
- Seek out other funding sources and encourage them to identify and prioritize seafood processing training.
- Advocate for continuation of Alaska's Education Tax Credit.

3. Use the University of Alaska's Kodiak Seafood and Marine Science Center (KSMSC) as a hub for seafood processing workforce training while also offering targeted classes elsewhere in the state.

In 1981, the Alaska State Legislature codified the Fishery Industrial Technology Center (now named the Kodiak Seafood and Marine Science Center) as the state's central hub to support the seafood industry through workforce training and research. The mission and purpose of FITC is outlined in Title 16 of the Alaska Statutes AS.52.020:

The center shall create employment opportunities in the state's fishing industry and other benefits to the state by:

- (1) *providing training opportunities to citizens of the state on the most efficient and appropriate technologies for the harvesting, processing, and conservation of the fishery resources of the state;*
- (2) *providing information and technical assistance on the adaptation of existing and new technologies to the users of the fishery resources of the state;*
- (3) *providing research and development activities to adapt existing technologies to enhance the economic viability of the industry;*
- (4) *providing research and development activities to create new technologies that will enhance the effectiveness of the industry, and provide economic benefits to state citizens; and*
- (5) *encouraging joint projects between industry and government in order to use industrial experience and government programs to enhance the productivity of the industry.*

The Kodiak Seafood and Marine Science Center, a 20,000 square foot fishery training and research facility, was constructed in 1991, on land donated by the City of Kodiak using settlement funds from the

Exxon Valdez oil spill.

Despite this dedicated facility and statutory direction, training, research and development for the seafood industry has been uncertain, limited and intermittent. Alaska Sea Grant recently hired a Seafood Workforce Training Coordinator to be based at KSMSC funded for one year by TVEP funds. This is a positive step for seafood workforce training.

Other regional training centers such as AVTEC and the University of Alaska's community campuses also have some capacity and resources to offer training that targets seafood processing priorities. Coordination and communication with the Kodiak Seafood and Marine Science Center workforce training coordinator will ensure that needs are met more fully.

Alaska's Seafood Future project recommends that the University of Alaska and regional training centers:

- Use the Seafood Workforce Training Coordinator at KSMSC as a point of contact for seafood employers and employees looking for training anywhere in Alaska.
- Collaborate, develop and consistently communicate a regular schedule of training opportunities from KSMSC, University of Alaska and regional training centers across the state.
- Coordinate itinerant classes as demand warrants in seafood ports around the state.
- Use the Alaska Research Consortium and other seafood industry advisors for input and support.

4. Amplify and improve existing training programs offered by the University of Alaska, AVTEC and other training centers to include the seafood processing industry.

Capacity for seafood processing workforce training in Alaska is very limited. A first step would be to grow and expand existing training programs in Alaska that either now serve the seafood processing industry or that could adapt to do so.

Alaska Sea Grant has for many years offered training related to seafood quality including HACCP, Better Process Control School, and Smoked Seafood School. These classes have consistently been filled with participants covering training fees. Ability to offer additional and more frequent classes in this area are limited by funding for faculty and staff.

Various vessel/maritime operations and mechanical and electrical classes around the state are relevant to the seafood processing industry. U.S. Coast Guard required maritime classes are available at both the University of Alaska Southeast

Maritime Training Center in Ketchikan and the Alaska Vocational Technical Center in Seward.

Alaska’s Seafood Future project recommends that the University of Alaska and regional training centers:

- Broaden the Maritime and Multi-Skilled Worker Program, the Millwright Program, the Process Technology Program and other programs to include the seafood processing industry. These programs already offer a range of skills that are used in the seafood processing industry.
- Grow Alaska Sea Grant’s capacity of faculty and staff to support more seafood processing workforce classes.

5. Develop new programs to fill gaps in seafood workforce training needs.

New programs, when unavailable in Alaska, should be developed to respond to seafood processing workforce training needs if demand warrants.

Alaska’s Seafood Future project recommends that educators and trainers:

- Develop an ammonia refrigeration training and certification program targeting Alaska seafood production and tailored to meet industry needs. The training should be delivered via a method, place and time that is compatible with seafood processing workforce availability. Alaska’s seafood processing industry almost exclusively uses ammonia for its refrigeration of seafood. Yet

there is no training in Alaska in ammonia refrigeration operations, maintenance and safety standards focused on seafood production. This gap needs to be filled.

- Develop and deliver lead/foreman/supervisor training targeting Alaska’s seafood processing industry. Collaborate between seafood processor human resource professionals and supervisory/leadership training professionals to develop a seafood processing industry-specific series of trainings that can be shared across the state.
- Once developed, ensure that training programs are sustainable through industry-fees or other funding sources.

6. Actively recruit from training programs to industry positions.

By investigating and building relationships with relevant training programs, the seafood processing industry has an opportunity to recruit new employees.

Alaska’s Seafood Future project recommends that the seafood processing industry:

- Visit or participate in the programs to encourage recruitment of students into industry positions upon course completion.
- Consider working with training programs to develop internships and mentorships that may provide a pathway to employment.

7. Consider development of an intensive, and potentially credentialed “Seafood Career Academy.”

The Alaska’s Seafood Future survey asked seafood plant leaders: *Would an intensive program introducing seafood processing careers be valuable?* Forty nine percent of the respondents said yes and 49% said maybe. When asked what focus such a program would take, answers included among others: an introductory look at seafood processing – production, maintenance, quality, safety, environmental compliance, HR, fleet management; supervisory skills, diversity, conflict resolution, production principles; basic mechanics, electrician, refrigeration, use of tools etc. and/or basic management of a facility, someone to run an operation.

Several key industries in Alaska are the focus of intensive training programs which offer an introduction to the industry and occupations.

The Center for Mine Training at the University of Alaska Southeast in Juneau offers both a high school course (Introduction to Mining Occupations and Operations) as well as an occupational endorsement or associate of science degree for post-secondary students in Mine Mechanics/Heavy Duty/Diesel or Fixed Plant Mechanics. The program includes opportunities for paid internships with the Hecla Greens Creek Mining Company.

The Alaska Construction Academies (AKCA) work with members of the Home Building Associations, apprenticeship programs, and local school districts to ensure participants receive the

standard skills necessary for entry into construction occupations. By providing School-to-Apprenticeship training programs for high school students and evening classes to adults, AKCA can offer knowledgeable, motivated, entry-level employees to fill high-demand construction industry jobs.

The Alaska Area Health Education Centers (AHEC) program began at the University of Alaska Anchorage (UAA) in 2005. AHECs are academic and community-based partnerships engaged in primary care workforce engagement, training and recruiting, and retaining activities to improve the distribution, diversity, supply and quality of health care personnel. The Alaska AHEC program office (at UAA) contracts with six regional Centers to implement educational activities involving health professions and to expose students to primary care delivery in rural and/or underserved settings. In addition, AHECs work closely with state and local workforce investment boards to identify and address health care needs and shortages.

Alaska’s Seafood Future project recommends that the seafood processing industry and education and training providers:

- Collaborate to analyze the value of a targeted seafood processing industry career program linked to internships to recruit and professionalize careers in the industry.



Engage Alaska's Youth in Seafood Processing Careers

Increasing the employment of Alaska residents in skilled seafood processing careers is a primary focus of the Alaska's Seafood Future project. Skilled occupations provide higher wages, opportunity for advancement and year-round employment. Alaskans can and should fill these positions. Creating awareness among young people about the careers available in the seafood processing industry points them to future employment opportunities and provides encouragement for them to remain in the state. This contributes to community resilience and stability.

Survey results from the Alaska's Seafood Future project are clear that the Alaska seafood processing industry has a chronic need to fill skilled positions with capable workers. Recruitment of people to fill these positions was ranked as very high or high in importance by over 80% of the survey responders. These workers must be able to handle the challenges associated with working long hours in isolated coastal communities or on processing vessels. An aging workforce coupled with industry growth and an increasing dependence on technology contribute to a continuous need for new skilled workers.

Seafood companies responding to the survey indicated a strong interest in engaging with youth. Of the respondents, 94% said they would be interested in participating in a high school program to introduce students

to the seafood processing industry. Despite this interest, 68% said that they currently have no relationship with their local high school.

Increasing the number of Alaskans that comprise the state's workforce has been a priority of the State of Alaska for many years. The vision of the Alaska Workforce Investment Board is to "build connections that put Alaskans into good jobs". The executive summary of the state's Career and Technical Education Plan notes that "the state cannot meet its current and future workforce demands without effectively preparing and transitioning young Alaskans from school into the world of work."

Actively engaging with Alaska's youth, providing them with career information, aligning training and education with employer needs, and providing pathways for career opportunities are strategies to get young Alaskans into

94%

Of seafood companies said they would be interested in participating in a high school program to introduce students to the seafood processing industry.

BUT

68%

Seafood companies said that they currently have no relationship with their local high school.

local seafood career employment. Alaskans in these careers provide stability and economic growth in local communities and in the state overall.

Current Landscape of Industry - Youth Engagement in Alaska

In Alaska, youth programs that directly engage with the seafood processing industry are few, primarily sponsored by Community Development Quota (CDQ) groups. CDQ career exposure efforts generally consist of youth employment programs and internships with their partner seafood companies. These include internships for youth ages 14 to 17, or in some cases to 19 years of age, and also internships for college students. Some CDQ groups sponsor seafood processing industry related classes at AVTEC and/or in their local communities. All CDQ groups have scholarship programs for their community residents.

For example, Kwik'Pak Fisheries/Yukon Delta CDQ Youth Employment Project (YEP) introduces youth to good business practices, administrative duties, sales and marketing, organizational structures, and project operating plans for the region's richest cultural staple- fisheries and fishery development. The opportunity to be employed and gain experience each year boosts the working skills of the youth and open doors for them to advance. Youth are shown that attaining a strong work ethic is a sustainable asset to their futures. During employment, youth are put in situations to exercise their positive work skills such as: problem solving, teamwork, and communication skills. The main goal of YEP is to shape regional youth by giving them a building block foundation to gain skills in order to transition into proficient, experienced working adults, who are motivated to further their education. Throughout the season, students cycle through several positions to best find out where their career interests belong.

The Homer Marine Trades Association (HTMA) has contributed to local youth career awareness through a partnership with Homer High School

and their Focus on Learning program. HMTA has brought in trades people (marine electronic technicians, net builders, etc.) to stimulate interest by exposing students to various occupations in the maritime industry that are available in the local community and region. The program is designed as a way to meet workforce needs, stabilize and grow the economy, and build community resilience.

Though youth programs directly related to Alaska's seafood careers are not common, there are a few highly structured successful programs that exist in Alaska focused on other career areas that could serve as models. Several other programs can be found in the Appendix.

The Della Keats Health Sciences Summer Program started over thirty years ago and is part of the University of Alaska Anchorage's WWAMI School of Medical Education. It is open to high school juniors and seniors who come from Alaska Native, rural Alaska and other backgrounds who are underserved or underrepresented in the health professions. While on the UAA campus for the six-week program, the teens are introduced to a wide range of health-related science classes, work as a team on a research project, have the opportunity to job shadow with local health professionals and experience a bit of what college life is like in Anchorage. The Della Keats program has resulted in an Alaskan healthcare workforce that is more representative of the population, grounded in local communities and provides economic stability and needed local healthcare.

Started in 1995, the Alaska Native Science & Engineering Program (ANSEP) has evolved from a scholarship program into an education model that provides a continuum of components beginning with students in sixth grade and continuing on through high school and on to the PhD if students wish to pursue it. ANSEP's objective is to "effect systemic change in the hiring patterns of Alaska Natives in science and engineering by placing students on a career path to leadership."

Elements leading to a successful youth program include:

- » Hands-on active learning that is challenging
- » Real world experiences
- » Meaningful, interesting work
- » Opportunities for skill building, scaffolded to higher levels of learning
- » Opportunities to make decisions and learn from mistakes
- » Well organized objectives and activities
- » Financial incentive or earned credits for youth participants
- » Ability to build relationships with role-model adults
- » Dedicated and knowledgeable adults to run the program
- » Longevity and financial continuity
- » Strong partnerships with industry employers

Challenges with developing an Alaska seafood career youth program:

- » The Alaska Child Labor Law prohibits minors under 18 years of age from working around machinery and potentially hazardous equipment. To work in the seafood processing industry, young people from 16 to 18 years of age are required to obtain a minor permit from the State of Alaska and have their parents' consent. For seafood processors, this usually limits youth from 16 to 18 years of age to only working in roe production or in the office.
- » Middle and high school students often have a variety of after school programs to choose from (such as sports, music and the arts) that compete for the students' time and attention. Establishing and maintaining a program that draws youth participants can be challenging. Financial or other incentives (i.e., travel, scholarships) can make programs more compelling.
- » Some high school students need to work and earn money to support themselves and their families; after school activities that don't include payment is not an option for them.
- » A dedicated adult champion is needed to make any of these programs work. Programs are disrupted and may cease to exist when the leader leaves employment or the community and there is no one to take their place.
- » Companies, schools, communities and local and state government need to be invested long term for these programs to work.
- » Financial stability is also key to success. Inconsistent funding or programs dependent on intermittent grants may not have sustainable funding to establish a long-term program.
- » Often, there are industry groups and/or schools doing small projects locally and regionally, but there is a lack of coordination.

Introduction to Mining Occupations and Operations Class at University of Alaska Southeast (UAS) is the first step towards a potential career in mining. The course is built especially for high school students, who will earn three UAS college credits and 0.5 high school credit. Instruction involves guest speakers from the mining industry sharing their experiences in mining operations and how

to safely and effectively operate a mine. The class is offered each spring semester at the UAS Center for Mine Training located within the UAS School of Career Education in Juneau. The class is the entry point for students looking to set out upon the Hecla Greens Creek Pathway to Mining, which is an industry-led effort to train more Southeast Alaskans for the high-paying jobs available as Mine Mechanics.

ENGAGING YOUTH ACTION STEPS

1. Commit time and funding to provide seafood processing career awareness for Alaska's youth.

As the state's largest private employer, seafood workforce opportunities must be included in policy, plans and funding for youth career awareness in Alaska. Success requires good communication, coordination and collaboration by all parties involved. Employers must be clear about the skills, traits and knowledge they seek in potential employees. They also should define the wide range of jobs and careers available and the opportunity for advancement. Schools and government must commit to understanding this important industry and creating partnerships that align workforce

development programs and funding with the seafood employer needs.

Alaska's Seafood Future project recommends that the seafood processing industry, educators and trainers and funders:

- Target the seafood processing industry in Alaska's youth career programs through funding and experiential opportunities.
- Collaborate to set relevant standards and program designs that meet the skills and knowledge needed by employers.

2. Develop relationships between seafood processing companies and local schools and regional training centers. Create formal school-business partnerships on a local or regional basis.

Engaging with young people about seafood processing careers can range from individual connections with students, teachers or classrooms to more systemic partnerships with local schools.

Direct one-on-one connections with local youth inside or outside of classrooms can stimulate an interest in the seafood processing industry, promote valued skills, and help students discover job and professional career opportunities available in their home communities. Seafood company employees can meet students and teachers, visit classrooms, explain various occupations and communicate with educators and youth program leaders about skills sought by industry employers.

Mentorships and internships can provide a foundational connection to the workforce and future employment opportunities and may possibly initiate or change a career trajectory for a young Alaskan. The seafood processing industry should consider developing internships in partnership with schools. Internships provide short-term, practical opportunities to learn about careers, develop

networks and have a "real world" work experience with standard workplace expectations. These can be paid or unpaid positions. Mentoring provides youth the opportunity to develop bonds with local adults who have more life experience and can provide support, guidance and opportunities to help them succeed and meet goals.

Broader connections with local schools and their CTE staff and regional training centers can include assistance with curriculum development, hosting a tour of the local seafood processing facility, donations of tools, building and welding materials to support programs, sponsoring an experiential event or providing a service-learning project for high school aged volunteers. Companies can fund youth programs or provide scholarships for continuing education.

Formal school-business partnerships with local schools, school districts or training centers can provide a more systemic connection. The Anchorage School District has a School Business Partnership program (SBP) that "provides

connections, tools and resources for meaningful partnerships between schools and local business organizations. Each partnership is designed to serve both student needs and the business mission". Activities from a school-business partnership can vary from year to year; they can be as simple as a businessperson involved in one classroom to a company-wide connection with many schools throughout the district. Business partners with the Anchorage School District include Carlile Transportation, Wells Fargo Bank, Alyeska Pipeline Service Company and many others.

Alaska's Seafood Future project recommends that the seafood processing industry, local schools and CTE programs, and regional educators and trainers:

- Build or enhance relationships between seafood companies and local schools, local CTE coordinators, school districts and regional training centers.

Industry and educators/trainers need to reach out to each other.

- Offer opportunities for seafood company personnel to visit schools and for students to visit the seafood workplace.
- Create mentorship and internship opportunities for students.
- Develop formal school-business partnerships with goals and expectations clearly outlined. Partnerships can form between a company and a school and/or training center, a school district or multiple school districts located in the same region. The partnership could also include multiple seafood companies that operate in the same region.
- Support an existing organization that provides career exploration and foundational skill development for youth with the goal of including sessions on opportunities in the seafood processing industry.

3. Create and share information about seafood processing careers with young people.

When the Alaska's Seafood Future survey asked, "Do you have any sort of career awareness materials or participate in career awareness days for local high school students?", ninety-five percent of the responders said no.

The Alaska Safety Alliance and the University of Alaska have created a number of maritime career information pages and downloadable flyers that would be useful for Alaska's youth. The Maritime Careers website of the Alaska Safety Alliance hosts that information.

However, seafood processing companies should consider creating company sponsored information about career opportunities and seek out events and platforms to share this with local youth. High school career fairs are common across Alaska, but information for today's young people needs to be delivered via their methods of communication.

Alaska's Seafood Future project recommends that the seafood processing industry, local schools, educators and trainers:

- Work collaboratively with school CTE programs to create accurate information about seafood processing careers.
- Share career awareness information with local high schools, education and regional training centers.
- Make information accessible via social media platforms used by young people such as TikTok.
- Engage young people to help create videos and information to share with their peers. Consider using 360 degree or virtual reality filming techniques to showcase real experiences.

4. Refresh and regularly update the Seafood Career Streams information at the Alaska Department of Labor and Workforce Development.

The Alaska Department of Labor and Workforce Development has an online presentation called Seafood Career Streams that provides detailed information about various seafood occupations and career pathways. It includes job descriptions for shore-based production, at-sea production, harvesting and corporate careers. Links for job descriptions of all of the positions identified are on the site.

Alaska's Seafood Future project recommends that the Alaska Department of Labor and Workforce Development and the seafood industry work together to:

- Ensure that the Seafood Career Stream information is consistently up to date and accurate.
- Implement ways to increase accessibility to this information and distribute it more widely.

5. Ensure inclusion of Alaska's seafood industry in the state's Career and Technical Education Plan and related state and national CTE programs and resources.

The Alaska Career and Technical Education (CTE) Plan outlines the state's resources and approach to address individuals' needs for career preparedness, and an education and training system that is effective and coordinated with Alaska's industry workforce demands. Developed by the Alaska Department of Education and Early Development (DEED), the Alaska Department of Labor and Workforce Development and the University of Alaska in 2010, the plan was updated with an addendum in 2018.

While the plan references the Alaska Maritime Workforce Development Plan, the seafood processing industry is mentioned only sporadically. Ensuring that CTE programs in schools across the state understand and include the largest private employer in Alaska and the primary local employer in many communities, will take a concerted effort.

Alaska's Seafood Future project recommends that the Alaska Department of Education and Early Development and the seafood industry:

- Identify the importance of the seafood industry in terms of employment and career opportunities.
- Ensure the seafood industry is included in the State's overall CTE plan and encourage CTE programs and funding to recognize the seafood industry. Develop a means for industry to meet annually with the three entities that are partners in Alaska's CTE Plan (UA, DOLWD and DEED) to provide information on employer needs and opportunities.
- Set relevant standards and design programs in CTE that align skills and knowledge identified by seafood employers.

6. Explore development of a comprehensive youth seafood careers program or ensure that seafood careers become part of an established program.

Youth programs that focus on careers or occupations can provide a structured opportunity for employers to engage with a large number of middle and high school age young people either in school or out of school. Young adults benefit from academic enrichment activities, work-readiness skills, project-based learning, life skills and leadership development. Such activities can provide opportunities for career exposure/exploration and recruitment opportunities in various industries.

Developing a seafood processing career awareness program for youth in Alaska would likely have the most impact, but will require a collaborative effort of industry, educators or other adults, and financial and programmatic stability. There are a variety of basic program models:

- (1) Internships provide short-term, practical opportunities to learn about careers, develop networks and have a "real world" work experience with standard workplace expectations. These can be paid or unpaid positions.
- (2) Mentorships match youth with responsible, caring adults to support their transition to adulthood and the workforce. Mentoring provides youth the opportunity to develop bonds with mentors who have more life experience and can provide support, guidance and opportunities to help them succeed in life and meet goals.
- (3) In-school programs are done in conjunction with high schools and usually include school or university credit. They help students transition from high school to higher learning institutions or employment.
- (4) After-school programs occur outside of school time. These can include clubs, competitions and various activities.

Alaska's Seafood Future project recommends that the seafood processing industry, the Alaska Safety Alliance and existing career awareness programs for youth:

- Collaborate as an industry to promote a comprehensive youth program.
- Consider partnering with the Alaska Safety Alliance (ASA). This organization has been working to enact the Alaska Maritime Workforce Development Plan (WFD) and create career awareness in the maritime sectors.
- Work with an existing career awareness program that features other industries and add seafood processing industry careers to that program.
- Explore existing youth programs that provide leadership, team building skills, and career exposure to determine if they provide a solid framework upon which to build a seafood processing specific stand-alone program. Or, determine if an existing program would be interested and conducive to adding a seafood processing industry component (i.e., FFA, Alaska EXCEL. Specific examples of youth programs can be found in the Appendix).



Re-Establishing Seafood Applied Research in Alaska

“**A**ppplied research” is research that seeks to answer a real-world question or solve a problem. Examples of applied research in Alaska that has been useful to the seafood industry include fish oil extraction process, process development for surimi, analysis of nutritional content of various seafood, techniques to remove pathogens, product development using fish byproducts such as bone, skin, roe and milt, and process engineering advances such as detection of foreign objects and process energy efficiencies.

The Alaska’s Seafood Future survey asked seafood leaders for their input on future applied research priorities. Industry members identified a range of general areas where applied research could be helpful including new product development for byproducts (68%), overall product recovery (63%), and new processing techniques to promote efficiencies (61%). Interest was also expressed in new market research, both for underutilized and mariculture produced species, impacts of warming ocean waters and parasite prevention.

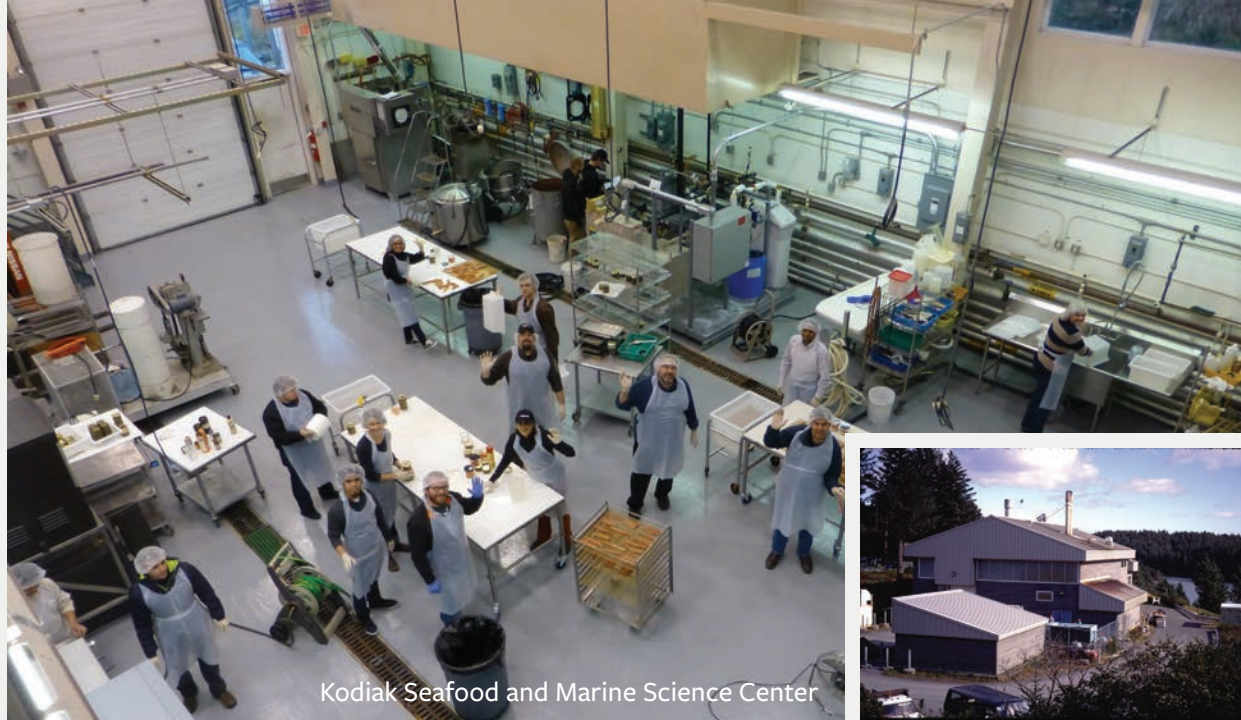
However, 84% of the responding seafood leaders said that they did not know how to encourage research or how to direct funds toward research. This was further evident when companies were asked to identify research entities they had consulted with in the past (University of Washington 24%, University of Alaska 29% and Alaska Sea Grant 37%).

Alaska has a robust fisheries research program focused on stock assessment, fish ecology and fisheries management. Research is carried out by NOAA Fisheries, the University of Alaska Fairbanks, Alaska Pacific University, the University of Washington, the Alaska Department

of Fish and Game and other federal agencies such as the U.S. Fish and Wildlife Service, the National Park Service, the U.S. Geologic Survey and the Bureau of Land Management.

Currently there are no University of Alaska researchers who work on seafood quality, product development, byproduct use and process technology. Limited partnerships between Alaska Sea Grant Marine Advisory faculty members and researchers from other universities such as Oregon State University and University of Idaho, have resulted in some work on seafood product development and quality control. However, much work remains undone due to a lack of capacity for seafood science research at the University of Alaska system. This is concerning since seafood processing represents over 70% of the state’s manufacturing sector.

The Alaska’s Seafood Future project has found that many seafood plants and companies in Alaska recognize the need for research, but do not understand how to identify priorities or present them to researchers. Seafood applied research capacity in the state is near zero. Following are action steps recommended by this project.



Kodiak Seafood and Marine Science Center

SEAFOOD RESEARCH ACTION STEPS

1. Develop an ongoing and consistent way to identify and prioritize Alaska seafood research and development needs.

The Alaska's Seafood Future project has found that many Alaska seafood plant managers recognize the need for research, but do not understand how to relay priorities to researchers and help get the research conducted. Research entities depend on knowledgeable input for setting priorities for funding. By actively identifying needs, Alaska's seafood industry can influence research priorities for funders such as Alaska Sea Grant, the North Pacific Research Board, USDA and NOAA.

The Alaska Seafood Marketing Institute (ASMI) hosts a statewide Seafood Technical Committee to identify problems and share research and regulatory information among the industry, government and researchers. This committee provides both an avenue for industry research and development personnel to intersect and a means to collectively identify emerging and important issues for Alaska's seafood.

The Pacific Fisheries Technologists annual conference brings together researchers, government agencies and industry technical experts from the west coast of the United States to review recent work and issues related to seafood technical concerns.

Alaska's Seafood Future project recommends that researchers and the seafood industry:

- Develop a new annual event or mechanism with the objective of growing the relationships between the seafood industry and researchers and to identify Alaska seafood research and development needs.
- Strengthen the role of both the ASMI Technical Committee and the Pacific Fisheries Technologists as a means to identify research and development needs of Alaska's seafood industry.
- Encourage research funders to add seafood priorities to their research portfolios.

2. Leverage the mission and facilities of the Kodiak Seafood and Marine Science Center to develop an applied seafood research/ocean cluster hub for Alaska.

In 1981, the Alaska State Legislature codified the Fishery Industrial Technology Center (now named the Kodiak Seafood and Marine Science Center) as the state's central hub to support the seafood industry through workforce training and research. During the 1990's over \$1M in directed funds were provided annually through the U.S. Department of Agriculture to support seafood product development research in Alaska. Carried out at the KSMSC, the work resulted in many publications and projects focused on byproduct use, processing techniques such as freeze-drying and fish oil extraction, and extensive work on new seafood product development.

In addition, the USDA Agricultural Research Service (ARS) had a cooperative agreement and research site at the University of Alaska Fairbanks until 2012. Almost \$1M in federal funds were directed annually to researchers based at KSMSC for the USDA/ARS "Alaska Fish Processing Byproduct Project." In 2012, the ten smallest ARS programs nationally, including Alaska's site, were dissolved due to federal budget cuts. Currently Alaska is one of only three states in the U.S. which does not host an ARS research program. When ARS was in Alaska and based at UAF, research into the development of fish oil and other uses of fish heads, racks, skin, etc., produced some of the best work done on byproducts stemming from Alaska seafood resources.

The loss of federal USDA funds at KSMSC significantly diminished the resources for seafood research and development (R&D) in Alaska. Compounded by the University of Alaska's budget cuts and competing alternative priorities, multiple seafood research faculty were lost from KSMSC without their positions being refilled (Drs.

Subramanian Sathival, Alex Oliviera, Chuck Crapo, Scott Smiley, Peter Bechtel and Brian Himelbloom). Funding for directed applied seafood research, while available from several sources, is difficult to obtain without researchers to propose and implement projects.

Going forward, re-establishing the applied research capacity and meeting the mission of the Kodiak Seafood and Marine Science Center will take innovation and creativity.

Alaska's Seafood Future project recommends that faculty/administrators at the Kodiak Seafood and Marine Science Center:

- Create formal affiliations between UAF Kodiak Seafood and Marine Science Center and the Oregon State University (OSU) Seafood Lab, the Alaska Seafood Marketing Institute, and other national and international research organizations to provide an easy path for researchers and students to visit and work from KSMSC.
- Identify and partner with individual researchers from around the country or world to come to the Kodiak Seafood and Marine Science Center as visiting scientists and/or students.
- Partner with the Alaska Ocean Cluster to identify common approaches and shared resources to advance seafood applied research.
- Seek out post-doctorate opportunities to bring new researchers to KSMSC.
- Work with seafood industry advisors and the Alaska Research Consortium to provide programmatic input, outreach and funding support to KSMSC.

3. Leverage private and public funds to support research of importance to Alaska's seafood industry.

Much of the funding for research in the U.S. comes from federal sources. However, federal funds for seafood applied research are limited. The U.S. Department of Agriculture (USDA) provides the bulk of research funds via the Agricultural Research Service (ARS) which focuses on farming and food issues and the National Institute for Food and Agriculture (NIFA) which funds research into farm-produced food in our country. There is no similar federal funding source available for research on food from wild caught seafood resources. NOAA funds research focused on fisheries health and production, but not generally for applied research and development aimed at post-harvest seafood utilization. Some limited federal funds focusing on seafood research does come through Alaska Sea Grant and the NOAA-sponsored Saltonstall/Kennedy program.

Applied research also can be funded with private funds coming from industry or other organizations. An example of this in the seafood industry might be researching the nutritional or oil content of a particular product or the process technology used in its formation. Research results funded by private dollars can become part of the public domain or remain unpublished. Industry-sponsored research or services, as defined by the University of Alaska's Regents' policy "are those subject to a sponsorship agreement or contract which prohibits or delays publication or dissemination of results or permits the sponsoring entity to prohibit or delay publication or dissemination of results, for more than 90 days after submission of the final report" (R10.07.020.D). A company that wishes to sponsor particular research can fund a project and then come to an agreement with a University of Alaska faculty member to ensure the results of that research either goes unpublished or is otherwise delayed from entering the public

realm for a period of time. This enables the funder to reap some financial gain from the research results. Though University of Alaska faculty do not do much of this type of research, other universities, for example, the Colorado School of Mines, have longstanding applied research relationships with industry. Terms of such an agreement are developed with an individual researcher and then reviewed by the University of Alaska.

The Pollock Cooperative Conservation Research Center (PCCRC) has supported important fisheries and seafood applied research for many years and is one of the largest private industry funders of research in Alaska. Lead investigators must be a researcher based at the University of Alaska. In September 2020 PCCRC prioritized four seafood technology areas for research by engineers, biochemists and product development researchers in their annual call for projects. Currently, the total amount of funding for this area, as well as other priorities, is \$350,000 per year.

Other industry-sponsored seafood applied research in Alaska has happened periodically. Alaska Leader Fisheries has supported investigations into fish oil and the Alaska Seafood Marketing Institute has funded interns and research on specific questions.

The State of Alaska offers an Education Tax Credit (ETC) to encourage industry involvement in education and research. An industry donation to an approved educational institution can result in up to a 50% credit on a range of taxes due to the State of Alaska. This tax credit has been used numerous times by seafood companies. However, the ETC is scheduled to sunset in 2025 unless it is renewed by the Alaska State Legislature.

In 2014, faculty from the UAF's KSMSC, OSU Seafood Lab and Washington State University joined forces to develop a proposal to the National

Science Foundation (NSF) to host an Industry-University Cooperative Research Center I/UCRC, titled the North Pacific Seafood Cooperative Research Center. The purpose of the center was to create a mechanism to establish a partnership between industry and universities to support research. While the original proposal did not progress for various reasons, there is the potential for a renewed attempt. Other federal sources of funds through USDA and the U.S. Department of Commerce should be pursued as well.

Alaska's Seafood Future project recommends that faculty at the Kodiak Seafood and Marine Science Center and the seafood industry:

- Create, simplify and clearly communicate pathways for industry to receive help with and fund needed research projects (both

small and large) that can be carried out at the Kodiak Seafood and Marine Science Center or other parts of the University of Alaska.

- Make use of and advocate for the Education Tax Credit to enable private funds to support research needs.
- Pursue federal funding sources that can address seafood applied research needs including the NSF I/UCRC, U.S. Economic Development Administration, the Manufacturing Extension Partnership, return of USDA Agricultural Research Service funds, and others.
- Advocate for the use of USDA funds including ARS or other sources for wild seafood research.

4. Expand research focus areas to represent the multi-dimensions of "Alaska seafood".

In Alaska, seafood is critical to the food security and identity of Indigenous peoples. As home to over 200 federally recognized tribes, Alaska Natives depend on safe and plentiful seafood for food security.

Personal and recreational harvest of seafood also is a significant source of food for Alaskans who depend on best handling and processing practices to consume harvested seafood safely. And the growth of mariculture across the state raises new questions on nutritional content of these species and processing and preservation techniques.

This unique dependence by Alaskans on seafood reinforces that research related to food safety and security is critical to the state's well-being. Understanding impacts of harmful algal blooms and other toxins, maintaining safety during seafood processing, and the impacts of climate change on food security are all related to seafood science. Recognizing that "seafood applied research" can

be defined broadly offers opportunities to find research funding and approaches in non-traditional ways.

Alaska's Seafood Future project recommends that researchers and Alaska Native tribes:

- Ensure that mechanisms used to identify research and development needs related to Alaska seafood are open to and include the input of non-commercial users.
- Identify Alaska's unique potential to work on research identified by the Alaska Native community related to indigenous use of aquatic foods. Look into funding from tribal sources to support this research.
- Reach out to new funding sources and researchers working on projects related to seafood including food security, climate change, food quality, and toxins.



The Alaska Research Consortium recognizes the valuable impact that the Alaska seafood processing industry has on the State of Alaska and the resiliency of its communities through employment and economic input. The Alaska’s Seafood Future Action Agenda is designed to increase employment of Alaskans in skilled seafood processing occupations, to build awareness in young Alaskans of career opportunities in the seafood processing sector and to add value and meet technical challenges by invigorating seafood applied research in Alaska.

The project’s focus aligns with the State of Alaska’s priority to increase the number of resident hires in the Alaska workforce, the Alaska Workforce Investment Board’s vision to “build connections that put Alaskans into good jobs,” and the goals and strategies of the Alaska Maritime Workforce Development Plan.

This report is the product of over 18 months of work by the Alaska Research Consortium with input from many individuals. Needs are documented, detailed background information is provided, gaps are identified and specific actions steps are outlined.

What happens next, and when, will depend on leadership, commitment and action by the Alaska seafood processing industry; local, tribal, state and federal governments; the University of Alaska; AVTEC and other regional training centers; and local schools and communities. We believe all of these entities would benefit from implementing the steps outlined in the Action Agenda. This will require communication, collaboration and alignment of goals and actions.

The Alaska Research Consortium will advocate for these steps to be enacted, recognizing the vital role of the Alaska seafood processing industry in the state’s economy and the well-being of our communities.

References

The Economic Value of Alaska’s Seafood Industry, January 2020. Alaska Seafood Marketing Institute
 Alaska Maritime Workforce Development Plan, 2014, University of Alaska
 The Oil and Gas Industry and UA Graduates Fast Facts, 2020



Survey Results July 2020

Alaska Seafood Processing Needs Assessment: Workforce Training, High School Career Programs and Applied Research

The Alaska Seafood Processing Needs Assessment was sent to 75 plant managers and 15 offshore catcher/processor companies in spring and summer 2020. Forty-six individual plant managers or HR managers responded, working for 22 companies in 25 communities across Alaska. Three catcher-processor companies, representing 25 vessels, also responded to the survey. Altogether, survey responders represented over 15,000 seafood workers at the peak of their season.

The companies responding represent a wide diversity in size of plant, species harvested, seasons operating and products produced.

Survey responders work in these communities:

- Akutan
- Anchorage
- Cordova
- Craig
- Dillingham
- Egegik
- Emmonak
- False Pass
- Juneau
- Kasilof
- Kenai
- Ketchikan
- King Cove
- Kodiak
- Larsen Bay
- Naknek
- Petersburg
- Seward
- Sitka
- St. Paul
- Togiak
- Twin Hills
- Unalaska
- Valdez
- Wrangell

Companies represented in the survey include:

- Alaska Glacier Seafoods, Inc.
- Alaska Seafood Company
- APICDA
- Arctic Storm Management Group
- Coastal Cold Storage, Inc.
- Copper River Seafoods
- E&E Seafoods, Inc.
- Icicle Seafoods, Inc.
- International Seafoods of Alaska, Inc.
- Kodiak Island Wildsource
- Kruzof Fisheries
- Kvichak Fish Co.
- Kwik'Pak Fisheries
- Leader Creek Fisheries
- North Pacific Seafoods
- Ocean Beauty Seafoods
- Ocean Peace, Inc
- O'Hara Corporation
- Peter Pan Seafood, Co.
- Sitka Sound Seafoods
- Silver Bay Seafoods
- Tonka Seafoods
- Trident Seafoods
- UniSea, Inc.
- Westward Seafoods

How many people are employed at your plant/ onboard during the peak?

- 11 w/ 100 or fewer employees
- 14 w/101-300 employees
- 17 w/301-500 employees
- 4 w/501-800 employees
- 2 w/801-1500 employees

WORKFORCE TRAINING NEEDS

What positions in your plant are the most difficult to fill?

- Plant Engineer
- Refrigeration Engineer
- Electrician
- QA manager
- Plant manager
- Production manager
- Baader Machinist
- Office Manager
- Safety Manager
- Offshore Catcher/ Processors
- Captain
- Mate
- Chief Engineer
- Assistant Engineer
- Deckhand

Notes:

Most plants employ one or a small number of these positions; refrigeration is the exception

Training is required for all of these positions

Lots of turnover in these skilled positions

What training is mandatory for your workforce?

More than 10 employees (or 5-10 for smaller plants)

- Firefighting
- First aid/CPR
- HACCP
- HAZWOPER
- OSHA 10-hr

2-5 employees or single employee

- Boiler operator
- DEC wastewater
- Electrician journeyman
- EPA 608
- RETA cert (refrigeration)
- CDL driver
- IT training
- USCG QMed (offshore)

What other desired skills in your workforce that could result from training? (check more than one)

- 87% – Supervisory skills
- 76% – Developing future leaders
- 72%– Computer skills (Excel, Word)
- 61% – Conflict management
- 54% – Preventing harassment and discrimination
- 48% – Basic accounting skills
- 48% – Math skills focused on production
- 41%– English proficiency
- 30% – Fostering diversity and inclusion

Where do you currently train employees? (check all that apply)

- 96% - in house training taught by other employees
- 61% - training offsite
- 52% - training online
- 48% - consultant brought in

Would it be helpful to have more training available offsite?

- 88% – yes
- 12% – no

Priorities:

- QC/HACCP/sanitation
- Ammonia refrigeration certification
- Supervisory skills, interpersonal communication skills
- HAZWOPER (with ammonia) and refreshers
- Baader operations
- Regulatory compliance
- Safety/First aid/CPR/Drill instructor
- Basic/advanced firefighting (offshore companies)
- General maintenance and troubleshooting
- Electrician, process line mechanic
- Net mending (offshore companies)
- Lead production
- Overall introduction to seafood processing
- Inventory tracking
- Fillet training and machine setup
- Multivac
- English, math, Excel

Would an intensive program introducing seafood processing be valuable?

- 49% yes
- 49% maybe
- 2% no

If so, what should it include?

- Basic management of facility, someone to run an operation.
- QC/food product safety
- General microbiology
- Introduction to the work, basic hands on training, processing environment. The more people who understand the job, the better.
- Leadership and work ethics
- Big picture and the future of the industry. How to be profitable.
- HACCP, production accounting
- Either mechanical/electric/hydraulic/refrigeration skills
- Since we operate at sea, Cold Water Survival and Safety
- Should be geared toward Deck, Factory and Engineering (offshore)
- A certificate in seafood processing careers (maybe at the high school level?)
- Basic mechanics, electrician, refrigeration, use of tools, etc.
- QC training, sanitation
- Math
- Supervisory skills, diversity, conflict resolution, production principals
- An introductory look at seafood processing – production, maintenance, quality, safety, environmental compliance, HR, fleet management
- Overall understanding of fisheries.
- Handling of seafood to preserve freshness and cleanliness.
- Plant operations
- Government compliance

Does your plant have an internship or apprenticeship program?

- 31% – yes
- 69% – no

Note:

None of the plants expressed consistent success using interns, but offshore processors use maritime academy cadets.

What is the best way to find out about training?

- Email
- Our corporate network
- Alaska Sea Grant
- “A general training bulletin would be helpful”

When is the best time for training?

(answers to this question depends on whether plant operates year-round or seasonally).

- Spring
- April-June
- Late summer, early fall, or after A season
- Right before or right after season
- Nov-Dec or early Jan pre-pollock
- Feb/Mar before longlining starts
- Depends on the training. If the training is applicable, we will make time.
- It depends on the position and need to the company

Best location for training?

- On site and off site – benefits to each
- Dutch Harbor – too expensive to send folks somewhere else
- Kodiak Seafood and Marine Science Center, offsite, onsite - just make them relevant
- Cost wise, local is always better. Onsite or combined training at Icicle would also be good. For out of town training ANC and SEA are about equal.
- Here in Petersburg (bring the trainer here as we have multiple processors in Psbg). Prefer Seattle or Anchorage over Kodiak as it is one less flight to get there. Expensive in time and money to go away from Petersburg for training.
- Close to where they live. Many crew have difficulty traveling to Seattle for specified training. For crew in Alaska- Anchorage is central, though I believe AVTEC in Seward has been helpful in the past depending on the courses available.

Does your company have a budget for training?

- 56% have an annual budget for training;

Does your company incentivize or subsidize training?

- 76% yes

Do you increase salaries or promote employees who have received training?

- 36% yes
- 62% sometimes

Do you have an employee advancement program in your company?

- 30% yes
- 70% no

Employees in your plant with potential for advancement?

- Of the 41 who responded, all identified 1-50 employees in their plant who have potential to advance with training and several identified over 100 employees.

Any other comments?

- a number of our positions have clear levels of responsibility, i.e. step 1, 2, or 3 so employee knows how to advance;
- I worry a bit about trainings that allow employees from different companies cross fertilize - we lose employees that way.
- Accredited online training would be great.
- There's a lot of basic information about working in a seafood plant that people lack.
- Most people applying for work don't even have basic high school skills
- Spreading the word, encouraging people back to Alaska fish processing jobs, showing how work looks like, podcast, interviews with people that have season or two behind them.
- Emphasis on work ethic would be helpful, also supervisory/leadership skills since culturally it can be difficult to mitigate conflict and poor workmanship with folks who are neighbors or relatives.
- Continue to work with processors to develop training that has true value and not just a feel-good program for the State.
- We need skilled people who want to come to and live in Alaska, but the seasonality of our jobs is a huge challenge.
- Training for existing or potential maintenance staff in electrical, plumbing, refer, small engines, etc. to broaden their skills would be very helpful.
- I have concern about spending money on employee training and then losing employee to other processors or even vessel owner/skippers.

HIGH SCHOOL CAREER AWARENESS AND RECRUITMENT

How highly do you rate the importance of recruitment of people looking for a career in the seafood industry?

- 72% - rank importance of recruitment as a 5 or 4 (5 is highest)

Does your facility interact with your local high school?

- 68% no
- 32% yes

If yes, how do you interact?

- Participate in career awareness day
- Job fairs, scholarships
- Fundraising at times
- Seminars on fish processing
- Sometimes hire high school students, sponsorships
- Donations, sponsorships
- Give tours, donations to school events

Do you have any sort of career awareness materials or participate in career awareness days for local high school students?

- 95% no.
- One plant participates in annual job fair, other noted that pamphlets were available in their company.
- Another noted use of videos that show fish processing in the factory.

Are you willing to host interested high school students in your facility for short periods of time to expose them to the seafood industry?

- 98% yes/maybe
- This is particularly difficult for offshore processors whose employees must be over 18.

Would you be interested in participating in a high school program to introduce students to the seafood industry?

- 92% yes/maybe

Comments/questions

- We're interested in specific skill sets – welding, quality control, maintenance, management logistics
- this is something I'd like to see my company pursue more of
- we do hire local high school students for the summer
- liability questions, all about their safety. The biggest issue is workforce laws that prohibit under 18-year-old workers anywhere in the plant - state laws.
- not realistic in rural Alaska where plant is seasonal and very small town with small school
- this would give them a good idea of the jobs that are available, would be helpful
- not sure high school kids are looking for careers on fishing boats, haven't had kids asking for work for 8-10 years
- we hire inmates from Wildwood Prison so would need to consider how to do both – i.e. prisoners and high school students in the same plant
- most young people have poor work ethic these days
- they have to apply before we hire them
- We have actively hired high school students and trained them. Some have fallen back on that training, when the need to make ends meet. No one plans to be a production worker in a seafood plant when they grow up.
- Our work season in Wrangell is perfect for students, it only operates in the summer.
- make it interesting, rewarding
- What age qualifies for this
- we have internship programs where individuals apply. We select through this process.

SEAFOOD TECHNOLOGY QUESTIONS NEEDING APPLIED RESEARCH

What product quality, product development, process technology or marketing questions does your company have that could be addressed through applied research? (check all that apply)

- 70% – New product development for byproducts
- 68% – Product recovery
- 63% – New seafood processing techniques creating efficiencies
- 47% – New markets for underutilized species
- 34% – New markets for seaweed and other mariculture products

Other:

- Lean manufacturing, quality management
- Warming waters impacting fish stocks
- In-state reprocessing potential
- Loop systems that grow crops fertilized through seafood harvest
- Nematodes and other parasites in salmon if farmed fish don't have them that will hurt us
- Salmon milt usage
- How can we continue to reduce workplace injuries?

Do you know how to encourage research or to direct funds to have these questions addressed?

- 85% - no

What resources, organizations do you use to find answers to these questions? (check all that apply)

- 63% – Seafood Processors Association
- 56% – ASMI
- 49% – In house experts
- 37% – Seafood equipment companies
- 40% - Alaska Sea Grant
- 28% - University of Alaska
- 23% - University of Washington

Programs and Classes Available

The classes and programs listed below offer training related to the needed skills identified by Alaska's seafood processing industry. Check with these programs to see if the content, timing and location of classes meet your needs.

Ammonia Refrigeration

Process Safety Management
RETA I and II
Boiler Tech I and II
Ammonia operator 1,2, and 3
Garden City Ammonia Program
Kansas City, MO
www.AmmoniaTraining.com

Process Safety Management
iWorkWise
Seattle and Alaska sites
https://iworkwise.com

IIAR PSM RMP Certificate
Course

International Institute of Ammonia Refrigeration
online
https://www.iiar.org/IIAR/Education/IIAR/Education/IIAR_Education.aspx?hkey=1c83a4d6-fbb9-4435-9638-e43bd9476669

Refrigeration

Refrigeration and Heating
Technology
Mat-Su College/UAA
Palmer
https://matsu.alaska.edu/degrees/refrigeration-heating/

Refrigeration and Air
Conditioning
Maritime Training Center/UAS
Ketchikan
https://www.uas.alaska.edu/ketchikan/krmcc/index.html

Refrigeration Program
AVTEC
Seward
https://avtec.edu/refrigeration

Diesel, Hydraulics, Refrigeration, Marine Electrical, Welding, Pipefitting

Maritime & Multi-Skilled
Worker (QMED)
Maritime Training Center/UAS
Ketchikan
https://www.uas.alaska.edu/ketchikan/krmcc/qmed.html

Diesel/Heavy Equipment

Diesel/Heavy Equipment
certificate
Community and Technical College/UAF
Fairbanks
https://www.ctc.uaf.edu/academics/programs/

Marine Diesel Engines
AVTEC
Seward
https://avtec.edu/maritime-short-term-class/marine-diesel-engines

Electrical

Marine Electrical Systems
AVTEC
Seward
https://avtec.edu/maritime

Basic Electricity for the Trades
Kodiak College/UAA
Kodiak
https://koc.alaska.edu/programs/continuing-education/Maritime/maritime_courses.cshtml

Engine Repairs

ABYC Marine Service
Technician
Kodiak College, Kachemak Bay Campus/UAA
Kodiak, Homer
https://koc.alaska.edu/programs/continuing-education/Maritime/maritime_courses.cshtml

HACCP

HACCP (Hazard Analysis
Critical Control Point)
Alaska Sea Grant/UAF
Kodiak, Anchorage and other sites upon request
https://alaskaseagrant.org/our-work/seafood-processing/

HAZWOPER

24 hr, 40 hr, refresher
Community and Technical College/UAA
Anchorage
https://catalog.uaa.alaska.edu/coursedescriptions/itec/

iWorkWise
onsite via contract
https://iworkwise.com

Northern Industrial Training

Anchorage
https://nitalaska.com

AVTEC

Seward
https://avtec.edu/hazwoper24

Hydraulics

Basic Hydraulics
Maritime Training Center/UAS
Ketchikan
https://www.uas.alaska.edu/ketchikan/krmcc/current_classes.html

Human Resources/Leadership/Supervisory

Alaska Seafood Processing
Leadership Institute
Alaska Sea Grant/UAF
Kodiak/Anchorage
https://alaskaseagrant.org/our-work/seafood-processing/

Supervision and Personnel Mgt
Community and Technical College/UAF
Fairbanks
https://www.ctc.uaf.edu/programs/business-applied/

Maritime Operations - USCG approved

USCG approved maritime
classes
Maritime Training Center/UAS
Ketchikan
https://www.uas.alaska.edu/ketchikan/krmcc/index.html

AVTEC

Seward
https://avtec.edu/maritime

Math Skills

Applied Math for Trades
Maritime Training Center/UAS
Ketchikan
https://uas.alaska.edu/career_ed/maritime/index.html

OSHA Safety Training

OSHA
iWorkWise
Seattle and Alaska sites
https://iworkwise.com

Ammonia Process Safety
Management
iWorkWise
Seattle and Alaska sites
https://iworkwise.com

Lock out Tag out
iWorkWise
Seattle and Alaska sites
https://iworkwise.com

Alaska Occupational Health and
Safety Training
https://labor.alaska.gov/lss/training.htm

Quality Control (QC)

Microbiology
Alaska Sea Grant/UAF
Kodiak
https://alaskaseagrant.org/our-work/seafood-processing/

Better Process Control School
Alaska Sea Grant/UAF
Anchorage/Kodiak
https://alaskaseagrant.org/our-work/seafood-processing/

Sanitation
Alaska Sea Grant/UAF
KSMSC Kodiak
https://alaskaseagrant.org/our-work/seafood-processing/

Regulatory Compliance

Seafood Environmental
Compliance
Alaska Sea Grant/UAF
Kodiak
https://alaskaseagrant.org/our-work/seafood-processing/

Safety/First Aid/CPR

Occupational Safety and Health
Program
Community and Technical College/UAA
Anchorage
https://www.uaa.alaska.edu

CPR
Bristol Bay Campus/UAF
Dillingham
https://www.uaf.edu/bbc/

First Aid/CPR
UAS
Ketchikan
https://www.uas.alaska.edu/sitka/courses/all/hs102.html

AVTEC
Seward
https://avtec.edu/node/1318

First Aid/CPR/AED for the
Mariner
Maritime Training Center/UAS
Ketchikan
https://uas.alaska.edu/ketchikan/krmcc/index.html

Safety in the Workplace

Ergonomics for Commercial
Fishermen and Industry
Workers
AMSEA
Sitka or on location
https://www.amsea.org/

Seafood Processor
Orientation and Safety
AVTEC
Seward
https://avtec.edu/maritime-short-term-class/seafood-processor-orientation-and-safety-course-o

Safety - Mariner

Drill Conductor class
AMSEA
Sitka or on location
https://www.amsea.org/

NPVOA
Seattle or on location
https://npfvoa.org

Basic Firefighting

NPVOA
Seattle or on location
https://npfvoa.org

AVTEC
Seward
https://avtec.edu/index.php/node/1314

Advanced Firefighting

AVTEC
Seward
https://avtec.edu/node/1312

Basic Safety Training Refresher
Maritime Training Center/UAS
Ketchikan
https://uas.alaska.edu/career_ed/maritime/index.html

Medical Emergencies at Sea
NPVOA
Seattle or on location
https://npfvoa.org/vessel-safety-classes/

Sanitation

Seafood Sanitation Control
Procedures
Alaska Sea Grant/UAF
Kodiak or on location
https://alaskaseagrant.org/our-work/seafood-processing/

Seafood Processing

Seafood Processor Orientation
and Safety Course
AVTEC
Seward
https://avtec.edu/maritime-short-term-class/seafood-processor-orientation-and-safety-course-1

Alaska Seafood Processing
Leadership Institute
Alaska Sea Grant/UAF
Kodiak/Anchorage
https://alaskaseagrant.org/our-work/seafood-processing/

Roe School
Alaska Sea Grant/UAF
Kodiak
https://alaskaseagrant.org/our-work/seafood-processing/

Smoked Seafood School
Alaska Sea Grant/UAF
Kodiak
https://alaskaseagrant.org/our-work/seafood-processing/

Process Technology
Community and Technical College/UAF
Fairbanks
https://www.ctc.uaf.edu/programs/process-technology/

Kenai Peninsula College/UAA
Kenai
https://kpc.alaska.edu/academics/areas-of-study/process-technology/index.cshtml

Vessel Repair and Maintenance

Marine Vessel Repair and
Maintenance Training
AVTEC
Seward
https://www.avtec.edu/vessel-repair-and-maintenance

Welding

Welding
Bristol Bay Campus/UAF
Dillingham
https://www.uaf.edu/bbc/
Ketchikan Campus/UAS
Dillingham/Ketchikan
https://uas.alaska.edu/ketchikan/krmcc/index.html
Kodiak College/UAA
Dillingham/Kodiak
https://www.uaf.edu/bbc/, https://koc.alaska.edu/
Kachemak Bay Campus/Kenai Peninsula College
Dillingham/Kodiak
https://www.uaf.edu/bbc/, https://koc.alaska.edu/

Industrial Welding
AVTEC
Seward
https://avtec.edu/comboination-welding



Youth Career Awareness and Skill Building Programs

The list below includes some current programs that introduce youth to career fields and job skills. Though only a few are directed at the seafood industry, others could be adapted and expanded to meet industry needs or used as models to create a seafood processing specific youth career awareness and skill building program.

Alaska DECA and FBLA

Alaska DECA (Distributive Education Clubs of America) and FBLA (Future Business Leaders of Alaska) are both national programs that emphasize business skills. FBLA has more competitive events than DECA but DECA's events are more in-depth. Both provide vital communication and time management skills, which are critical in the business industry. DECA competitive events fall into six different career clusters: business management and administration; entrepreneurship; marketing; finance; hospitality and tourism; personal financial literacy.

Alaska FFA

FFA is a longtime national program, dedicated to preparing youth for leadership, personal growth and career success. While the focus is most strongly on agriculture-related careers (the program was named the Future Farmers of America until 1988), the focus in Alaska includes other natural resource careers. Currently, there are 18 FFA chapters in Alaska with 500 youth in grades 7-12, although few are in coastal Alaska.

District events are held during the year and an annual statewide convention attracts about 200 student participants. The convention has an aquaculture/mariculture and oceanography

component which draws about 30 to 40 participants. It also includes a safety component, career fair and many leadership activities. Agricultural mechanic events have also been hosted such as welding, small engines, and electricity.

Kevin Fochs, Alaska FFA director, believes employers recognize the value of youth with FFA experience. He suggests the best way for industry to get involved with FFA is to expose youth to opportunities, interact with them, prepare curriculum for kits, and host an event at the annual convention.

Anchorage School District Gifted Mentorship Program

Anchorage School District Gifted Mentorship Program is for high school juniors and seniors who are self-disciplined and interested in pursuing an independent study under the direction of a professional/expert in a field of great interest to the student. The program gives motivated, mature high school students an idea of what it is like to work in a field of their interest by being teamed with a professional who acts as their mentor. Students spend 45-60 hours with their mentor and earn half an elective credit for the mentorship when they successfully complete several assignments, including a final project. The program is sponsored by a grant from Matson.

Alaska EXCEL, Inc

Alaska EXCEL, Inc is a non-profit that provides rural junior and high school student opportunities to experience hands-on academic and career exploration activities and technical education intensives. Students can earn high school credit and dual college credit in specific programs.

Foundational sessions cover leadership, teamwork, problem solving, communication, career awareness, applying for additional training and scholarships, identifying jobs for which they qualify, practice interviews, etc. They also utilize summer bridging camps and CTE camps. School districts in the Lower Yukon Kuskokwim region and the North Slope Borough are currently working with the EXCEL program. Donlin Creek Mine is a supporter and has hired students who have completed the program.

Introduction to Mining Occupations and Operations Class at University of Alaska Southeast

Introduction to Mining Occupations and Operations offered at University of Alaska Southeast (UAS) is the first step towards a potential career in mining. This course is built especially for high school students, who will earn 3 UAS college credits and 0.5 high school credit. Instruction involves guest speakers from the mining industry sharing their experiences in mining operations and how to safely and effectively operate a mine. The class is offered each spring semester at the UAS Center for Mine Training located within the UAS School of Career Education in Juneau. The class is the entry point for students looking to set out upon the Hecla Greens Creek Pathway to Mining, which is an industry-led effort to train more Southeast Alaskans for the high-paying jobs available as Mine Mechanics.

Introduction to Process Technology

Offered by the CTE programs at both the Fairbanks North Star School District and the Anchorage

School District, the class is an introduction to process industries. It prepares youth to enter a post-secondary training program or the workforce with a collection of identifiable skills. The class links to the UAA and UAF Process Technology Programs. While the class references the seafood processing industry, there is very little connection to date with seafood.

Kwik'Pak Fisheries Youth Employment Project (YEP)

Kwik'Pak Fisheries is a subsidiary of CDQ group, Yukon Delta Fisheries Development Association. The main goal of YEP is to give regional youth a foundation to gain skills to transition into proficiently experienced working adults who are motivated to further their education. Throughout the season, students cycle through several positions to best find out where their career interests belong. Kwik'Pak has been employing regional youth since 2001. In 2010, 105 youth were employed at Kwik'Pak Fisheries working a total of over 14,500 hours combined. The youth have participated in many community-improvement projects and were active in the establishment and building of the Kwik'Pak break room and Fisherman Store.

Northwestern Alaska Career and Technical Center (NACTEC)

NACTEC is a regional high school training center located in Nome. It is a joint venture between the Bering Strait School District and Nome Public Schools. NACTEC prepares high school students from the region for the world of work by assisting in the development of life skills, work readiness skills, academic skills, and career awareness. A fisheries and seafood strand includes an introduction to maritime careers and fishing and seafood industries. Partners include NSEDC, At-Sea Processors Association, Aleutian Spray Fisheries, American Seafoods, Glacier Fish Company, and Trident Seafoods.

Youth Maritime Program

Youth Maritime Program (Seattle) is a new program designed to prepare high school seniors for a career in the maritime industry. This two-year program aims to provide students a smooth transition through their senior year in high school toward college readiness. It helps build strong soft-skills and connects students with future career maritime opportunities. High school students starting as juniors can earn a financial stipend and 80 service-learning hours. Students are expected to attend weekend workshops and activities throughout their senior year. Ongoing support is available to keep students on track for high school graduation and ready for college and career exploration in the maritime industry. Field trips and networking with maritime industry experts and community leaders are part of the program. The first summer session includes service learning, team building and college and career readiness to prepare students for both their senior year and work. During the second summer session, students will begin maritime courses at an area college. Upon completion, students will receive job placement assistance.



How these programs might be adapted for the seafood processing industry:

- Work with the Anchorage and Fairbanks School Districts offering Process Technology classes in high schools to ensure that the seafood processing industry is included and represented.
- Sponsor and encourage an FFA chapter in your community. Prepare and participate in a seafood processing section with the local chapters and/or at their annual convention.
- Sponsor a DECA or FBLA team in your local high school and work with schools to incorporate seafood business scenarios into the competitions.
- Support a high school mentorship program in your community that is modeled after the Anchorage School District's program. Reach out to the Anchorage School District Gifted Mentorship Program to serve as an Anchorage-based seafood industry mentor.
- Develop a Youth Seafood Employment Program with some of the methods used by Kwik'Pak Fisheries.
- Consider supporting Alaska EXCEL and have them include seafood jobs and careers in their program.
- Partner with and support the Alaska Safety Alliance. This organization has been working to implement the Alaska Maritime Workforce Development Plan (WFD) and build career awareness in the maritime sectors. Some members of the seafood industry have been working with the organization since the Maritime WFD plan was developed in 2014 but more collaboration and support is needed. ASA has worked in this area with the oil & gas industry with success.

Resources and Definitions

AAS: Associate of Applied Science degree represents the completion of a two-year program that meets requirements for specific skill sets in the workplace. The purpose of the A.A.S. degree is to prepare students to directly enter the workforce in a high-demand field.

AHEC: Alaska Area Health Education Centers (AHEC) AHECs are academic and community-based partnerships engaged in primary care workforce engagement, training and recruiting, and retaining activities to improve the distribution, diversity, supply and quality of health care personnel. The Alaska AHEC is located at the University of Alaska Anchorage.

Alaska Ocean Cluster: The Bering Sea Fishermen's Association launched the cluster to promote and enhance the growth of the maritime industry. The cluster concept involves a coalition of private, public and academic stakeholders forming around a base industry, and in the process, supporting both the industry and each other through economic transactions and circulated assets.

AKOSH: Alaska Occupational Safety and Health is part of the Labor Standards and Safety Division of the Alaska Department of Labor and Workforce Development.

Alaska Maritime Workforce Development Plan: published in 2014. The plan is a call to action and a guide for industry, government, and educators to work together to enable Alaska's maritime sector to remain economically vibrant, ensure that Alaskans are qualified to fill these skilled and well-paid positions, and increase the number of Alaskans in this workforce.

Alaska Sea Grant (ASG): is a partnership between the National Oceanic and Atmospheric Administration and the University of Alaska Fairbanks. ASG enhances the sustainable use and conservation of Alaska's marine and freshwater resources through research, outreach and education.

Alaska Workforce Investment Board (AWIB): AWIB is part of the Alaska Department of Labor and Workforce Development and is tasked with reviewing plans and providing recommendations to the State of Alaska to further train and prepare Alaskans for the workforce and help grow Alaska's economy.

AMSEA: The Alaska Marine Safety Education Association (AMSEA) is a non-profit organization based in Sitka, AK with a mission to reduce injury and death in the marine and freshwater environment through education and training provided by a network of qualified marine safety instructors.

ARC: Alaska Research Consortium is a non-profit organization that advocates for sustainable fisheries, marine science and the blue economy in the North Pacific. ARC engages with a wide range of stakeholders whose aim is long-term economic opportunities through a sustainable seafood industry.

ARDOR: Alaska Regional Development Organizations. There are ten such designated organizations that encourage economic development in their respective regions. ARDORs are the only entities that collaborate with local communities and businesses to develop and maintain a regional comprehensive economic development strategy.

ARS: Agricultural Research Service is the U.S. Department of Agriculture's chief scientific in-house research agency. Their mission is to find solutions to agricultural problems that affect Americans every day from field to table.

ASA: Alaska Safety Alliance is a non-profit safety council established by employers as the vehicle for industry collaboration in developing a trained and skilled workforce. ASA works with employers to help Alaskans find the training they need for employment in Alaska's process industries (from oil & gas to maritime to construction).

ASMI: Alaska Seafood Marketing Institute is a public-private partnership between the State of Alaska and the Alaska seafood industry established to increase the economic value of the Alaska seafood resource.

ASPLI: Alaska Seafood Processing Leadership Institute is an intensive professional development program for rising seafood processing professionals that is offered ever two years by Alaska Sea Grant.

At-Sea-Processors Association (APA): is a trade association representing six member companies that own and operate 15 U.S.-flag catcher/processor vessels that participate principally in the Alaska pollock fishery and west coast Pacific whiting fishery.

AVTEC: Alaska Vocational Technical Center (AVTEC) is a vocational training center operated by the State of Alaska as a Division of the Department of Labor and Workforce Development and is located in Seward, Alaska.

Baader: a leading manufacturer of seafood processing equipment used in the Alaska seafood industry that requires specialized training.

BPCS: Better Process Control School is a class that teaches principles of thermal processing, equipment requirements, container closure evaluation, and record keeping for glass jars and cans. In Alaska, the class is offered by Alaska Sea Grant.

BRC: British Retail Consortium is a trade association that developed standards designed to supply food retailers with a common approach to supplier auditing.

Carl Perkins funding: A principal source of federal funding to states and discretionary grantees for the improvement of secondary and postsecondary career and technical education programs.

CDQ Groups: The Western Alaska Community Development Quota (CDQ) Program allocates a percentage of all Bering Sea and Aleutian Islands quotas for groundfish, prohibited species, halibut, and crab to eligible communities. There are six CDQ groups: Aleutian Pribilof Island Community Development Association (APICDA), Bristol Bay Economic Development Corporation (BBEDC), Central Bering Sea Fishermen's Association (CBSFA), Coastal Villages Region Fund (CVRF), Norton Sound Economic Development Corporation (NSEDC), and Yukon Delta Fisheries Development Association (YDFDA). Some of the CDQ groups own processing facilities and vessels, catcher processors and harvesting vessels.

C/P: Catcher/processor is a commercial vessel used to harvest and process seafood.

CPR: Cardiopulmonary resuscitation is a lifesaving technique useful in many emergencies, including a heart attack or near drowning, in which someone's heartbeat has stopped.

CTE: Career Technical and Education

CTE Plan: Career Technical and Education Plan is a joint effort among the Alaska Departments of Education & Early Development and Labor & Workforce Development and the University of Alaska. It links training and workforce development.

DEC: Alaska Department of Environmental Conservation DEC's mission is "to conserve, protect and improve its (Alaska's) natural resources and environment and control water, land and air pollution in order to enhance the health, safety, and welfare of the people of the state and their overall economic and social well-being."

DEED: Alaska Department of Education & Early Development DEED "provides information, resources, and leadership to support an excellent education for every student every day."

DOLWD: Alaska Department of Labor & Workforce Development AKDOLWD manages AVTEC, operates Job Centers, management of unemployment benefits, and provides research and analysis around Alaska's workforce.

EPA: U.S. Environmental Protection Agency was established to protect human health and the environment. The agency is responsible for writing and enforcing regulations for environmental laws enacted by Congress. EPA often sets standards that states and tribes enforce through their own regulations; and help companies understand the requirements.

ESL: English as a Second Language.

ETC: Education Tax Credit. Alaska's program was first established in 1987 by the Legislature to encourage private businesses to make charitable contributions to support schools in Alaska. Qualifying donations can be cash or equipment to support educational facilities and programs and in return the businesses receive credits to offset taxes due to the State of Alaska.

FITC: Fishery Industrial Technology Center was renamed the Kodiak Seafood and Marine Science Center. FITC was established in 1981 and its mission and purpose, to support the state's seafood economic input, are outlined in Alaska state statute 16.52.020.

FDA: U.S. Food and Drug Administration is an agency within the U.S. Department of Health and Human Services. Its responsibilities include the safety and security of our nation's food supply.

FSMI: Fisheries, Seafood and Maritime Initiative is a collaborative University of Alaska initiative to prepare Alaskans to meet current and emerging workforce, economic and scientific needs of this sector. Since 2012, UA has been working with maritime partners across the state to implement the Maritime Workforce Development Plan.

HACCP: Hazard Analysis Critical Control Points (HACCP) is a system, regulated by the FDA, which provides the framework for monitoring the total food system, from harvesting to consumption, to reduce the risk of foodborne illness. The system is designed to identify and control potential problems before they occur. In Alaska, HACCP training is taught regularly by Alaska Sea Grant.

HACCP Alliance: The international alliance was formed in 1994 to provide a uniform program to ensure safer meats and poultry products. It is housed at Texas A & M University. <http://www.haccpalliance.org/>

HAZWOPER: Hazardous Waste Operations & Emergency Response is a set of standards used by OSHA to set health and safety requirements for employers engaged in certain operations, as well as responses to emergencies involving releases of hazardous substances.

HR: Human Resources is the division of a business that is charged with finding, screening, recruiting, and training job applicants, and administering employee-benefit programs.

KSMSC: Kodiak Seafood and Marine Science Center is part of the University of Alaska Fairbanks. Its mission and purpose, to "create employment opportunities in the state's fishing industry" are outlined in Alaska state statute 16.52.020. KSMSC was previously named the Fishery Industrial Technology Center (FITC).

Lean Manufacturing: A methodology focused on minimizing waste within manufacturing systems while simultaneously maximizing productivity. Waste is seen as anything that customers do not believe adds value and are not willing to pay for.

Manufacturing Extension Partnership (MEP): The Alaska Manufacturing Extension Partnership is a technical assistance, training, and workforce development provider focused on advancing small and medium-sized manufacturers across Alaska. MEPs are funded in part by the U.S. Department of Commerce and are found in every state.

Maritime and Multi-skilled Worker (MMSW): offered at the UAS Maritime Training Center in Ketchikan, the program is a series of courses that leads to the US Coast Guard Marine Oiler Credential: "Qualified Member of the Engine Department", QMED.

Millwright: A high-precision skilled tradesperson who installs, dismantles, maintains, repairs, reassembles, and moves machinery in factories, power plants, and construction sites. An Occupational Endorsement in Millwright is offered at the Prince William Sound College.

Multivac: This is a brand of food packaging equipment used by the seafood processing industry. Specialized training is available to operate it.

NAICS: The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

NCCER: National Center for Construction Education and Research aims to be universally recognized by industry and government as the training, assessment, certification and career development standard for construction and maintenance craft professionals.

NIFA: National Institute for Food and Agriculture is a federal agency within the United States Department of Agriculture (USDA). It provides funding that advance agriculture-related sciences to ensure the long-term viability of agriculture.

NOAA: National Oceanic and Atmospheric Administration NOAA is a federal agency under the U.S. Department of Commerce. Its mission is to understand and predict changes in climate, weather, oceans and coasts; to share that knowledge and information with others; and to conserve and manage coastal and marine ecosystems and resources.

North Pacific Research Board (NPRB): Comprised of 20 members representing Federal, State and other entities that recommends marine research priorities to the U.S. Secretary of Commerce, placing a priority on cooperative research that addresses pressing fishery managements issues and important ecosystem information needs of the North Pacific, Bering Sea and Arctic Ocean.

NPFVOA: North Pacific Fishing Vessel Owners Association (NPFVOA): NPVOA is a non-profit organization with a membership composed of approximately 250 vessels, support businesses and individuals dedicated to safety education and training for the commercial fishing industry and other mariners.

NSF: National Science Foundation The National Science Foundation (NSF) is an independent federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..."

NSF/I-UCRC: National Science Foundation's Industry-University Cooperative Research Centers. The IUCRC program provides a structure for academic researchers to conduct fundamental, pre-competitive research of shared interest to industry and government organizations. IUCRCs are formed around research areas of strategic interest to U.S. industry.

OEC: Occupational Endorsement Certificate is a University of Alaska credential for programs that provide the specialized knowledge and skills needed in specific employment. OECs often require 29 or fewer credits to complete.

OSHA: Occupational Safety and Health Agency is part of the U.S. Department of Labor. It was created to ensure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance.

Oregon State University Seafood Lab (OSU): Based in Astoria, Oregon, the mission of the OSU Seafood Lab is to improve seafood through research and development, extension service to the fishing and seafood processing industry and graduate student research, training and instruction.

Pacific Fisheries Technologists:

A group that facilitates the exchange of technical and scientific information by organizing annual conferences for presentations of scientific papers, discussions of technical scientific matters relating to fishery industries, and the formation of collaborations between research institutes, universities, and governmental agencies engaged in fisheries work.

PCCRC: Pollock Cooperative Conservation Research Center was established in 2000 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. Funding for research comes from contributions from the pollock harvesting and processing fleet.

Process Line Mechanic: This position is found in seafood processing facilities and is responsible for installing the necessary parts for a particular production job. This includes setting up the line equipment, performing preventative maintenance and streamlining the production process by spotting and resolving potential problems such as bottlenecks on the line.

Process Technology: The heart of all industries that involve the production of consumer goods from raw materials. Technicians are responsible for planning, analyzing, and controlling the production of products from raw materials through distribution. They control, monitor and troubleshoot equipment that process raw material into products. They analyze, evaluate and communicate about data. An AAS in Process Technology is taught at several University of Alaska campuses.

PSM: Process Safety Management is addressed in specific OSHA standards for the general and construction industries. OSHA's standard emphasizes the management of hazards associated with highly hazardous chemicals and establishes a comprehensive management program that integrates technologies, procedures, and management practices.

PSPA: Pacific Seafood Processors Association is a non-profit seafood industry trade association. Its corporate partners are major seafood processing companies with operations in Alaska and Washington.

QMED: Qualified Member of the Engine Department documents are required by the U.S. Coast Guard of a certain number of the engine department crew on every inspected vessel. QMED is also the entry level (starting point) for any merchant mariner Engineering Officers License. QMED's are not restricted by the type or size of the vessel.

R & D: Research and development includes activities that companies undertake to innovate and introduce new products and services. It is often the first stage in the development process.

RETA: Refrigerating Engineers & Technicians Association is dedicated to the professional development of industrial refrigeration operators and technicians. Founded in 1910, RETA is a non-profit membership and certification organization currently based in Albany, Oregon.

RMP: Risk Management Plan is required by facilities that use extremely hazardous substances (such as anhydrous ammonia for refrigeration). The plan identified the potential effects of a chemical accident, identifies steps the facility is taking to prevent an accident, and explains emergency response procedures should an accident occur. These plans must be revised and resubmitted to the U.S. Environmental Protection Agency (EPA) every five years.

RSW: Refrigerated sea water refers to sea water cooled by mechanical refrigeration or by the addition of ice. It is used onboard fish harvesting and tender vessels.

Saltonstall/Kennedy program: Federal grant program that funds projects that address the needs of fishing communities, optimize economic benefits by building and maintaining sustainable fisheries, and increase other opportunities to keep working waterfronts viable.

SBP: School Business Partnership program (SBP) at Anchorage School District. SBP provides connections, tools and resources for meaningful partnerships between schools and local business organizations.

Seafood Industry: The seafood industry in Alaska includes harvesters (fishermen) and seafood processing companies and their employees.

Seafood Processing: Seafood processing companies operate along the coast of Alaska from Southeast to Kotzebue and range in size from small operations including a few people, to large operations with hundreds of employees. Processors also operate offshore either as catcher-processors or floating processors who use fish delivered to them. Processing techniques, species processed and product forms are diverse. In some communities, seafood is a seasonal occupation; in several, seafood harvesting and processing are active much of the year.

Seafood Technical Committee: As outlined in the Alaska Seafood Marketing Institute bylaws "shall study and make recommendations to the Board of Directors regarding the development of market-oriented quality specifications for Alaska seafood to be used in developing a high-quality image for Alaska seafood in domestic and world markets, and to adopt and distribute recommendations regarding the handling of seafood from the moment of capture to final distribution."

STEP: State Training and Employment Program is administered by the Alaska Department of Labor and Workforce Development, Division of Employment and Training Services and funded by a set-aside from the Unemployment Insurance Trust Fund. The purpose of STEP is to enhance the quality and make Alaska job training and employment assistance easily available to employers, employees, and future workers.

Sun'aq Tribe of Kodiak: A federally-recognized Alaska Native Tribe located within the City of Kodiak. Their mission and member services seek to address current Tribal issues while creating wholesome opportunities for Tribal health and growth.

TVEP fund: Technical Vocational Education Program fund was established in 2000 from a portion of the Unemployment Insurance receipts collected by the AK Dept. of Labor and Workforce Development. The funds must be used for technical and vocational training programs that align with workforce regional demands and the Alaska Workforce Investment Board's industry priorities.

UA: University of Alaska is a land-, sea- and space-grant system of higher education established in 1917. The UA system's three universities (UAA, UAF, and UAS) are separately accredited institutions with 13 community campuses.

UAA: University of Alaska Anchorage

UAF: University of Alaska Fairbanks

UAS: University of Alaska Southeast

USCG: United States Coast Guard is a branch of the U.S. Armed Forces, a law enforcement organization, a regulatory agency, a member of the U.S. Intelligence Community, and a first responder. The Coast Guard is the principal Federal agency responsible for maritime safety, security, and environmental stewardship in U.S. ports and inland waterways, along the U.S. coastline, throughout the U.S. Exclusive Economic Zone (EEZ), and on the high seas.

USDA: United States Department of Agriculture is a federal agency that provides leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on public policy, the best available science, and effective management. The USDA is made up of 29 agencies and offices with nearly 100,000 employees who serve the American people at more than 4,500 locations across the country and abroad.

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