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# ALASKA SEAFOOD

*The Model for Sustainability*

## INSIDE THIS WHITE PAPER:

*The Five Pillars of Alaska Seafood Sustainability*

- Fisheries Management
- Families and Communities
- Resource Utilization
- Social Responsibility
- Certification





*Wild, Natural & Sustainable®*

## **ALASKA SEAFOOD**

The Model for Sustainability  
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## **EDITOR**

Alaska Seafood Marketing Institute

## **CONTRIBUTORS**

Heather Brandon, NOAA, ADF&G, SeaShare, and many others  
in the Alaska seafood community.

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## EXECUTIVE SUMMARY

In the world of seafood, Alaska is synonymous with sustainability. Fish thrive in the cold, productive seas of Alaska and communities take pride in the sustainable principles that maintain the health of their renewable fisheries resources. Alaska naturally produces more seafood than any other part of the United States, and for decades has sustainably managed this renewable resource with rigorous science and judicious allocation. That said, the industry understands the importance of adaptation in the face of inevitable change and uncertainty. Sustainability will always guide the ecological, economic, social, and cultural philosophy of the Alaska seafood industry.

With over 100 different species harvested and at least 300 unique seafood products produced, Alaska is home to a diverse and abundant portfolio. Fishermen in Alaska today use the most modern techniques to harvest salmon, halibut, crab, pollock, flatfish, cod and more. They do this while avoiding the catch of non-targeted species, steering clear of protected habitat, and keeping themselves and their crew safe on the water. Seafood processors turn that catch into the products enjoyed by families, such as fillets of halibut, cans and pouches of salmon, king crab legs, and fish fingers. The remaining fish “waste” is resourcefully processed into a variety of markets including pet food, fertilizer, oil, biomedical products, nutraceuticals, pharmaceuticals and wearable products. The Alaska seafood industry was built on innovation and hard work; producing products for the global market that are traceable and harvested in a sustainable manner.

A major component of Alaska’s sustainability story is Alaska’s fishery management system, which is among the best in the world. Multiple levels of government — state, federal and international — work together and across jurisdictional boundaries to produce reliable, accurate, and current scientific data that all management decisions are based on. Processes are in place for public engagement, tribal consultation, and stakeholder input prior to decision-making. Another hallmark of Alaska fishery management is the separation of science decisions and management decisions; a firewall between the two processes that prevents political maneuvers from superseding the biological limits.



For more information, please see the [United Nation's Sustainable Development Goals](#)

*The United Nation's Sustainable Development Goals (SDG) provide a common framework for the global challenges that we face today. The Alaska seafood industry is actively contributing either directly or indirectly to these global goals.*

*The Alaska seafood sustainability pillars outlined in this report provide a framework of how our industry is prioritizing sustainable decisions to align with specific SDGs such as strengthening food security by supplying healthy and safe seafood, promoting sustainable economic growth, contributing to sustainable food value chains, and implementing a conservative and sustainable approach to utilizing the ocean's resources.*

Obtaining scientific data, harvesting resources, and processing seafood in remote Alaska is difficult, requiring a lot of collaboration and hard work. However, this remoteness is also what makes Alaska's seafood resource so prolific and unique. Alaska's pristine waters, cold rivers, few people, inaccessible and untouched environment, and community and cultural cohesion to the resource contribute to the ethics of seafood sustainability that Alaskans live and work by.

The comprehensive nature that defines the sustainability of Alaska's seafood resource is better understood by dividing it into five pillars. The five pillars of sustainability for Alaska seafood are Fisheries Management, Families & Communities, Resource Utilization, Social Responsibility, and Certification. Each tenet is closely tied to the others, and in some cases, intertwined. This document serves as a foundation of information that defines the framework of Alaska's sustainability story.

*The five pillars of Alaska seafood sustainability — Fisheries Management, Families & Communities, Resource Utilization, Social Responsibility and Certification — are comprehensive in ensuring sustainable practices for Alaska seafood.*





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## ALASKA'S FISHERIES

Alaska's fisheries resources are key contributors to both the sustenance and economy of the state of Alaska, the U.S., and the world. Alaska's seafood industry is the top private sector employer in the State of Alaska with approximately 60,000 workers directly employed generating \$2.1 billion in annual labor income and \$5.6 billion in economic output for Alaska's economy (McDowell, 2020). Around 60% of the seafood landed in the U.S. is harvested from Alaska's waters. Alaska hosts six of the top ten fishing ports in the United States measured by value.

Alaska has a diverse portfolio of seafood species commercially harvested annually. Common species targeted in Alaska's commercial fisheries include: salmon, herring, shellfish (crab, shrimp, scallop, and clam), sea cucumber, octopus and squid, groundfish (Pacific cod, Alaska pollock, sablefish, Atka mackerel, lingcod, and various rockfish species), and flatfish (Pacific halibut, yellowfin, flathead and rock sole, Greenland turbot, arrowtooth flounder, and Alaska plaice).

Common gear types of catcher vessels and catcher-processors in the Alaska commercial fishing industry include drift net, jig, longline, pot, purse seine, set net, trawl, and troll. The catch is either delivered to tender vessels for transport to processors or processed onboard.



*Alaska has the most prolific commercial fishing industry in the United States, producing more harvest volume than all other states combined. Conservative fishery management systems in Alaska are designed to support and continue that high level of productivity while prioritizing healthy ecosystems and thriving communities.*

Source: McKinley Research Group (formerly McDowell Group)





# FISHERIES MANAGEMENT

## COVERED IN THIS CHAPTER:

- Overview
- Policy and Allocation
- Management Tools
- Fisheries Population Monitoring

- Ecosystem Considerations
- Social Considerations
- International & Cultural Treaties
- Enforcement & Traceability







OVERVIEW

All fisheries management agencies with jurisdiction over Alaska’s marine resources have similar and compatible fisheries management principles, strategies, and methods to support the three areas of fisheries management: *conservation and management, policy and allocation, and regulatory enforcement*. Each of the three Alaska fisheries management regimes — federal, state, and international — is committed to a triple bottom line framework for sustainability. Each management practice has a legal mandate to achieve optimum yield, or the harvest level that will provide the greatest overall benefits — ecological, economic, and social, while also preventing overfishing and harm to ecosystems and fishing communities. Additionally, they all have a clear separation of conservation and management from allocation and policy.

The commercial fisheries off Alaska occur in areas under state, federal, or international management jurisdictions. State waters contain inland and coastal waters off Alaska from 0-3 nautical miles, whereas federal waters encompass waters from 3-200 nautical miles offshore, or the Exclusive Economic Zone (EEZ). For migratory, transboundary fish populations, there are international management agreements and treaties for species such as salmon and halibut.

*Each of the three Alaska fisheries management regimes — federal, state, and international — is committed to a triple bottom line and balances an ecological, economic, and social framework for sustainability. Alaska has been a pioneer in applying successful sustainable management practices and now serves as a gold standard for fisheries around the world.*

In general, the state fisheries management agency is the Alaska Department of Fish and Game (ADF&G), which has management authority for fisheries in state waters. The federal management agency is the National Marine Fisheries Service (NMFS), which has management authority for fisheries occurring in federal waters. The International Pacific Halibut Commission (IPHC) jointly regulates international halibut harvest and stocks in the North Pacific with the state and federal agencies. The IPHC determines management catch quotas for

	 SALMON State Management	 GROUNDFISH Federal Management	 HALIBUT International Management: U.S. and Canada	 CRAB Collaborative Federal and State Management
CONSERVATION & MANAGEMENT <i>(Includes Scientific Research)</i>	Alaska Department of Fish & Game (ADF&G)	National Marine Fisheries Service (NMFS)	International Pacific Halibut Commission (IPHC)	Alaska Department of Fish & Game (ADF&G)
POLICY & ALLOCATION	Alaska Board of Fisheries (BoF)	North Pacific Fishery Management Council (NPFMC or Council)	<i>International:</i> International Pacific Halibut Commission (IPHC) <i>National:</i> North Pacific Fishery Management Council (NPFMC or Council)	North Pacific Fishery Management Council (NPFMC or Council)
REGULATORY ENFORCEMENT	Alaska Wildlife Troopers	National Marine Fisheries Service (NMFS)	National Marine Fisheries Service (NMFS)	National Marine Fisheries Service (NMFS) and Alaska Department of Fish & Game (ADF&G)





halibut in international waters, with Alaska area catch allocations, policy, and regulation implemented by state and federal agencies. Several species occur in both state and federal waters, including sablefish, king crab, tanner crab, rockfish, and groundfish, which necessitates co-management and a higher level of cooperation and communication between state and federal agencies (see Co-management section).

## State

Alaska became a state in 1959 and took over the management of its fisheries. The state constitution mandated that:

■ *“fish...be utilized, developed and maintained on the sustained yield principle.”* ■

The sustained yield principle allows people to obtain benefits from the natural resource without undermining the resources’ dynamic ecological integrity. Alaska is the only state to have written such conservation language into its constitution.

The core mission of the ADF&G’s Division of Commercial Fisheries is to ensure the conservation of natural stocks of fish, shellfish and aquatic plants based on scientifically sound assessments. The Division further declares in its mission statement that the sustained yield principle and the best available science is used in all fisheries management – commercial, recreational, and subsistence – with the end goal of supporting state economies and citizens (ADF&G, 2019).

ADF&G Division of Commercial Fisheries has statewide and regional staff overseeing four general management regions. ADF&G employs a unique and extensive fisheries monitoring and research program to document catches in-season, assess stock conditions, and determine appropriate harvest levels. Examples of commercial fish and shellfish species groups ADF&G manages are salmon, crab, herring, and other invertebrates.

ADF&G Division of Commercial Fisheries has a unique role in also monitoring the state’s private non-profit hatcheries, or enhancement facilities in Alaska. The Alaska salmon enhancement program was designed to increase salmon abundance and enhance the wild stocks. The highest priority of the program is to protect and maintain wild stocks. Salmon produced by Alaska’s fisheries enhancement program play a minimal role in the life history of salmon, involved only in the rearing state from egg to the juvenile stage when they are released to the wild. Cooperative development of annual management plans guide hatchery operations, production, and harvest management of returns, leading to successful fisheries management practices. Ongoing research to understand the interactions between enhanced and wild salmon stocks provide managers with information to constantly evaluate the program to ensure the sustainability of Alaska’s salmon populations.

■ *For more information, please see [Alaska’s Salmon Hatcheries](#).*

## Federal

Modern federal fishery management in Alaska coincided with the Americanization of fishing fleets under the 1976 Magnuson-Stevens Act (MSA). An underlying principle of the MSA is to promote conservation of the nation’s fishery resources while achieving optimum yield with equal consideration to social and economic factors. The MSA guides federal fisheries conservation and management through 10 National Standards. These standards provide nationwide consistency across all fishery management plans. National Standard 1 requires that conservation and management measures prevent overfishing, an annual catch level that is too high to be sustainable, while achieving optimum yield.



The MSA directs the regulation of some of Alaska’s fisheries and the actions of the federal management agency, NMFS, the National Marine Fisheries Service. Generally, NMFS is responsible for the management of all groundfish fisheries off Alaska with the exception of a few fisheries. The mission of NMFS, or National Oceanographic and Atmospheric Administration (NOAA) Fisheries, is to provide science-based stewardship of Alaska’s marine resources and their habitats. In addition to supporting sustainable fisheries, NMFS is also responsible for protecting and recovering federally protected species, promoting healthy ecosystems, and resilient Alaska coastal communities. NMFS operations for Alaska’s fisheries is organized by the Alaska Fisheries Science Center (AFSC) and the Alaska Regional Office.

The AFSC studies Alaska’s marine ecosystems to ensure the sustainable use of living marine resources in federal waters. AFSC has five primary divisions with the mission to monitor fish and marine mammal populations, their habitats, and ecosystem dynamics. AFSC conducts research to collect the best scientific data available and use models to help fisheries managers set sustainable catch limits while ensuring the protection of marine mammals and habitats.

The NMFS Alaska Regional Office is responsible for authorizing federal fisheries in Alaska, implementing fishery management programs consistent with the MSA, and coordinating with the state and international management bodies on fishery management data collection programs and regulations. The regional office is headquartered in Juneau, Alaska with multiple field offices around the state.

### International

The only Alaska fishery whose stock assessments and harvest policy are not determined by NMFS or ADF&G is Pacific halibut. The IPHC is a bilateral, collaborative organization, composed of members from the United States and Canada. Today’s IPHC management was based on the Convention developed in 1923. The objective of the IPHC Convention was and continues to be “to develop the stocks of Pacific halibut in the Convention waters to those levels which will permit the optimum yield from the fishery and to maintain the stocks at those levels” (IPHC, 2017). In 1982, the U.S. Congress passed Convention implementing legislation titled the North Pacific Halibut Act, which also authorized U.S. federal agencies to develop and implement additional halibut fishery regulations with-

in the U.S. portion of the Convention area (NOAA, 2012). This means that the process for how halibut in Alaska is managed is in-line with federal fishery management standards to derive the most benefit from Alaska’s fisheries for food and economic well-being while conserving ecosystem health and fish stocks for continued productivity to benefit future generations of fishing families and Alaska’s coastal communities.

The IPHC is responsible for assessing the status of the Pacific halibut stock and setting harvest strategies and catch limits that provide for optimum yield. Within the United States, the federal fisheries policy body, the North Pacific Fisheries Management Council (NPFMC) is responsible for allocating the halibut resource among users and user groups fishing off Alaska, and NMFS is responsible for developing, implementing, and enforcing regulations pertaining to the management of halibut fisheries in U.S. waters. Hook and line (also called longline) is the only legal

*Fisheries managers of the state, federal and international management programs have a shared goal of sustainability. Each management program has a legal mandate to achieve optimum yield, or the harvest level that will provide the greatest overall benefits — ecological, economic, and social considerations, while also preventing overfishing and harm to ecosystems and fishing communities.*



gear for the directed (targeted) halibut fishery. Bycatch on other gears may not be kept or sold. Commercial halibut fisheries in Alaska are subject to the Individual Fishing Quota (IFQ) Program and Western Alaska Community Development Quota (CDQ) Program regulations (Title 50 - Wildlife and Fisheries, 2018), and the area-specific catch sharing plans.

## POLICY AND ALLOCATION

As mentioned above, there are three major management bodies for Alaska's fisheries. They have different processes for incorporating public input and science, as outlined below, but all three share the goal of sustainable management. Although there are multiple international treaties and organizations that contribute to the science, advocacy, and allocation decisions, only the three major fishery management bodies are discussed in this section.

### State: Board of Fisheries

The Alaska Board of Fisheries (Board or BoF) consists of seven members serving three-year terms. Members are appointed by the Governor of Alaska, and confirmed by the State Legislature. Members are appointed on the basis of interest in public affairs, good judgment, knowledge, and ability in the field of action of the board, with a view to providing diversity of interest and points of view in the membership. The Board's main role is to conserve and develop the fishery resources of the state. This involves setting seasons, bag limits, methods, and means for the state's subsistence, commercial, sport, guided sport, and personal use fisheries, and it also involves setting policy and direction for the management of the state's fishery resources.

The Board is charged with making allocative decisions, and the Alaska Department of Fish & Game is responsible for management based on those decisions. The Board meets four to six times per year in communities around the state to consider proposed changes to fisheries regulations. The Board receives written proposals, comments, and oral and written testimony from members of the public, local Fish & Game Advisory Committees, and ADF&G. The Board then deliberates on regulations that respond to people's concerns, while also considering the need for long-term conservation and sustainable use of the resource. The Board meetings are open to the public and provide opportunity for transparency in policy changes and testimony in the form of public comment.

*The State government in Alaska has a unique approach to generating "bottom up" stakeholder involvement from over 80 community Advisory Committees that recommend fisheries management changes that consider long-term conservation and sustainable use of the resource.*

Proposed changes and recommendations to the State's fisheries policies often come from the unique and extensive suite of more than 80 Advisory Committees situated around the state with up to 15 locally elected members. Each committee listens to and discusses local concerns about fishing regulations, and then submits proposed regulation changes to the Board (ADF&G, accessed 2019). The advisory committees also provide comments and recommendations to the board on proposals that would impact the resources in their area. Advisory Committee meetings are open to the public, allowing for public comment, and are attended by ADF&G and/or Board staff.



Council  
members  
balance  
COMPLEX  
SCIENTIFIC  
INFORMATION  
&  
DIVERSE  
PUBLIC  
INTERESTS  
while trying  
to make  
decisions for  
the overall  
benefit of the  
nation.

There is frequent collaboration between the federal NPFMC/NMFS process and the state BoF/ADF&G process. For example, the Commissioner of ADF&G has a permanent, voting seat on the Council. The Council and the Board hold a formal joint protocol meeting at least once per year, and informal coordination a matter of routine. Because of their strong mutual interests in fishery conservation, and their adherence to the precautionary principle of fishery management, both pairs of agencies view this cooperation as essential.

### Federal: North Pacific Fishery Management Council

The MSA created broad goals for U.S. fisheries management and a unique, highly participatory management structure centered on eight regional Councils. These Councils must ensure that the National Standards are followed in all fishery management plans. Councils, in developing fishery management plans, must carefully balance the need for stable fishing jobs, ecological conservation, and societal interests (Balsiger, 2014). This structure ensures that input and decisions about how to manage U.S. fisheries develop through a “bottom up” process that includes fishermen, other fishery stakeholders, affected states, tribal governments, and the federal government (Balsiger, 2014). The regulation of Alaska’s federal fisheries is developed by the North Pacific Fisheries Management Council (NPFMC) and implemented by the NMFS Alaska Regional Office.

The NPFMC or Council is composed of 15 members: 11 voting and 4 non-voting. Seven of the voting members are appointed by the U.S. Secretary of Commerce upon the recommendation of the governors of Alaska and Washington. The Governor of Alaska nominates candidates for five seats, the Governor of Washington two seats. Each member is appointed to a three-year term and may be reappointed, but may not exceed three consecutive terms. There are four mandatory voting members; they are the leading fisheries management officials from the states of Alaska, Washington, and Oregon, and the Alaska Regional Director for NMFS. The four non-voting members are the Executive Director of the Pacific States Marine Fisheries Commission, the Area Director for the U.S. Fish and Wildlife Service, the Commander of the 17th Coast Guard District, and a representative from the U.S. State Department.

The Council is tasked with approving a Fisheries Management Plan (FMP) per the MSA for each species or group of species under federal authority. Guiding the development of each FMP is the Stock Assessment and Fishery Evaluation (SAFE) report for federal fisheries managed by the Council. The SAFE reports are compiled by the respective Plan Teams with contributions of research and data sets from scientists at NMFS’ Alaska Fisheries Science Center & and the Alaska Department of Fish and Game (ADF&G). There are four Plan Teams: Bering Sea/Aleutian Islands (BSAI) groundfish, Gulf of

Alaska (GOA) groundfish, BSAI crab, and scallop. Plan Teams are composed exclusively of scientists -- no harvesters or other stakeholders are involved in these conservation decisions.

The catch limits and other recommendations of the Plan Teams are first vetted by the Council’s Scientific & Statistical Committee (SSC), a separate panel of biologists and economists, and is open to public observation and comment. After review, the SSC’s recommendations are discussed at the

Council’s Advisory Panel (AP), a broad group of harvesters, processors, and other stakeholders. The AP develops recommendations for allocation of the catch limits, and this process is also open to public observation and formal comment. In summary, the Plan

*The federal management process, directed through the Council, strives to be iterative, scientifically rigorous, and open to public and stakeholder engagement.*



Teams and the SSCs make fisheries conservation decisions. After those decisions are made, the AP and the NPFMC make allocation and management decisions. The biological and allocative steps of decision-making are intentionally separated. The Council makes recommendations to the U.S. Secretary of Commerce and the policy mandates are properly recorded in the federal register. This multilevel “Council process” is an inclusive partnership of scientists, management professionals, and public and industry stakeholders.

#### International: International Pacific Halibut Commission

The six-person IPHC is composed of three Canadian and three U.S. representatives. Representatives from both nations fill the following commission seats: an employee of the federal fisheries agency, a fisherman, and a seafood buyer or processor involved in the halibut fishery.

Every year, IPHC scientists set the catch limits for the coming fishing season, and apportion those harvests to IPHC statistical fishing areas, based on the productive capacity of the specific population, or stock, in those areas. For halibut fisheries off the coast of

Alaska, the allocation of those area specific catch limits is done by the Board and the Council. In this way, the IPHC conducts the conservation decisions and the Council and Board of Fish conduct the allocation decisions.

The IPHC has a scientific review board, research advisory board, and several other panels and boards that allow for input from stakeholders. The public may observe the Commission and panel/board meetings, and public comment may be submitted or public testimony given.

*The management of Alaska's Pacific halibut population is highly collaborative as the IPHC implements research and sets allocation for stocks while state and federal managers effectively manage the fisheries.*

## ENFORCEMENT & TRACEABILITY

#### Fisheries enforcement

NMFS Office of Law Enforcement (OLE) works closely with the U.S. Coast Guard and Alaska Wildlife Troopers in enforcing fisheries regulations, coordinating patrols, boardings, inspections, and investigations. OLE has the power to seize and forfeit fishing vessels, fishing gear, and harvested products. Successful prosecutions based on OLE enforcement and investigations can result in penalties ranging from fines to imprisonment. OLE and the U.S. Coast Guard present annual enforcement reports to the North Pacific Fishery Management Council.

OLE and the U.S. Coast Guard also works with U.S. Customs and Border Protection, U.S. Fish and Wildlife Service, and local law enforcement. Additionally, OLE maintains

a strong partnership with the NMFS certified At-Sea Observer Program to protect observers and fisheries data used to manage marine resources. These civilian scientific observers are employed by private contractors and placed aboard fishing vessels under mandates from the North Pacific Fishery Management Council. The observers collect fisheries data, and they also report suspected regulatory violations to OLE. Of the roughly

*When a law or regulation violation occurs in Alaska, it is detected, investigated, prosecuted, and remedied through fines, forfeitures, and/or imprisonment.*



300 investigations every year, the review process usually finds 1-2 incidents that are forwarded to prosecution (NOAA, OLE, 2018).

OLE monitors vessel location with Vessel Monitoring System (VMS) technology, in which fishing vessels must carry an electronic device that automatically tells OLE where they are. All vessels using pot, hook-and-line or trawl gear that are permitted to directly fish for Pacific cod, Atka mackerel or Alaska pollock must have an operable VMS. This requirement is necessary to monitor fishing restrictions in Steller sea lion protection areas.

Additionally, tender vessels (aggregation and transport vessels), independent buyers, direct marketers, and those who wish to catch, sell, buy, process or export seafood in Alaska require either an ADF&G permit or a Fisheries Business License (ADF&G, 2018) which provides a record of business and therefore accountability.

### Traceability

Traceability is “the ability to follow the movement of a food through specified stages of production, processing and distribution” through, for example, batch numbers or bar codes (FAO, 2004). It can be achieved by having a framework of multiple systems, for keeping track of products as they are received, processed, labeled and shipped. With thorough traceability systems, food producing companies can save money and improve processes; food recalls can be more targeted, quality parameters (time and temperature) can be monitored more closely, and the production-distribution process can be analyzed in greater detail and used to improve choke points.

All Alaska seafood suppliers conform to applicable national and international laws governing food producers, including the USDA’s Country of Origin Labeling (COOL) law and the U.S. Seafood Import Monitoring Program (SIMP) (USDA, 2019; NOAA Fisheries, 2019). All major seafood producers in Alaska comply with the FDA’s Hazard Analysis

*Alaska is dedicated to providing transparency and efficiencies achieved with traceability measures.*

and Critical Control Point (HACCP) which requires thorough recordkeeping that ensures that food safety requirements are met, documents the transformation of fish/shellfish into value-added seafood products, and is a component of product traceability information. Additionally, the first receiver (any first purchaser, processor, exporter or transporter) of raw fish-

ery resources must complete and submit a fish ticket. A fish ticket, the paper form or eLanding system, is the form provided to document commercial harvest from a public resource to accurately report commercial fishing activity and comply with ADF&G laws and regulations (ADF&G, 2019).

### Illegal, unreported and unregulated fishing

Illegal, unreported and unregulated (IUU) fishing is a major global threat to the sustainability of fisheries and marine biodiversity, and creates an unfair market for those abiding by the law. IUU fishing happens primarily in countries with low or non-existent

*Unregulated fishing does not happen in Alaska. Regulatory enforcement is effective in limiting illegal fishing practices in Alaska and assuring illegally obtained seafood products are not sold in commerce.*

enforcement and monitoring capabilities, weak management, and corrupt governance (FAO, 2019). None of these attributes describe the Alaska or U.S. fishery management regime.

No fisheries are unregulated in Alaska. Fishermen and seafood processors are carefully monitored to make sure that everyone is following the law and accurately reporting the number of fish that have been caught and other required information. Management and monitoring of Alaska fisheries includes the



use of observers, satellite-based monitoring systems, certified catch accounting and weighing procedures, and electronic reporting. Violations are investigated and remedies, including court settlements, occur. In other words, anyone fishing in violation of U.S. and Alaska laws and regulations is prosecuted and others are effectively deterred from illegal behavior.

**HARVEST CAPS,  
QUOTAS,  
LIMITED ENTRY,  
AREA CLOSURES,  
SEASONAL  
LIMITATIONS,  
SIZE & SEX  
RESTRICTIONS  
and GEAR  
LIMITATIONS**  
are just a  
few of the  
management  
tools employed  
by Alaska's  
managers.

## MANAGEMENT TOOLS

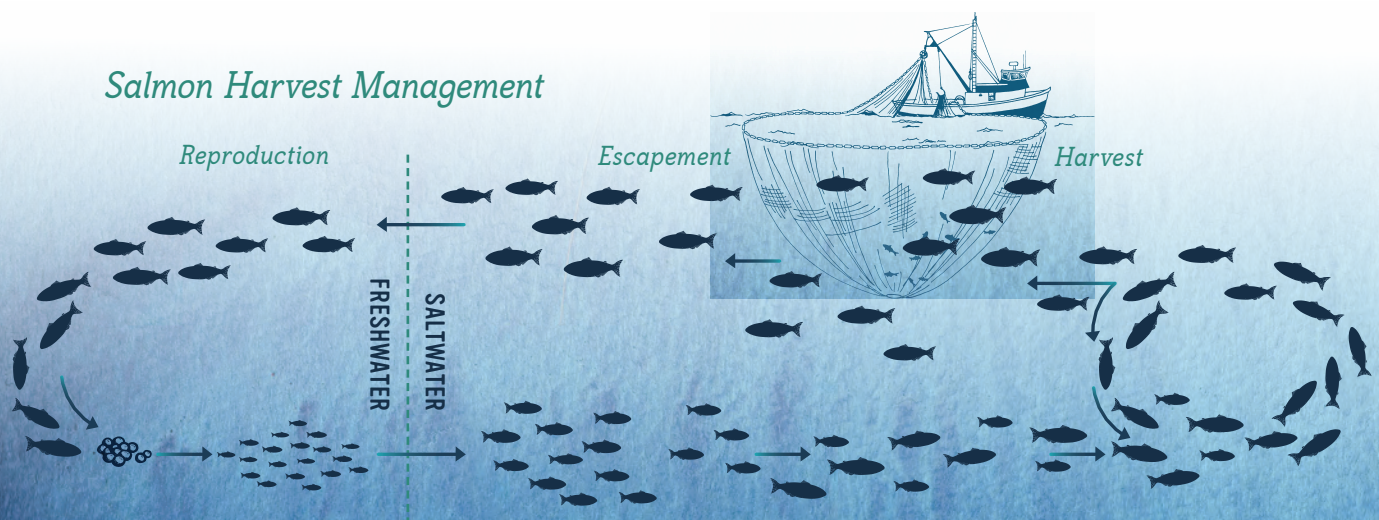
Alaska's fisheries management bodies rely on many different management tools to make conservative management decisions for Alaska's diverse fisheries. Harvest control is one of the primary management measures with proven capability for preventing over-fishing of fishery resources. Capping total allowable catches or guideline harvest levels for target species is one type of harvest control. Some fisheries divide the catch limits into quotas for individual boats, people, or cooperatives of boats, which is often referred to as catch-shares. Limiting the group of harvesters (limited entry), closing fishing areas or limiting the time of year when fishing can occur are additional tools. Some fisheries control the maximum size of a boat or net mesh sizes, while other fisheries have size and sex restrictions on fish and shellfish that can be retained. Fisheries managers have in-season control to open and close fisheries based on landings information, product quality, escapement goals, bycatch limits, or for the safety of fishermen.

### Seasonal and annual harvest limits

#### State

A management tool specific to Alaska's salmon fisheries, is a seasonal salmon harvest policy known as 'fixed escapement.' This means that management's first priority is to ensure that sufficient numbers of adult spawning salmon escape capture in the fishery and are allowed to spawn in the river systems, thus maintaining the long-term health of the stocks. All human uses of salmon, especially commercial fishing, are subordinate to this guiding principle.

ADF&G scientists annually forecast salmon returns, estimate the size of the harvest, and establish escapement goals. The escapement goal is a stock-specific reference point for



fishery management. Because of the natural variability of environmental conditions, the total number of adult salmon returning to spawn varies considerably each year. In order to achieve spawning goals, which are set within a range, the commercial harvest also fluctuates from year to year. When the salmon return, in-season assessments of run strength (numbers of fish) are made throughout the fishing and spawning season to ensure that escapement goals are met. Escapement data extends beyond just the number of salmon that return to the spawning grounds, but managers also look at coverage or use of spawning habitat, the ratio of males to females in a spawning area, the age composition and origin of the returned fish, and return times from the ocean into the river system.

Some runs of salmon have no stock-specific information on escapements or catch, so ADF&G selects a model or a comparable (index) river and salmon species on which to base its estimates of run strength and escapement (Grabacki, 2008). This usually leads

*Managing for escapement and the long term health of salmon stocks is the dominant goal in salmon fishery management. In-season management actions allow the fishery managers to modify the fishery to adapt it to the changing stock dynamics, the environmental conditions, and other parameters that are experienced during the fishing season.*

to the development of a Sustainable Escapement Goal (SEG), a range of escapement numbers. A range provides flexibility to fisheries managers to make in-season adjustments and decisions (Grabacki, 2008). For stocks with more comprehensive data on both escapements and catch, a Biological Escapement Goal (BEG) is calculated by ADF&G.

“In-season” management action means that fishery managers can modify the fishery to adapt it to the changing stock dynamics, the environmental conditions, and other parameters that are experienced during the fishing season. In the state-managed salmon fisheries, ADF&G may use an Advisory Announcement or Emergency Order to make in-season adjustments, such as opening or closing a fishing area or period, modifying harvest limits, modifying gear types or mesh size, or other in-season ad-

justments that help control harvest yet still achieve the optimum yield. For example, state salmon managers can open and close the fishery (start and stop fishing) in response to the daily “run strength”, which is the numbers of salmon returning to their natal streams (Grabacki, 2008).

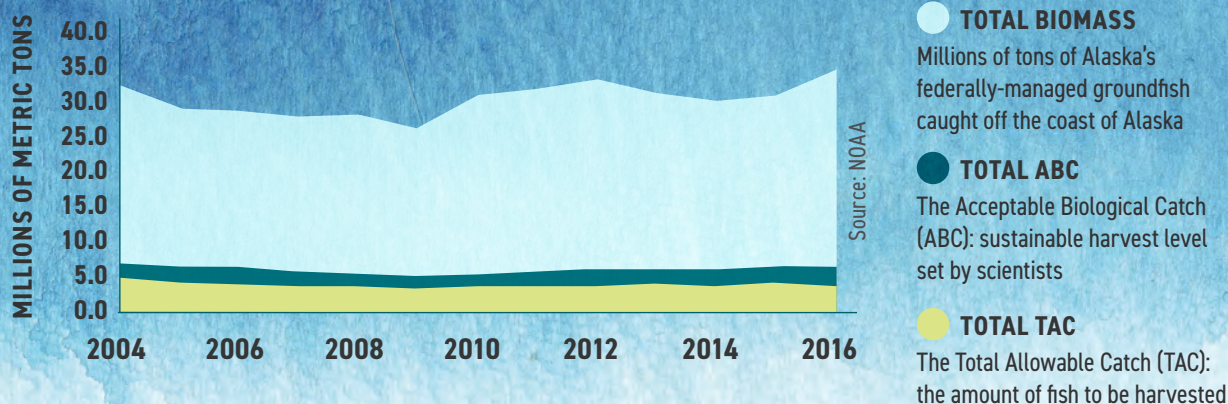
### *Federal*

The federal fishery management system effectively and responsibly manages fish stocks at biologically sustainable levels by adhering to a FMP for each federal fishery in Alaska. The FMP is supported by the SAFE report which summarizes the best available scientific information concerning the past, present, and possible future condition of the stocks, marine ecosystems, and fisheries that are managed under federal regulation. The SAFE report provides the NPFMC with information to determine annual harvest levels from each stock, documents significant trends or changes in the resource, marine ecosystems, and fishery over time, and assesses the relative success of existing state and federal fishery management programs. It defines two stock-specific reference points: 1) Acceptable Biological Catch (ABC) and 2) Over-Fishing Limit (OFL). The ABC is a scientifically acceptable level of harvest based on the biological characteristics of the stock and its current biomass level. The OFL is a limiting catch level, higher than ABC, which demarcates the boundary beyond which the fishery is no longer viewed as sustainable. NMFS looks at the stock assessments and reference points to determine whether a stock is overfished or subject to *overfishing*. The ABC recommendations, together with social, environmental, and economic factors, are considered by the Council in determining total allowable catches (TACs), or the total amount of fish that can be legally harvested.

*Overfishing is when the annual rate of catch is too high, and overfished is when the population size is too small to produce maximum sustained yield.*  
(NOAA Fisheries, 2018)



## A History of Responsible Fishery Management



The TAC never exceeds the ABC. When the TAC is finalized by the Council, the stakeholders involved rest assured that the best available science was applied rigorously and appropriately. This is in stark contrast to other regions of the world where the scientific methods and scientists are not as trusted, are not as transparent, or there is less (or no) public access or transparency to the TAC setting data or process. For some commercial fish species that are also desirable prey for Steller sea lions such as Bering Sea pollock and Pacific cod, TACs are spread across seasons to disperse harvest and reduce prey depletion for foraging sea lions (NPFMC, Bering Sea Fishery Ecosystem Plan, 2019).

If a fishery is found through the stock assessment process to be in an overfishing or overfished status, NMFS and NPFMC will generate a rebuilding plan as required by the MSA (NOAA Fisheries, 2018). If any stocks are found through the assessment process to be overfished and cannot support a fishery, the stocks must operate under a rebuilding plan. To rebuild these stocks, no target commercial fishery is allowed, bycatch in other fisheries is restricted, socio-ecological impact to communities is addressed, and there is research for restoration and enhancement implemented.

Additionally, there are annual harvest limits for multiple species spanning regions and management units across the state. A cap on total groundfish removals from the two most productive marine systems in Alaska: The Gulf of Alaska and the Bering Sea/Aleutian Islands cannot exceed 2 million metric tons in the Bering Sea/Aleutian Islands or 800,000 metric tons in the Gulf of Alaska.

In federal fisheries, a fishery might be limited, modified, or stopped altogether, if a predetermined level of bycatch, or incidental catch, is reached or if harvest activity will exceed the set harvest limits (Grabacki, 2008). Catch and landings of crab, halibut, and sable-

fish are reported daily to NMFS, while groundfish and bycatch in the groundfish fishery are reported weekly (NMFS, accessed 2019). Catch volume is linked by government catch accounting systems internally to a fishing license, permit or IFQ, which is one vital part of appropriate enforcement.

In summary, the Plan Team recommends ABCs which are reviewed by the SSC. Based on the ABC and other factors, the Council sets the TACs which are always lower than the ABC. Developing the ABC and setting the TAC for each FMP are processes that are deliberately kept separate to create a separation between science-based conservative management and fisheries policy. Taken together, setting seasonal and annual harvest limits is a complex process, but one that prevents overfishing and helps maintain a healthy and sustainable fish population, while also preserving the delicate ecosystem.

*Federal fisheries scientists estimate how much fish are in the ocean (biomass) and how much fish can be sustainably harvested (ABC) with policy setting an actual harvest level (TAC). Under no circumstances is the TAC set higher than what is scientifically recommended from the ABC. This conservative approach is an underlying theme of fishery management conservation practices in Alaska.*

## Limited entry

When an unlimited number of people are allowed to use or harvest a public resource the result is a “tragedy of the commons.” In other words, harvesters have little incentive to sustainably manage the common/public resource. To begin to address this problem, the State of Alaska and the MSA authorized the use of limited entry systems and limited access privilege programs (LAPPs).

### State

The ability to participate in a state commercial fishery is regulated by the Commercial Fisheries Entry Commission (CFEC). The CFEC is integral in developing and maintaining the sustainable fisheries and small businesses that underpin Alaska’s fishing industry. They ensure the limited entry system does not create an exclusive privilege in Alaska fisheries and monitors the permit system to align with the optimum yield goals for Alaska’s seafood resources.

### Federal

Federal LAPP programs go a step further than the state limited entry system by giving fishermen the privilege to harvest a percent of the total allowable catch. These LAPPs, or catch share programs, were established “through a long and deliberative process with the Council that resulted in enhancing the value of Alaska’s fisheries, reducing waste, and minimizing the need for fishing in dangerous conditions that can often occur in a ‘race for fish’ without LAPP management (Balsiger, 2014).” LAPPs have proven to be effective in meeting a number of economic management objectives when they have broad stakeholder support. Both in the United States and abroad, such programs are helping to prevent TAC overruns, extend fishing seasons, reduce lost gear, increase revenues, and improve safety (Balsiger, 2014). Because it is an economic system, LAPPs consolidate harvesting opportunities, therefore Alaska is attempting to address opportunities to increase new entrants and retain quota in communities that have not benefited from consolidation.

Today, approximately 85 percent of the harvest occurring in federally managed fisheries in Alaska are LAPPs, including individual quota shares, rationalized fishery quota shares, and catch share allocations allowing qualified vessels to form cooperatives in different sectors. One example of the cooperative catch share program is the Amendment 80 cooperative. Implemented in 2008, the Amendment 80 program allocates BSAI

yellowfin sole, flathead sole, rock sole, Atka mackerel, and Aleutian Islands Pacific ocean perch to the head and gut trawl catcher processor sector, and allows qualified vessels to form cooperatives.

Halibut and sablefish are managed in Alaska with an Individual Fishing Quota (IFQ) system. This means that harvesters must have a catch permit to take halibut and sablefish, as well as purchase quota for each pound of the target fish harvested. There are a limited number of catch permits. Prior to the IFQ system, the fishery was open for a very short amount of time resulting in lost gear, which in turn resulted in ghost fishing and habitat destruction, high accident rates, and high discard mortality rates

(National Research Council, 1999). The IFQ system was put into place in 1995 to end the “race for fish” caused by too many boats fishing too few days. The IFQ system has resulted in longer fishing seasons, less lost gear, improved safety on the water, a higher quality halibut product, and longer market seasonality (National Research Council, 1999).

*Limited entry or access systems have worked well for the majority of Alaska’s fisheries by allowing harvesters to obtain the right to fish. Harvesters become invested in the long-term health of the fishery and make decisions that ensure sustainability.*



### Co-management

NMFS and ADF&G have developed a working relationship that allows for co-management of salmon, scallops, some groundfish species, and Bering Sea crab resources off Alaska (Balsiger, 2014). For example, NMFS and the Council developed a FMP for salmon fisheries in the U.S. Exclusive Economic Zone (EEZ), while ADF&G manages salmon in state waters where most fishing occurs and in certain EEZ areas historically managed by the State of Alaska (NMFS, accessed 2019). Another example is seen in the parallel state and federal fisheries for Pacific cod in different management areas around the state. The Council sets the overall ABC for Pacific cod in management areas. State fisheries are allocated a set percentage of the ABC so state managers can set a Guideline Harvest Level (GHL) for the different management areas and gear types.

### International management

Fish populations cross political and international boundaries. Alaska shares a border with Canada and shares a maritime boundary with Russia. International agreements have been established for the management of pollock, halibut and salmon. In the Bering Sea donut hole, the high seas piece of the Bering Sea that is sandwiched between the U.S. and Russian EEZs, pollock fishing is ceased through a treaty agreement by all nations until such time that the pollock population can sustain a fishery.

The IPHC was established by treaty for the co-management of the Pacific halibut stock which extends from northern California through Oregon, Washington, British Columbia and north through Alaska and into the Bering Sea. See the IPHC section above under Policy and Allocation for more information.

King and coho salmon, which migrate through U.S. and Canadian waters on their way back to their birth rivers and lakes, receive transboundary oversight and cooperative management by the Pacific Salmon Commission. Established by treaty in 1985 between the US and Canada, the Pacific Salmon Commission's mission is to achieve optimum production for international salmon populations and joint long-term goals (PSC, accessed 2019). The Commission consists of 16 commissioners, half each from the US and Canada representing national, state and tribal governments and the fishing industry. The PSC also operates a bilateral restoration and enhancement fund and is advised by regional panels.

*International treaties are in place for sustainable co-management of pollock, halibut and salmon.*

## FISHERIES POPULATION MONITORING

State and federal management have developed integral monitoring plans to evaluate populations of fish stocks. Population monitoring and species data collection is mandated by the FMP for each fishery and includes comprehensive information such as the stock assessment for the different fisheries. Other population monitoring activities including research surveys, reporting in-season harvest, observer sampling, and video monitoring. Vital fishery-dependent data is collected by these activities as well as through collaborative research with industry partners.

## Stock assessments

Stock assessments for groundfish, halibut, crab and other species are a quantitative process based on timely and reliable statistics. Stock assessments are the foundation of policy and allocation decisions regarding fishery sustainability. Every year, for federally managed species, scientists from NMFS, in collaboration with scientists from the Council, universities, and ADF&G collect data to comply with the MSA FMPs developed by the NPFMC. NMFS and ADF&G update databases on catch, age and size composition, and survey biomass to input into biomass models. They

analyze the data and calculate estimates of key population parameters for all groundfish species under federal management.

The data for these assessments come from scientific trawl surveys, acoustic surveys, fishery harvest monitoring, and other scientific studies. Contemporary stock assessment models are constructed to integrate the scientific information, except

when information is not sufficient for model construction. The data are used to calculate estimates of year class abundance, spawning biomass, total biomass, weight-at-age, weight-at-age by year, and weight-at-age by sex. This is a comprehensive, quantitative process, which occupies the full-time attention of dozens of scientists year-round. This is the best scientific evidence available, and it forms the foundation of all fishery stock assessments.

## Research surveys

The data underlying the statistics found in the stock assessments come from scientific surveys and from fishery-dependent data. To have the best scientific data available, time series data on stock and ecosystem health is critical to be confident in the timely and reliable statistics produced from the stock assessments. NMFS AFSC is involved in an array of ongoing field studies and surveys to help better understand and document the current state of marine life and their habitats within the Alaskan region. Some surveys are conducted annually or biennially; and some are in partnership with ADF&G, US Fish and Wildlife Service, or other partners. The IPHC and AFSC conduct annual longline surveys to monitor changes in abundance, age, sex ratios, size at maturity, and other biological factors which are incorporated into stock assessments

for halibut. AFSC and ADF&G conduct annual juvenile salmon, adult spawning stock, and habitat surveys to add to time series databases in order to assess bio-physical changes in stock populations.

The Commercial Fisheries Division of ADF&G conducts stock assessment surveys for king crab in seven areas throughout the state. Trawl surveys are conducted on an annual basis in the Kodiak area, annual or biennial in Cook Inlet and Prince William Sound, and triennial in Norton Sound. An annual pot survey is conducted in Southeast Alaska, and occasional pot surveys in

the Pribilof Islands, and the Petrel Bank grounds in the central Aleutian Islands. ADF&G also conducts surveys for other commercial fisheries such as herring.

The IPHC conducts an annual stock assessment, using data from the fishery-independent setline survey, the commercial Pacific halibut and other fisheries, as well biological information from its research program. Data sources are updated each year to reflect the most recent scientific information available for use in management decision-making

*The best available science is the foundation of stock assessments to maintain sustainable harvest limits for Alaska seafood.*

*Surveys collect information that is vital to fisheries management to obtain the best science available. Government agencies are dedicated to conducting them in order to better understand marine life and their habitats.*



(IPHC, 2017). Pacific halibut form a single genetic stock across their entire range so abundance estimates are for the coast-wide population.

### In-season data

Active monitoring helps determine when the fishing season will open to ensure sustainable management objectives will be met for that stock (i.e. salmon escapement levels). The collection of in-season data helps managers make real-time management decisions as well as provide a continued time series of data instrumental to analyze year-to-year differences in population dynamics.

### Observer coverage

Adequate observer coverage is critical information for stock assessments, life history studies, and bycatch reduction strategies. Observers collect catch data onboard fishing vessels and at onshore processing plants in the Bering Sea, Aleutian Islands, and Gulf of Alaska groundfish and halibut fisheries. This data is given to NOAA's AFSC and Alaska Regional Office as a component of in-season management and scientific purposes such as stock assessments and ecosystem studies. Observers are employed by a third-party private entity and all costs are paid for by the industry. Observer coverage has proven to be a key component of successful federal fisheries management in Alaska. NMFS is expanding electronic monitoring tools to complement, and for small vessels possibly replace, in-person observer programs in an effort to continuously improve the quality and quantity of scientific data. The primary objectives of utilizing electronic monitoring are to provide catch estimations and monitor compliance in the fishery.

### Industry reporting

Accurate and complete reporting of catch and landings is essential, and mandatory, for sustainable fisheries management. NMFS, ADF&G and IPHC provide an integrated way to electronically report fish and shellfish landings through the internet (eLanding), as an alternative to paper reporting, or fish tickets (ADF&G, accessed 2019). This electronic system not only allows commercial harvesters and licensed fish buyers (typically processors) to report information, but they can also access that information for their own records (such as production reports and receipts) and the information can be shared

confidentially between government agencies. This electronic system allows for more timely reporting and recording of landings and other data, and reduces redundant reporting to multiple agencies.

All processors, fish receivers, and motherships must be permitted, keep landings records, and report that information to government regulators. Precise scales are used to weigh catch and "landings" made at-sea on motherships and catcher-processors fishing off-shore in Alaska. Scales are inspected and

certified annually by NMFS to ensure precision, accuracy, and prevent tampering. Fish and shellfish receivers are monitored, inspected and certified. Shore-based and floating processors are inspected and must have an approved Catch Monitoring Control Plan describing how fish/shellfish will be sorted and weighed (NMFS, accessed 2019).

The pollock cooperatives in the Bering Sea have developed real-time self-monitoring and reporting systems which are internal to only their membership. This internal information sharing allows the fishing boat captains to share information on catch and bycatch rates, and that information can be used to alter fishing location, depth, and tow length.

*Whether on the water or at the seafood processor, government, non-government, and self monitoring oversight ensures that catch and landings of Alaska's seafood resource are accounted for.*

*The fishing industry in Alaska fully participates in monitoring and catch accounting. The data that is collected through these reporting systems informs both businesses and all agencies and stakeholders involved in fishery management.*

#### *In-season surveys*

ADF&G conducts surveys to count salmon as an in-season population monitoring tool. In Southeast Alaska, this is done with small planes and helicopters carrying a biologist who visually estimates the run size. In other parts of the state, managers have counting towers, weirs and sonar for estimating salmon returns. Counting towers and weirs are valuable when counting salmon migrating upstream in clear, narrow streams and tributaries. However, in wide, glacial silt-laden rivers, it is difficult to count salmon, therefore the size of a salmon run is gauged by using sonar technology. Technicians and managers on 15 rivers around the state use sound, not sight, to generate a high resolution video of fish passage. The imaging sonar can not only count fish, but can also determine the direction the fish is traveling and the length of the fish.

*Intensive in-season management techniques allow Alaska's fishery managers to fine tune harvest, allowing for the best conservation and yield outcomes.*

Additionally, ADF&G uses index streams and test fisheries to gauge the relative run strength of salmon. Prior to opening salmon fisheries, managers fly over salmon spawning streams and tributaries to assess in-season escapement. The summary of annual aerial surveys provides managers with the ability to generate an annual escapement measure, or an 'index' of abundance, the basis of escapement goals. Test fisheries are used to make decisions about opening a regional species-specific fishery to assess in-season abundance. In-season surveys continue through the summer commercial season, and allow managers to ensure escapement and sustainable management of Alaska's salmon fisheries.

## **ECOSYSTEM CONSIDERATIONS**

There have been great strides with Alaska's fisheries management to incorporate ecosystem-based monitoring and habitat protections for Alaska's marine resources. Federal, state, academic, industry, and non-governmental research addresses the different aspects of ecosystem considerations including, species' habitat use and overall status, marine food web interactions, the changing environment and the impact on fisheries, and bycatch reduction efforts. For comprehensive management practices, integrating these research findings into management plans as it is important for scientists and policymakers to have the best science available when devising management goals.



## Habitat

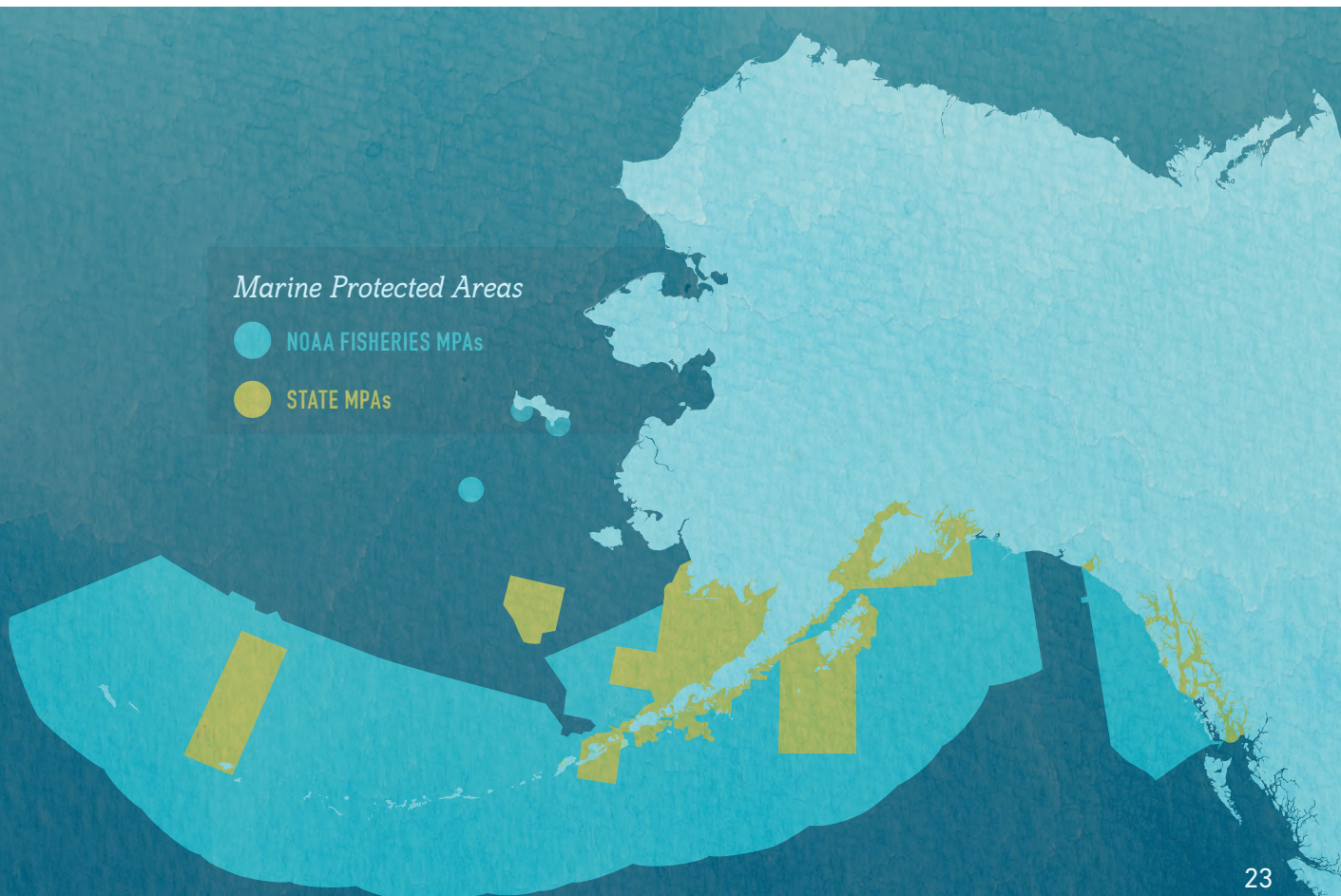
Alaska contains over 40 Marine Protected Areas (MPAs) that are closed to commercial fishing or to certain types of fishing gear in both federal and state waters (Witherell & Woodby, 2005). These MPAs have various names: habitat conservation areas, prohibited or closed areas, Habitat Areas of Particular Concern (HAPC), state marine parks, federal national parks, preserves and refuges, research areas, no transit zones, coral and seamount protection areas, etc. Additionally, there are de facto MPAs in the areas not fished on the continental shelf, slope and basin due to remoteness and bottom

depth, and these areas have no formal designation (Witherell & Woodby, 2005). It is difficult to quantify the area protected from fishing in Alaska because the protections vary, however there are massive areas closed to fishing in the Chukchi and Beaufort Seas and additional large areas closed to specific gear types in the Gulf of Alaska and Bering Sea. The establishment of MPAs and seasonal closures contribute greatly to the successful sustainable management of Alaska's fisheries (Smith, Goldman, Knight, & Warrenchuk, 2017).

To address the environmental impacts of federally permitted commercial fisheries, the Council and NMFS identify Essential Fish Habitat (EFH) and a method for identifying Habitat Areas

of Particular Concern (HAPC) that are incorporated into FMPs. All FMPs include a description and identification of EFH, a description of adverse impacts, and actions to conserve habitat (NPFMC, Habitat Areas of Particular Concern, n.d.).

*Numerous and vast Marine Protected Areas are a critical element of Alaska's fisheries management regime to support healthy fisheries populations. Alaska recognizes that healthy marine habitats are essential to support sustainable ecosystem management.*



## Ecosystem-based Fishery Management (EBFM)

Ecosystem Status Reports for the Eastern Bering Sea, Aleutian Islands, Gulf of Alaska, and Arctic Seas are presented to the Council with ecosystem-based management indicators that provide context for harvest limit decisions (AFSC, 2018). The Council practices

*Fisheries managers account for the variables that affect the functionality and productivity of the ecosystem when setting harvest limits.*

EBFM in federal fishery management by considering or conducting the following: protecting marine food webs (including forage fish protections/conserving prey), monitoring ecosystem health, evaluating the ecological, social and economic tradeoffs of different management actions, reducing bycatch, conserving important habitat, avoiding impacts to seabirds and marine mammals, maintaining resilient fisheries and ecosystems in a changing climate, providing for sustained participation of fishing communities, and fostering meaningful stakeholder participation (NPFMC, Bering Sea Fishery Ecosystem Plan, 2019).

## Environmental & integrated ecosystem assessment

Many factors affecting ocean temperature will likely change habitat ocean temperatures, circulation, prey selection and availability, and other ecosystem dynamics. Scientists predict a range of impacts to Alaska's fisheries resulting from a warming climate, including a northward shift in range, certain species having a lower productivity while others are higher, changes in ocean chemistry, and altered migration timing (Johnson, 2016). Projecting how each fishery stock will change in the future is tentative and ongoing research is needed to monitor the resiliency of Alaska's marine resources in the face of environmental change.

To address changing ecosystems, federal Fishery Management Plans include an Ecosystems Consideration chapter with the SAFE reports which is updated annually.

*At the stock assessment level, the needs of the ecosystem are incorporated.*

In order to use the ecosystem information in a practical way, the Alaska Integrated Ecosystem Assessment tool was created. The tool helps the NPFMC assess the status of ecosystems relative to the fishery and other management objectives (NPFMC, Bering Sea Fishery Ecosystem Plan, 2019).

## Incidental catch reduction

MSA National Standard 9 requires fishery management plans to minimize incidental catch, or bycatch. Incidental catch, are non-targeted fish species that cannot be kept or sold. In the groundfish fisheries, certain bycatch species are called prohibited species, because they are targeted in other commercial fisheries, including halibut, herring, salmon, steelhead trout, king crab and tanner crab (NMFS, accessed 2019). NMFS works with the Council, industry, academia, Alaska stakeholders, Alaska tribes and Native communities, and other partners to conduct research, test new methods and gear, and integrate priority issues for Alaska's communities regarding resource security and access that will make Alaska's fisheries even cleaner, more selective, and have the ability to further avoid interactions with marine mammals and prohibited species.

The Bering Sea pollock fleet and government scientists have been working for years to reduce salmon bycatch through different methods, including developing a salmon excluder device for trawl nets, test fishing in various areas, increasing fleet-wide communication about bycatch rates, voluntary avoidance of rolling "hot spots" with higher salmon bycatch, area and time closures, and setting catch limits on the number of king



salmon bycatch. The incidental catch of king salmon in the Bering Sea groundfish fishery is capped at a certain level and is changed to reflect years of high and low king salmon populations. Most often the fishery is well below the targeted cap of incidental catch set

by the NPFMC, indicating the success of these bycatch reduction efforts.

Much of the collaborative research is done through the MSA's Cooperative Research Program, Bycatch Reduction Engineering Program, and the experimental fishing permits process. For example, NMFS scientists partnered with harvesters to modify flatfish trawl gear to reduce bycatch as well as the impact to important bottom habitat. The new gear reduced seafloor contact by nearly 90 percent and reduced crab incidental catch and mortality rates. This modification is now required on Bering Sea flatfish trawl gear.

*Minimizing bycatch is a national requirement, and Alaska achieves this through avoidance, gear innovation, increased communication among harvesters and managers, and continually listening to and consulting with Alaska's communities.*

## SOCIAL CONSIDERATIONS

Alaska can be described as remote, rural, and rugged. Other than the three large population centers of Anchorage, Fairbanks and Juneau, communities in Alaska are small (less than 10,000 people) and access is sometimes difficult, due to lack of infrastructure and foul weather. Many rural communities are strongholds of Native culture where language and traditions are used in everyday life. The unique cultures of the different Alaska Native groups shape many aspects of the state, including, in some cases, how commercial fisheries are conducted. Robust and inclusive fisheries help support the Alaskan way of life, especially in rural, coastal communities.

### Alaska CDQ program

The Western Alaska Community Development Quota (CDQ) Program (NPFMC, Community Development Program, 2019) provides eligible villages the opportunity to participate and invest in fisheries; supports economic development; alleviates poverty and provides economic and social benefits for residents; and achieves sustainable and diversified local economies. There are 65 communities associated with the CDQ program, 80% of those communities are Alaska Native. The CDQ program annually generates hundreds of millions of dollars for the eligible communities.

*Western Alaska  
Community Development  
Quota Program*

Norton Sound Economic  
Development Corporation

Yukon Delta Fisheries Development Association

Coastal Villages  
Region Fund

Central Bering Sea Fishermen's Association

Aleutian Pribilof  
Island Community  
Development  
Association

Bristol Bay Economic  
Development Corporation

*A portion of quota for Alaska commercial fisheries in the Bering Sea is set aside for the benefit of rural, Alaska Native communities.*

The NPFMC allocates a portion (generally 10% of the Total Allowable Catch, but varies depending on species and management area) of the overall federal harvest quota for pollock, halibut, sablefish, other groundfish, crab, and incidental catch of prohibited species to six CDQ nonprofit corporations that represent the 65 communities. The six CDQ groups employ

residents and use the profit from the harvest to fund economic development in their associated communities (NMFS, 2018).

#### **Tribal consultation**

The United States government acknowledges the sovereignty of the 229 federally recognized tribes in Alaska, and the relationship is government-to-government (NOAA, 2019). Federal agencies, including the Alaska NMFS are required to conduct consulta-

*NOAA Fisheries consults with tribes and Native corporations about federal actions that may affect tribal governments and their members. The North Pacific Council engages rural and Alaska Native communities in fisheries decision-making processes.*

tions on federal regulations that have substantial direct effects on tribes, as delineated in Presidential Executive Order 13175 (Federal Register, 2000; NMFS, Alaska Region, 2019). NMFS is also required to consult with Alaska Native corporations about issues of concern. Such federal regulations include federal fisheries management proposed and final rules, such as salmon bycatch limits, halibut subsistence, the Individual Fishing Quota program, and research activities in the Northern Bering Sea research area. NMFS and the NPFMC incorporate tribal consultation information into issue analysis and decision making (Bibb, 2019).

#### **Socio-economic data**

NMFS conducts economic and social science research that is incorporated into commercial fisheries management. Such research helps managers assess the costs and benefits of different regulatory scenarios. Some of the areas of research include landings, seafood consumption, value of fish and fish products, profit and costs of commercial fish-

*Social and economic data is incorporated into the scientific framework that informs fishery management decisions.*

ing businesses, the overall economic outcomes and impacts of catch-share and IFQ programs, results or potential results of allocation decisions and other regulatory changes, and measurement of efficiencies (NOAA Fisheries, accessed 2019). NMFS produces an annual report called Fisheries Economics of the United States (NOAA Fisheries, 2016), which includes Alaska, and conducts an annual survey of the seafood processing industry.

NMFS also creates fishing community profiles and numerical social well-being indices to assess economic and social vulnerability and impacts of regulatory changes at the community level (AFSC, 2011).

#### **Traditional Ecological Knowledge**

Traditional Ecological Knowledge (TEK) is the detailed body of knowledge of plants, animals and places that is accumulated through multi-generational and indigenous sources, is embedded in culture, and informs a community about its landscape and resources (Grussing, 2015). In the past, the NPFMC lacked a clear pathway for incorporating TEK into fishery management decisions (Raymond-Yakoubian, Raymond-Yakoubian, &



*Alaska's Native communities have accumulated TEK over thousands of years, and these sources of ecological information are increasingly contributing to fisheries management in Alaska.*

Moncrieff, 2017). Recently, the Bering Sea Fishery Ecosystem Plan was developed by a group of stakeholders convened by the Council. Local knowledge and traditional knowledge were explicitly described and a protocol for incorporating such knowledge into fishery management decisions was outlined for future use (NPFMC, Bering Sea Fishery Ecosystem Plan, 2019).

### **Subsistence, sport and personal use**

Food security for Alaska residents is closely linked to their ability to harvest wild foods, including fish and shellfish, through subsistence, personal use, or recreational gathering (Fall & Kostick, 2018). ADF&G manages recreational (also called sport), subsistence and personal use fishing. Subsistence fishing is a non-commercial harvest of fish and shellfish for personal and family consumption and for customary trade, barter or sharing. Alaska state law (AS 16.05.258 (b)) directs the Board of Fisheries to provide a reasonable opportunity for subsistence uses first, prior to other uses of a harvestable surplus (ADF&G, 2019). This is referred to as a "subsistence priority."

When it is necessary to restrict harvest of a given species, for example when there is a conservation concern, subsistence fisheries have a preference or priority over other uses of the species including commercial and sport fishing (ADF&G, 2019).

*Alaska's management system prioritizes local food security over commercial food production.*

## **INTERNATIONAL AND CULTURAL TREATIES**

To better address sustainability goals, the Alaska management system has formed international and cultural treaties to maintain management objectives to prevent overfishing while providing resources for multiple resource users.

### **Pacific Salmon Treaty- Commission's Yukon River Panel**

In 1985, the United States and Canada agreed to cooperate in the management, research and enhancement of Pacific salmon stocks of mutual concern by ratifying the Pacific Salmon Treaty. The two countries agreed to carry out their salmon fisheries and enhancement programs so as to prevent overfishing and provide for optimum production, and ensure that both countries receive benefits equal to the production of salmon originating in their waters. From the treaty, the Pacific Salmon Commission was formed and is considered a Regional Fishery Management Organization (RFMO). For more information about the Pacific Salmon Commission, see the International Management section above.

The Yukon River Panel, under the Pacific Salmon Commission, makes recommendations to management entities on both sides of the United States/Canada border concern-

ing the conservation and management of king and keta salmon. Some Canadian-origin king will travel nearly 2,000 miles through Alaska and the Yukon Territory to their natal streams in Canada. However, some king are incidentally harvested in keta fishing gear reducing the fish passage to Canada. In 2015,

*Alaska jointly manages transboundary salmon with Canada, including king salmon that swim the length of the Yukon River.*

keta harvesters switched from gill nets to dip nets in order to release king bycatch alive and unharmed. This gear change was an innovative and adaptive approach that helps ADF&G, federal, and international fisheries managers sustainably co-manage the Yukon's valuable salmon fisheries.

### **Metlakatla Indian Community fisheries management**

Metlakatla Indian Community, an officially recognized tribe of Tsimshian people, is located in extreme Southeast Alaska on the Annette Islands group near Ketchikan. It is the only Indian Reserve in Alaska, and a population of 1460 people there depend on fisheries, as they have for thousands of years, for their economic livelihood and food (Metlakatla Indian Reserve, 2019). The Metlakatla Indian Community regulates its fisheries as a sovereign entity, with a community-based fishery management system supported by robust informal and formal systems of communication and decision-making. Management systems parallel State systems in the form of preseason forecasts and in-season management based on escapement goals and real-time fishery information.

Only a member of the Metlakatla Indian Community can hold a commercial fishing permit. Metlakatla Indian Community manages its keta, coho, king, pink and sockeye salmon commercial fisheries caught mainly by purse seine (~70%) and gillnet (~30%), and less than 1 percent by troll gear. This is the only fishery managed entirely by indigenous people in Alaska.

*The Metlakatla Indian Community continues a Native tradition of fishing for their livelihoods and are self-managed under unique Tsimshian sovereignty.*





# FISHING FAMILIES AND COMMUNITIES





Alaska's fishing families are the heart and soul of Alaska's seafood industry. Alaska is populated by small, rural towns and villages where commercial fishing is the primary economic opportunity. In 2017/2018, the Alaska seafood industry directly generated 1.6 billion in annual labor income for 58,700 workers (McDowell, 2020). Those who harvest fish for income can also harvest fish (under a subsistence permit) for consumption by their families and neighbors. Commercial and subsistence fishing and sharing of fish are important social, cultural, and community activities for many Alaska families (Holen, 2014). In other words, fishing is a way of life in Alaska; families fish together.

Children of commercial fishermen participate in an important Alaska tradition, as their parents pass along values such as a strong work ethic and a connection to the seas' resources. In Alaska, the tradition of using the summer time to come together as a family and bring in the harvest remains strong, albeit on the family boat rather than the home-stead. During the summer months, when the major salmon fisheries occur, school is not in session and children can be together with their parents on board fishing boats or at remote land based fishing sites, fishing with generations of family members. Children of fishing families are the next generation of harvesters, and without them, the future of small, local harvesting operations would be in jeopardy.

This is why Alaska institutions and government officials have put effort into researching and finding solutions to the concept known as the 'graying of the fleet.' This concept refers to the increasing average age of fishermen due to lack of young entrants in the fisheries (Donkersloot & Carothers, 2016). By training young and new fishermen, putting





sidebars on Limited Access Privilege Program (LAPP) fisheries so that communities and new entrants have access, and critically assessing how to ease regulatory barriers of fisheries management on fishing families, federal and state entities are engaged in finding ways to make sure the next generation of Alaskans have access to commercial fishing (NOAA Fisheries, 2018).

The commitment to both the fishing family and the entry of new fishermen led Alaska to adopt the Limited Entry Act. Designed with fishing families in mind, this Act included a prohibition on permit leasing, prohibition on use of permits as collateral for loans, and allowance for free transferability of permits between persons. Thus, permit holders are free to transfer their permits through gift, inheritance or sale. Research on the Act's effectiveness has found it has also protected Alaska from an influx of fishermen from outside fisheries, keeping Alaska's fishing permits in the hands of Alaskans.

This same commitment applies to the small rural fishing communities in Alaska, some of which have existed as subsistence fishing hubs since humans first crossed the Bering Strait. Alaska communities received about \$23 million (2017/2018 average) in local raw fish taxes from the Alaska seafood industry (McDowell, 2020).

To protect Alaska's Western Alaska communities, the Western Alaska Community Development Quota (CDQ) Program was developed. The program allocates a percentage of all Bering Sea and Aleutian Islands quotas for groundfish, prohibited species, halibut, and crab to eligible communities. Monies derived from the CDQ program totals in the hundreds of millions annually to the eligible communities. The purpose of the CDQ

Program is to provide eligible western Alaska villages with the opportunity to participate and invest in fisheries in the Bering Sea and Aleutian Islands Management Area, to support economic development in western Alaska, to provide economic and social benefits for residents of western Alaska, and to achieve sustainable and diversified local economies in western Alaska. Currently, there are 65 communities associated with the CDQ program, 80% of the inhabitants of those communities are Alaskan Native. The CDQ program annually generates hundreds of millions of dollars for eligible communities.

*Many Alaska fisheries are family-based, and these families have been harvesting fish for generations. Fishing families contribute to local communities' economies and their harvest is a valuable source of protein and nutrients both locally and around the world.*







# RESOURCE UTILIZATION

## COVERED IN THIS CHAPTER:

- Increasing Use & Specialty Products (Co-products)
- Retained Catch
- Emerging Alternative Markets



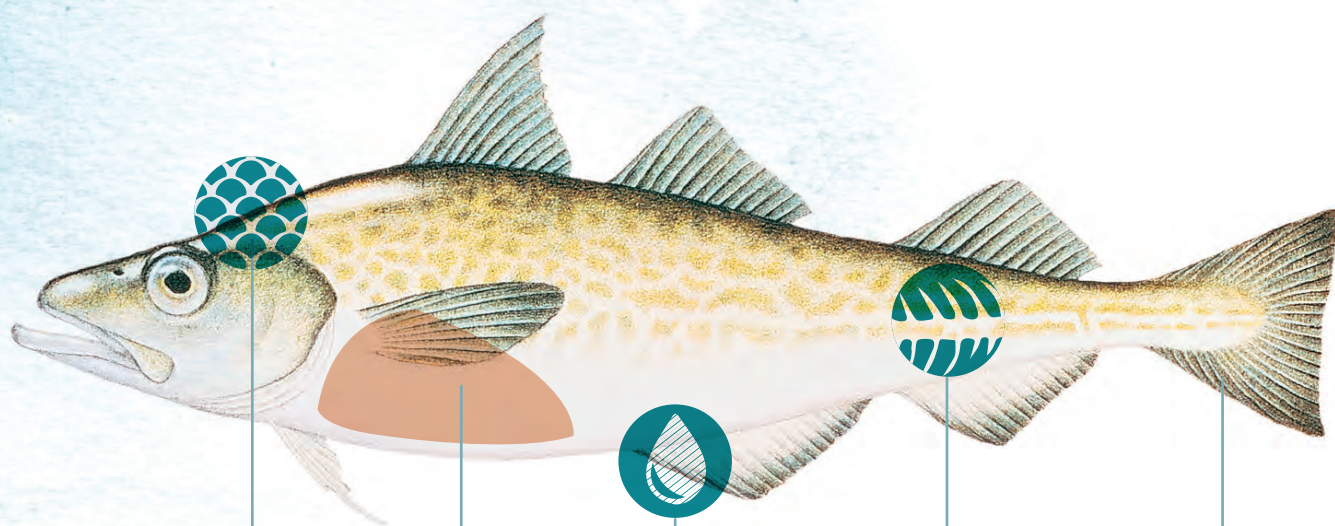
## INCREASING USE & SPECIALTY PRODUCTS (CO-PRODUCTS)

The Alaska seafood industry strives to use 100% of the fish, to fully utilize the abundant resource. By investing in an approach to increase utilization of harvested fish, seafood producers in Alaska think in terms of quality and not quantity. After the primary processing of the harvests, Alaska seafood producers use the materials that are left over to increase the value and create diversity in the marketplace for Alaska seafood. Some of the innovative ways Alaska increases the utilization of fish is through production of fishmeal, fish oil, pet food ingredients, and many more alternative applications.

In the past unused parts of fish and shellfish were considered waste. Those parts are now increasingly being turned into valuable specialty products. Processors in Alaska continually seek to improve product yield through technology and technique. For example, crab shells are now valued for their chitosan, which has anti-bacterial, anti-fungal, and antiviral properties. Using crab tails and shells increases the yield by 12-14 %, resulting in 75%

*As one of the world's greatest producers of wild caught seafood, Alaska's seafood industry is turning its attention to developing a robust seafood by-products industry.*

overall yield from crab (ASMI, 2017). Cold water wild fish, like those harvested in Alaskan waters, contribute prime raw materials to many industries one wouldn't necessarily attribute to a marine resource. Fuels, nutraceuticals (such as omega-3, collagen, and nucleotide supplements), pharmaceuticals, fertilizers, and livestock feed also all are sourced from Alaska seafood.



**ROE/MILT/STOMACHS:**  
Highly valued specialty products

**SKIN:** Fish skin has properties that help heal internal wounds, reduce wrinkles and improve skin elasticity

**OIL:** A great source of omega-3 fatty acids DHA and EPA

**BONES:** Used in pet food and fertilizer. It also removes heavy metals and radioactive waste from contaminated soil

**FISH MEAL:** Alaska whitefish trimmings are ground to a meal that is highly prized by the aquaculture industry

## RETAINED CATCH

Alaska fishermen and processors may keep the incidental catch, which can't be sold to a processor, and donate it to hunger-relief efforts. Processors also donate processed directed harvest catch (pollock blocks, salmon fillets, canned salmon, etc.) to organizations to provide a healthy protein as well as aid in increasing food security for those in the U.S. Approximately 140 fishing vessels, 34 at-sea processors, 15 shore-based processors donate their product and time to coordinate with the organization SeaShare to ship finished products to food banks and feeding centers. In 2015, almost 500,000 pounds of salmon and 50,000 pounds of halibut were donated by fishermen to the pro-

gram. Annually, SeaShare donates 1.4 million pounds of seafood to the nation with 200,000 pounds or 800,000 servings of pollock, salmon, halibut, sablefish and lingcod distributed to Alaska communities annually. Utilizing incidental catch to feed hungry families shows respect for the resource and respect for Alaska's and the nation's community members.

*Turning incidental catch into food is another example of how Alaska's fisheries are working to fully utilize our harvested resources.*

## EMERGING ALTERNATIVE MARKETS

*New and innovative products are emerging from Alaska and increasing the economic value of the industry, including biomedical, pet, and nutrient supplement products that are often derived from seafood byproducts like skin, bones, shells, and heads.*

Innovative Alaskans are continually developing new products from Alaska's marine resources, such as fish oil for human consumption, pet treats/products, fish skin leather, biodegradable "plastic" from fish scales, biodegradable packaging, high protein noodles, fertilizer, fishmeal/powder, medical products such as blood clotting products and anti-bacterial fabric, and jewelry. Many of these alternative products are made from the waste streams of conventional seafood products (McDowell Group, 2017). There is room for additional alternative product development and production.

Each year, the Alaska Fisheries Development Foundation (AFDF) hosts a competition, Symphony of Seafood, for new and innovative products created from Alaska marine resources. Past innovative entries include protein noodles, salmon jerky, odor preventer spray, cod pet treats, fining agent, salmon ice cream, baby food, salmon bacon, and chili (AFDF, 2019).

The Alaska Seafood Marketing Institute's (ASMI) marketing programs constantly engage in developing markets for Alaska seafood as well as identifying exciting opportunities in new markets. ASMI's international program takes advantage of grant opportunities to explore new markets for Alaska seafood through activities such as outbound trade missions, inbound buyers' missions, feasibility studies, and trade show attendance. Emerging markets, such as Southeast Asia and South America help diversify Alaska's customer base and also find a home for underutilized products or species. ASMI's domestic marketing pro-

*Important marketing initiatives contribute to promoting new market development and new species and product type awareness and consumption by consumers.*

gram works closely with foodservice, retail, and distribution partners to promote new Alaska seafood products and target new consumers. Work in the U.S. and abroad with chefs and other culinary professionals helps ASMI introduce new product forms and species to new audiences. Recipe development and consumer education have helped ASMI showcase new flavor profiles and continue to support the Alaska seafood industry's innovations.





# ENVIRONMENTAL SUSTAINABILITY CERTIFICATION

## COVERED IN THIS CHAPTER:

- Fisheries Standards
- Chain of Custody Standards



Sustainability certification programs provide third party assurance through credible standards for fishing and supply chain traceability. Whether you are a buyer, consumer, NGO or other stakeholder, seafood from certified fisheries in Alaska provide documented third-party assurance of responsible seafood sourcing policies. Numerous organizations evaluate and certify fisheries as sustainable and/or environmentally responsible. Fishery sustainability certification and chain of custody standards are developed by independent groups of experts, taking into account stakeholder input. These criteria are used to assess if a fishery is well-managed and sustainable, and reflect internationally accepted fisheries science and management.

## FISHERIES STANDARDS

The Alaska Responsible Fisheries Management (RFM) Fisheries Standard consists of six key principles: the fisheries management systems; science and stock assessment activities; the precautionary approach; management measures; implementation, monitoring and control; and serious impacts of the fishery on the ecosystem (ASMI, 2019). The Marine Stewardship Council (MSC) Fisheries Standard consists of three key principles: sustainable fish stocks; minimizing environmental impact; and effective fisheries management (MSC, 2019). Nearly all of Alaska’s fisheries are certified by both Alaska RFM and MSC.

*The Fisheries Standard certification consists of several principles that have associated criteria that fisheries need to meet in order to be certified.*

## CHAIN OF CUSTODY STANDARDS

The term Chain of Custody stems from forensics, and represents the chronological paper or electronic documentation of a products movements or change in location or custody. As the global demand for sustainable seafood grows, so does the consumer’s need to know that the product is labeled correctly and is produced responsibly. Because the international seafood supply chain is complex, and mislabeling of inferior products can occur, having proper chain of custody traceability ensures that consumers know exactly where their seafood comes from and that it was responsibly produced.

*A seafood product with a Chain of Custody certification logo and number shows the consumer that the product is sustainably sourced and correctly labeled.*





Seafood certification schemes, including Alaska RFM, MSC, and others, offer an additional Chain of Custody certification that ensures seafood products utilizing a certified and verifiable route from harvest to market is guaranteed to be from a certified fishery. In addition, that seafood product may bear the certification logo on its label. The Certification eco-label and Chain of Custody certification number endorse any marketing claims made by a retailer or restaurant to attract customers that value this sustainable seafood source guarantee.

The majority of Alaska's fisheries are certified by both the Alaska Responsible Fisheries Management (RFM) Program and the Marine Stewardship Council (MSC). These certifications are based on the United Nations Food and Agriculture Organization (FAO) Guidelines and Documents and the Guidelines for the ecolabelling of fish and fishery products for Marine Capture Fisheries. These are the most comprehensive and respected best-practices guidelines for fisheries management around the world, created with the participation of leading fishery biologists, environmental organizations and fishery managers representing more than 70 countries.

The Global Sustainable Seafood Initiative (GSSI) created a benchmarking tool that enables identification of robust and credible certification schemes. Both Alaska RFM and MSC were recognized by the GSSI as being in alignment with the GSSI Benchmark tool for essential components of environmental, governmental, and operational criteria and the FAO Code of Conduct (GSSI, accessed 2019).

*Most of Alaska seafood is dual certified as sustainable through Alaska RFM and MSC, two of the most reputable certifications on the globe.*

For both Alaska RFM and MSC, an accredited third-party Certification Body conducts the assessment and certification as well as ongoing audits and re-certifications. The assessment process allows for transparency and public input through public notice, public comment period, external peer review, and an objection process.

*Steps for gaining the RFM Chain of Custody certification to promote certified sustainable Alaska seafood marketing claims:*



*Those fisheries which have achieved Alaska RFM Certification are eligible to bear the RFM Certification Logo as long as Chain of Custody certification standards have been met and a Terms of Use Agreement has been signed.*





# SOCIAL RESPONSIBILITY

## COVERED IN THIS CHAPTER:

- State Regulation
- Federal Regulation
- International Regulation



*All workers in the Alaska fishing industry are protected by U.S. and Alaska law, which were established to protect a modern, developed nation's workforce.*

Fisheries in Alaska operate under a comprehensive suite of federal and state laws and regulations to create a safe and fair working environment for people employed in the Alaska seafood industry. Because of these strong labor laws and enforcement, Alaska commercial seafood operations are at extremely low-risk for egregious labor practices, slave labor, forced labor, or unlawful child labor. Workplace safety is of utmost importance, and both the harvesting and processing of seafood has

become increasingly safer for workers in the past three decades (Koski, 2018).

Safety at sea and on land is achieved through international, national and state regulations that require a safe workplace. Compliance by the seafood industry is ensured through inspections, mitigation actions, and enforcement.

Labor practices and safety requirements onboard the commercial fishing vessels operating in Alaska are regulated by both the state and federal governments under the Occupational Safety and Health Administration (OSHA). OSHA provides for a fair and adequate workplace, which includes processing plants, and vessels both on the water and in dry-dock. OSHA protects any worker who files a complaint with OSHA, the U.S. Coast Guard, or the crew member's employer about workplace health and safety concerns. OSHA conducts dockside inspections of commercial fishing vessels, including when vessels are undergoing repairs. When violations of workplace safety occur, mitigation and corrective action is required, repercussions may include a financial penalty and/or termination of a fishing trip (AFDF, 2019).

The U.S. Coast Guard is the primary enforcement agency for commercial fishing vessel safety and conducts myriad vessel inspections. The U.S. Coast Guard is responsible for ensuring permitting and licensing for crew and vessels, as well as the required number of crew, safety equipment, crew training, vessel stability and maintenance, etc. Additionally, the U.S. Coast Guard has the authority to enforce other federal regulations during commercial fishing vessel inspections, such as illegal drug use or labor violations.

Beyond regulations and requirements, social responsibility criteria are being developed by sustainability certification programs. While no comprehensive standard exists, Alaska has been enthusiastically vocal in dialogues regarding the development of this new facet. The commitment by both industry and NGO's in Alaska has not only led to an existing culture of social responsibility backed by regulations, but also in the development of progressive guidelines for the industry, such as the report on best practices for vessel safety by the Alaska Fisheries Development Foundation (AFDF) ([Social Responsibility Onboard Commercial Fishing Vessels in Alaska](#)).

#### FORCED LABOR & HUMAN TRAFFICKING

*Forcing any person against their will to engage in any act that threatens the safety of themselves or others is considered a felony in the U.S. and Alaska (AFDF, 2019). Legislation, such as the Victims of Trafficking and Violence and Protection Act, is cooperatively enforced by the Department of Homeland Security and U.S. Coast Guard, combatting trafficking in persons, especially into the sex trade, slavery and involuntary servitude. The U.S. Department of Justice, Department of Homeland Security and State Department are the primary investigating agencies of human trafficking. The U.S. State Department annually assesses countries' actions and progress to eliminate human trafficking, including forced labor.*

## State

Alaska Department of Labor and Workforce Development (ADOLWD) is the agency designed to ensure safe and fair labor conditions in Alaska. The agency acts on behalf of workers to collect unpaid or underpaid monies from employers. ADOLWD oversees child labor laws and licenses private employment agencies.

Established by state law in 1951, the Fishermen's Fund provides for the treatment and care of Alaska licensed commercial fishermen who have been injured or become ill due to fishing related activities on shore or in Alaska waters. Benefits from the Fishermen's Fund are financed from revenue received from each resident and nonresident commercial fisherman's license and permit fee.

The children of fishermen are protected in many ways from labor abuse by regulation and law. Minor children (under the age of 16) are allowed to work onboard only with a parent, if that parent is also the vessel owner/operator. Children ages 16 and 17 may be employed on a commercial fishing vessel if parental consent and a work permit is approved by the Alaska Department of Labor (AFDF, 2019). The state of Alaska requires all crew members, of any age, to be licensed, and the allowable duties and hours of minors are restricted and must not be hazardous (AFDF, 2019). No minor may be employed on a processing vessel.

Alaska Department of Environmental Conservation (ADEC) requires worker training on the treatment of seafood during processing. ADEC conducts inspections onboard vessels processing at-sea to ensure the health and safety of seafood and workers, including safe galley operations, safe drinking water, proper waste disposal, appropriate processing operations, and vessel accommodations (AFDF, 2019).

The Alaska Workers' Compensation Board provides enforcement of payment of wages to workers (wage claims, prevailing wage, minimum wage and overtime). All commercial crewmembers can file a wage claim with the ADOLWD in the event that they are not compensated for time worked. The Alaska State Commission for Human Rights is Alaska's civil rights enforcement and education agency. The Commission has statewide power and jurisdiction, and investigates discrimination complaints from all individuals in Alaska.

The Alaska Occupational Safety and Health Division (AKOSH) is part of the Alaska Department of Labor and Workforce Development which operates an OSHA-approved State Plan covering seafood processing and harvesting workers.

## Federal

Commercial fishing has consistently remained one of the most dangerous occupations in the U.S.; however, this is improving over time. The fishing industry record has improved greatly over time due to training, inspection, and compliance with safety requirements (AMSEA, 2008).

In 2017, over 9,000 commercial fishing vessels were licensed to operate in Alaska. Over 8,500 (or 93%) of these vessels were under 59 feet in length, had crews of five people or less, and regularly returned to port in 10 days or less. In the years 2014 to 2018, the U.S. Coast Guard conducted 2,168

*Vessels used for commercial fishing in Alaska must be registered by the Commercial Fisheries Entry Commission, including fishing, aggregating (tender), processing and transporter vessels. The U.S. Coast Guard requires documentation of large vessels (five net tons or more) and the Alaska Division of Motor Vehicles registers vessels under that size (AFDF, 2019). Registration of vessels allows authorities to have information about each vessel in a fishery.*



at-sea inspections of commercial fishing vessels in state and federal waters off Alaska for safety and fisheries regulations and documented a 91.9% compliance rate. During this reporting period, the U.S. Coast Guard also conducted over 9,000 dockside safety inspections of commercial fishing vessels operating in state and federal waters off Alaska (AFDF, 2019).

U.S. Coast Guard mandates that all fish processor vessels and tender vessels are required to have a valid and current Certificate of Compliance that is renewed every two years. For the certification, the U.S. Coast Guard examines firefighting, safety and life-saving equipment, fishing and other licenses, classification standards, waste management plan, proof of crew training in first aid, safety and emergency drills, crew contracts, navigation equipment, engine room, alarms, vessel name and number markings, etc (USCG, accessed 2019).

U.S. Coast Guard regulations mandate safety and operational training for crewmembers and licensed individuals. The individual in charge of a vessel must provide a safety orientation to each individual onboard before the vessel may get underway. First aid training is a federal requirement onboard all commercial fishing vessels with at least two people.

The U.S. Coast Guard conducts unannounced at-sea inspections of safety and fishery compliance for all commercial fishing vessels in both federal and state waters off Alaska. If a vessel is not compliant and a “hazardous condition” is present, the U.S. Coast Guard may terminate the fishing voyage and return the vessel to port.

The North Pacific Observer Program plays a role in ensuring fishing vessel safety in the federal groundfish and halibut fisheries. Observers conduct a pre-trip safety check for lifesaving equipment and hazardous conditions onboard. An observer is not required to stay onboard a vessel that is unsafe, and without an observer the vessel may not fish. This provides a strong incentive for vessels carrying observers to meet the federal safety requirements.

Federal and state laws, regulations and policies related to labor and occupational health and safety, apply to all U.S.-flagged commercial vessels fishing in the U.S. EEZ (AFDF, 2019). All people onboard a commercial fishing vessel who are participating in the fishery must either hold a permit or a crewmember license, regardless of age. At least 75% of workers onboard U.S.-flagged commercial fishing vessels must be U.S. citizens or non-citizens granted permanent U.S. resident status, while the other 25% of workers may be non-citizens with valid work visas (AFDF, 2019).

Federal labor laws mandate equal opportunity employment. This means that the Alaska commercial seafood industry may not discriminate in the hiring of crewmembers or plant workers based on race, religion, age, gender, marital status, or sexual orientation.

Deckhands and other seafood industry workers are often exempt from overtime and maximum work hour restrictions due to the seasonal nature of the work. However, if paid crewmembers or fish processor workers are paid on an hourly basis their pay is subject to the state and federal hourly minimum wage and overtime laws. Both crewmembers and processing workers must be informed of their wages in writing. Crew shares, or payment based on a percentage of the catch value, is common practice in the harvester sector.

## International

The 1980 International Convention for the Safety of Life at Sea (SOLAS) resulted in guidelines designed to safeguard human life in all marine industries and set minimum safety standards. These standards, maintained by the International Maritime Organization

(IMO), are met in U.S. Coast Guard regulations and inspection standards for life-saving equipment within the Alaska commercial seafood industry.

The 2017 International Labour Organization (ILO) Work in Fishing Convention Number 188 (C188) provides minimum European Union (EU) requirements for working conditions in the commercial fishing industry. Although not ratified by the U.S., this standard is adhered to by U.S. and Alaska commercial fishing industries. U.S. companies are required to meet the minimum federal and state legislation concerning important principles such as workers' rights, including health, safety, and the environment. The Alaska commercial fishing industry embodies this model and meets the ILO 188 standards (AFDF, 2019).

Based on ILO conventions, the Ethical Trading Initiative was developed to promote workers' rights to safe and hygienic work conditions, living wages, reasonable working hours, and humane treatment. Companies, non-governmental organizations, and trade unions that are Initiative members, agree to implement the Initiative's base code of labor practice (Ethical Trading Initiative, accessed 2019) and are listed on the Ethical Trading Initiative website. Similarly, Sedex is an organization with member companies that pledge to uphold four categories of standards: labor rights, health and safety, environment, and business ethics. Businesses and brands that adhere to Sedex standards can be found online at that Sedex website (Sedex, accessed 2019).

Seafood processing jobs, which require lifting, cutting and repetitive motions, have the highest injury and illness rate of any Alaska industry (Koski, 2018), higher even than the harvesting sector. Improved safety requirements, increased and better training and advancements in processing equipment have contributed to a more than 50% reduction in the injury rate since the 1990s (Koski, 2018).





# ACRONYMS, GLOSSARY & REFERENCES





## ACRONYMS

- ABC** | Allowable Biological Catch
- ADEC** | Alaska Department of Environmental Conservation
- ADF&G** | Alaska Department of Fish and Game
- ADOLWD** | Alaska Department of Labor and Workforce Development
- AFSC** | Alaska Fisheries Science Center
- BoF/Board** | Alaska Board of Fisheries
- BSAI** | Bering Sea Aleutian Islands
- CDQ** | Community Development Quota
- EEZ** | Exclusive Economic Zone
- GOA** | Gulf of Alaska
- HACCP** | Hazard Analysis Critical Control Point
- IFQ** | Individual Fishing Quota
- ILO** | International Labour Organization
- IPHC** | International Pacific Halibut Commission
- IUU** | Illegal, unreported, and unregulated fishing activity
- LAPP** | Limited access privilege programs
- MSA** | Magnuson-Stevens Fishery Conservation and Management Act
- NMFS** | National Marine Fisheries Service, also called NOAA Fisheries
- NOAA** | National Oceanic and Atmospheric Administration
- NPFMC** | North Pacific Fishery Management Council
- OFL** | Overfishing limit
- OSHA** | Occupational Safety and Health Act
- TVPA** | Trafficking and Violence and Protection Act
- SAFE** | Stock Assessment and Fishery Evaluation report
- SSC** | Science and Statistical Committee of the North Pacific Fishery Management Council
- VMS** | Vessel Monitoring System



## GLOSSARY OF TERMS

**ABC Control Rule** | the specified approach in the five-tier system for setting the maximum permissible ABC for each stock as a function of the scientific uncertainty in the estimate of OFL and any other specified scientific uncertainty.

**Annual Catch Limit (ACL)** | the level of annual catch of a stock that serves as the basis for invoking accountability measures. For EBS crab stocks, the ACL will be set at the ABC.

**Biomass** | Total weight of a stock or biological unit of fish.

**Biological Reference Points** | Biologically based benchmarks for measuring and understanding fish stock abundance or fishing mortality rate.

**BMSY Stock Size** | the biomass that results from fishing at constant FMSY and is the minimum standard for a rebuilding target when a rebuilding plan is required.

**Bycatch** | Fish legally harvested in a fishery, which are not sold or kept.

**Catch-per-unit-effort** | A catch rate based on the number or weight of fish caught in a standard unit of effort, such as one hour of trawling. Often used as an indicator of stock biomass or abundance.

**Catcher-processor** | A vessel that catches and processes fish onboard.

**Commercial Fisheries** | Fisheries catching wild fish and crab for commercial profit; and sometimes includes marketing and selling seafood.

**Convention** | An international agreement between countries' governments.

**Escapement** | The number or portion of a salmon population that escapes harvest and reaches spawning grounds.

**Fishery** | Network of harvesters targeting a fish or shellfish species within a single body of water with similar or same gear types.

**Fishery-dependent Data** | Data collected directly from commercially harvested fish, including landings data, fishery observer data, and port sampling data.

**FMSY Control Rule** | a harvest strategy which, if implemented, would be expected to result in a longterm average catch approximating MSY.

**Groundfish** | Collective term for fish demersal (bottom dwelling) or mid-pelagic (dwelling in the water column) species such as pollock, cod, flounder and sole. Salmon, herring, and halibut are not groundfish.

**Guideline Harvest Level (GHL)** | the preseason estimated level of allowable fish harvest which will not jeopardize the sustained yield of the fish stocks. A GHL may be expressed as a range of allowable harvests for a species or species group of crab for each registration area, district, subdistrict, or section.

**In-season Management** | Regulatory changes that affect an ongoing fishery.

**Landings** | Fish or crab unloaded by a commercial vessel to a processor, expressed in number of fish or weight.

**Limited Access Privilege Program (LAPP)** | A federal permitting program to harvest a quantity of fish expressed by a unit or units representing a portion of the total allowable catch of the fishery that may be received or held for exclusive use by a person. This includes individual fishing quotas

**Limited License Fishery** | A fishery that limits participation in a fishery through a set number of fishing permits or licenses.

**Marine Debris** | Persistent man-made material in the sea, such as plastic.

**Maximum Fishing Mortality Threshold (MFMT)** | defined by the FOFL control rule and is expressed as the fishing mortality rate.

**Minimum Stock Size Threshold (MSST)** | one half the BMSY stock size. Whether a stock is overfished is determined by comparing annual biomass estimates to the established MSST. For stocks where MSST (or proxies) are defined, if the biomass drops below the MSST (or proxy thereof) then the stock is considered to be overfished. For crab stocks, biomass for determining overfished status is estimated on February 15 of the current year and compared to the MSST established by the NPFMC in October of the previous year.

**Maximum Sustainable Yield (MSY)** | The largest long-term average catch that can be taken from a stock under existing environmental conditions.

**Mothership** | A vessel which processes catch at-sea (used primarily in the Bering Sea pollock fishery).

**Natal** | Birthplace.

**National Standards** | The Magnuson-Stevens Act requires that fishery management plans meet 10 national standards that have to do with conservation and management measures, including achieving optimum yield and preventing overfishing.

**Observer** | A certified person who collects scientific and technical information on fishing operations and catch.

**Open Access Fishery** | A fishery that does not limit the number of fishing permits, does not have quotas, and does not limit the amount of fish that can be harvested.

**Optimum Yield** | The amount of fish that will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities, and taking into account economic, social, and biological considerations.

**Overfished** | A stock having a population size that is too low to produce maximum sustained yield. Overfished status of a stock can be the result of many factors, including overfishing, habitat degradation, pollution, climate change, and disease.

**Overfishing** | A stock having an annual harvest rate higher than the agreed optimum level.

**Precautionary Principles** | Measures or actions that reduce risk in fishery management.

**Prohibited Species** | Fish species incidentally caught by a vessel not authorized to retain those species. Typically, prohibited species are target species of other commercial fishing sectors.

**Quota Shares** | A share of the total allowable catch (TAC) allocated to a vessel, a company or an individual fisherman. Quotas may or may not be transferable, inheritable, and tradable.

**Recruitment** | The number of fish surviving to adulthood and entering a fishery.

**Social Responsibility** | A commitment to manage commercial operations of a business with social, environmental and economic principles that are in line with public expectation.



**Spawning** | Releasing of eggs and sperm by fish/salmon in the event of reproduction.

**Stock Assessment** | The process of analyzing biological and statistical data to estimate fish stock abundance and changes in abundance.

**Subsistence** | A fishery where fish are not sold for commercial profit, but rather are consumed and shared.

**Target Species** | Species of wild fish or crab that are sought by fishermen in a particular fishery with a particular gear.

**Tender Vessel** | A vessel that aggregates fish caught by smaller boats.

**Total Allowable Catch (TAC)** | A catch limit set for a particular fishery based on biological limits and other factors.

**Transboundary Stocks** | Stocks of fish that migrate across international boundaries or across management jurisdictions.

**Tribal Government** | Any federally recognized Native tribe, Alaska Native village, or regional or village corporation with tribal laws, government structures, and sovereignty over their land and people.

**Utilization** | Producing food or other products from a harvested organism.

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