



*Wild, Natural & Sustainable**

WHITEFISH

BUYER'S GUIDE

ALASKA PACIFIC COD

PACIFIC HALIBUT

ALASKA POLLOCK

ROCKFISH

SABLEFISH/BLACK COD

SOLE/FLOUNDER

LINGCOD



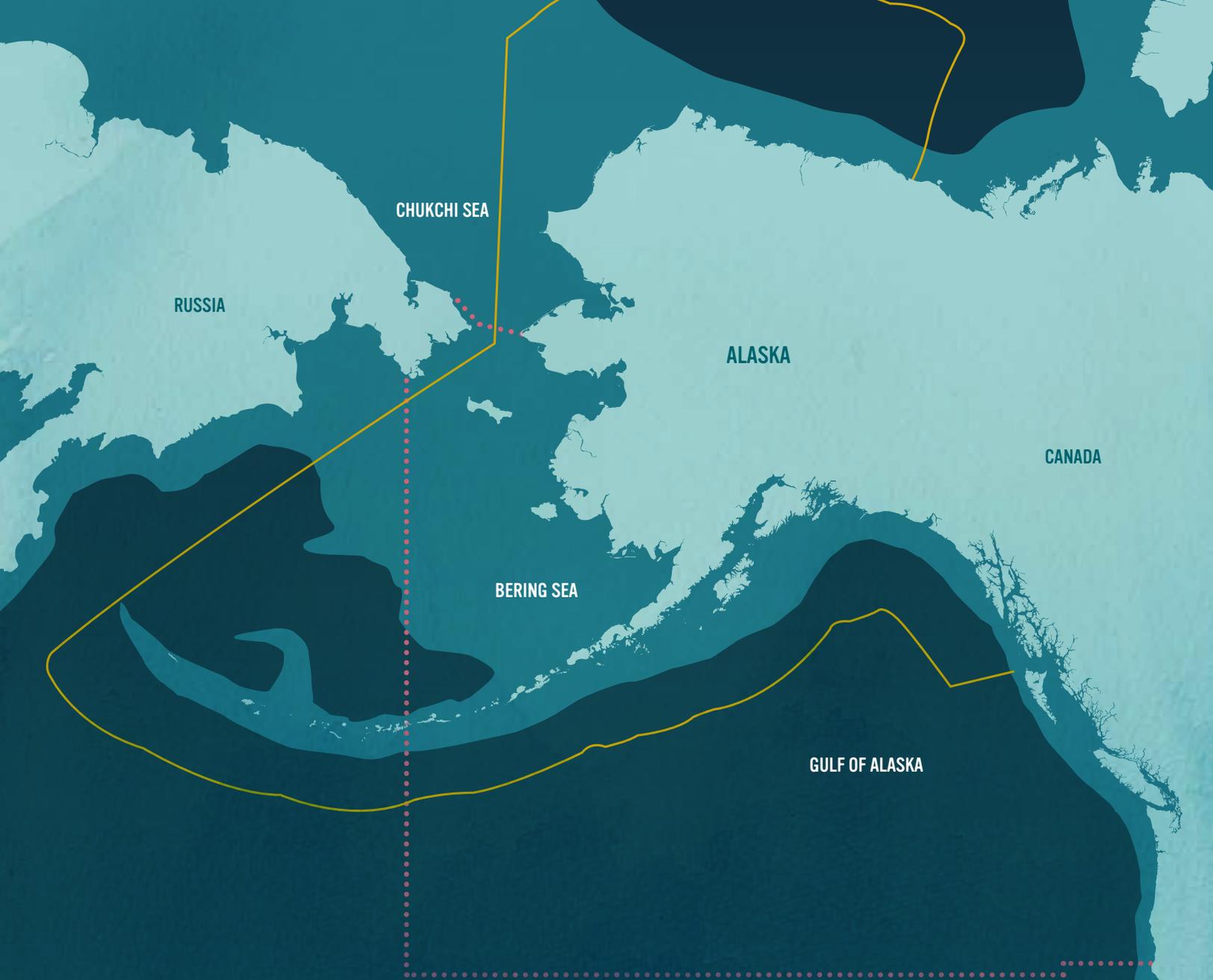


ALASKA WHITEFISH

THE COLD, CLEAN WATERS OFF ALASKA support huge, sustainably managed stocks of whitefish, many of which are in high demand in seafood markets worldwide. While there are dozens of species of whitefish in Alaska, this Buyer's Guide produced by the Alaska Seafood Marketing Institute, describes the whitefish species of greatest interest to the seafood trade. Included in this guide are important considerations for buyers of Alaska whitefish including product forms, packaging, quality and nutritional aspects of the seafood product. All Alaska whitefish products are sent to large domestic and international markets.

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HARVEST AREA

Most of Alaska's whitefish species are harvested from the Bering Sea and the Gulf of Alaska located in the United Nations' Food & Agriculture Organization (FAO) statistical catch area 67. This area supports some of the most productive fisheries in the world. All fish harvested from Alaska are caught within the Exclusive Economic Zone, an area outlined by the United Nations Convention on the Law of the Sea where a state has rights in regards to the exploration and the use of marine resources.

MAP KEY

- **FAO 67:** The world's boundaries of the major fishing areas established for statistical purposes.
- **EEZ:** The Alaska Exclusive Economic Zone extends 200 nautical miles off the coastline. Within this zone, the U.S. has sovereign rights to the management of the resources.
- **CONTINENTAL SHELF:** The extension of Alaska's coast consisting of relatively shallow, productive waters. Alaska's continental shelf comprises 70% of the nation's total.

ALASKA WHITEFISH



ALASKA PACIFIC COD
true cod, Alaska cod
Gadus macrocephalus



PACIFIC HALIBUT
Alaska halibut
Hippoglossus stenolepis



ALASKA POLLOCK
walleye pollock
Gadus chalcogrammus formerly
Theragra Chalcogramma



ROCKFISH
multiple species
Sebastes species



PACIFIC OCEAN PERCH/ROCKFISH
POP, ocean perch
Sebastes alutus



SABLEFISH/BLACK COD
black cod, butterfish
Anoplopoma fimbria



YELLOWFIN SOLE
Alaska dab
Limanda aspera



FLATHEAD SOLE
paper sole
Hippoglossoides elassodon



NORTHERN ROCK SOLE
rock flounder, roughscale sole
Lepidopsetta polyxystra



ARROWTOOTH FLOUNDER
turbot
Atheresthes stomias



ALASKA PLAICE
longfin sole, witch flounder
Pleuronectes quadrituberculatus

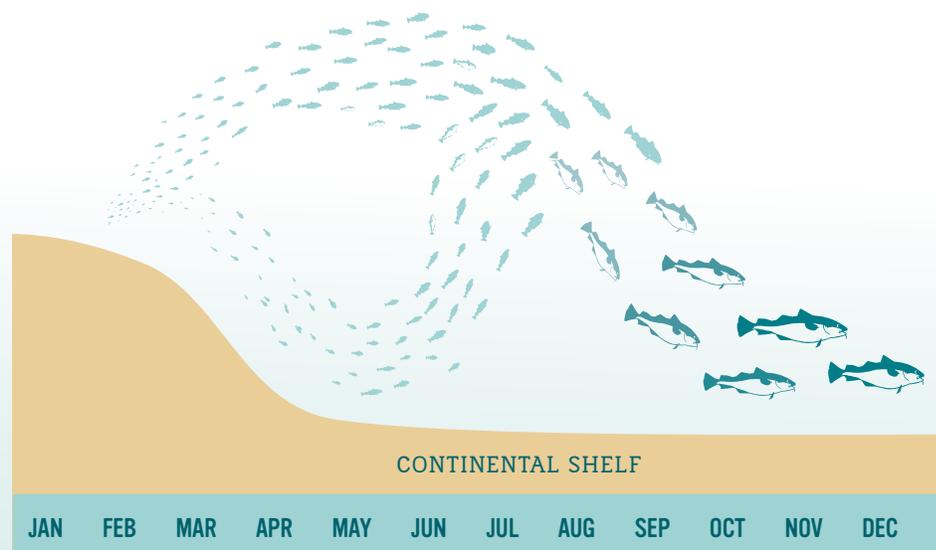


LINGCOD
buffalo cod
Ophiodon elongatus

Photos courtesy of NMFS, Alaska Fisheries Science Center and Alaska Department of Fish and Game

LIFE HISTORY

Most of Alaska's whitefish species spawn in the waters over Alaska's continental shelf in the winter and early spring. In general, females can produce hundreds of thousands of eggs that are dispersed and drift in the ocean currents or adhere to the ocean floor. When eggs hatch the larval fish float in the upper ocean layers. In the fall, the small fish settle at deeper depths and eventually are recruited into the fishery.

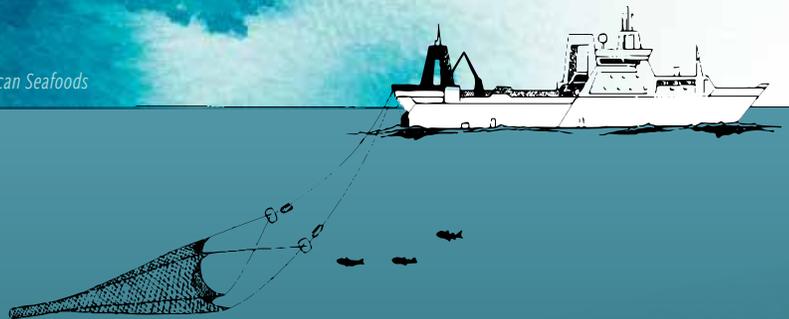
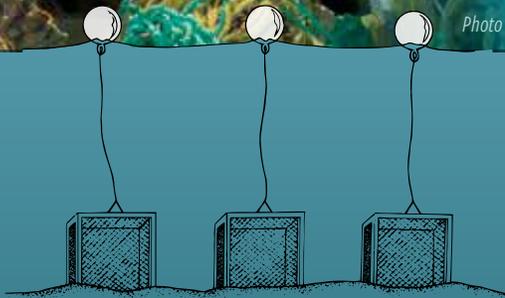




HARVESTING ALASKA'S WHITEFISH

All fishing gear is operated in as “clean” a manner as possible. Bycatch of juvenile fishes and non-target species is reduced, and interaction with marine mammals and birds is minimized. Alaska whitefish fishermen are dedicated to responsible catch methods, and have participated in scientific studies to avoid incidental catch of non-target species. Fishermen have cooperated with researchers to develop modified gear that promotes bycatch reduction, improved quality and preservation of marine habitat.

Photo courtesy of American Seafoods



POTS

Pots are large, steel-framed cages covered in net mesh. The pots are baited and placed on the seafloor connected by a rope to a surface buoy. Pot fishing vessels are similar in length to longline vessels. Pot fishermen retrieve the pots and return non-targeted species live to the ocean.

Sablefish, Alaska Pacific cod

TRAWL

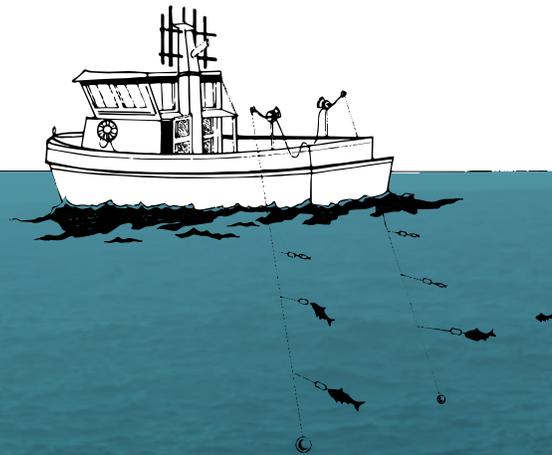
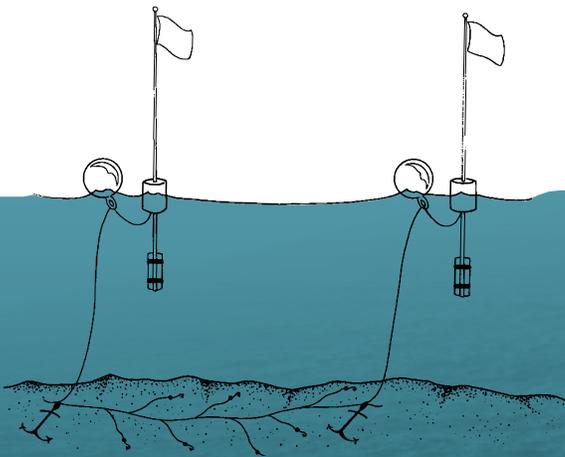
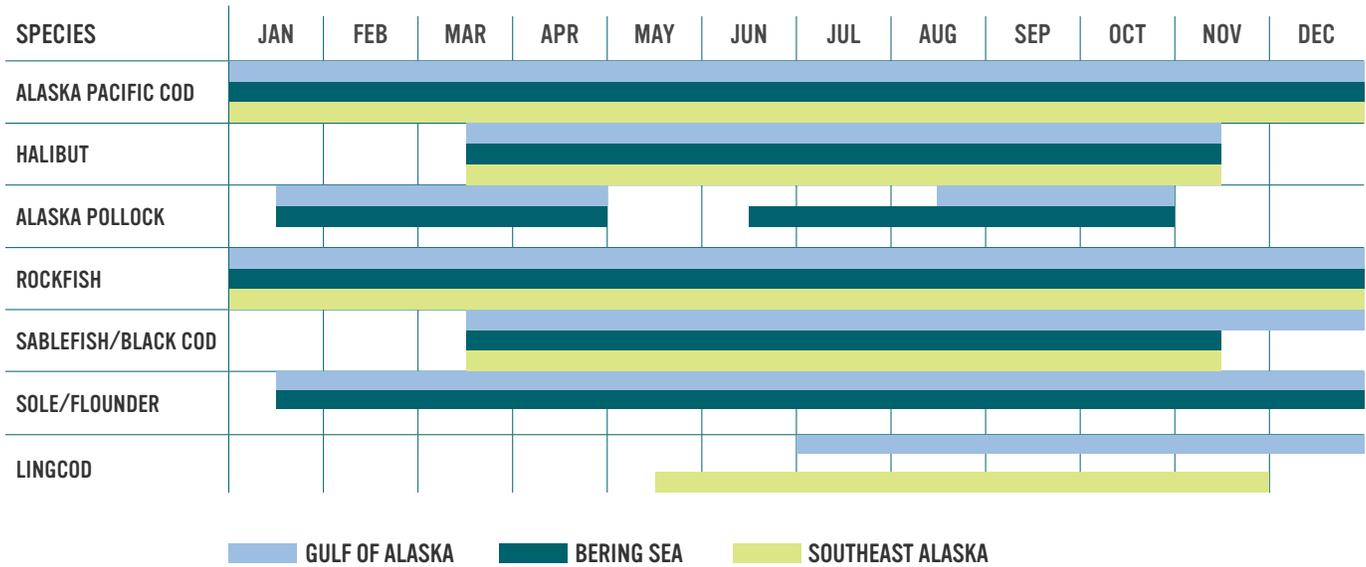
Trawl fishing uses a large, funnel-shaped net towed behind a large fishing vessel. Trawl vessels are the largest of the Alaska whitefish fishing fleet. Trawlers use sophisticated devices to detect and identify fish underwater allowing vessels to avoid catching non-targeted species as well as know where to tow the gear in relation to the fish and the ocean floor.

MID-WATER TRAWL: Vessels tow the net approximately 100-400 meters below the ocean surface.

BOTTOM TRAWL: Vessels tow the net just above the ocean floor using rollers to not harm the habitat.

Alaska pollock, Sole, Alaska Pacific cod, Sablefish, Pacific Ocean Perch (POP)

HARVEST TIMELINE



LONGLINE

Longline fishing gear is comprised of a main groundline resting on the ocean floor with baited hooks attached at intervals. Longline vessels are smaller than trawl vessels. Longline fishermen have the ability to selectively choose the fish they bring onto the boat and release other non-targeted fish live to the ocean. Some longline vessels have the ability to freeze fish at sea and are called freezer longliners.

Alaska pollock, Pacific halibut, Sablefish, Alaska Pacific cod, Lingcod

JIG

Jig fishing is a hook-and-line fishing method that utilizes artificial lures and an electric machine to jerk (jig) the line up and down. Each machine may have up to five lines and each line may have up to 30 hooks attached. Jig fishing vessels are comparable in size to smaller pot and longline vessels. Fish caught are selectively sorted and non-targeted fish are returned live to the ocean.

Sablefish, Alaska Pacific cod, Lingcod

SEAFOOD PROCESSING

After Alaska's whitefish are harvested, the fish are processed in one of four different processing facilities. Alaska processors are careful to extract the maximum value from the harvest and minimize waste. New innovations in product types to maximize use of the catch are constantly being investigated.



A.



B.



C.



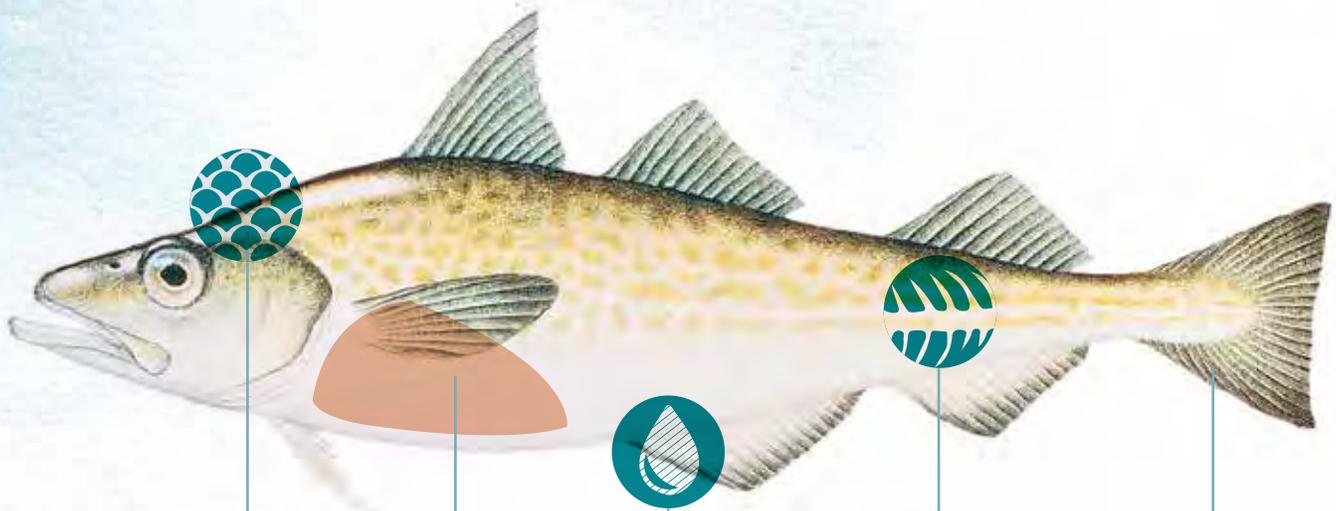
D.

A. FREEZER LONGLINE: Processes catch at sea from hook and line fishing directly after harvest.

B. CATCHER-PROCESSOR: Utilizes onboard equipment to process and freeze catch within hours of catch.

C. MOTHERSHIP VESSELS: A fleet of catcher vessels deliver their catch to floating processing vessels stationed at sea.

D. ONSHORE PLANTS: Land based facilities where vessels deliver their catch for processing.



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

ROE/MILT/STOMACHS: Highly valued specialty products

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

SPECIALTY PRODUCTS	POLLOCK	COD	SABLEFISH	HALIBUT	SOLE/FLOUNDER
FISH MEAL	✓	✓		✓	✓
FISH OIL	✓	✓			
HEADS & BONES	✓	✓	✓	✓	✓
ROE	✓	✓			✓
MILT	✓	✓			
STOMACHS & ORGANS	✓	✓			
COLLARS & BELLIES	✓	✓	✓	✓	
SKINS	✓	✓		✓	

There is currently very little production or sale of fish skins and stomachs/organs of sablefish, halibut and sole/flounder; however, if a market developed for it there would be substantial volume available.

RESOURCEFUL HARVESTING

The industry strives to use the whole fish, maximizing the benefit of this world-class resource in a sustainable manner. Resources left over after primary processing produce a broad range of unique specialty products including roe, milt and skins. Value added products from Alaska seafood, such as surimi, provide innovative and productive markets. All of these products can be made available in substantial quantities, due to Alaska's bountiful marine resources and responsible fishery management practices.

PRODUCT TYPES

ALASKA PACIFIC COD



FRESH		FROZEN	
PRODUCT	PACKAGING	PRODUCT	PACKAGING
H&G	50 lbs. box	H&G	50, 80 lbs. boxes or block, 1000 lbs. tote
Fillets (skin/skinless, bone/boneless)	5, 10, 15 lbs. poly bags 10, 12, 20 lbs. boxes	Fillets (skinless/boneless)	16.5 lbs. blocks / 49.5 lbs. master
		IQF Fillets (skin/skinless, bone/boneless)	10-25 lbs. packs
		Shatter/layer packs	15 lbs. /45 lbs.
		Mince	16.5 lbs. blocks / 49.5 lbs. master
DRIED (SALT COD)			
Butterfly-shaped, split, collar-on, fins on, ribs and backbone removed			

Fillet sizes: 4-8, 8-16, 16-32, 32-up oz. | Portion sizes: 4-8 oz. IQF

PACIFIC HALIBUT



FRESH		FROZEN	
PRODUCT	PACKAGING	PRODUCT	PACKAGING
H&G	80 lbs. cartons/ 1,000 lbs. tote	H&G; glazed	100-150 lbs. cartons / 1,000 lbs. tote
Fletches/Fillets (skin/skinless)	25-50 lbs. carton	IQF Fletches	50 lbs. carton
Steaks and Loins	10-25 lb carton	Steak/Fillets/Loins	10-20 lbs. cartons
Cheeks	5-10 lbs. bag	Cheeks	5 lbs. blocks

Fletch/Fillet sizes: 1-3, 3-5, 5-7, 7-up lbs. | Portion sizes: Steaks – 4, 6, 8, 10 oz. / H&G – 10/20, 20/40, 40/60, 80-up lbs.

For information on recovery and yield data for whitefish products please see: *Recoveries and Yields: Pacific Fish and Shellfish, Alaska Sea Grant College Program.*

ALASKA POLLOCK



FROZEN	
PRODUCT	PACKAGING
H&G	50, 80 lbs. boxes
Fillet (PBO & PBI) and Deep-Skinned* Fillet block	16.5 lbs. / 49.5 lbs. master
IQF Fillets (Skinless/Boneless)	10, 15, 25 lbs. packs
Shatterpacks	15 lbs. / 45 lbs. master
Mince block	16.5 lbs. / 49.5 lbs. master
Surimi	22 lbs. / 44 lbs. master
Roe	16.5 lbs. / 49.5 lbs. master
Milt	16.5 lbs.

Fillet sizes: 2-4, 4-6, 6-8, 8-up oz. | *Deep-skinned fillets of Alaska pollock have been trimmed to remove the darker, higher-fat tissue just under the skin.

SOLE/FLOUNDER



FROZEN	
PRODUCT	PACKAGING
H&G	35-42 lbs. bags
IQF Fillets*	10, 25, 40 lbs. master
H&G, v-cut with roe**	35-42 lbs. bags
Skinless fillet	35-42 lbs. bags
J-cut/tail-off (kiriimi)	35-42 lbs. bags
Heads/Tails	35-42 lbs. bags

***Average fillet sizes are species specific:**

Alaska plaice: 3-10 oz.

Arrowtooth flounder: 3-8 oz.

Flathead sole: 2-7 oz.

Yellowfin sole: 2-5 oz.

Northern rock sole: 2-5 oz.

****Rock sole only**



	REPRODUCTION AGE	MAXIMUM AGE	DIET	SIZE
PACIFIC COD	4-5 years	20 years	clams, shrimp, crab & juvenile fish	average 5-10 lbs but can reach 40 lbs.
PACIFIC HALIBUT	8 & 12 years for male and female, respectively	55 years	clams, shrimp, crab & juvenile fish	average 35-50 lbs but can reach 500 lbs.
ALASKA POLLOCK	4-5 years	22 years	shrimp, euphausiids and juvenile fish	average 2 lbs but can reach 13 lbs.
SOLE/ FLOUNDER*	variable, 4-13 years	30+ years	crabs, clams, fish & various small invertebrates	average 1-5 lbs..
ROCKFISH	usually 5-7 years, but can be 20-25 years for some species	variable, 70-90 years, but can live until 205 years, roughey rockfish - Southeast Alaska	crabs, clams, fish and various small invertebrates	average 3-14 lbs., but can grow to 36 lbs.
SABLEFISH/ BLACK COD	4-5 years	average 40, but can reach 94 years	Alaska pollock, Pacific cod, squid and jellyfish	average 5-10 lbs., but can grow to 40lbs.
LINGCOD	3-5 years	25 years	herring, rockfish & small octopus	average 10-20 lbs., but can grow to 130 lbs.

* For more information on sole/flounder species please see the ASMI Flatfish Brochure at http://www.alaskaseafood.org/foodservice/practices/documents/Flatfish_BuyersGuide.pdf

Sources for whitefish life history information: Mecklenburg, C. W., T. A. Mecklenburg, and L. K. Thorsteinson. 2002. *Fishes of Alaska*. American Fisheries Society, Bethesda, MD.; North Pacific Fishery Management Council NOAA, *Groundfish Species Profiles*, 2015.

ROCKFISH

FRESH		FROZEN	
PRODUCT	PACKAGING	PRODUCT	PACKAGING
H&G	50-80 lbs. boxes	H&G; glazed	50-80 lbs. boxes
Fillets (skin/skinless, pinbone-in, pinbone-out, skin-on, scaled)	10 lbs. poly bags/plastic containers	Fillets: IQF, layer or shatterpack	5-15 lbs. packages

SABLEFISH/BLACK COD

FRESH		FROZEN	
PRODUCT	PACKAGING	PRODUCT	PACKAGING
H&G; split or unsplit belly, collar on/off		H&G; glazed	50-80 lbs. boxes
Fillets (skin/skinless, pin-bone in)	10 lbs. poly bags/plastic containers	Fillets: IQF and layer packs	10-25 lbs.

LINGCOD

FRESH		FROZEN	
PRODUCT	PACKAGING	PRODUCT	PACKAGING
H&G; collar on	50-80 lbs. boxes	H&G; collar on	50-80 lbs. boxes
Fillets	50 lbs. boxes	IQF Fillets	50-80 lbs. boxes

For information on recovery and yield data for whitefish products please see: *Recoveries and Yields: Pacific Fish and Shellfish, Alaska Sea Grant College Program.*



PROTEIN

OMEGA-3

VITAMIN B12

VITAMIN A

VITAMIN D

SELENIUM



PROTEIN: an essential nutrient that helps build and maintain the body's cells. Proteins from seafood are vital for the human diet because they contain essential amino acids

OMEGA-3: DHA and EPA are essential fats that help prevent heart disease and stroke

VITAMIN B12: an essential nutrient that produces red blood cells and helps maintain healthy nerve cells

VITAMIN A: contributes to healthy vision, bone growth, reproductive abilities and a good immune system

VITAMIN D: plays a role in bone formation and health and chronic disease prevention

SELENIUM: a nutrient that works with other vitamins to counteract free radical damage in the body

ENGINEERED BY NATURE

The unique topography of the ocean floor and the nutrient-rich ocean currents make Alaska's waters among the most productive and cleanest in the world. The northern latitude of Alaska's fishing grounds ensures seafood products are safe from harmful environmental contaminants. Whitefish harvested in the clean, remote waters of Alaska are rich in nutrients and can be eaten in unrestricted amounts. Alaska whitefish are an excellent source of lean protein and heart-healthy omega 3 fatty acids.

PURE WATER, PURE FISH

	PACIFIC COD	PACIFIC HALIBUT	ALASKA POLLOCK	ROCKFISH	SABLEFISH	SOLE/FLOUNDER
CALORIES	85	111	110	109	250	86
PROTEIN (G)	19	23	23	22	17	15
FAT (G)	<1	2	1	2	20	2
SODIUM (G)	70	82	116	89	72	105
CHOLESTEROL (MG)	40	45	86	61	63	60
OMEGA-3s (MG)	460	240	510	350	1800	300
VITAMIN B12 (µG)	2.31	1.27	3.66	1.59	1.44	1.27
VITAMIN A (IU)	7	73	51	16	338	37
VITAMIN D (IU)	24	230	51	183	N/A	47
SELENIUM (µG)	28	55	44	76	47	33

Serving Size 3.5 oz/100g cooked portions

Source: USDA National Nutrient Database for Standard Reference, Release 28



SEAFOOD QUALITY

As required by law, all whitefish species are processed in facilities that are in full compliance with food safety regulations and practices. These regulations require monitoring of control points to ensure food safety and are overseen by the U.S. Food and Drug Administration and the Alaska Department of Environmental Conservation. The quality of the products is ensured by each company's standard practices in accordance with the specifications of their customers. The producers and the customers work together to guarantee the highest quality possible. Many customers conduct their own inspections and audits of their suppliers. This practice is routine in the industry and includes a focus on the traceability of all products.

The Alaska Department of Environmental Conservation conducts a rigorous examination of environmental contaminants in Alaska fishes. This program is funded by the State of Alaska to ensure the health of its natural marine and freshwater resources. Alaska's whitefish species are tested annually and have never detected contaminant levels of concern. Results from the fish monitoring program can be viewed at:

<https://dec.alaska.gov/eh/vet/fish.htm>

THE SUSTAINABILITY STORY

In Alaska, the future of seafood stocks and the environment are more important than immediate opportunities for commercial harvest. Managing for a continuing supply of seafood produced in Alaska's waters is mandated in the state's constitution. In 1959, the people of Alaska decided that

'fish... be utilized, developed and maintained on the sustainable yield principle.'

The state, federal and international processes ensure this by separating conservation from decisions regarding allocation. The management agencies are structured so that scientists make harvest level decisions, and policy allocation can never dictate harvest levels above the scientific recommendation. The guiding principle of the management of Alaska's whitefish fisheries is solidly based in science and managers must take a precautionary conservative approach rather than risk damage to the resource. Federal scientists conduct surveys to assess the status of the fish stocks as well as study the climatic, environmental and socio-economic factors that affect the fisheries.

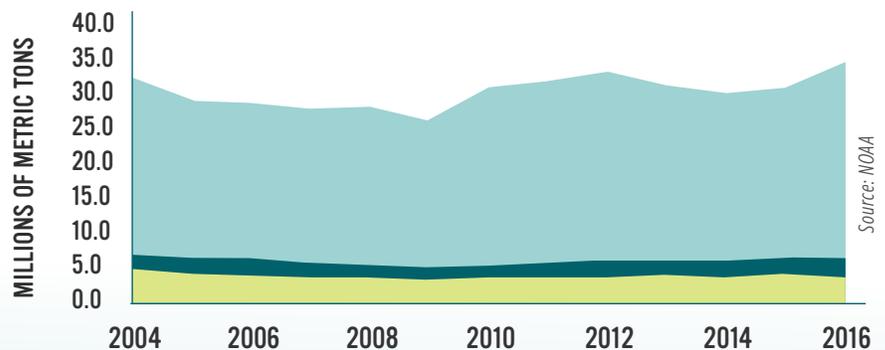
The sustainability of Alaska whitefish fisheries are independently certified by both the Alaska Responsible Fisheries Management program and the Marine Stewardship Council.



FISHERIES MANAGEMENT

The sustainable harvest level or the Acceptable Biological Catch (ABC) for each fishery is calculated from research surveys conducted by federal fisheries biologists. Alaska's regional marine fisheries council is mandated to manage the whitefish fisheries and is responsible for setting the Total Allowable Catch (TAC) or the actual amount of each whitefish that can be harvested. In the North Pacific, the TAC is set at or below the ABC. The entire management process is open, transparent and inclusive to anyone who would like to participate.

A HISTORY OF RESPONSIBLE FISHERY MANAGEMENT



- **TOTAL BIOMASS**
 Millions of tons of Alaska's federally-managed groundfish caught off the coast of Alaska
- **TOTAL ABC**
 The Acceptable Biological Catch (ABC): sustainable harvest level set by scientists
- **TOTAL TAC**
 The Total Allowable Catch (TAC): the amount of fish to be harvested

Source: NOAA

SUSTAINABLE ECOSYSTEM MANAGEMENT

In addition to traditional fishery management, over 40 Marine Protected Areas (MPAs) have been established to protect ecological structure and function, conduct research, conserve bottom habitat, protect vulnerable stocks, and preserve cultural resources. Of these 40+ MPAs, 31 prohibit commercial fishing and/or bottom contact gear. There are thousands of square miles under MPA protection in Alaska, comparable to the size of Europe. Evidence of the success of Alaska's fisheries management approach is that no species of Alaska whitefish is overfished or approaching an overfished condition.

Each fishery is also protected by a designated regulatory enforcement agency, such as the National Marine Fisheries Services (NMFS) Office of Law Enforcement. The At-Sea Observer Program places federal fisheries observers, certified by NMFS, aboard fishing vessels to collect data and report suspected regulatory violations to the Office of Law Enforcement. This program helps monitor and provides real time harvest estimates of Alaska's fisheries.

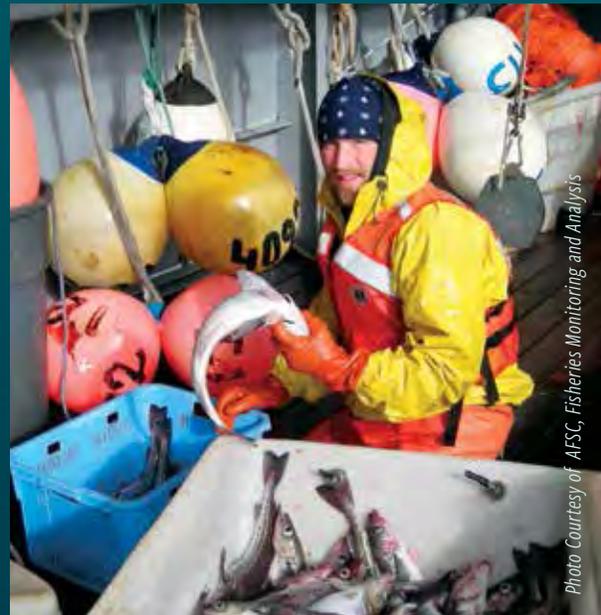
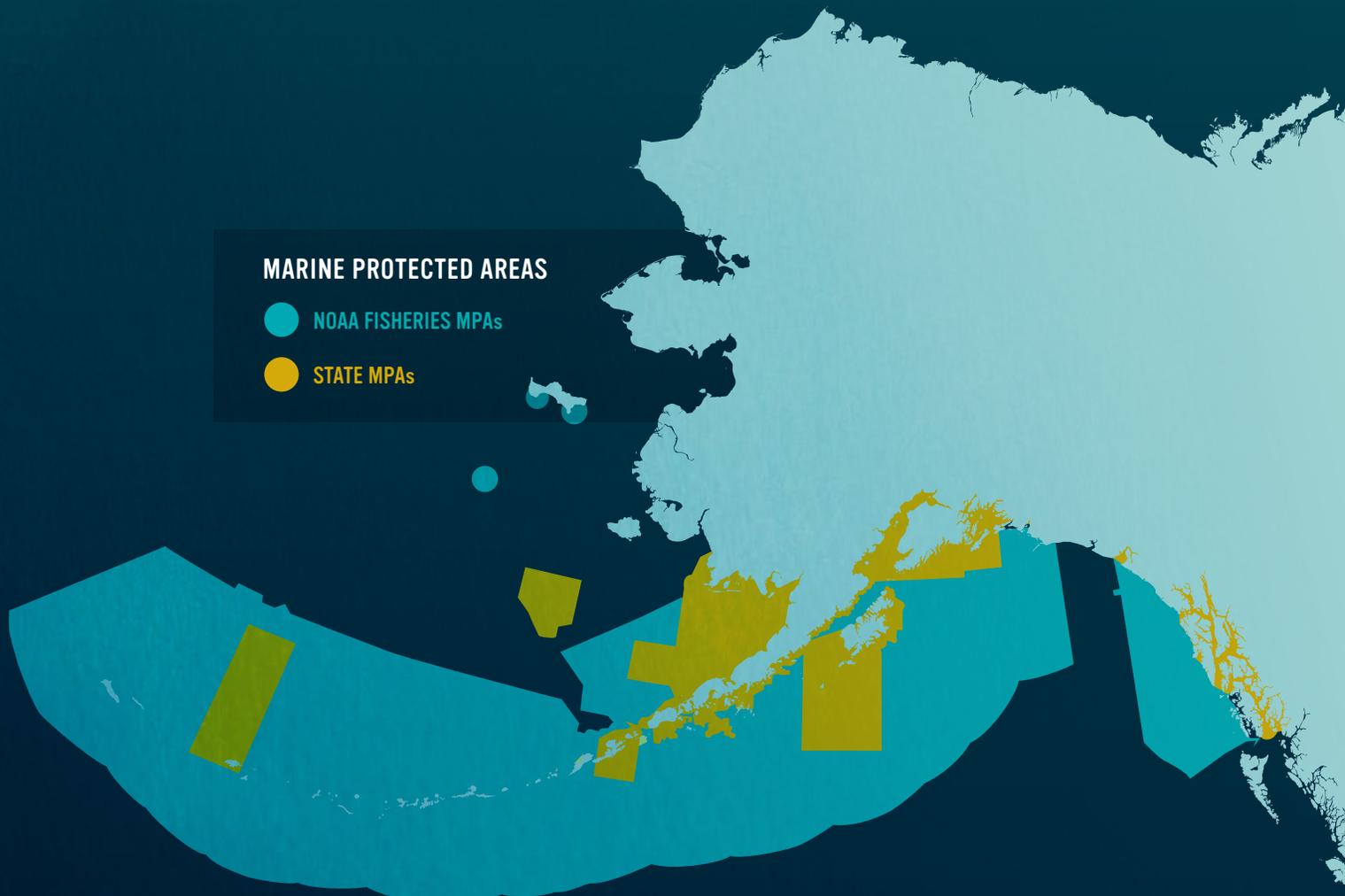


Photo Courtesy of AFSC, Fisheries Monitoring and Analysis



To enjoy Alaska's whitefish, please check out our recipes at: <http://www.wildalaskaseafood.com/recipe-finder/>



>> Halibut and Wild Mushroom



>> Pan Baked Cod Florenti



>> Alaska Pollock Taco

WHITEFISH PUBLICATIONS

To learn more about Alaska's whitefish consult alternate ASMI publications, including:

FACT SHEETS FOR ALASKA WHITEFISH

PREMIUM QUALITY SPECIFICATIONS - WHITEFISH FILLETS

RECOMMENDED WHITEFISH QUALITY GUIDELINES

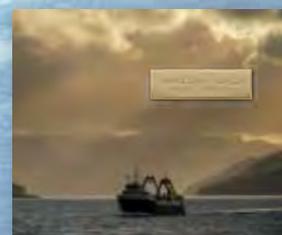
SUSTAINABLE ALASKA SOLE AND FLOUNDER GUIDE

ALASKA SEAFOOD SUSTAINABILITY IN PLAIN ENGLISH

MARINE PROTECTED AREAS BROCHURE

These materials can be obtained by downloading the pdf or ordering online from our website:

www.alaskaseafood.org or by calling 1-800-478-2903





Wild, Natural & Sustainable

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Published February 2016



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METRIC CONVERSIONS

POUNDS (LBS)	KILOGRAMS (KG)
5	2.3
10	4.5
50	22.7
100	45.4
1,000	453.6

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