

Wild, Natural & Sustainable\*

# SALMON

## BUYER'S GUIDE

KING

COHO

SOCKEYE

KETA

PINK







## ALASKA SALMON

THE COLD, CLEAN WATERS OF ALASKA support huge stocks of Pacific salmon. With a pure, wild taste like no other, it's easy to see why Alaska salmon are sought-after by seafood consumers the world over. The Alaska Seafood Marketing Institute (ASMI) produced this guide to inform buyers about the salmon harvesting, processing, quality and commitment to sustainability in Alaska.

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## HARVEST AREAS

Alaska's harvesting areas support 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. Alaska's salmon are harvested from areas relatively close to the coastline within regional fishing areas designated and managed by the state of Alaska.

### MAP KEY

- **INTERNAL WATERS:** From the shoreline to 3 nautical miles offshore, the State of Alaska has fisheries management authority.
- **FEDERAL WATERS:** Between 3 and 200 nautical miles offshore, termed the Exclusive Economic Zone, the U.S. has sovereign rights to the management of the resources.
- **COMMERCIAL SALMON FISHING AREAS:** Locations of prominent commercial salmon fishing grounds and salmon processing communities.

# ALASKA SALMON

Alaska salmon belong to the genus *Oncorhynchus*, a name formed by combining two Greek words, “onco” meaning hook or barb, and “rhyno,” meaning nose and is evident in spawning male salmon which develop a hooked or ‘kype’ nose.

Alaska salmon are anadromous: the young start life in freshwater and migrate to saltwater where they mature and then return as adults to their freshwater natal streams to reproduce or spawn. Alaska salmon are also semelparous: they only reproduce once in their lifetime.

There are five species of salmon that are commercially harvested in Alaska.



**KING**  
Chinook  
*Oncorhynchus tshawytscha*



**SOCKEYE**  
Red  
*Oncorhynchus nerka*



**COHO**  
Silver  
*Oncorhynchus kisutch*



**KETA**  
Chum  
*Oncorhynchus keta*

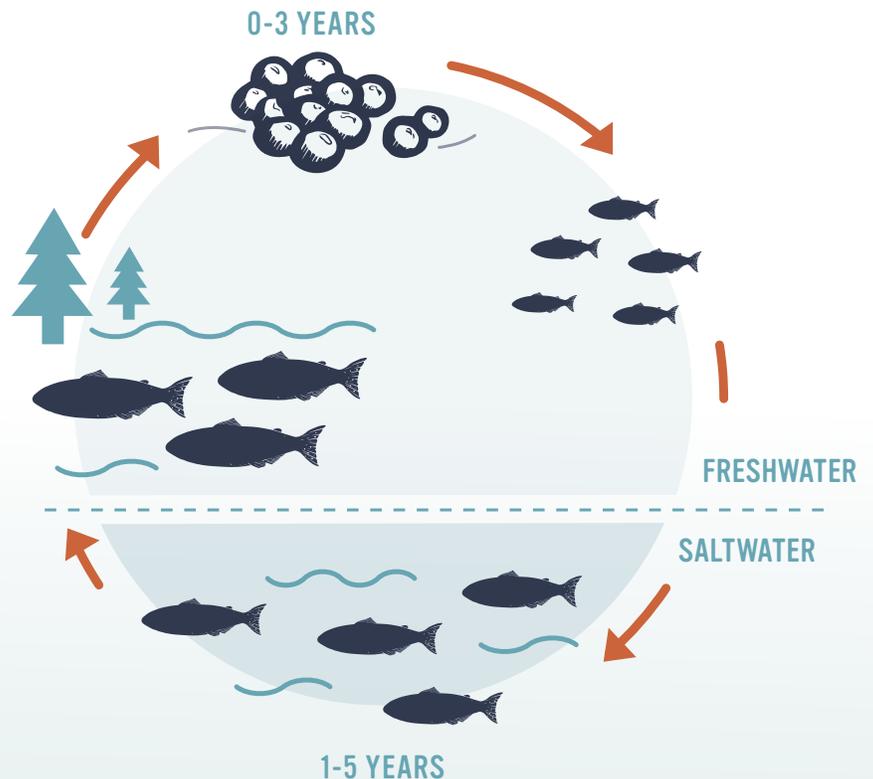


**PINK**  
Humper  
*Oncorhynchus gorbuscha*

## SALMON LIFE CYCLE

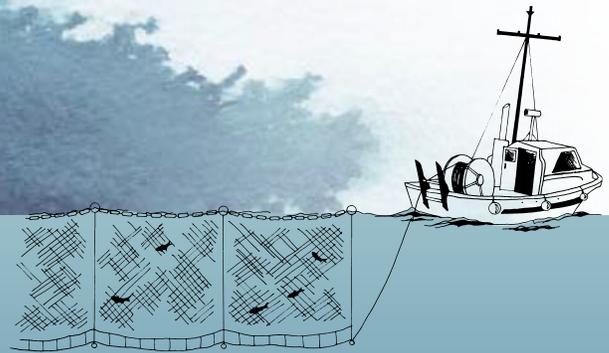
Salmon eggs incubate and hatch in the freshwater stream beds in the early spring. Some species of salmon migrate directly down the rivers to the ocean, while others spend one to three years in freshwater rivers or lakes. Varying by species and within species, salmon spend one to five years to mature while swimming in the waters off Alaska’s coast completing great migrations in the Gulf of Alaska and the Bering Sea. Salmon return as adults to the same freshwater streams in which they were hatched. The female lays 2,000-5,000 eggs in a ‘redd’ that she makes by creating a nest in the gravel streambed and the male fertilizes the eggs. After spawning, the adult salmon die and the carcasses contribute important nutrients to the stream and surrounding upland ecosystem.

\*For more information on salmon species’ life history please see ADFG website:  
[adfg.alaska.gov](http://adfg.alaska.gov)

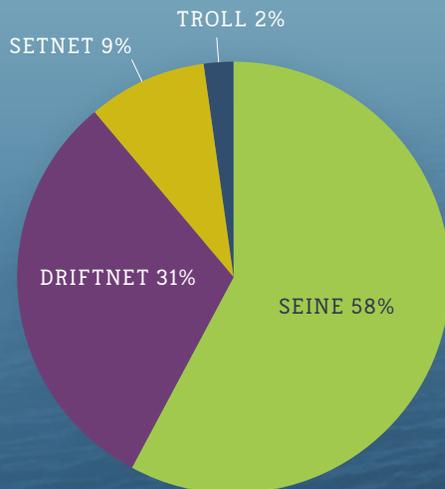


## HARVESTING ALASKA'S SALMON

All fishing gear used by Alaskan harvesters is operated in as 'clean' a manner as possible and is specific to species behavior and fishery location. Salmon school tightly, not mixing very much with other species of fishes, so commercial salmon fishing has virtually no incidental catch of non-salmon species. Harvesters have cooperated with researchers and managers to develop allocation and regulations methods for different gear types, fishing areas and fishing times to sustainably harvest salmon in Alaska.



### COMMERCIAL HARVEST VOLUME BY GEAR TYPE (10-YEAR AVERAGE)



Source: Alaska Department of Fish & Game (Commercial Fisheries Entry Commission), compiled by McDowell Group.

### GILLNETTING

Gillnetters use nets that suspend from the floating corks at the surface that form a wall of mesh in the water that can stretch a distance anywhere from 900-1,800 feet and extend variable depths depending on region and regulation. Swimming salmon are caught in the net by their gills, hence the term 'gillnetting.'

**DRIFTNETTING:** Boats set nets offshore along migratory pathways of salmon and reel the caught fish onboard. Gillnetting vessels are similar in size to trollers, ranging from 28-42 feet in length.

**SETNETTING:** A small boat or skiff is used to extend the gillnet out from shore in order to catch salmon swimming near the shoreline. Once the net has 'soaked,' or has been floating for a set time, the net is pulled in by hand.

*sockeye, keta, coho, king and pink*

# HARVEST TIMELINE

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
KING						GILLNET						
	WINTER TROLL		SPRING TROLL		SUMMER TROLL					WINTER TROLL		
COHO						GILLNET/SEINE						
						GILLNET		GILLNET/SEINE/TROLL				
SOCKEYE						GILLNET/SEINE						
						GILLNET		GILLNET/SEINE/TROLL				
KETA						GILLNET/SEINE						
						GILLNET/DIP NET/FISHWHEEL		GILLNET/SEINE/TROLL				
PINK						GILLNET/SEINE						
						GILLNET		GILLNET/SEINE/TROLL				

**GULF OF ALASKA**

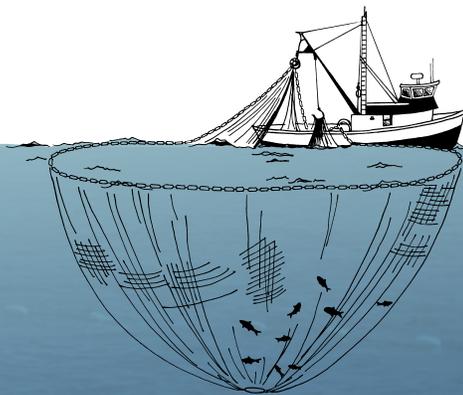
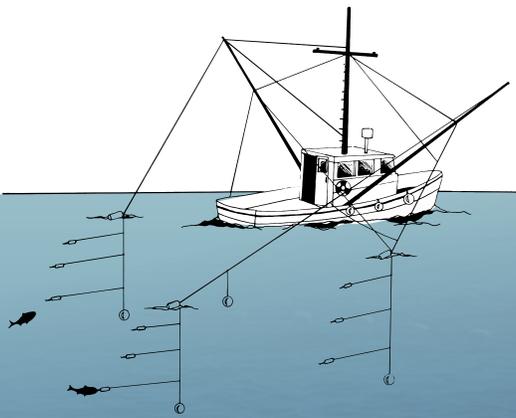
includes Yakutat, Cook Inlet, Kodiak, Chignik and the Alaska Peninsula areas

**BERING SEA**

includes Aleutian Islands, Bristol Bay and Arctic-Yukon-Kuskokwim areas

**SOUTHEAST ALASKA**

includes the island archipelago of many fishing communities in Alaska



## TROLLING

Troll fishing is an artisanal form of fishing practiced only in Southeast Alaska. Trollers are small fishing vessels operated by one or two people who fish with artificial lures or baited hooks attached to long lines. Trollers are generally allocated larger areas to fish, but have lower catch rates than harvesters using nets. Generally, trollers fish offshore and intercept salmon on the outer coast as they start their migration through inland waters. Troll-caught salmon are known for quality over quantity.

*king, coho and keta*

## PURSE SEINING

Seiners use a net that is set in a circle to form a ‘purse’ that closes at the bottom. Synthetic corks keep the net floating at the surface and a skiff pulls one end of the net around an area of schooling salmon to enclose them in the purse. Once the purse has been closed, the net is hauled aboard with a power block and a winch. Seiners usually set their nets in areas close to shore where large schools of salmon are found. The net mesh size used in seining is smaller than a gillnet. Varying by region, seine nets span around 1,500 feet long and 100 feet deep. Seine vessels are the largest among the salmon harvesters and catch the largest volume of salmon.

*pink, keta and sockeye*

# ALASKA SALMON SPECIES

There are 5 species of Pacific salmon that are commercially harvested in Alaska.

	PHYSICAL DESCRIPTION	LIFE HISTORY	AVERAGE SIZE	DIET
 <p><b>ALASKA KING SALMON</b></p>	dark spots on back and tail, black gums on upper and lower jaw	freshwater: 2 years marine: 1-5 years	10-30 lbs.	Herring, sand lance, capelin and squid
<i>The largest king salmon caught was 126 lbs. in 1949 in Petersburg, Alaska.</i>				
 <p><b>ALASKA COHO SALMON</b></p>	black spots on back and the upper part of the tail	freshwater: 2 years marine: 2 years, but some cohos known as 'jacks' return after only 6 months at sea	6-12 lbs.	Herring, sand lance, squid and small crustaceans
<i>In the freshwater environment, young coho fry establish territories which they defend from other salmonids.</i>				
 <p><b>ALASKA SOCKEYE SALMON</b></p>	no black spots on body or tail	freshwater: 1-3 years in lakes and streams marine: 1-3 years feeding before returning to spawn	4-10 lbs.	Plankton, small crustaceans and small fish
<i>Sockeye salmon naturally have bright red flesh due to the ability to absorb more of the carotenoid pigment found in their food than other salmon species.</i>				
 <p><b>ALASKA KETA SALMON</b></p>	metallic blue/green in color with no large spots and a pronounced forked tail	freshwater: 1 year marine: 3-4 years	8-12 lbs.	Plankton, small fish and squid
<i>For keta salmon, adults return in two modes, one group returns to the freshwater spawning grounds early (May-September) and are called the 'summer' run salmon. Keta returning later in the year (September-November) are called the 'fall' or 'autumn' run of salmon.</i>				
 <p><b>ALASKA PINK SALMON</b></p>	black spots on back and all over tail	freshwater: 1 year marine: 1 year	3-5 lbs.	Plankton, squid, small fish and crustaceans
<i>Some stocks of pink salmon have an odd and even year trend for population. One year will produce more fish than the next year and this weak and strong classification shifts back and forth over time.</i>				

## PROPORTION OF COMMERCIAL ALASKA SALMON CATCH (10-YR AVG. 2006-2015)



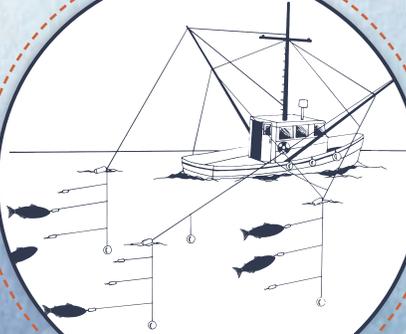
Source: Alaska Department of Revenue (Commercial Operators Annual Report), compiled by McDowell Group.



## FROM DECK TO DISH

As a wild caught fishery, Alaska salmon are harvested from the open ocean. The fish are then transported to processing facilities located in small fishing communities scattered along Alaska's coastline. Staff at the processing facilities manually handle every fish assuring that quality products are ready for distribution. Alaska salmon products then travel by boat, plane and truck to retailers and restaurants to fulfill the demand from consumers worldwide.

### HARVEST/DECK



### TRANSPORT



### PROCESS



**FISH MEAL:** Salmon trimmings and bones are used for fish meal products including aquaculture feed and fertilizers

**ROE:** Highly valued specialty product

**SKIN:** Used in textiles to make many different products

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

## SALMON PRODUCT TYPES



HEADED & GUTTED (H&G)



BONES, MEAL, OIL



CANNED



FILLET (FRESH & FROZEN)



ROE



SPECIALTY & VALUE-ADDED PRODUCTS

### DISTRIBUTE



### RESTAURANT



### MARKET



### GROCERY STORE



### DISH

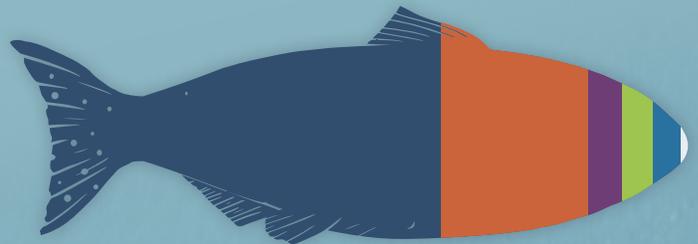


## RESOURCEFUL HARVESTING

The industry strives to use the whole fish, maximizing the benefit of this wild resource in a sustainable manner. Unique specialty products are made from the remaining resources after primary processing, such as skins, bones and other parts of the fish. New innovations in product types to maximize use of the catch are constantly being investigated. Value added products from Alaska salmon, such as smoked salmon, caviar and fish oil, support 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.

## ALASKA SALMON PRODUCTS

10 YEAR AVERAGE 2005-2014 (LBS.)

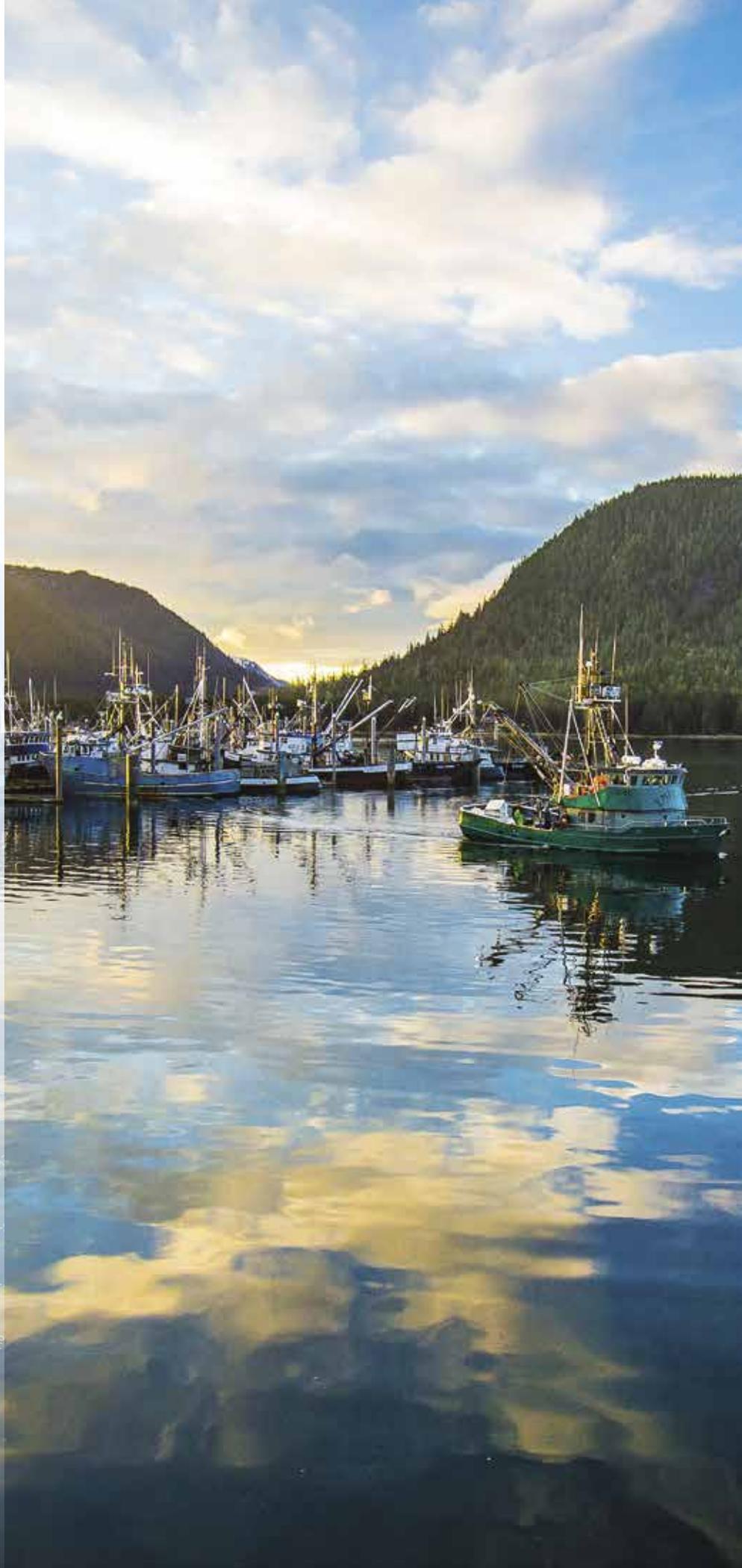


- FROZEN H&G 63%
- CANNED 22%
- FRESH H&G 5%
- ROE 5%
- FROZEN FILLET 4%
- FRESH FILLET 1%

Source: Alaska Department of Revenue (Alaska Salmon Production Report)

## ENGINEERED BY NATURE

Home to some of the last wild runs of salmon in the world, Alaska's thriving wild salmon population is a testament to the pristine quality of Alaska's waters and healthy salmon habitats. 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 remote locations of salmon harvesting grounds and Alaska's strict regulations for seafood safety ensures that seafood products are safe from harmful environmental contaminants. Salmon harvested in the clean, pristine waters of Alaska are rich in nutrients. Salmon is a great source of lean protein and is packed with essential long chain omega-3 fatty acids such as DHA and EPA (eicosapentaenoic and docosahexaenoic acids) found only in marine sources.



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 an easily digestible protein vital for the human diet because they contain essential amino acids.

**OMEGA-3:** a premier source of the good fats, omega-3s (DHA and EPA), which our bodies cannot produce and are only found in marine food sources such as salmon. These essential fats reduce the risk of heart disease and contribute to brain development of infants and children.

**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 as well as chronic disease prevention.

**SELENIUM:** a nutrient that works with other vitamins to counteract free radical damage in the body and is a key player in detoxifying mercury.

## PURE WATER, PURE FISH

### ALASKA SALMON

	ALASKA KING	ALASKA COHO	ALASKA SOCKEYE	ALASKA KETA	ALASKA PINK
CALORIES	231	139	156	154	153
PROTEIN (G)	26	23	26	26	25
FAT (G)	13	4	6	5	5
SODIUM (G)	60	58	92	64	90
CHOLESTEROL (MG)	85	55	61	95	55
OMEGA-3s (MG)	1740	1059	860	804	607
VITAMIN B12 (µG)	2.87	5.00	4.47	3.46	4.73
VITAMIN A (IU)	496	169	193	114	126
VITAMIN D (IU)	N/A	451	670	N/A	522
SELENIUM (µG)	47	38	36	47	38
POTASSIUM (MG)	505	434	436	550	439
IRON (MG)	0.91	0.61	0.52	0.71	0.45
CALCIUM (MG)	28	45	11	14	8

### CANNED ALASKA SALMON\*

	ALASKA SOCKEYE	ALASKA KETA*	ALASKA PINK
CALORIES	167	141	138
PROTEIN (G)	24	21	23
FAT (G)	7	6	5
SODIUM (G)	408	391	381
CHOLESTEROL (MG)	79	39	83
OMEGA-3s (MG)	1257	1175	1077
VITAMIN B12 (µG)	6	4	5
VITAMIN A (IU)	184	60	65
VITAMIN D (IU)	841	N/A	580
SELENIUM (µG)	34	47	40

Serving Size 3.5 oz/100g  
\*drained solids with bone

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

## SALMON QUALITY

The initial capture, handling, and storage of the fish, together with the primary processing operations prior to packaging, are major factors influencing the quality of the final products. The establishment of a value or level of preference depends on the size, external and internal color characteristics, fat content, degree of maturity, method of capture, freshness and state of preservation. Thus "quality" relates to the characteristics of the fish itself as well as its handling history, state of freshness and preservation.

Unique to wild salmon is the natural change in shape and color that occurs as they mature and near their freshwater spawning areas. Each shade of salmon has a place in the seafood market. Further information on species-specific skin and meat color grades can be ordered from the ASMI website: [www.alaskaseafood.org](http://www.alaskaseafood.org)

To ensure the highest quality of Alaska's harvested wild salmon, most processors have quality assurance programs or incentive based programs for fish delivered to the

processing plant. Additionally, the salmon producers and customers work together to guarantee the highest quality products. Many customers conduct their own inspections and audits of their salmon suppliers. This practice is routine in the industry and includes a focus on the traceability of all products.

## SALMON SKIN COLOR VARIATIONS

### ALASKA KING SALMON



### ALASKA COHO SALMON



### ALASKA SOCKEYE SALMON



### ALASKA KETA SALMON



### ALASKA PINK SALMON



LESS MATURE

FULLY MATURE

For a larger reference of salmon skin color, please order the Color Evaluation Guide for Pacific Salmon found on the ASMI website.



## SALMON SEAFOOD SAFETY

The Alaska salmon industry's commitment to the quality of salmon products can be seen in the strict adherence to safe salmon processing. All parts of the processing operation from raw materials to distribution are examined for hazards and controls following the U.S. Food and Drug Administration Hazard Analysis and Critical Control Point (HACCP) seafood safety requirements.

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 salmon species are tested annually and have never detected contaminant levels of concern. Results from the fish monitoring program can be viewed at: [dec.alaska.gov](http://dec.alaska.gov)

ASMI's Seafood Technical Program works to enhance and maintain the quality and safety of all Alaska seafood products. ASMI and the University of Alaska's Marine Advisory Program work together to provide seafood safety and handling workshops to Alaska's seafood workforce.



# ALASKA'S SALMON FISHERY MANAGEMENT: A MODEL

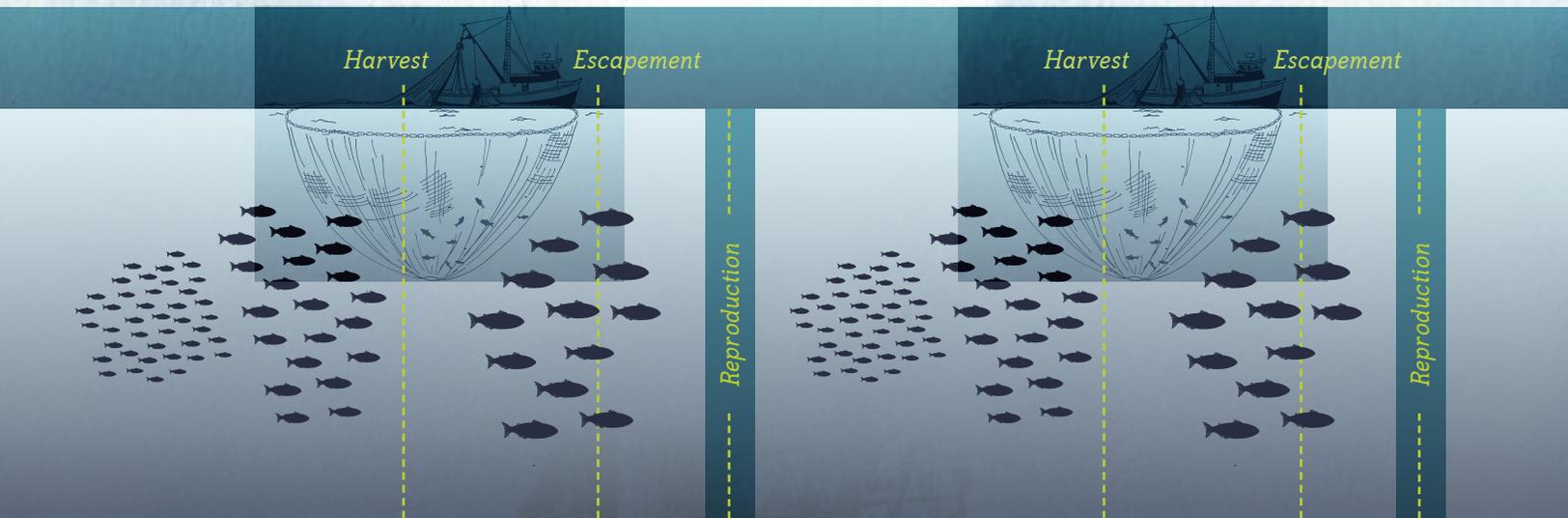
Salmon in Alaska are wild and therefore there is natural variability in the numbers of salmon that return to the freshwater streams to reproduce. Unlike stocks in other parts of the world, no Alaska salmon stocks are threatened or endangered. Alaska's salmon have been abundant for millennia, and they are managed to ensure their future abundance.

The Alaska Department of Fish and Game (ADFG) manages the salmon fishery by setting 'escapement goals'

that provide sufficient numbers of adult spawning salmon to escape capture in the fishery and reach the spawning grounds in the freshwater environment, thus maintaining the long-term health of salmon populations. In order to maintain escapement, the commercial harvest fluctuates from year-to-year. In Alaska, the salmon fisheries are tactically managed while they are actually taking place, known as 'in-season management' through counting fish as they swim up to their spawning grounds. Escapement

monitoring is done in a variety of ways by fish biologists using sonar, flying surveys or visually counting fish from stands as they migrate upstream. Local ADFG offices make in-season management decisions for the 15,000+ salmon spawning streams that the state manages. Alaska has led the way with its in-season salmon management approach, which has become a model for fisheries management agencies around the world.

## SALMON HARVEST MANAGEMENT



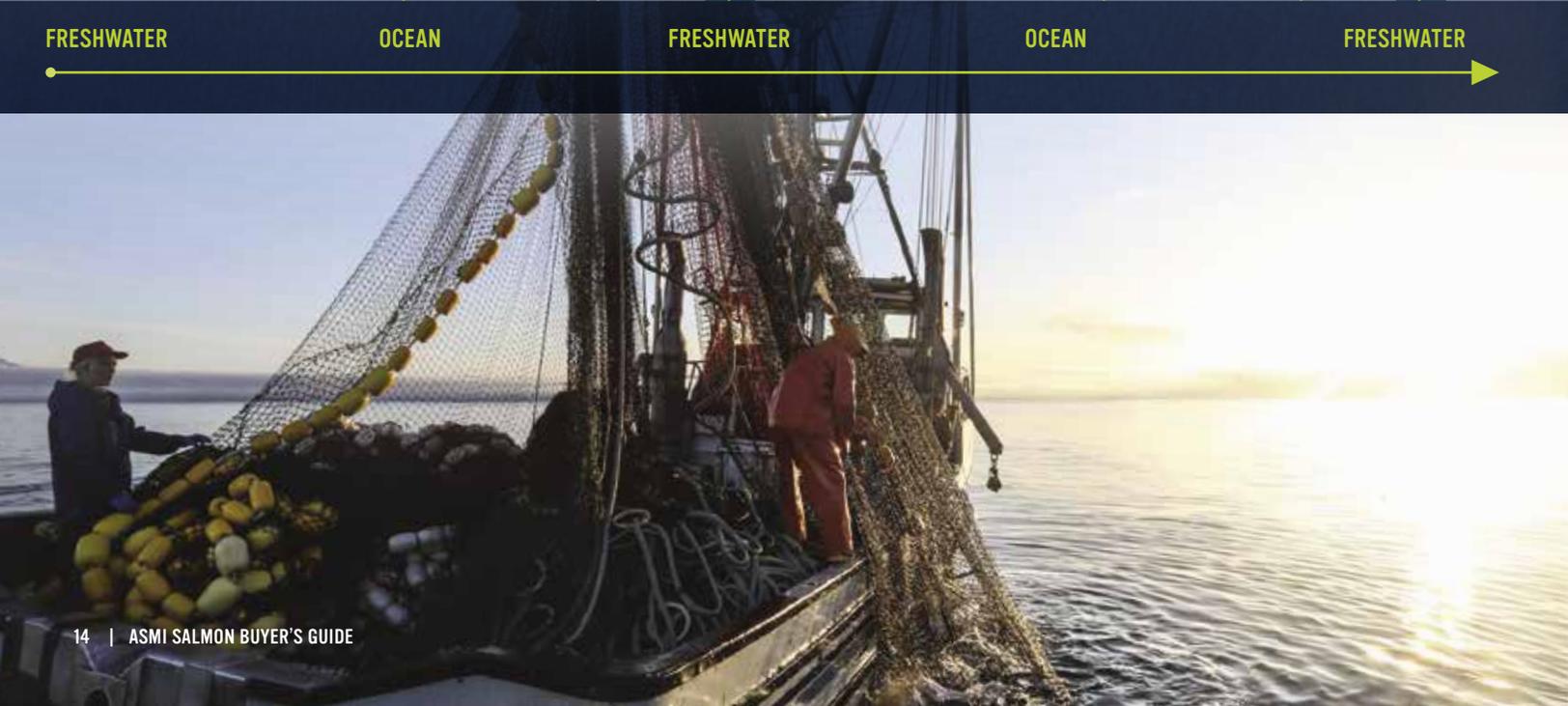
FRESHWATER

OCEAN

FRESHWATER

OCEAN

FRESHWATER



## SUSTAINABLE SALMON

In Alaska, the future of seafood stocks and the environment are more important than immediate opportunities for commercial harvest. Alaska's fisheries are managed for the sustainable supply of seafood produced in Alaska's waters as 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.'*

Every aspect of Alaska's salmon fisheries is strictly regulated, closely monitored, and rigidly enforced. Strict regulations and harvest policies set in place by the Alaska Board of Fisheries and enforced by ADFG to ensure that salmon populations are managed for maximum sustained yield.

Alaska salmon fisheries are independently certified as sustainable fisheries by both the Alaska Responsible Fisheries Management program and the Marine Stewardship Council.



## ALASKA'S SALMON GUIDELINES FOR SUSTAINABILITY

Alaska's Sustainable Salmon Fisheries Policy provides guiding principles and encourages innovative approaches to collaborative research for salmon conservation and management.

- 1 HABITAT STEWARDSHIP**  
to provide safe passage for salmon throughout freshwater, estuary and ocean habitats. The cornerstone of the state's salmon habitat protection program is the Anadromous Fish Act from which a catalogue of anadromous salmon streams now exists to ensure protection by ADFG.
- 2 SCIENCE AND MANAGEMENT TO SUSTAIN POPULATIONS**  
continue to pursue research to better understand salmon ecosystems and the effects of environmental change.
- 3 HUMAN ACTIVITY REGULATION**  
groups and agencies combining resources to minimize the impact of human activities on salmon populations.
- 4 PUBLIC INVOLVEMENT**  
provide an open public process for fisheries decision making through advisory committees, public meetings and the transparent and open process of the Alaska Board of Fisheries.
- 5 CONSERVATION MANAGEMENT**  
in times of uncertainty, management decisions will favor protection of salmon to ensure the bounty of Alaska's salmon for future generations.

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



>> Charred Sugar-Crusted Alaska Salmon



>> Alaska Sockeye Salmon with Wasabi Goat Cheese



>> Alaska Sockeye Salmon with Northwest Spiced Coffee Rub

## SALMON PUBLICATIONS

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

**ALASKA SALMON ROE BROCHURE**

**PACIFIC SALMON SKIN COLOR EVALUATION GUIDES**

**PACIFIC SALMON MEAT COLOR GUIDES**

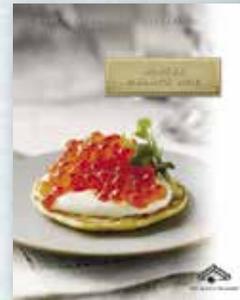
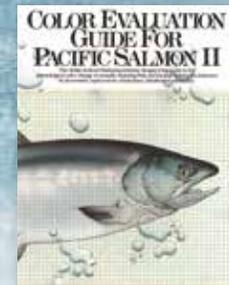
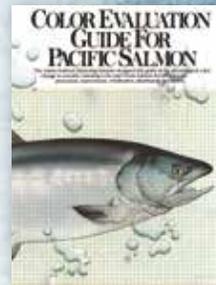
**RECOMMENDED STATEWIDE QUALITY SPECIFICATIONS AND GRADES FOR ALASKA FRESH AND FROZEN SALMON**

**CARE AND HANDLING OF SALMON: THE KEY TO QUALITY**

**WILD ALASKA SALMON TRIM GUIDE**

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

[www.alaskaseafood.org](http://www.alaskaseafood.org) or by calling 1-800-478-2903





Wild, Natural & Sustainable®

INTERNATIONAL MARKETING OFFICE AND ADMINISTRATION  
311 N. Franklin St. • Suite 200 • Juneau, AK 99801 • 800-478-2903

U.S. MARKETING OFFICE  
150 Nickerson Street • Suite 310 • Seattle, WA 98109 • 800-806-2497

Published November 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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