

# A Guide to California Seafood

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by

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## ACKNOWLEDGEMENTS

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Developing a California seafood product guide that is both accurate and useful would be extremely difficult without significant contributions of time, effort and product from many individuals. Our deepest thanks and gratitude are extended to the many people from California's fishing industry who contributed encouragement to undertake this project, time to peer review the materials (not once but several times), and effort to secure, package and airship numerous California seafood species to the offices of the Sea Fare Group in Seattle to complete the product photography. Their knowledge and assistance contributed enormously to the production of this manual.


Much of the technical and life history information on the various species included in this guide was compiled from numerous sources listed in the References section at the back of the book. To these sources, too, we extend recognition and grateful thanks.





# JUDGING QUALITY


The best way to determine the quality of fish is by using subjective sensory evaluations (look, smell and touch).

 **Frozen fish** should first be thawed and rinsed.


 **Fresh fish** should be unpackaged and rinsed to remove odors from stale air in the package and from packaging materials.


 **The appearance of fresh, dressed fish** should be clean with no excessive slime or debris. The skin should be shiny, bright and intact with the scales adhering tightly to the skin. The stomach cavity should be clean and free of blood and viscera. The flesh should feel firm and elastic to the touch with a fresh, mild, and non-fishy odor.


 **Frozen, thawed fish** have a softer texture than fresh fish. They should be free of discoloration or signs of freezer burn.


 **Fresh or frozen fillets** should be cut smooth with no ragged edges, tears, holes, blood spots or bruises. They should be trimmed of all viscera and belly


flaps and should have no yellowing or browning at the edges.


 **Skin-off fillets** should be trimmed of all skin. Skin-on fillets should not have wrinkled

 **Fresh fillets** should be firm and elastic to the touch and should not have a dull appearance.

 **Frozen, thawed fillets** have a softer texture than fresh fish, and should be free of discoloration or signs of freezer burn.

 **Fresh or frozen steaks** should be cut smooth with no ragged edges, tears, holes, blood spots or bruises. They should be trimmed of all viscera, and should have no yellowing or browning at the edges. Steaks should not have wrinkled skin.

 **Fresh steaks** should be firm and elastic to the touch, and should not have a dull appearance.

 **Frozen thawed steaks** have a softer texture than fresh fish, and should be free of discoloration or signs of freezer burn.



## PRODUCT FORMS

Live fish are alive.

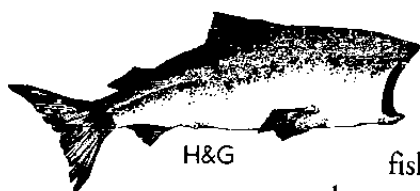
**Whole or round** fish are the entire fish as it comes from the water.

**Dressed or gilled and gutted (G&G)** fish have the gills and viscera removed.



Whole

**Headed and gutted (H&G)** fish have the head, gills and viscera removed.

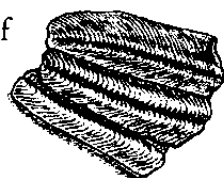


H&G

**Carcasses** are H&G with fins and tail off.

**Chunks** are large sections of H&G fish including a section of the backbone.

**Fillets** are slices of fish removed from each side of the fish by cuts made parallel to the backbone. For an additional cost, buyers can request removal of the skin and pin bones.



Fillet

**Steaks** are cross-sectional slices of fish that include part of the backbone. Steaks can vary in thickness depending upon customer preference. Steaks are available fresh and frozen.



Steak

**Loins** are slices of fish removed from each side of the fish by cuts made both parallel to the backbone and perpendicular to the backbone. Loins are boneless. They are available fresh and frozen.

**Wheels** are cross-sectional slices that include part of the backbone.



## PACKAGING



**LIVE:** Live fish, shrimp and crab are held in circulating or aerated seawater until the time of purchase. Water quality is carefully monitored to insure the continued health of the live product.



**FRESH - WHOLE:** Fresh whole fish are layer or "choir" packed with ice in waxed cardboard cartons typically containing up to 100 pounds each. The choir pack — fish packed side by side with heads up and tails down — is the preferred method for whole rockfish.



**FRESH - DRESSED and H&G:** Headed and gutted (H&G) and gilled and gutted (G&G or dressed) product packaging varies with the species.

Extra large fish such as swordfish and shark are iced thoroughly and placed on pallets. Each pallet is then completely wrapped with heavy duty plastic wrap and loaded into refrigerated trucks for shipping.

Large fish such as salmon are typically packed in a bed of ice, with ice gently placed into the belly cavity of each fish, in styrofoam or cardboard cartons lined with poly liners. Boxes generally contain no more than 60 to 70 pounds each.

Smaller fish such as dressed rockfish or H&G sanddabs may be packed into

10-pound poly bags or waxed cartons, which are then placed into waxed cardboard cartons with ice. Weights are in increments up to 100 pounds.



**FRESH - FILLETS and STEAKS:** Fresh fillets and steaks are packed into 10- and 20-pound poly tubs, 10-pound poly bags, or 10-pound waxed cartons with poly liners.



**FROZEN - WHOLE, H&G and G&G:** Frozen whole, H&G and G&G fish are ice glazed. Fish such as salmon are typically placed into plastic sleeves to protect the scales from abrasion and prevent freezer burn. Box sizes vary considerably, ranging from the 10-kilo box to the 1,200 pound tote.



**FROZEN - FILLETS and STEAKS:** Frozen fish fillets and steaks are ice glazed. Fish may be individually quick frozen, shatter or layer packed, vacuum packed, or block frozen. Or fish may be packed in 5-pound poly bags placed into master cartons. Packaging sizes range from 5- to 50-pound units.

Most common packing containers: poly bags, waxed cartons with plastic liners, plastic or styrofoam tubs. These are typically placed in master cartons, most commonly in increments up to 100 pounds.



## LABELING

Packaged containers and/or accompanying invoices should contain at least the following information:



**Product name or identity** - The use of the scientific name is recommended along with the FDA approved market or common name.



**Product form** - Label as dressed (G&G), H&G, fillets or steaks, fresh or frozen.



**Quantity** - List total net weight, usually in pounds. Counts per

pound or per 100 pounds, or size ranges can accompany the net weight declaration.



**Name and address of the processor or distributor.**



**Ingredients**, if present, listed in descending order according to the amount present on a weight basis.



**State or Country of origin** - domestic vs. foreign source.



# NUTRITION INFORMATION

Fish, 3 oz., edible portion, skinless

Source	Calories (Kcal)	Protein (g)	Carbo- hydrate (g)	Total Fat (g)	Saturated Fat (g)	Choles- terol (g)	Sodium (g)	Percent U.S. RDA Vitamin A Vitamin C Calcium Iron
Catfish, baked	FDA-8/91	120	19	0	5	1	60	* * 3 5
Cod, broiled	FDA-8/91	90	19	0	1	0	50	* 2 *
Flounder, baked	FDA-8/91	100	20	0	1	0	50	* 2 2
Haddock, baked	FDA-8/91	90	20	0	1	0	60	* * 4 6
Hallibut, broiled	FDA-8/91	120	22	0	2	0	30	* 3 * 5 5
Lingcod, raw	AH-8-15	72	15	0	1	0	44	* * *
Mackerel, broiled, mix spec.	FDA-8/91	190	21	0	12	3	60	95 7 * * 9
Ocean Perch, baked	FDA-8/91	100	20	0	2	0	50	80 * * 10 6
Orange roughy, broiled	FDA-8/91	70	16	0	1	0	20	70 * * *
Pollock, broiled	FDA-8/91	100	21	0	1	0	80	90 * * *
Rainbow trout, broiled	FDA-8/91	130	22	0	4	1	60	30 * 5 7 10
Rockfish, baked	FDA-8/91	100	20	0	2	0	40	65 * * 3
Sablefish, raw	AH-8-15	166	11	0	13	3	42	48 * * 6
Salmon, baked - Aljico	FDA-8/91	150	22	0	7	1	50	50 * 2 * 4
Shark, mixed spec, raw	AH-8-15	111	18	0	4	1	43	67 4 * 3 4
Snapper, mix spec., dry ckd	AH-8-15	109	22	0	1	0	40	48 * * 3 *

# CALIFORNIA SEAFOOD



Sole, broiled	FDA-8/91	100	21	0	1	0	1	0	60	90	*	*	2	2
Swordfish, dry cooked	AH-8-15	132	22	0	4	1	43	98	2	*	*	*	5	
Tuna, blufin, dry cooked	AH-8-15	157	25	0	5	1	42	43	13	*	*	*	6	
Tuna, skipjack, raw	AH-8-15	88	19	0	1	0	40	31	*	*	*	2	6	
Tuna, yellowfin, raw	AH-8-15	92	20	0	1	0	38	31	*	*	*	3		
Whiting, baked	FDA-8/91	100	19	0	1	0	70	75	2	*	*	5	2	
Clams, steamed, 12 small	FDA-8/91	130	22	0	2	0	60	95	10	*	*	8	130	
Crab, blue, steamed	FDA-8/91	90	19	0	1	0	80	310	*	*	*	9	4	
Crab, Dungeness, raw	AH-8-15	73	15	1	1	0	50	251	*	*	*	4	2	
Lobster, broiled	FDA-8/91	100	20	1	1	0	100	320	*	*	*	5	2	
Oyster, steamed, 12 med	FDA-8/91	120	12	7	4	1	90	190	*	*	*	8	65	
Scallop, brld, 5-7 lg/14 sml	FDA-8/91	150	26	2	1	0	60	275	*	*	3	2	*	
Shrimp, broiled	FDA-8/91	110	22	0	2	0	160	155	*	*	3	3	15	
Squid, mixed species, raw	AH-8-15	78	13	3	1	0	198	37	*	*	7	3	3	
































































AH-8-15: Composition of Foods: Finfish and Shellfish Products, USDA Agricultural Handbook 8-15

FDA/8/91: FDA Nutritional Labeling proposed rule














































\*=Less than 2% RDA



# CALIFORNIA SEAFOOD INDEX

Species	Availability (Season)	Flavor	Texture	Processed Forms
<i>Barracuda</i> 	  	F	t	  
<i>California Halibut</i> 	   	f	t	  
<i>Mackerel</i> 	   	F	t	  
<i>Rockfish</i> 	   	f	t	  
<i>CA King Salmon</i> 	    (May 1 - Sept. 30)	F	t	  
<i>Sanddab Sole</i> 	   	f	t	  
<i>Sardine</i> 	   	F	t	  
<i>Shark</i> 	    (Aug. 15 - Dec. 15)	f	T	  

# CALIFORNIA SEAFOOD

Surfperch					<i>f</i>	<i>t</i>	
Swordfish		<i>(Aug. - Jan. 31)</i> 			<i>f</i>	<i>T</i>	
Tuna					<i>f</i>	<i>T</i>	
CA Crab (Rock/Dung.)					<i>f</i>	<i>t</i>	
CA Spiny Lobster			<i>(Oct. - Mid March)</i> 		<i>f</i>	<i>T</i>	
Prawn					<i>f</i>	<i>t</i>	
Squid					<i>f</i>	<i>T</i>	
 = Peak Season  Available	 Winter	 Spring	 Summer	 Fall	<i>f</i> = Mild <i>f</i> = Moderate <i>f</i> = Full	<i>t</i> = Delicate <i>t</i> = Med. Firm <i>T</i> = Firm	 Fresh  Frozen  Canned  Smoked



## SEAFOOD HANDLING GUIDELINES

### Recommended Temperatures for Seafoods

#### Chilled Seafoods

Ideal Temperature	30°F
Minimum acceptable temperature	29°F
Maximum acceptable temperature	40°F

#### Live mollusks

Ideal Temperature	40°F
Minimum acceptable temperature	35°F
Maximum acceptable temperature	45°F

#### Live crabs & lobsters

(recommended temperatures for product *not* held in live tanks)

Ideal Temperature	40°F
Minimum acceptable temperature	35°F
Maximum acceptable temperature	45°F

#### Frozen Seafoods

Ideal Temperature	-20°F
Maximum acceptable temperature	0°F

*The Goal of the CSC Seafood Quality Hallmark Program:  
Strive to Achieve the Ideal*

### For Commercial Fishing Vessels

#### Fish Handling

1. Use handling equipment and practices that do not damage edible portion of catch.
2. If necessary, use boxes or vertical shelving to prevent physical damage to catch.

#### Preservation Systems

1. Use ice made from potable water.
2. Clean and maintain chilled seawater, refrigerated seawater, and similar systems to prevent contamination of catch.

#### Storage

1. Chill fresh seafoods to below 40°F as soon as possible, not to exceed 4 hours after catch.

# CALIFORNIA SEAFOOD



2. Freeze seafoods to below 10°F within 8 hours of catch before transferring to frozen storage.
3. Maintain frozen storage at 0°F.
4. Physically separate seafoods from potential sources of contamination.

## Unloading

1. Use unloading equipment and practices that do not damage edible portion of the catch.

## For Seafood Processors (Fresh & Frozen Seafood)

### Receiving

1. Buy seafoods based on purchasing specifications.
2. Buy seafoods from suppliers who comply with the CSC Seafood Quality Guidelines.
3. Accept seafoods only if they are at recommended temperatures.

### Holding

1. Hold seafoods at recommended temperatures.
2. Hold seafoods below 55°F during processing.
3. Separate seafoods by species.
4. Use preservatives and other additives following appropriate regulations.
5. Chill fresh seafoods to below 40°F within 4 hours after processing.
6. Freeze seafoods to below 0°F within 24 hours after processing. Hold in ice in cooler in interim.

### Packaging/Shipping

1. Label seafoods with FDA approved common name, weight, packing date, shipping date, and packer's name & address.
2. Pack in clean containers.
3. Ship product on pallets in clean refrigerated truck, mechanically refrigerated to maintain product temperature below 40°F.

## For Seafood Distributors

### Receiving

1. Buy seafoods based on purchasing specifications.
2. Buy seafoods from suppliers who comply with the CSC Seafood Quality Guidelines.
3. Accept seafoods only if they are at recommended temperatures.

# CALIFORNIA SEAFOOD

4. Accept cooked seafoods only if there is no indication of cross-contamination from live or raw seafoods.
5. Accept live mollusks only if properly tagged.

## Storage

1. Transfer seafoods into storage without delay.
2. Store seafoods at recommended temperatures.
3. Prevent cross-contamination of cooked seafoods from raw or live seafoods.

## Packaging/Shipping

1. Label seafoods with FDA approved common name, weight, packing date, shipping date, and packer's name and address.
2. Pack in clean containers.
3. Distribute product on pallets in clean refrigerated truck, mechanically refrigerated to maintain product temperature below 40°F.

## For Foodservice Operators

### Receiving

1. Buy seafoods based on purchasing specifications.
2. Buy seafoods from suppliers who comply with CSC Seafood Quality Guidelines.
3. Accept seafoods only if they are at recommended temperatures.
4. Accept cooked seafoods only if there is no indication of cross-contamination from live or raw seafoods.
5. Accept live mollusks only if properly tagged.

### Storage

1. Transfer seafoods to storage immediately.
2. Store seafoods at recommended temperatures.
3. Prevent cross-contamination of cooked seafoods from raw or live seafoods.

### Production

1. Store chilled seafoods at recommended temperatures until ready to prepare.
2. Defrost frozen seafoods in cooler at 40°F or slower.
3. Chill hot seafoods to below 40°F within 4 hours or hold above 140°F.
4. Protect cooked seafoods from cross-contamination from live or raw seafoods.
5. Label menus with FDA approved seafood names.



## For Retail Seafood Operations

### Receiving

1. Buy seafoods based on purchasing specifications.
2. Buy seafoods from suppliers who comply with CSC Quality Seal Guidelines.
3. Accept seafoods only if they are at recommended temperatures.
4. Accept cooked seafoods only if there is no indication of cross-contamination from live or raw seafoods.
5. Accept live mollusks only if properly tagged.

### Storage

1. Transfer seafoods into storage without delay.
2. Store seafoods at recommended temperatures.
3. Prevent cross-contamination of cooked seafoods from raw or live seafoods.

### Display

1. Keep processed seafoods from direct contact with ice.
2. Physically separate live, raw, and cooked seafoods.
3. Physically separate cooked seafoods from garnish, or use sanitized garnish.
4. Display seafoods at recommended temperatures.
5. Label seafoods with FDA approved names.
6. Do not insert spiked price tags into seafoods.

### Sales

1. Handle seafoods with clean utensils, single-service wraps, or clean gloves.
2. Protect scale from cross contamination between live, raw, and cooked seafoods.



# CALIFORNIA FISH

Albacore Tuna

Bluefin Tuna

California Halibut

Chinook Salmon

Jack Mackerel

Lingcod

Opah

Pacific Barracuda

Pacific Bonito

Pacific Mackerel

Pacific Sanddab

Pacific Sardine

Rockfish: Bank

Black

Blackgill

Blue

Bocaccio

Canary

Chilipepper

Copper

Cowcod

Gopher

Olive

Rockfish: Shortbelly

Speckled

Starry

Vermilion

Widow

Yelloweye

Yellowtail

Sablefish

Sheephead

Shortfin Mako Shark

Skipjack Tuna

Smelt: Night

Surf

Sole: Dover

English

Petrale

Rex

Soupfin Shark

Surfperch

Swordfish

Thresher Shark

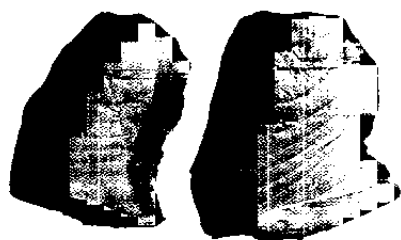
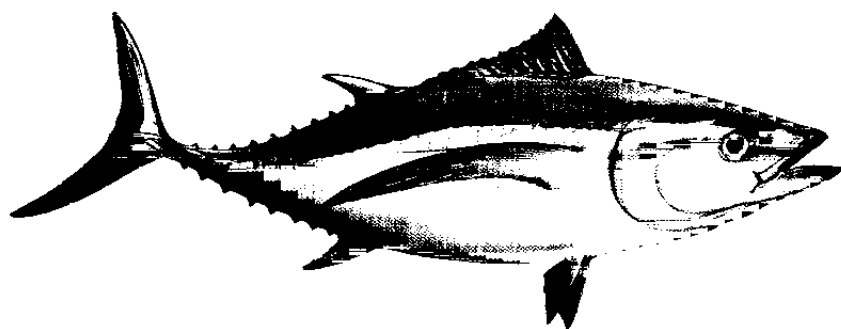
White Seabass

Yellowfin Tuna

CALIFORNIA SEAFOOD



# ALBACORE TUNA



Albacore Tuna steak

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Albacore, *Thunnus alalunga*, are members of the mackerel family of fishes. They are known regionally as longfin, albie, pigfish, Pacific albacore, German, germon, longfinned tuna, and albecor. The fish's body tapers at both ends (cigar-shaped). The head is long. The mouth is fairly large. The pectoral fins are extremely long. The color is dark gray to metallic blue above, becoming white to gray below.



**NATURAL HISTORY:** Albacore reach maturity at about 6 years. They spawn in the subtropical and tropical regions of the western, central or eastern Pacific Ocean. Albacore spawn from April to September and may spawn more than once each season. Albacore reach 5 feet in length and 79 pounds in weight. Albacore feed on small fishes, squid, octopus, and crab- and shrimp-like organisms.



**PRODUCTION:** Albacore occur world-wide in subtropical and temperate waters. They are often abundant from southern Baja California to the Queen Charlotte Islands, Canada, during the summer and fall months. Most Albacore are harvested by hook-and-line. Fishermen usually catch albacore 20 to 100 miles offshore near the surface of the ocean.



**PRODUCT FORMS:** Albacore are available canned, and as whole, dressed, H&G, steaks and loins, both fresh and frozen.



## **SIZES AND GRADES:**

**Whole** albacore usually range in size from 10 to 30 pounds and are randomly graded by size.

**H&G** fish average 9 to 30 pounds and are usually randomly graded by size.

**Loins** average 2 to 8 pounds and are randomly graded by size.



**Steaks** can be ordered by thickness or by size category.

**Canned** albacore are usually packed in 6-1/2 ounce cans and labeled as white-meat tuna.

# CALIFORNIA SEAFOOD



**QUALITY FACTORS:** The color of albacore meat is creamy white and turns white when cooked. The texture is firm. The flavor when cooked is mild.

For more information about quality factors, see page 3.



**PACKAGING:** For information about packaging see page 5.



**LABELING:** The FDA approved market name is tuna. The approved common name is albacore. The use of the scientific name, *Thunnus alalunga*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, Albacore does not pose a health problem. Improperly handled albacore can produce histamine, the causative agent of scombroid poisoning.

Fresh albacore should have an acceptable shelf life of 7-10 days at 40°F; frozen, of 6-9 months at 0°F.



## NUTRITIONAL VALUE

(3 oz., canned in oil, drained solids):

158	Kilocalories	
23	g	Protein
0	g	Carbohydrates
7	g	Total Fat
N/A	g	Saturated Fatty Acids
26	mg	Cholesterol
336	mg	Sodium
N/A	%	U.S. RDA Vitamin A
N/A	%	U.S. RDA Vitamin C
N/A	%	U.S. RDA Calcium
N/A	%	U.S. RDA Iron

CALIFORNIA SEAFOOD



# BLUEFIN TUNA



Bluefin Tuna steak

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Bluefin tuna, *Thunnus thynnus*, are members of the mackerel family of fishes. They are known regionally as tunny, giant bluefin, footballs, shortfin tuna, great albacore, and Northern bluefin. The fish's body is cigar-shaped and robust. The head is conical. The mouth is rather large. The color is dark blue above, gray below.



**NATURAL HISTORY:** Bluefin tuna reach maturity at about 5 to 6 years, 5 feet in length, and 177 pounds in weight. They spawn between Japan and the Philippines from April through August. Bluefin tuna may reach 500 pounds in the Pacific Ocean and 1,500 pounds in the Atlantic Ocean. They feed on anchovies, red crabs, sauries, squid, hake, sardines, albacore, yellowtail, barracuda, mackerel and other fishes.



**PRODUCTION:** Bluefin tuna occur worldwide in subtropical and temperate waters. They are often found off Baja California and California from May through October. Most bluefin tuna are harvested by purse seine, although some are taken by gill net and hook-and-line.



**PRODUCT FORMS:** Bluefin tuna are available as whole fish, H&G, steaks and loins, fresh and frozen, and occasionally canned.



## **SIZES AND GRADES:**

Whole bluefin tuna usually range in size from 15 to 100 pounds, with a maximum of about 500 pounds. Whole fish are usually randomly graded by size.

H&G fish range from 60 to 200 pounds and are usually randomly graded by size.

Loins range from 5 to 40 pounds and are usually randomly graded by size.

Steaks can be ordered by thickness or by size category.

# CALIFORNIA SEAFOOD



Canned bluefin tuna are usually packed in 6 and 14 ounce cans.



**QUALITY FACTORS:** The color of bluefin tuna meat is bright red and turns ivory when cooked. The texture is firm. The flavor when cooked is mild.

For more information about quality factors, see page 3.



**PACKAGING:** For information about packaging see page 5.



**LABELING:** The FDA approved market name is tuna. The approved common name is bluefin tuna. The use of the scientific name, *Thunnus thynnus*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, bluefin tuna does not pose a health problem. Improperly handled bluefin tuna can produce histamine, the causative agent of scombroid poisoning.

Fresh bluefin tuna should have an acceptable shelf life of 5-7 days at 40°F; frozen, of 6-9 months at 0°F.



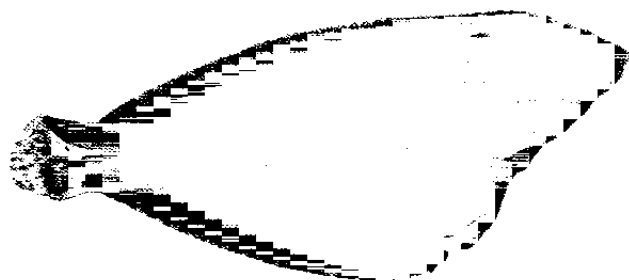
**NUTRITIONAL VALUE** (3 ounces, cooked, dry heat):

157	Kilocalories	
25	g	Protein
0	g	Carbohydrates
5	g	Total Fat
1	g	Saturated Fatty Acids
42	mg	Cholesterol
43	mg	Sodium
13	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
<2	%	U.S. RDA Calcium
6	%	U.S. RDA Iron

CALIFORNIA SEAFOOD



# CALIFORNIA HALIBUT



California Halibut fillet

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** California halibut, *Paralichthys californicus*, is a member of the left-eyed flounder family of fishes. It is known regionally as bastard halibut, Monterey halibut, flatty, fly swatter (small), barn door (large), alabato, chicken halibut, and southern halibut. The fish's body is oblong and compressed. The head is small. The mouth is large. About 40% have eyes on the right side. There is a high arch in the lateral line over the pectoral fin. The color is dark green on the eyed side and white on the blind side.



**NATURAL HISTORY:** Female California halibut reach maturity in 4-5 years at 15-17 inches. Males reach maturity in 2-3 years at 8-9 inches. Adults spawn throughout the year in water less than 250 feet deep and within 4 miles of shore. Fertilization is external. California halibut may live to 30 years and grow to 5 feet in length. The maximum recorded weight is 72 pounds. California halibut feed almost exclusively on anchovies and similar small fishes.



**PRODUCTION:** California halibut occur from Baja California to British Columbia, and are usually found over sandy bottoms. The commercial fishery is mainly from Bodega Bay, California to Magdalena Bay, Baja California. California halibut are harvested with trawl nets with a minimum mesh size of 4.5 inches in federal waters, and with a minimum mesh size of 7.5 inches in a designated "California halibut trawl grounds," one to three miles from the mainland in southern California. California halibut are also taken with gill and trammel nets and hook and line. Twenty-two inches is the minimum legal total length for commercial fishermen. The trawl season is closed in the spring within the halibut trawl grounds to protect spawning adults. Most hook and line activity occurs in spring and summer when halibut are in shallow water. Gill and trammel nets were banned within state waters in a southern California "Marine Resources Protection Zone," in December, 1993.



## **PRODUCT FORMS:**

**California Halibut** are available dressed, and as fillets and steaks, fresh and frozen.

# C A L I F O R N I A   S E A F O O D



## **SIZES AND GRADES:**

Dressed California halibut average 6 to 8 pounds, with a maximum size of about 35 pounds.

Filletts average 3 to 4 pounds and are randomly graded by size.

Steaks can be ordered by thickness or size, usually in 2 ounce increments.



**QUALITY FACTORS:** The color of raw California halibut meat is translucent white. The flavor is mild. The texture is firm, but less firm than Atlantic or Pacific halibut.

For more information on quality factors, see page 3.



**PACKAGING:** California halibut are packaged according to varying specifications. For general information on packaging, see page 5.



**LABELING:** The FDA approved market names are halibut and California halibut. The approved common name is California halibut. The use of the scientific name, *Paralichthys californicus*, is recommended along with the approved market or common name.

For more information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, California halibut do not pose a health problem. Occasionally California halibut may harbor tiny stringlike parasites. These are harmless, easily visible and best removed before preparation.

Fresh California halibut should have an acceptable shelf life after processing of 5 days at 40°F; frozen, of 9 months at 0°F.



# CALIFORNIA SEAFOOD



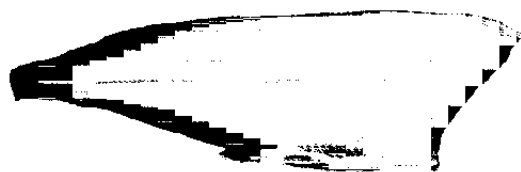
## NUTRITIONAL VALUE (3 ounces, broiled, skinless):

120	Kilocalories	
22	g	Protein
0	g	Carbohydrates
2	g	Total Fat
0	g	Saturated Fatty Acids
30	mg	Cholesterol
60	mg	Sodium
3	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
5	%	U.S. RDA Calcium
5	%	U.S. RDA Iron

CALIFORNIA SEAFOOD



# CHINOOK SALMON



Chinook Salmon fillet

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# CALIFORNIA SEAFOOD



## PRODUCT DESCRIPTION: Chinook Salmon,

*Oncorhynchus tshawytscha*, is a member of the salmon family of fishes. It is known regionally as king salmon, tye salmon, spring salmon, winter salmon, and quinnat salmon. The fish's body is elongate and somewhat compressed. The head is conical. The color is bluish to dark gray above, becoming silvery on the sides and belly. There are black spots on the back and on both lobes of the tail. The gums at base of the teeth are black.



## NATURAL HISTORY: Chinook salmon reach maturity at

2-5 years. They are anadromous fish, hatching in streams, migrating to the ocean for part of their life, then re-entering fresh water to spawn. Fall-run chinook salmon, which make up the bulk of the California harvest, spawn from October through December. Fertilization is external. Salmon die after spawning. Chinook salmon can reach 4 feet 10 inches in length and weigh up to 127 pounds, although in California the fish are smaller. Chinook salmon feed on herring, anchovies, squid, rockfish and other small fish.



## PRODUCTION: Chinook salmon occur from San Diego,

California, to the Bering Sea and Japan. They are more abundant from central California northward. Chinook salmon are harvested with trolling hook-and-line in California. The commercial fishery is regulated through seasons and minimum size limits, and is a limited-entry fishery.



**PRODUCT FORMS:** Chinook salmon are available dressed, H&G, smoked and as fillets and steaks, both fresh and frozen.



## SIZES AND GRADES:

**Dressed and H&G** chinook salmon usually range in size from 7 to 25 pounds, with a maximum of about 100 pounds. Dressed and H&G fish are usually graded by size in increments (i.e., 7-11, 11-15, 15 to 18, and 18 pounds and up), or as small, medium and large.

# C A L I F O R N I A   S E A F O O D



Fillets average 4 to 15 pounds and are randomly graded by size. The yield on fillets processed from dressed fish is about 63 percent.

Steaks can be ordered by thickness or by size category. Processing yields for steaks from dressed fish are about 80 percent.

Smoked chinook salmon sides, fillets and chunks are randomly graded by size.



**QUALITY FACTORS:** The color of chinook salmon meat varies from a rich "salmon" color to almost white. The texture is medium firm. The flavor when cooked is rich.



**PACKAGING:** For information about packaging see page 5.



**LABELING:** The FDA approved market names are chinook salmon, king salmon, or spring salmon. The approved common name is chinook salmon. The use of the scientific name, *Oncorhynchus tshawytscha*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, chinook salmon should not pose a health problem. Occasionally chinook salmon may harbor parasites, which are visible and completely harmless when the fish is cooked or properly frozen before eating.

Fresh fish should have an acceptable shelf life after processing of 5 to 7 days at 40°F. Frozen fish should have an acceptable shelf life of 9 months at 0°F.

# CALIFORNIA SEAFOOD



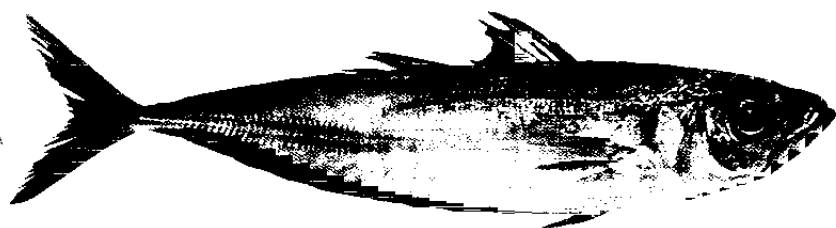
## NUTRITIONAL VALUE (3 ounces, raw):

153	Kilocalories	
17	g	Protein
0	g	Carbohydrates
9	g	Total Fat
2	g	Saturated Fatty Acids
56	mg	Cholesterol
40	mg	Sodium
<2	%	U.S. RDA Vitamin A
6	%	U.S. RDA Vitamin C
2	%	U.S. RDA Calcium
3	%	U.S. RDA Iron

CALIFORNIA SEAFOOD



# JACK MACKEREL



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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Jack mackerel, *Trachurus symmetricus*, is a member of the jack family of fishes. It is known regionally as California horse mackerel, Pacific jack mackerel, Spanish mackerel, jackfish, mackerel-jack, and horse mackerel. The fish's body is rather elongate and somewhat compressed. The tail is as broad as it is deep, with spines on the keel. The color is metallic blue to olive green above, silvery below.



**NATURAL HISTORY:** Jack mackerel reach maturity at 1-2 years and 8-12 inches in length. They spawn from March through August. Fertilization is external. Young fish hatch in about 3-5 days. Jack mackerel can live 20-30 years, reach a length of 32 inches and weigh about 5 pounds. Jack mackerel feed on anchovies, lanternfish, juvenile squid, crustaceans and free swimming mollusks. Predators include marine mammals, yellowtail, white seabass, bonito, bluefin tuna, striped marlin, angel and blue shark.



**PRODUCTION:** Jack mackerel occur from southern Baja California to southeast Alaska. Young jack mackerel (less than 6 years old) are harvested with purse seine nets. They are found near the surface from southern California to central Baja California. Older and larger jack mackerel are found further offshore from California to Alaska. The season is year-round.



**PRODUCT FORMS:** Jack mackerel are available canned and as whole fish, fresh and frozen.



## **SIZES AND GRADES:**

Whole jack mackerel usually range in size from 6 to 14 ounces, with a maximum of about 2 pounds. Whole fish are usually randomly graded by size.

Canned jack mackerel are usually packed in 16 ounce tall cans.



**QUALITY FACTORS:** The color of raw jack mackerel is creamy tan. The texture is soft, flaky and moist. The flavor is sweet and moderate.

# CALIFORNIA SEAFOOD

For more information about quality factors, see page 3.



**PACKAGING:** Canned jack mackerel are packed in 24 can cases.

Frozen mackerel are packed IQF or block in 50-pound cases with poly liners.

For more information about packaging see page 5.



**LABELING:** The FDA approved market name is jack mackerel. The approved common name is jack mackerel. The use of the scientific name, *Trachurus symmetricus*, is recommended along with the approved market or common name.

For more information about labeling, see page 6



**SAFETY & HANDLING GUIDELINES:** Improperly handled jack mackerel can produce histamine, the causative agent of scombroid poisoning. Properly handled and iced fish are not a health problem.

Fresh fish should have an acceptable shelf life after processing of 5 days at 40°F. Frozen fish should have an acceptable shelf life of 4-6 months at 0°F. Canned fish should have an acceptable shelf life of 1 year.



## NUTRITIONAL VALUE (3 oz., broiled, skinless):

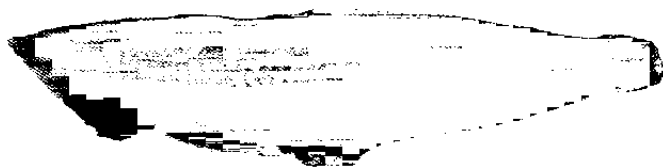
190	Kilocalories	
21	g	Protein
0	g	Carbohydrates
12	g	Total Fat
3	g	Saturated Fatty Acids
60	mg	Cholesterol
95	mg	Sodium
7	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
<2	%	U.S. RDA Calcium
9	%	U.S. RDA Iron



CALIFORNIA SEAFOOD



# LINGCOD



Lingcod fillet

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Lingcod, *Ophiodon elongatus*, is a member of the greenling family of fishes. It is known regionally as cultus cod, blue cod, buffalo cod, ling,

greenlinger, and slinky linky. The fish's body is elongate, tapering and only slightly compressed. The head is elongate and conical. The mouth is large with numerous large teeth. The color is generally dark brown with lots of spots and blotches on the upper part of the body, but color may vary from blue green to red brown. The flesh color varies from white to a light blue-green, and turns white when cooked.



**NATURAL HISTORY:** Lingcod males reach maturity at about 3-4 years of age and 16-22 inches in length. Females reach maturity at 4-5 years and 23-28 inches in length.

Spawning begins in November and continues through March. Fertilization is external. The largest recorded lingcod was 20 years old, 59 inches in length, and weighed 70 pounds. Lingcod feed primarily on smaller fishes. Predators of juvenile lingcod include marine mammals and birds, and other fishes.



**PRODUCTION:** Lingcod occur from northern Baja California to the Shumagin Islands along the Alaskan Peninsula. They are most abundant in northern California.

Most lingcod are harvested with trawl nets, although some are taken with gill nets and hook-and-line. They occur over a wide range of bottoms at depths from 10 to 1,300 feet, but most occur in rocky areas from 30 to 330 feet. The season is year-round.



**PRODUCT FORMS:**

Lingcod are available dressed, H&G, and as fillets and steaks, fresh and frozen.



**SIZES AND GRADES:**

Whole lingcod average 12 pounds, with a maximum of about 40 pounds.

Dressed fish average 10 pounds and are usually graded by size in half pound increments (i.e., 12 to 12 1/2 pounds, 12 1/2 to 13 pounds).

# C A L I F O R N I A   S E A F O O D



H&G fish average 9 pounds and are usually graded randomly by size.

Fillets range from 6 ounces to 2 pounds or more. Fillets can be ordered in distinct size categories, usually in 2 ounce increments (i.e. 6-8 ounces, 8-10 ounces).

Steaks can be ordered by thickness or by size category.



**QUALITY FACTORS:** The color of raw lingcod meat is white, but may be bluish or greenish, and turns white when cooked. The texture is tender and firm. The flavor is mild.

For more information on quality factors, see page 3.



**PACKAGING:** For information about packaging, see page 5.



**LABELING:** The FDA approved market name is lingcod. The approved common name is lingcod. The use of the scientific name, *Ophiodon elongatus*, is recommended along with the approved market or common name.

For more information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, lingcod do not pose a health problem. Occasionally lingcod may harbor tiny parasites, which are visible and completely harmless when the fish is cooked or properly frozen before eating.

Fresh lingcod should have an acceptable shelf life of 5-7 days at 40°F; frozen, of 6-9 months at 0°F.

# CALIFORNIA SEAFOOD



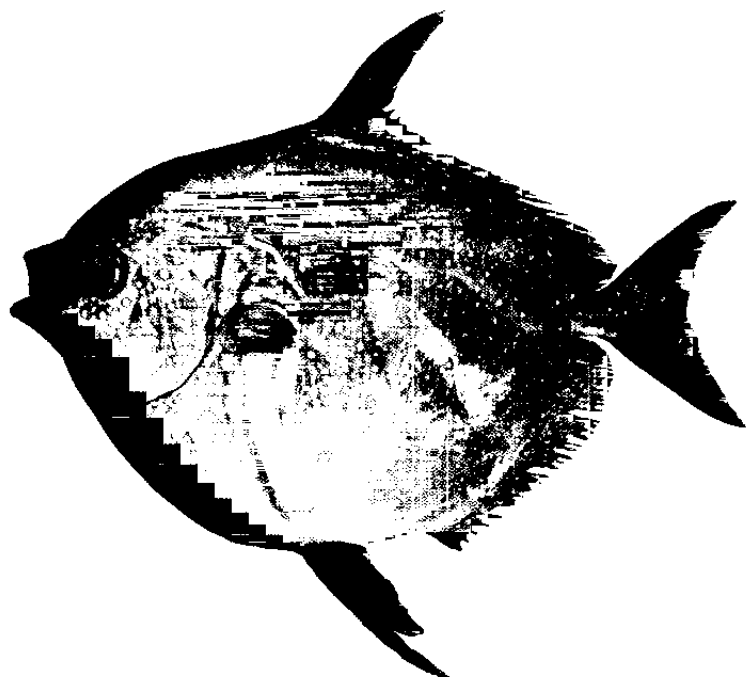
## NUTRITIONAL VALUE (3 ounces, raw):

72	Kilocalories	
15	g	Protein
0	g	Carbohydrates
1	g	Total Fat
0	g	Saturated Fatty Acids
44	mg	Cholesterol
50	mg	Sodium
<2	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
<2	%	U.S. RDA Calcium
<2	%	U.S. RDA Iron

CALIFORNIA SEAFOOD



# OPAH



Opah fillet

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Opah, *Lampris guttatus*, is a member of the opah family of fishes. It is known regionally as African pompano, giant pompano, Hawaiian moonfish, moonfish, mariposa, and Jerusalem haddock. The fish's body is oval and compressed. The mouth is small and toothless. The tail is strongly forked. The color is iridescent blue with red fins and white spotting. The eyes are yellow.



**NATURAL HISTORY:** Size and age at maturity are unknown. Spawning locations and seasons are unknown. Opah can grow to 54 inches in length and a weight of 160 pounds. The maximum age is unknown. Opah probably feed on squid, crustaceans, and fishes such as anchovy, lancetfish, and cutlassfish.



**PRODUCTION:** Opah occur worldwide in temperate and tropical seas. In the eastern Pacific, they occur from Chile to the Gulf of Alaska, and are generally common off California. Opah are harvested with hook and line and also in the swordfish drift gillnet fishery. Most opah are taken off California from September to January. The season is year-round.



**PRODUCT FORMS:** Opah fillets are available fresh and occasionally frozen.



**SIZES AND GRADES:** Whole opah usually range in size from 30 to 140 pounds, with an average of about 80 pounds. Fillets average 7 pounds and are sold in random weights.



**QUALITY FACTORS:** Opah meat is multicolored. Meat from behind the head and along the backbone is amber red; meat toward the belly is pale pink; meat from the cheeks is red; and meat from inside the breast plate is bright ruby-red. Meat from inside the breast plate turns brown when cooked, and other meat turns white. The texture is oily, firm and delicate. The flavor when cooked is rich, sweet and mild to moderately pronounced.



For more information on quality factors, see page 3.

# C A L I F O R N I A   S E A F O O D



**PACKAGING:** For information about packaging, see page 5.



**LABELING:** The FDA approved market name is opah. The approved common name is opah. The use of the scientific name, *Lampris guttatus*, is recommended along with the approved market or common name.

For more information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, opah do not pose a health problem.

Fresh opah should have an acceptable shelf life of 7-10 days at 40°F; frozen, of 9 months at 0°F.



**NUTRITIONAL VALUE:** Not available.

CALIFORNIA SEAFOOD



# PACIFIC BARRACUDA



Pacific Barracuda steaks

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Pacific barracuda, *Sphyraena argentea*, is a member of the barracuda family of fishes. They are known regionally as California barracuda, barracouta, scoot, scooter, snake, and barry. The fish's body is very elongate and slender, and almost round. The mouth is large with canine-like teeth. The snout is sharply pointed with projecting lower jaw. The color is grayish black with a bluish tinge above, becoming silvery or white on the sides and belly. The tail is yellowish and the dorsal fins are widely spaced.



**NATURAL HISTORY:** Pacific barracuda reach maturity at 2-3 years and about 20-22 inches in length. Barracuda spawn from April to September and may spawn more than once each season. Fertilization is external. Growth during the first year is rapid. Barracuda reach 14 inches at one year and 20 inches and one pound at two years. Barracuda live for at least 11 years, and can reach 4 feet in length. Barracuda prey on anchovies, sardines, Pacific mackerel, jack mackerel, grunions, and squid. Predators include giant sea bass.



**PRODUCTION:** Pacific barracuda occur from Baja California to Kodiak Island, Alaska. They are most abundant from Baja California through Southern California. Most barracuda are harvested with gill nets with 3.5 inch mesh, although some are taken by trolling hook-and-line. The minimum size limit is 28 inches. Fishermen usually catch barracuda at depths of 10-120 feet. Most Pacific barracuda are caught off California during May and June.



**PRODUCT FORMS:** Pacific barracuda are available whole, G&G, and as steaks, both fresh and frozen.



## **SIZES AND GRADES:**

Whole Pacific barracuda usually range in size from 3 to 6 pounds.

G&G fish average 3 pounds.

Steaks are usually cut at time of sale.

# CALIFORNIA SEAFOOD



**QUALITY FACTORS:** The color of Pacific barracuda meat is creamy tan. The texture is firm. The flavor when cooked is medium to mild.



**PACKAGING:** For information about packaging, see page 5.



**LABELING:** The FDA approved market name is barracuda. The approved common name is Pacific barracuda. The use of the scientific name, *Sphyraena argentea*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, Pacific barracuda do not pose a health problem.

Fresh fish should have an acceptable shelf life after processing of 5 days at 40°F. Frozen fish should have an acceptable shelf life of 12 months at 0°F.

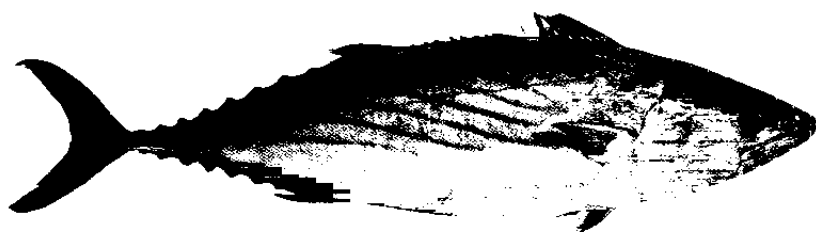


**NUTRITIONAL VALUE:** Not available.

CALIFORNIA SEAFOOD



# PACIFIC BONITO



Pacific Bonito steak

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# CALIFORNIA SEAFOOD



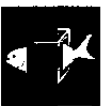
**PRODUCT DESCRIPTION:** Pacific Bonito, *Sarda chiliensis*, is a member of the mackerel and tuna family of fishes. It is known regionally as California bonito, skipjack, bonehead, Laguna tuna, magneto, striped tuna, and ocean bonito. The fish's body is cigar-shaped and somewhat compressed. The head is pointed and conical. The mouth is large. The color is dark blue above, dusky on the sides, becoming silvery below. There are a number of slanted stripes along the back.



**NATURAL HISTORY:** Pacific bonito reach maturity at 2-3 years, 20 inches for males and 24 inches for females. They spawn from February or March to June or July. Fertilization is external. Pacific bonito grow rapidly during their first years. The oldest reported bonito was 6 years old, 40 inches in length and weighed 25 pounds. Pacific bonito consume about 6% of their body weight daily. Bonito feed on Pacific sardines, anchovies, squid, and other small fishes.



**PRODUCTION:** Pacific bonito occur in two populations, one from Peru to Chile and a second from southern Baja California to the Gulf of Alaska. The northern population centers between southern California and central Baja California. Most Pacific bonito are harvested with purse seines, although some are taken by gill nets and hook and line. The main part of the season is from July to January in southern California and during the fall and early winter off central California. Most bonito are taken south of Point Conception. The minimum size is 5 pounds. California commercial seasons and catches are currently regulated by the state.



**PRODUCT FORMS:** Pacific bonito are available whole, H&G, and as loins and steaks, both fresh and frozen.



## **SIZES AND GRADES:**

Whole Pacific bonito range in size from 5 to 12 pounds, with a maximum of about 15 pounds. Whole fish are usually graded by size as 5 to 8 pounds and 8 pounds and up.

H&G fish average 6 to 8 pounds. H&G fish are usually graded by size as 5 to 8 pounds and 8 pounds and up.

# CALIFORNIA SEAFOOD



Loins and steaks can be special ordered and are randomly graded by size.



**QUALITY FACTORS:** The color of Pacific bonito meat is brownish-red and lightens after cooking. The texture is soft before cooking and firm after cooking. The flavor is rich and pronounced.

For more information about quality factors, see page 3.



**PACKAGING:** Fresh whole and H&G Pacific bonito are placed or layered in 100-pound waxed cardboard containers in ice. Frozen whole and H&G fish are ice glazed and packed in 100-pound waxed cardboard containers with poly liners or 1,200-pound totes.

Fresh loins are individually poly-wrapped and packed in ice in 100-pound waxed cardboard containers. Frozen loins are individually ice glazed or vacuum packed and packaged in 100-pound waxed cardboard containers.

Fresh steaks are packed in 10- and 20-pound poly trays with snap on lids, 10-pound poly bags, and 10-pound poly bags in cardboard boxes. IQF frozen steaks are ice glazed and packed in 10-pound poly bags, or packed in 5- and 10-pound shatter-packs or layer packs. Frozen steaks may be individually vacuum packaged and packed in 10-pound cardboard containers.



**LABELING:** The FDA approved market name is bonito. The approved common name is Pacific bonito. The use of the scientific name, *Sarda chiliensis*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** Improperly handled Pacific bonito can produce histamine, the causative agent of scombroid poisoning. Properly handled and iced fish are not a health problem.

# CALIFORNIA SEAFOOD



Fresh products should have an acceptable shelf life after processing of 5 days at 40°F. Frozen products should have an acceptable shelf life of 9-12 months at 0°F.

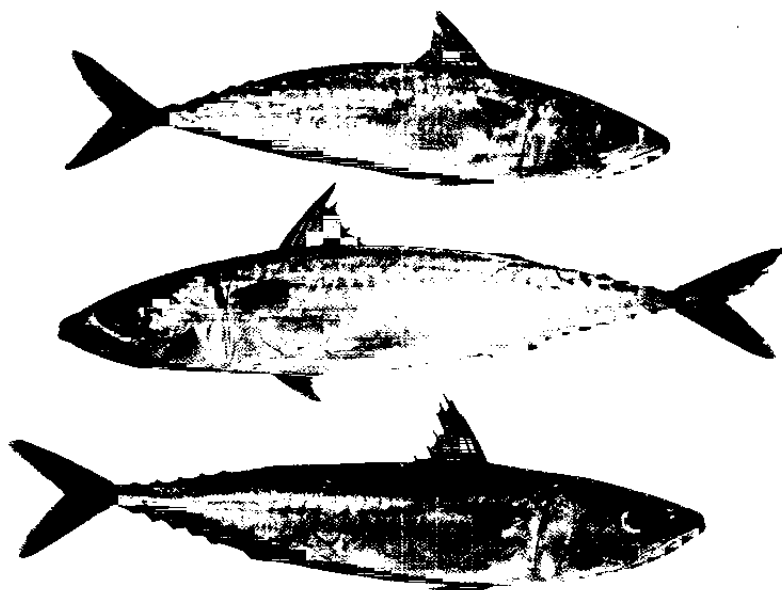


**NUTRITIONAL VALUE:** Not available.

CALIFORNIA SEAFOOD



# PACIFIC MACKEREL



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# CALIFORNIA SEAFOOD



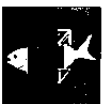
**PRODUCT DESCRIPTION:** Pacific mackerel, *Scomber japonicus*, is a member of the mackerel and tuna family of fishes. It is known regionally as American mackerel, chub mackerel, blue mackerel, greenback jack, Japanese mackerel, and mackerel. The fish's body is rather elongate, somewhat compressed, and tapers at both ends. The head is pointed. The mouth is large. The color is dark blue above, silver green below. The back has about 30 wavy lines.



**NATURAL HISTORY:** Pacific mackerel reach maturity at 1-3 years and 10-14 inches in length. They spawn from April through August. Fertilization is external. Young fish hatch in about 4-5 days. Pacific mackerel may live 11 years, reach a length of 25 inches and weigh over 6 pounds. Pacific mackerel feed on small fishes, fish larvae, squid, and small crustaceans. Predators include marine mammals, yellowtail, white seabass, giant sea bass, sailfish, bluefin tuna, striped marlin, black marlin, and various sharks.



**PRODUCTION:** Pacific mackerel occur worldwide in temperate and subtropical seas. In the eastern Pacific, they range from Chile to the Gulf of Alaska. They are most abundant south of central California. Pacific mackerel are harvested with purse seine nets, lampara nets, and hook and line. They are found near the surface from southern California to central Baja California. The Pacific mackerel harvest is regulated by California based on the estimated biomass each year.



## **PRODUCT FORMS:**

Pacific mackerel are available **canned** and as **whole fish**, fresh and frozen.



## **SIZES AND GRADES:**

**Whole** Pacific mackerel usually range in size from 2 oz. to 2 pounds, with a maximum of about 3 pounds. Whole fish are usually randomly graded by size.

**Canned** Pacific mackerel are usually packed in 16 ounce cans.



# CALIFORNIA SEAFOOD



**QUALITY FACTORS:** The color of raw Pacific mackerel is creamy tan. The texture is soft, flaky and moist. The flavor is pronounced.

For more information on quality factors, see page 3.



## **PACKAGING:**

**Fresh whole** Pacific mackerel are placed or layered in 50 to 100 pound waxed cardboard containers in ice.

**Frozen whole** fish are ice glazed and packed in 50 pound cardboard containers with poly liners.

**Canned** Pacific mackerel are packed in 24 can cases.

For more information about packaging, see page 5.



**LABELING:** The FDA approved market name is chub mackerel. The approved common name is chub mackerel. The use of the scientific name, *Scomber japonicus*, is recommended along with the approved market or common name. In California the common name is Pacific mackerel.

For more information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** Improperly handled Pacific mackerel can produce histamine, the causative agent of scombroid poisoning. Properly handled and iced fish are not a health problem.

Fresh Pacific mackerel should have an acceptable shelf life of 5 days at 40°F; frozen, of 9-12 months at 0°F.

# CALIFORNIA SEAFOOD



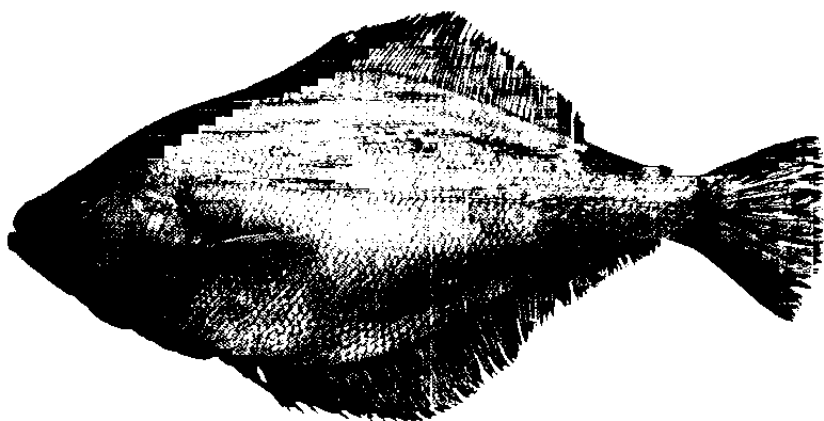
## NUTRITIONAL VALUE (3 ounces, broiled, skinless):

190	Kilocalories	
21	g	Protein
0	g	Carbohydrates
12	g	Total Fat
3	g	Saturated Fatty Acids
60	mg	Cholesterol
95	mg	Sodium
7	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
<2	%	U.S. RDA Calcium
9	%	U.S. RDA Iron

CALIFORNIA SEAFOOD



# PACIFIC SANDDAB



Pacific Sanddab fillet

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Pacific sanddab, *Citharichthys sordidus*, is a member of the left-eyed flounder family of fishes.

It is known regionally as sand dab, soft flounder, sole, mottled sanddab, and megrim. The fish's body is oblong and compressed. The head is deep. The eyes are on the left side and are large. The color is light brown mottled with yellow and orange on the eyed side and white on the blind side.



**NATURAL HISTORY:** Pacific sanddabs reach maturity at about 3 years of age. They spawn from July to September.

Fertilization is external. Pacific sanddabs can live 10 years, and reach a length of 16 inches and a weight of 2 pounds. They feed on shrimp, crabs, worms, squid, octopus, eggs, and small fishes. Predators include marine mammals and birds, and larger fishes.



**PRODUCTION:** Pacific sanddabs occur from southern Baja California to the Bering Sea. They are most abundant in central and northern California. Most Pacific sanddabs are harvested

with trawl nets, although some are taken by hook-and-line. They are found on soft sand to sandy-mud bottoms from depths of 30 to 1,800 feet, but most occur from 150 to 450 feet. The season is year-round.



## **PRODUCT FORMS:**

Pacific sanddabs are available whole, G&G and trimmed, fresh and frozen. Large sanddabs may be filleted and skinned.



## **SIZES AND GRADES:**

**Whole** Pacific sanddabs usually average 1/4 pound, with a maximum of about 1/2 pound. Whole fish are randomly graded by size.

**Gilled and gutted (G&G)** fish average 7 ounces and are usually graded by size in 3-ounce increments (i.e., 2 to 4 ounces, 4 to 6 ounces).

**Trimmed** fish average 3-5 ounces and are usually graded by size in 3-ounce increments (i.e., 2 to 4 ounces, 4 to 6 ounces).

# CALIFORNIA SEAFOOD



**QUALITY FACTORS:** The color of Pacific sanddab meat is white. The texture is fine and flaky. The flavor is mild.

For more information about quality factors, see page 3.



**PACKAGING:** Fresh whole, dressed, and trimmed Pacific sanddabs are packed in 10 and 20 pound poly trays with snap on lids, 10 pound poly bags, and 10 pound poly bags in cardboard boxes. Frozen fish are ice glazed and packed in 10 and 20 pound waxed cardboard containers with poly liners.



**LABELING:** The FDA approved market name is sanddab. The approved common name is Pacific sanddab. The use of the scientific name, *Citharichthys sordidus*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, Pacific sanddabs do not pose a health problem. Occasionally Pacific sanddabs may harbor tiny parasites, which are visible and completely harmless when the fish is cooked or properly frozen before eating.

Sanddabs have a short shelf life and should be used quickly.

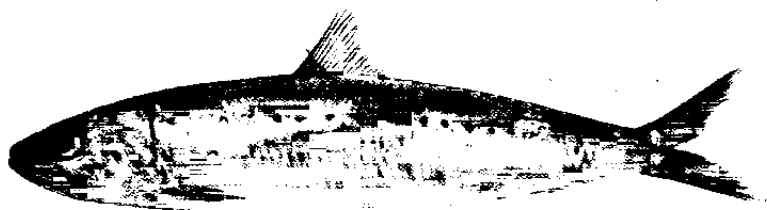


**NUTRITIONAL VALUE:** Not available.

CALIFORNIA SEAFOOD



# PACIFIC SARDINE



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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Pacific sardine, *Sardinops sagax*, is a member of the herring family of fishes. It is known regionally as California pilchard, South American sardine, and Chilean pilchard. The fish's body is elongate, spindle shaped and only moderately compressed. The head is compressed. The mouth is terminal, moderate in size and directed slightly upward. The color is dark metallic blue or green above, silvery on sides and below. There are black spots in a wide variety of sizes and patterns on the upper part of the sides.



**NATURAL HISTORY:** Pacific sardines range in the eastern Pacific Ocean from Baja California to British Columbia, and from Chile to Peru. One of a group of species called coastal pelagic fishes, which also include mackerels and anchovies, Pacific sardines' primary spawning biomass is centered off southern California and Baja California. Pacific sardines spawn year-round with peaks from April to August off California. Spawning begins in Mexican waters and progresses northward as the water warms and larger fish move northward.



Fertilization is external. Sardine eggs take about 3 days to hatch. Pacific sardines may live as long as 13 years and reach 16 inches in length, but they are usually harvested when less than 12 inches long and 8 years old. Pacific sardines feed on plankton, including fish larvae. Predators include marine birds, mammals and fishes.



**PRODUCTION:** Sardines and other coastal pelagic fishes undergo vast fluctuations in abundance. The fish form large schools, a characteristic that facilitates capture by purse seines and other types of round-haul nets. California commercial seasons and catches are currently regulated by the state.



**PRODUCT FORMS:** Pacific sardines are available whole, fresh and frozen, and canned.



## **SIZES AND GRADES:**

Whole Pacific sardines usually range in size from 4 to 8 per pound. Whole fish are randomly graded by size.

# C A L I F O R N I A   S E A F O O D



**Canned** Pacific sardines are usually packed in 16 ounce cans.



**QUALITY FACTORS:** The color of raw Pacific sardine meat is creamy-tan and whitens when cooked. The texture is soft and moist. The flavor when cooked is rich.

For more information about quality factors, see page 3.



**PACKAGING:** For information about packaging see page 5.



**LABELING:** The FDA approved market name is sardine or pilchard. The approved common name is Pacific sardine. The use of the scientific name, *Sardinops sagax*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, Pacific sardines do not pose a health problem.

Fresh fish should have an acceptable shelf life after processing of 5 days at 40°F. Frozen fish should have an acceptable shelf life of 9-12 months at 0°F.



**NUTRITIONAL VALUE:** Not available.



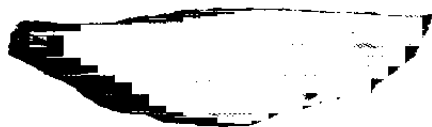
CALIFORNIA SEAFOOD



# ROCKFISHES



Bocaccio



Black Gill



Chilipepper



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**PRODUCT DESCRIPTION:** Rockfish, *Sebastes spp.*, are one of the most important groups of commercial fish occurring off the California coast. There are 59 known species occurring in California. They are members of the scorpionfish family of fishes. Rockfish range in size from 6 inches to over 36 inches and 40 pounds in weight, depending on the species. The more common rockfish species are listed in Table 1.

**Table 1. Common rockfish species**

Common Name	Scientific Name	Alternate Name <sup>1</sup>
Bank rockfish	<i>S. rufus</i>	Pacific red snapper
Black rockfish	<i>S. melanops</i>	Pacific red snapper
Blackgill rockfish	<i>S. melanostomus</i>	
Blue rockfish	<i>S. mystinus</i>	
Bocaccio	<i>S. paucispinis</i>	Pacific red snapper
Canary rockfish	<i>S. pinniger</i>	Pacific red snapper
Chilipepper	<i>S. goodei</i>	Pacific red snapper
Copper rockfish	<i>S. caurinus</i>	
Cowcod	<i>S. levis</i>	Pacific red snapper
Gopher rockfish	<i>S. carnatus</i>	
Olive rockfish	<i>S. serranoides</i>	Pacific red snapper
Shortbelly rockfish	<i>S. jordani</i>	Pacific red snapper
Speckled rockfish	<i>S. ovalis</i>	Pacific red snapper
Starry rockfish	<i>S. constellatus</i>	
Vermilion rockfish	<i>S. miniatus</i>	Pacific red snapper
Widow rockfish	<i>S. entomelas</i>	Pacific red snapper
Yelloweye rockfish	<i>S. ruberrimus</i>	Pacific red snapper
Yellowtail rockfish	<i>S. flavidus</i>	Pacific red snapper

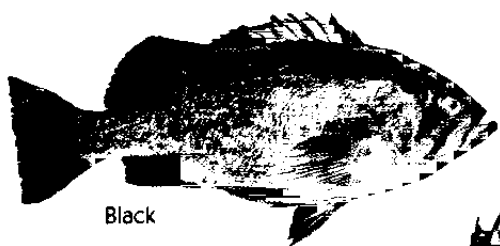
<sup>1</sup>Alternate names are permitted within California.



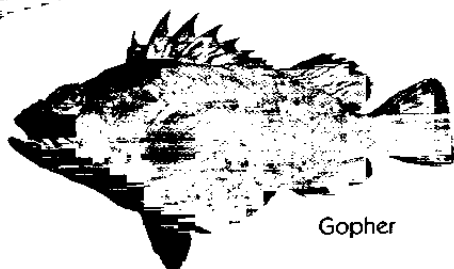
**NATURAL HISTORY:** Rockfishes occur in both the Atlantic and Pacific oceans, although the majority of species are found in the North Pacific Ocean. All members of the genus *Sebastes* produce live young. Fertilization and embryo development take place within the body of the mother.



# ROCKFISHES



Black



Gopher



Vermillion



Starry



Olive



Copper

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**Bank Rockfish** are also known as rockcod, red-widow rockfish, snapper, Pacific snapper, and Pacific red snapper.

The fish's body is moderately deep and compressed. The head is large. The color is dusky on back, light red on body. The membranes of the anal fin are black. There are black spots on the body and dorsal fin. Fish without black spots on the body or fins are referred to as red-widow rockfish.

Bank rockfish occur from central Baja California to central Oregon. They are most common from northern Baja California to northern California. Bank rockfish are midwater aggregating fish that live over hard bottom and on bank edges at depths of 102-810 feet.

Bank rockfish reach maturity at 12-15 inches in length. They spawn from December through May. Females spawn 2 or more times per year. The fish grow slowly to a maximum of about 20 inches. Bank rockfish are midwater feeders, eating mostly plankton, krill and small fishes.

**Black Rockfish** are also known as rockcod, black snapper, black bass, gray rockfish, snapper, Pacific snapper, and Pacific red snapper.

The fish's body is oval or egg-shaped and compressed. The head has a steep upper profile that is almost straight. The mouth is large and the lower jaw projects slightly. The color is brown to black on the back, paler on the sides, and off-white below. There are black spots on the dorsal fin.

Black rockfish occur from southern California to Kodiak Island, Alaska. Black rockfish are commonly found 10-20 feet above shallow rocky reefs to depths of 100 feet, but are occasionally found midwater over reefs to 400 feet. They have been found as deep as 1,200 feet.

Black rockfish reach maturity at about 16 inches in length for males and about 14 inches in length for females. They mate between September and November, and the eggs are fertilized in December or January. Black rockfish attain a maximum length of 24 inches and may live to be 21 years old. They feed on crustaceans and small fishes. Predators include marine mammals, lingcod, and other larger rockfishes.



# ROCKFISHES



Yellowtail



Widow



Short Belly



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**Blackgill rockfish** are also known as rockcod, red rock, blackmouth rockfish, and deepsea rockfish.

The fish's body is moderately deep and compressed. The head is large. The mouth is large and lower jaw protrudes slightly. The color is dark red. The rear edge of the gill cover is black. The skin above the upper jaw and the mouth is black.

Blackgill rockfish occur from central Baja California to Washington State, at depths of 720 to 2,520 feet. Blackgill rockfish are found over soft bottom, but are most abundant over hard bottom, steep drop-offs and sea mounts.

Blackgill rockfish reach maturity at 7-8 years and at 14-15 inches in length. They spawn from January through June. The fish grow rapidly until they reach maturity, then more slowly to a maximum of about 24 inches. Blackgill rockfish feed on krill and small fishes.

**Blue rockfish** are also known as rockcod, black rockfish, priestfish, blue bass, blue fish, snapper, Pacific snapper, and reef perch.

The fish's body is oval or egg-shaped and compressed with similar dorsal and ventral profiles. The head is relatively short and bluntly pointed. The mouth is relatively small and the lower jaw projects slightly. The color is dark blue or olive brown to grayish black on the back, becoming lighter below. The back and sides are blotched with lighter shades.

Blue rockfish occur from northern Baja California to the Bering Sea. They are most commonly caught between southern and northern California. Blue rockfish are schooling fish found from tide pools to 300 feet, but usually near kelp beds from 60-100 feet deep.

Blue rockfish reach maturity at about 5 years and 10 inches in length for males and about 6 years and 11 inches in length for females. They mate in October, and the eggs are fertilized in December. Blue rockfish attain a maximum length of 21 inches and may live to be 23 years old. They feed on crustaceans and small fishes. Predators include marine mammals, lingcod, and other larger rockfishes.



**Bocaccio** are also known as salmon grouper, grouper, mini-grouper, snapper, Pacific snapper, Pacific red snapper, jack, and merou.

The fish's body is elongate and compressed. The head is pointed. The mouth is large and the lower jaw protrudes. The color varies from shades of brown to reddish and extends down over the belly. Young fish are generally light bronze with speckling over the sides and back. As they mature, their color generally becomes darker and the speckling gradually disappears. Very large fish often have large black spots.

Bocaccio occur from Baja California to Kodiak Island, Alaska. Bocaccio are usually found at depths of 60 to 750 feet. Juveniles have been taken in shallow sandy areas near piers and adults have been taken from depths as great as 1,550 feet. Bocaccio are found around rocky reefs and over rocky or rubble bottom.

Bocaccio grow rapidly until they reach maturity at 14 inches and 1 pound, then more slowly to a maximum of about 36 inches and 21 pounds. Bocaccio may live to be about 50 years old. Adult bocaccio feed on small rockfishes, sablefish, anchovies, lanternfish and squid. Predators include other fishes, marine mammals, and birds.

**Canary rockfish** are also known as orange rockfish, red rock, Pacific red snapper, fantail, canary, and rockcod.

The fish's body is elongate, moderately deep and compressed. The head is large with an upper profile that is somewhat curved. The mouth is small and round. The color is yellow orange with gray mottling on the back and paler, near white, below. Fins are also yellow orange. The middle of the sides are clear gray. There is often a black spot near the back of the first dorsal fin in fish shorter than 14 inches.

Canary rockfish occur from Baja California to southeast Alaska. They are most commonly found at depths from 50 to 500 feet. Juveniles have been taken at the surface and adults have been taken from depths as great as 1,000 feet. Canary rockfish are found around reefs and over soft bottoms.

# CALIFORNIA SEAFOOD



Canary rockfish grow rapidly until they reach maturity at 16 inches, then more slowly to a maximum of about 30 inches. Canary rockfish may live to be at least 60 years old. Adult canary rockfish feed on small crustaceans and fishes. Predators of juvenile canary rockfish include chinook salmon, other fishes, marine mammals, and birds.

**Chilipepper** are also known as chili, rockcod, snapper, Pacific snapper and Pacific red snapper.

The fish's body is slender and elongate. The head is elongate, pointed and with no spines. The lower jaw protrudes. The color is generally pinkish, becoming whitish below. The lateral line is bright light red.

Chilipepper occur from Baja California to British Columbia. They are usually found at depths from 150 to 1,400 feet. Juveniles are frequently found in shallow near-shore water, particularly in kelp beds. Chilipepper are found on deep rocky reefs and on sand and gravel bottoms.

Chilipepper grow rapidly until they reach maturity at 12 inches and 4 years, then more slowly to a maximum of about 22 inches and 20 years. Adult chilipepper feed on small crustaceans, squid and fishes. Predators include marine birds and marine mammals, king salmon, lingcod, Pacific hake, sablefish, and other rockfish.

**Copper rockfish** are also known as rockcod, red rock, never die, whitebelly, and chucklehead.

The fish's body is moderately deep and compressed. The head is large with a slightly curved upper profile. The mouth is large. The lower jaw protrudes slightly. The color is dark brown to olive above, white below.

Copper rockfish occur from central California to the Kenai Peninsula, Alaska. Copper rockfish are a shallow water species usually found in rocky areas, but they may be found as deep as 600 feet.

Copper rockfish reach maturity at 3-7 years and 12-16 inches in length for males and 5-8 years and 12-16 inches in length for females. They spawn in February in California, and from March through April north of



# CALIFORNIA SEAFOOD



California. Copper rockfish reach a maximum length of 22-1/2 inches and may live to be 35 years old. They feed on crabs, herring, anchovies, blennies and other fishes. Predators include marine mammals and birds, salmon, lingcod, and other larger rockfishes.

**Cowcod** are also known as cow, cow rockfish, cowfish, rockcod, red rock, snapper, Pacific snapper, and Pacific red snapper.

The fish's body and head are somewhat compressed. The head is very large and spined. The mouth is large with a projecting lower mouth. The color is pale pink to orange. Young fish have four dark vertical bands on their sides. The bands gradually fade to dusky blotches as they become larger.

Cowcod occur from Baja California to Destruction Island, Washington. They are usually found at depths from 60 to 1,200 feet. Juveniles are frequently found in shallow near-shore water. Cowcod are found over rocky bottoms, particularly where there are sharp, steep drop-offs.

Cowcod grow rapidly until they reach maturity, then more slowly to a maximum of about 37 inches and 28 pounds. Adult cowcod feed on small octopus, squid and other fishes.

**Gopher rockfish** are also known as rockcod, red rock, flesh-colored rockcod, and gopher cod.

The fish's body is moderately deep and compressed. The head is large. The mouth is large. The lower jaw projects slightly. The color olive-brown with flesh-colored or whitish spotting and blotches.

Gopher rockfish occur from central Baja, California to northern California. They are usually found on rocky reefs from 10 to 180 feet.

Gopher rockfish reach maturity at 3-4 years and appear to reproduce once per breeding season. They spawn during winter-spring. Gopher rockfish reach a maximum length of 15-1/2 inches and may live to be 20 years old. They feed on crabs, shrimps, and occasionally fish and octopi.

# CALIFORNIA SEAFOOD



**Olive rockfish** are also known as rockcod, johnny bass, kelp bass, johnathans, snapper, Pacific snapper, and Pacific red snapper.

The fish's body is elongate and compressed. The upper profile of the head is almost straight. The snout is long and pointed. The lower jaw projects. The color is dark olive brown on the back, often with some light areas under the dorsal fin. Sides are lighter olive green. Fins are yellow.

Olive rockfish occur from central Baja, California to northern California. Olive rockfish are schooling fish and are commonly found near rocky reefs and kelp beds at depths less than 150 feet. They have been found as deep as 480 feet.

Olive rockfish begin to reach maturity at about 13-14 inches in length and 4-5 years old. They spawn from January through March. Olive rockfish reach a maximum length of 24 inches, a maximum weight of 7-8 pounds, and may live to be 25 years old. They feed on squid, crab, shrimp and other fishes. Predators include marine mammals and birds, and other larger fishes.

**Shortbelly rockfish** are also known as rockcod, slender rockfish, snapper, Pacific snapper, and Pacific red snapper.

The fish's body is elongate and slender. The head is moderate, upper profile slightly convex. The lower jaw protrudes slightly. The color is olive-pink above, light pink on the sides. Fins have the same color as adjacent body parts.

Shortbelly rockfish occur from northern Baja, California to Vancouver Island, British Columbia. Large populations occur off central California. Shortbelly rockfish are schooling fish and are commonly found over smooth bottoms at depths from 400 to 900 feet. They have been found as deep as 1,500 feet.

Shortbelly rockfish reach maturity at about 8 inches in length and 3-4 years old. Shortbelly rockfish reach a maximum length of 13 inches, a maximum weight of 0.7 pounds, and may live to be 22 years old. They feed on crustaceans. Predators include marine mammals and birds, lingcod, salmon and other larger fishes.

# CALIFORNIA SEAFOOD



**Speckled rockfish** are also known as widowfish, cinnamon bass, cinnamon, viura, rockcod, red rock, snapper, Pacific snapper, and Pacific red snapper.

The fish's body is elongate and compressed. The head is relatively short, and the mouth is small and oval. The upper profile is slightly curved and the lower jaw projects slightly. The color is orange-brown above and yellow-tan below, profusely covered with small jet-black spots.

Speckled rockfish occur from northern Baja, California to San Francisco, California. They are more common from central to southern California. Speckled rockfish are usually found over rocks at depths of 250-500 feet. They have been found as deep as 1,200 feet. Juveniles are usually found at depths from 100 to 250 feet.

Speckled rockfish reach a maximum length of 22 inches and may live to be 37 years old. They feed on plankton and small fish.

**Starry rockfish** are also known as rockcod, red rock, and spotted rockfish.

The fish's body is elongate and compressed. The head is moderate. The lower jaw projects slightly. The color is red-orange above and on the sides. The body is profusely covered with small white spots.

Starry rockfish occur from southern Baja, California to San Francisco, California. They are more common from Monterey Bay south. Starry rockfish are usually found over hard bottoms, usually around large rocks or wrecks, at depths from 180 to 450 feet. They have been found as shallow as 80 feet and as deep as 900 feet. Juveniles are usually found at depths from 90 to 250 feet.

Starry rockfish reach maturity at 8 inches and 6-7 years for males and 10 inches and 8-9 years for females. Spawning occurs from February through July. Starry rockfish reach a maximum length of 18 inches and may live to be 28 years old. They feed on crabs, shrimps, and other small crustaceans.

# CALIFORNIA SEAFOOD



**Vermilion rockfish** are also known as rockcod, red rock, red rockcod, scarletino, rasciera, rasher, snapper, Pacific snapper, and Pacific red snapper.

The fish's body is moderately deep and compressed. The mouth is large with the lower jaw slightly projecting. The color is bright red on the body and fins, with black mottling on back and sides.

Vermilion rockfish occur from Baja California to Vancouver Island, British Columbia. They are usually found at depths from 40 to 660 feet. Juveniles are frequently found at depths from 40 to 100 feet. Vermilion rockfish are found over rocky bottoms.

Vermilion rockfish grow fairly slowly; half are mature at 14 inches and 8 years, then continue to grow slowly to a maximum of about 30 inches and at least 25 years. Adult vermilion rockfish feed on octopus, squid, anchovies, blue lanternfish, rockfishes, and other small fishes.

**Widow rockfish** are also known as brown bombers, brownies, widow, widowfish, snapper, Pacific snapper, and Pacific red snapper.

The fish's body is elongate and compressed. The head is relatively short. The upper profile is slightly curved. The mouth is relatively small and the lower jaw protrudes slightly. The color is brassy brown above, lighter below. The belly often has a reddish cast. Fin membranes are black.

Widow rockfish occur from southern Baja, California to Kodiak Island, Alaska. Large populations occur off southern Washington/northern Oregon and south to central California. Widow rockfish are schooling fish and are usually found over ridges or large mounds near the shelf break at depths from 450 to 750 feet. They have been found as deep as 1,200 feet. Juveniles are found near the surface in shallow water.

Widow rockfish reach maturity at 12-17 inches and 3-8 years old. Spawning occurs from December through May. Widow rockfish reach a maximum length of 24 inches and may live to be 59 years old. They feed on lanternfish, small Pacific whiting, krill and other crustaceans. Predators include sea birds, and chinook salmon.



**Yelloweye Rockfish** are also known as turkey-red rockfish, rasphead, swallowtail, rockcod, red rock, snapper, Pacific snapper, and Pacific red snapper.

The fish's body is elongate and compressed. The head is large. The upper profile is almost straight. The mouth is large. The lower jaw protrudes slightly. The color is orange-yellow washed with pink on the back and sides, paler below. Fins are pink, usually black on the tips. Eyes are bright yellow.

Yelloweye rockfish occur from northern Baja, California to the Aleutian Islands, Alaska. They are common from central California to the Gulf of Alaska. Yelloweye rockfish are usually found on or just over reefs at depths from 450 to 600 feet. They have been found as shallow as 150 feet and as deep as 1,200 feet.

Yelloweye rockfish reach maturity at 16-20 inches. Spawning occurs from April through September. Yelloweye rockfish reach a maximum length of 36 inches and may live to be 114 years old. They feed on crabs, shrimps, snails, and fishes.

**Yellowtail rockfish** are also known as bass, yellow bass, yellowtail bass, snapper, Pacific snapper, and Pacific red snapper.

The fish's body is elongate and compressed. The head is large. The mouth is large. The lower jaw protrudes strongly. The color is grayish brown above, shading to white below. The sides are finely spotted with yellow. The tail is yellow. The other fins are dusky yellow.

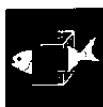
Yellowtail rockfish occur from southern California to the Aleutian Islands, Alaska, and are common from central California to southeastern Alaska. Yellowtail rockfish are midwater schooling fish and are usually found over rocky and hard bottoms at depths from 300 to 450 feet. They have been found at the surface and as deep as 1,812 feet.

Yellowtail rockfish reach maturity at 14-18 inches and 6-15 years. Spawning occurs from January through July. Yellowtail rockfish reach a maximum length of 26 inches and may live to be 64 years old. They feed on krill, plankton, and small fishes.

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**PRODUCTION:** Rockfish are harvested with trawl nets, gill nets and hook-and-line. The season is year-round. Rockfish production is regulated by quotas on various species.



**PRODUCT FORMS:** Rockfish are available live, whole and as fillets, fresh and frozen. Typical market forms for common rockfish species are as follows:

**Live:** copper rockfish and gopher rockfish.

**Whole:** blackgill rockfish, canary rockfish, copper rockfish, cowcod, gopher rockfish, speckled rockfish, starry rockfish, and yelloweye rockfish.

**Fillets:** bank rockfish, black rockfish, blackgill rockfish, blue rockfish, bocaccio, canary rockfish, chilipepper, olive rockfish, widow rockfish, yellowtail rockfish, and shortbelly rockfish.



## **SIZES AND GRADES:**

Whole rockfish range in size from less than 1 pound to about 40 pounds. Size varies with species.

Fillets range in size from a few ounces to several pounds. Fillets may be randomly packed or graded by size.

Live, whole, dressed and H&G rockfish are usually randomly graded by size.



**QUALITY FACTORS:** The color of rockfish meat is white to pink. The texture is firm. The flavor when cooked is mild.



## **PACKAGING:**

Live rockfishes are held in seawater.

Fresh whole, dressed and H&G rockfishes are placed or layered in 100 pound waxed cardboard containers in ice. Frozen H&G fish are ice glazed and packed in 100 pound waxed cardboard containers with poly liners.

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Fresh fillets and steaks are packed in 10 and 20 pound poly trays with snap on lids, 10 poly bags, and 10 pound poly bags in cardboard boxes. IQF fillets are ice glazed and packed in 10 pound poly bags, or packed in 5 and 10 pound shatter-packs or layer packs.

Frozen fillets may be individually vacuum packaged and packed in 10 pound cardboard containers.



**LABELING:** The FDA approved market name for all rockfishes is rockfish. The approved common names are listed in Table 1. The alternate name "Pacific red snapper" may be used for the species indicated in Table 1, if the species is landed and sold within California. Alternate names are not approved by the U.S. FDA for fish shipped out of California. The use of the scientific name (Table 1.) is recommended along with the approved market, common or alternate name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, rockfishes do not pose a health problem. Occasionally rockfish may harbor parasites, which are visible and completely harmless when the fish is cooked or properly frozen before eating.

The shelf life of rockfishes varies with species and product form.

**WHOLE FISH:** Color retention is an important consideration when evaluating the shelf life of whole rockfish.

**Species with longer than average shelf life:** yelloweye, starry rockfish, gopher rockfish, vermilion rockfish, cowcod, chilipepper.

**Average:** copper rockfish, shortbelly rockfish, speckled rockfish, bocaccio.

**Shorter than average:** canary rockfish, blackgill rockfish, black rockfish, blue rockfish.

# CALIFORNIA SEAFOOD



**FILLETS:** On average, fresh fish should have an acceptable shelf life after processing of 5 to 7 days at 40°F. Frozen fish should have an acceptable shelf life of 9 months at 0°F.

**Species with longer than average fresh shelf life:** bank rockfish, chilipepper, bocaccio.

**Average:** olive rockfish, blackgill rockfish, canary rockfish.

**Shorter than average:** blue rockfish, black rockfish, widow rockfish.



## NUTRITIONAL VALUE (3 ounces, baked, skinless):

100	Kilocalories	
20	g	Protein
0	g	Carbohydrates
2	g	Total Fat
0	g	Saturated Fatty Acids
40	mg	Cholesterol
65	mg	Sodium
4	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
<2	%	U.S. RDA Calcium
3	%	U.S. RDA Iron



CALIFORNIA SEAFOOD



# SABLEFISH



Sablefish fillet

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Sablefish, *Anoplopoma fimbria*, is a member of the sablefish family of fishes. It is known regionally as butterfish, blackcod, coalfish, candlefish, skilfish, coal cod, bluecod, bluefish, deep sea trout, black candlefish, skill, and beshow. The fish's body is elongate, slightly compressed and tapering to the tail. The head is rather large and elongate. The color is blackish gray on the back and sides, and gray to white below.



**NATURAL HISTORY:** Male sablefish reach maturity when they are 24 inches long and 5 years old. Females reach maturity when they are 28 inches long and 7 years old. Sablefish spawn from October through February. Sablefish can grow to at least 50 years in age and reach a size of 47 inches and 126 pounds.



**PRODUCTION:** Sablefish occur from Baja California to the Bering Sea and Japan. Sablefish are found at depths ranging from the surface to 4,800 feet. Most sablefish are harvested with long lines and trawl nets at depths of 80 to 600 feet, down to 3,600 feet. Sablefish are also taken in traps and gill nets. The season is year-round, subject to quota limitations.



**PRODUCT FORMS:** Sablefish are available H&G, as fillets and steaks, fresh and frozen, and smoked.



## **SIZES AND GRADES:**

Whole sablefish usually average 3 to 8 pounds, with a maximum of about 10-12 pounds.

J-cut, H&G fish average 2-4 pounds and are usually graded by size in 1 pound increments (i.e., 2 to 3 pounds, 3 to 4 pounds) up to 5 pounds, then 5-7 and 7 and up.

Fillets average 4 to 8 ounces and can be ordered in distinct size categories, usually in 2 ounce increments (i.e., 4-6 ounces, 6-8 ounces).



Steaks can be ordered by thickness or by size category, usually in 2 ounce increments.

# C A L I F O R N I A   S E A F O O D



Smoked sablefish chunks average 6 ounces, and are randomly size graded.



**QUALITY FACTORS:** The color of sablefish meat is marbled creamy white. The texture is oily. The flavor when cooked is mild.

Smoked sablefish should be dry, with a smooth glossy appearance. The aroma is smoky and non-fishy. The texture is firm. Frozen smoked sablefish should be free of discoloration or signs of freezer burn.



**PACKAGING:** For information about packaging, see page 5.



**LABELING:** The FDA approved market name is sablefish. The approved common name is sablefish. The use of the scientific name, *Anoplopoma fimbria*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, sablefish do not pose a health problem.

Fresh sablefish should have an acceptable shelf life of 3-5 days at 40°F; frozen, of 6-9 months at 0°F.



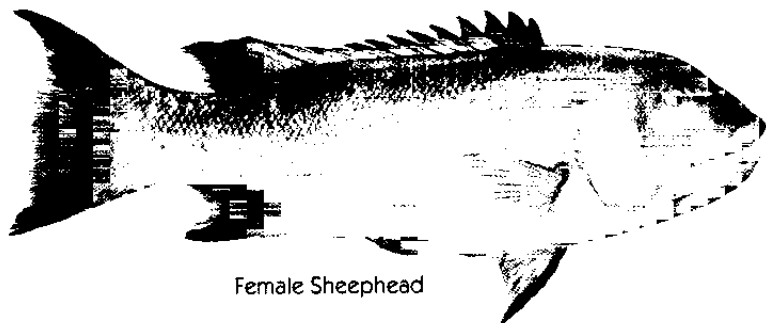
## NUTRITIONAL VALUE (3 ounces, raw):

166	Kilocalories	
11	g	Protein
0	g	Carbohydrates
13	g	Total Fat
3	g	Saturated Fatty Acids
42	mg	Cholesterol
48	mg	Sodium
<2	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
<2	%	U.S. RDA Calcium
6	%	U.S. RDA Iron

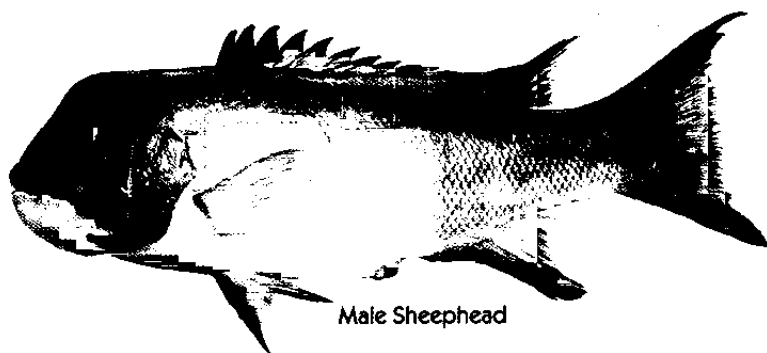
CALIFORNIA SEAFOOD



# SHEEPHEAD



Female Sheephead



Male Sheephead



Sheephead fillet

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# C A L I F O R N I A   S E A F O O D



**PRODUCT DESCRIPTION:** California sheephead, *Semicossyphus pulcher*, is a member of the wrass family of fishes. It is known regionally as sheepie, billygoat (large), red fish, humpy and fathead. The fish's body is elongate, robust and compressed. Both sexes have large canine teeth, used to pry food from rocks. Young sheephead of both sexes are a solid orange-red color except for several round black blotches. Adult females are a dull-red or rose color; adult males have a bluish-black head and tail and a bright red midsection. Adult sheephead of both sexes have light or whitish chins. A prominent fatty lump develops on the forehead of the male during breeding season.



**NATURAL HISTORY:** California sheephead are "protogynous hermaphrodites" – beginning life as females, with larger females changing sex to male later in life. Females mature at about 8 inches in length and approximately 3 to 6 years of age. They transform to males at a length of about 12 inches and 7 to 8 years of age, and the sex change is accompanied by a marked change in appearance. Transformation depends on the population's sex ratio and size of available males; slow-growing females may not change sex at all.

Sheephead reach 3 feet in size and males have been aged to 53 years, 30 years for females. Batch spawning takes place during summer. Estimates of egg production vary from 36,000 to 296,600 for fish from 8 to 15 inches long. Larval drift averages about 37 days. Sheephead have a broad diet, including crabs, barnacles, mollusks, urchins, polychaetes and bryozoa.



**PRODUCTION:** California sheephead are found from Monterey Bay, California, south into the Gulf of California, over reefs and in kelp to depths of about 280 feet. Sheephead are uncommon north of Point Conception. They are harvested in shallow reef areas over rocky bottom with hook and line. Sheephead are also trapped.



**PRODUCT FORMS:** California sheephead are available alive (the primary market) and as fillets, fresh and frozen.

# CALIFORNIA SEAFOOD



**SIZES AND GRADES:** Sheephead usually range in size from 3 to 20 pounds. Live fish are usually 3 to 4 pounds. Fillets range from 1/2 pound to 5 pounds.



**QUALITY FACTORS:** Live fish should be alive; slow isn't good enough. Fillets are white in color with a red tinge on the outside of the meat. The texture is firm, similar to white seabass, and the flavor is mild. Sheephead adopt the flavor of the seasonings used in cooking.



**PACKAGING:** For information about packaging, see page 5.



**LABELING:** The FDA approved market name is sheephead. The approved common name is California sheephead. The use of the scientific name, *Semicossyphus pulcher*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**QUALITY & SAFETY GUIDELINES:** Properly handled California sheephead pose no known health hazards.

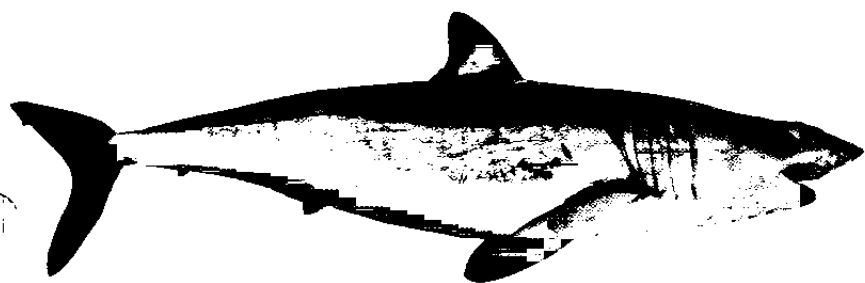
Fresh fish should have an acceptable shelf life after processing of 5 to 7 days at 40°F. Frozen fish should have an acceptable shelf life of 9 months at 0°F.



**NUTRITIONAL VALUE:** Not available.

CALIFORNIA SEAFOOD

# SHORTFIN MAKO SHARK



Shortfin Mako Shark steak

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Shortfin mako shark, *Isurus oxyrinchus*, is a member of the mackerel shark family of fishes. It is known regionally as bonito shark, Pacific mako shark, blue pointer, mackerel shark, mako, spriglio, and paloma. The fish's body is elongate, but rather stout. The snout is long and pointed. The first dorsal and the pectoral fins are large, but the second dorsal and anal fins are very small. The color is deep blue or dark gray above, white below.



**NATURAL HISTORY:** Female shortfin mako sharks reach maturity at about 7 to 8 years and 9 feet in length; male shortfin mako sharks at about 4 years and 9 feet in length.

Mako sharks give birth to live fully-developed pups. Shortfin mako sharks may live for more than 40 years, reach 13 feet in length, and weigh as much as 1,000 pounds. Shortfin mako sharks feed on marine mammals, squid, tuna and other fishes.



**PRODUCTION:** Shortfin mako sharks occur worldwide in warm and temperate oceans. In the eastern Pacific, they range from Chile to the Columbia River. They are an oceanic species, usually not found in coastal waters. Most shortfin mako sharks are harvested with drift gill nets.



**PRODUCT FORMS:** Shortfin mako sharks are available as H&G, steaks and loins, both fresh and frozen.



## **SIZES AND GRADES:**

H&G mako shark usually ranges in size from 20 to 150 pounds, with a maximum of about 175 pounds. H&G fish are usually graded by size in 10 pound increments (i.e., 30 to 40 pounds, 40 to 50 pounds).

Loins average 10-15 pounds and are usually graded by size in 1 pound increments.

Steaks can be ordered by thickness or by size category, usually in 2 ounce increments.



# CALIFORNIA SEAFOOD



**QUALITY FACTORS:** The color of mako shark meat is pale pink to white, and becomes an ivory color when cooked. The texture is moist, firm and dense. The flavor when cooked is slightly sweet, with a full, meaty flavor.

For more information about quality factors, see page 3.



**PACKAGING:** For information about packaging, see page 5.



**LABELING:** The FDA approved market name is mako shark. The approved common name is shortfin mako shark. The use of the scientific name, *Isurus oxyrinchus*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, mako shark does not pose a health problem.

Fresh mako shark should have an acceptable shelf life of 7-10 days at 40°F; frozen, of 9-12 months at 0°F.



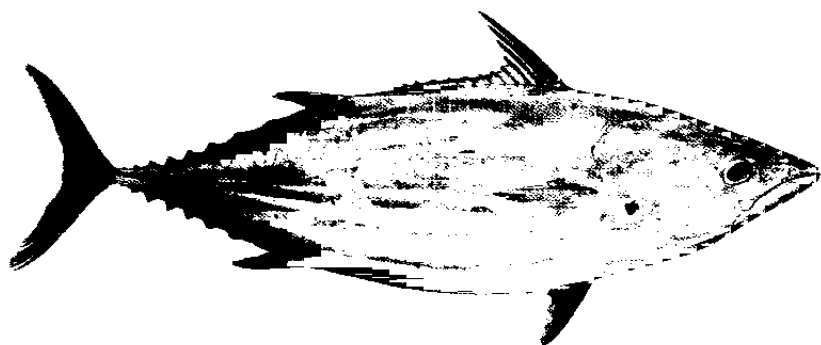
## **NUTRITIONAL VALUE** (3 oz., mixed species, raw):

111	Kilocalories	
18	g	Protein
0	g	Carbohydrates
4	g	Total Fat
1	g	Saturated Fatty Acids
43	mg	Cholesterol
67	mg	Sodium
4	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
3	%	U.S. RDA Calcium
4	%	U.S. RDA Iron

CALIFORNIA SEAFOOD



# SKIPJACK TUNA



Skipjack fillet

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Skipjack tuna, *Katsuwonus pelamis*, are members of the mackerel family of fishes. They are known regionally as ocean bonito, lesser tuna, aku, skippies, oceanic bonito, striped tuna, arctic bonito, watermelon and victor fish. The fish's body is cigar-shaped. The snout is sharply pointed. The mouth is relatively large. The teeth are very sharp. The color is dark blue to purple above, silvery to white below. There are 4 to 6 dark horizontal stripes on the belly.



**NATURAL HISTORY:** Skipjack tuna reach maturity at about 2 years old. They spawn during winter and spring months off Central America, and during April through November off Baja California. Skipjack tuna reach 26 pounds and about 7 years in age. They feed on anchovies, sardines, squid, small fishes, and shrimp eggs.



**PRODUCTION:** Skipjack tuna occur worldwide in tropical, subtropical and temperate waters. In the eastern Pacific, they have been found from northern Chile to Vancouver Island, British Columbia. Most Skipjack tuna are harvested by purse seiners, although some are taken by hook-and-line.



**PRODUCT FORMS:** Skipjack tuna are primarily available canned, and as whole, dressed steaks and loins, fresh and frozen (rare).



## **SIZES AND GRADES:**

Whole skipjack tuna usually range in size from 3 to 18 pounds, with a maximum of about 25 pounds. Whole fish are usually randomly graded.

**H&G fish** average 2 to 10 pounds.

**Loins** average 1 to 3 pounds.

Canned skipjack tuna are usually packed in 6-1/2 ounce and 14 ounce cans.

# CALIFORNIA SEAFOOD



**QUALITY FACTORS:** The color of skipjack tuna meat is red and turns a brownish shade when cooked. The texture is firm. The flavor when cooked is stronger than most other tunas.

For more information about quality factors, see page 3.



**PACKAGING:** For information about packaging see page 5.



**LABELING:** The FDA approved market name is tuna. The approved common name is skipjack tuna. The use of the scientific name, *Katsuwonus pelamis*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, skipjack tuna do not pose a health problem. Improperly handled skipjack tuna can produce histamine, the causative agent of scombroid poisoning.

Fresh skipjack tuna should have an acceptable shelf life of 5-7 days at 40°F; frozen, of 6-9 months at 0°F.



## NUTRITIONAL VALUE (3 ounces, raw):

88	Kilocalories	
19	g	Protein
0	g	Carbohydrates
1	g	Total Fat
0	g	Saturated Fatty Acids
40	mg	Cholesterol
31	mg	Sodium
<2	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
2	%	U.S. RDA Calcium
6	%	U.S. RDA Iron

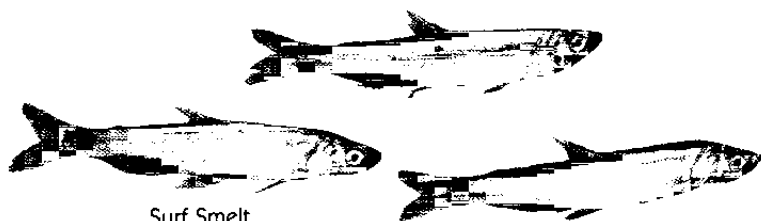
CALIFORNIA SEAFOOD



# SMELT



Night Smelt



Surf Smelt

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**PRODUCT DESCRIPTION:** The smelts are a family of small fishes highly prized for their delicate flavor. Common California smelt are listed in Table 1.

**Table 1. Common smelts.**

Common Name	Scientific Name	Market Name
Surf smelt	<i>Hypomesus pretiosus</i>	Smelt
Night smelt	<i>Spirinchus starksi</i>	Smelt

**SURF SMELT** has an elongate body. The mouth is rather small. The lower jaw is somewhat protruding. The color is light olive green to brownish above, silvery and iridescent on sides and below. There is a bright reflecting band along the sides. The body may be nearly transparent.

Surf smelt occur from Long Beach, California to Prince William Sound, Alaska. They are common north of San Francisco Bay, California. They are schooling fish and are usually found in waters close to shore. Surf smelt are probably the dominant species in the commercial smelt catch.

Female surf smelt mature at 1 to 2 years. Surf smelt live to about 3 years for males and 5 years for females, and reach a maximum size of about 10 inches in length. They feed on plankton. Predators include marine mammals, birds and other fishes.

**NIGHT SMELT** has an elongate body. The mouth is moderate. The lower jaw protrudes. The eye is moderate. Canine teeth are present on the tongue. The color is green above, silvery on sides and below.

Night smelt occur from Point Arguello, California to Shelikof Bay, Alaska. About 70% of the commercial landings are caught near Eureka, California. Night smelt are a schooling fish.

Female night smelt spawn repeatedly during the January through September spawning season. Night smelt are small, rarely exceeding 6 inches in length. They feed on plankton. Predators include marine mammals and birds, and other fishes.

# C A L I F O R N I A   S E A F O O D



**PRODUCTION:** The major species in the commercial smelt catch are surf smelt and night smelt. Smelt are taken with hand nets, gill nets and seines.



**PRODUCT FORMS:** Smelt are available whole, both fresh and frozen.



**SIZES AND GRADES:**

Whole smelt usually range in size from 10 to 30 per pound.

Night smelt average about 25-30 per pound

Surf smelt average about 10 to 15 per pound.

Whole fish are randomly graded according to size.



**QUALITY FACTORS:** The color of smelt meat is creamy tan. The texture is soft, flaky and moist. The flavor is pronounced.

For more information about quality factors, see page 3.



**PACKAGING:**

Fresh smelt are packed in 5 pound containers.

IQF smelt are ice glazed and packed in 5 pound containers.

For more information about packaging, see page 5.



**LABELING:** The FDA approved market name is smelt. The approved common names are listed in Table 1. The use of the scientific names (Table 1.) is recommended along with the approved market or common name.

For more information about labeling, see page 6.

# CALIFORNIA SEAFOOD



**SAFETY & HANDLING GUIDELINES:** With proper handling, smelt do not pose a health problem.

Fresh smelt should have an acceptable shelf life of 5 days at 40°F; frozen, of 9-12 months at 0°F.



**NUTRITIONAL VALUE:** Not available.

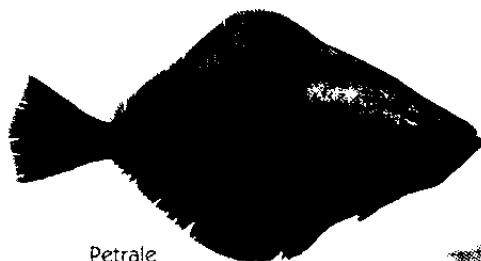


CALIFORNIA SEAFOOD

# SOLE



Rex



Petrale



Dover



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**PRODUCT DESCRIPTION:** Sole are members of the righteye flounder family of flatfishes.

**Dover sole**, *Microstomus pacificus*, are known regionally as slime sole and slippery sole. The fish's body is compressed, highly asymmetrical. The mouth is small. The eye is moderate. The lateral line is practically straight with a barely perceptible curve over the pectoral fin. Gill openings barely extend above the base of the pectoral fin. Dover sole produce large amounts of slime. The body is usually flaccid. The color is rich uniform shades of brown or mottled on the eyed side, light to fairly dark gray, sometimes blotched with dull red on the blind side. Fins are dusky, especially toward the tips.

**English sole**, *Pleuronectes vetulus*, have a compressed and highly asymmetrical body. The head is asymmetrical, slender and pointed. The mouth is small. The eyes are large and on the right side. The lateral line is almost straight. The color is uniform shades of brown on the eyed side, pale yellow to white, tinged with reddish brown on the blind side.

**Petrale sole**, *Eopsetta jordani*, are known regionally as California sole, brill, round-nosed sole, Jordan's flounder, sole and petrale. The fish's body is elongate, moderately slender and compressed. The head is deep. The mouth is large. The eyes are large and on the right side. The color is uniform dark to light brown with dusky blotches on the dorsal and anal fin on the eyed side, white on the blind side.

**Rex sole**, *Errex zachirus*, are known regionally as longfin sole and witch. The fish's body is much compressed and highly symmetrical. The head is short, compressed and rounded. The mouth is small. The eyes are large and on the right side. The pectoral fin on the eyed side is long and narrow. The lateral line is almost straight. The color is uniform light brown on the eyed side, white to dusky on the blind side. Fins are dusky, especially toward the tips.



## NATURAL HISTORY:

Dover sole occur from northern Baja California through the Bering Sea, Alaska. They are most abundant from central California to British Columbia. English sole occur from southern Baja California through the Aleutian Islands and the Bering Sea, Alaska. They are most abundant from southern California to the Gulf of Alaska. Petrale and

rex occur from northern Baja California through the Bering Sea, Alaska. They are most abundant from southern California northward.

**Dover sole** females reach maturity at about 7 years and 13 inches in length; males at about 12 to 16 inches. They spawn from September through April. Fertilization is external. Dover sole grow rapidly during their early years and slowly during later years. They may live at least 50 years and reach 30 inches in length. Dover sole feed on polychaete worms, mollusks, shrimp, and brittle stars.

**English sole** females reach maturity at 3 to 5 years and 10 to 14 inches in length; males at 2 to 3 years and 8 to 11 inches in length. They spawn year-round, usually over sand and mud bottoms at depths of 200 to 360 feet. Fertilization is external. English sole may live at least 22 years and reach 22 inches in length. English sole feed on small crustaceans, worms and small fish, crabs and shrimp.

**Petrable sole** females reach maturity at 4 to 9 years and 12 to 18 inches in length; males at 3 to 8 years and about 12 to 15 inches in length. They spawn from November through March in water between 900 and 1,200 feet deep. Fertilization is external. Petrale sole grow rapidly during their early years and males grow slower than females during later years. Females may live at least 25 years and reach 25 inches in length; males live at least 21 years and reach 19 inches in length. Petrale sole feed on shrimp, anchovies, herring, juvenile hake, small rockfishes, and other flatfish.

**Rex sole** females reach maturity at 3 to 4 years and 8 to 9 inches in length; males at 2 to 4 years and about 5 to 9 inches in length. They spawn year-round, usually in water between 300 and 900 feet deep. Fertilization is external. Rex sole grow rapidly during their early years and males grow slower than females during later years. Rex sole live at least 24 years and reach 23 inches in length. Rex sole feed on small crustaceans, worms and shrimp. Rex occur from northern Baja California through the Bering Sea, Alaska.



## PRODUCTION:

Most sole are harvested with trawl nets. Fishermen usually catch Dover sole at depths of 1,200 to 1,800 feet, although they have been found as deep as 4,800 feet. Most English sole are

# C A L I F O R N I A   S E A F O O D



harvested at depths of 120 to 900 feet, although they have been found as deep as 1,800 feet. Most petrale and rex sole are harvested at depths of 300 to 900 feet, (rex down to 1,200 feet) although they have been found as deep as 1,800 feet (rex as deep as 2,100 feet).



**PRODUCT FORMS:** Sole is available whole, H&G and as fillets, both fresh and frozen.



## **SIZES AND GRADES:**

**Whole** fish are randomly graded by size.

**Dover sole** usually range in size from 1 to 1-1/2 pounds average, with a maximum of about 10-12 pounds.

**English sole** usually average about 12 to 14 inches in length, with a maximum of about 22 inches.

**Petrale sole** usually average about 2 pounds and 14 to 17 inches in length, with a maximum of about 6 to 7 pounds.

**Rex sole** usually average under 2 pounds.

**H&G** are usually randomly graded by size.

**Dover sole** average 1 pound.

**English sole** average 3/4 pounds.

**Petrale sole** average 2 pounds.

**Trimmed rex sole** average 4 to 6 ounces, and can be ordered in distinct size categories, usually in 3 ounce increments (i.e., 2-4 ounces, 4-6 ounces).

**Fillets** can be ordered in distinct size categories, usually in 2 ounce increments.

**Dover sole** fillets range in weight from 1 to 6 ounces.

**English sole** fillets range in weight from 1 to 3 ounces.

**Petrale sole** fillets range in weight from 2 to 8 ounces.



**QUALITY FACTORS:** The color of sole meat is white. The texture is firm. The flavor when cooked is mild.

For more information about quality factors, see page 3.



**PACKAGING:** For information about packaging see page 5.



## **LABELING:**

**Dover sole** The FDA approved market name is Dover sole. The approved common name is Dover sole. The use of the scientific name, *Microstomus pacificus*, is recommended along with the approved market or common name.

**English sole** The FDA approved market name is sole. The approved common name is English sole. The use of the scientific name, *Pleuronectes vetulus*, is recommended along with the approved market or common name.

**Petrale sole** The FDA approved market names are sole or flounder. The approved common name is petrale sole. The use of the scientific name, *etta jordani*, is recommended along with the approved market or common name.

**Rex sole** The FDA approved market names are sole or flounder. The approved common name is rex sole. The use of the scientific name, *Errex zachirus*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, sole do not pose a health problem.

Fresh sole should have an acceptable shelf life of 5 days at 40°F; frozen, of 9-12 months at 0°F.

# CALIFORNIA SEAFOOD



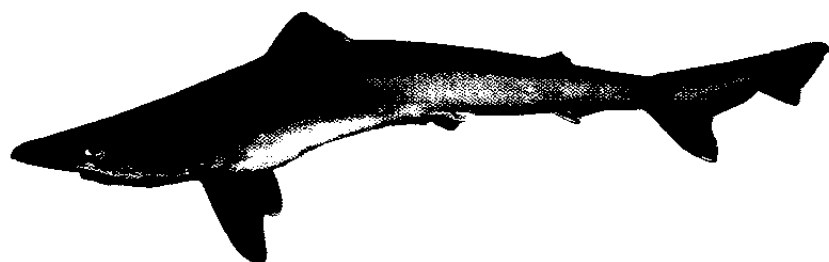
## NUTRITIONAL VALUE (3 ounces, broiled, skinless):

100	Kilocalories	
21	g	Protein
0	g	Carbohydrates
1	g	Total Fat
0	g	Saturated Fatty Acids
60	mg	Cholesterol
90	mg	Sodium
<2%		U.S. RDA Vitamin A
<2%		U.S. RDA Vitamin C
2%		U.S. RDA Calcium
2%		U.S. RDA Iron

CALIFORNIA SEAFOOD



# SOUPFIN SHARK



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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Soupfin shark, *Galeorhinus galeus*, is a member of the requiem shark family of fishes. It is known regionally as soupfin. The fish's body is elongate. The mouth is moderate in size. The snout is flattened, long and pointed. The color is dark bluish to dusky gray above, paler below. The front edges of the dorsal fins, the tip of the caudal fin, and most of the pectoral fin are black.



**NATURAL HISTORY:** Female soupfin sharks reach maturity at about 5 to 6 feet in length; males at 4 to 5 feet in length. They give birth to live fully-developed pups. The gestation period is about 1 year. Soupfin sharks reach 6 feet in length. They feed on anchovies, salmon, rockfishes, squid, perches, mackerel, barracuda, flatfishes, sculpins, midshipman and other fishes.



**PRODUCTION:** Soupfin sharks occur from Cedros Island, Baja California to northern British Columbia. Most soupfin sharks are harvested with gill nets.



**PRODUCT FORMS:** Soupfin shark is available as H&G, steaks and fillets, both fresh and frozen.



## **SIZES AND GRADES:**

H&G soupfin sharks usually range in size from 10 to 50 pounds, with a maximum of about 75 pounds. H&G fish are usually graded by size in 10 pound increments (i.e., 30 to 40 pounds, 40 to 50 pounds).

**Fillets** average 5-15 pounds and are usually graded by size in 1 pound increments.

**Steaks** can be ordered by thickness or by size category, usually in 2 ounce increments.



**QUALITY FACTORS:** The color of soupfin shark meat is white to gray. The texture is firm and dense. The flavor when cooked is mild.



# CALIFORNIA SEAFOOD

For more information about quality factors, see page 3.



**PACKAGING:** For information about packaging see page 5.



**LABELING:** The FDA approved market name is shark. The American Fisheries Society common name is soupfin shark. The use of the scientific name, *Galeorhinus zyopterus*, is recommended along with the market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, soupfin shark does not pose a health problem.

Fresh soupfin shark should have an acceptable shelf life of 7-10 days at 40°F; frozen, of 9-12 months at 0°F.

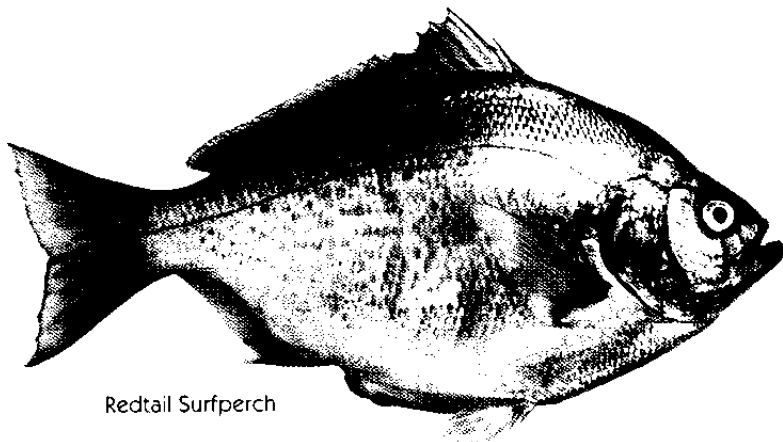


**NUTRITIONAL VALUE** (3 oz., mixed species, raw):

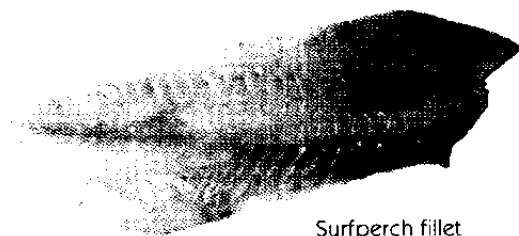
111	Kilocalories	
18	g	Protein
0	g	Carbohydrates
4	g	Total Fat
1	g	Saturated Fatty Acids
43	mg	Cholesterol
67	mg	Sodium
4	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
3	%	U.S. RDA Calcium
4	%	U.S. RDA Iron

CALIFORNIA SEAFOOD

# SURFPERCH



Redtail Surfperch



Surfperch fillet

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**PRODUCT DESCRIPTION:** The surfperch family includes 23 species found predominantly in the temperate eastern North Pacific waters. Surfperch have an elliptical, compressed body and a forked tail. Most are marked with bars or stripes. They have a continuous dorsal fin. Redtail surfperch and “unspecified” surfperch comprise the bulk of landings in California.



**NATURAL HISTORY:** Surfperch bear live young. Fertilization and embryo development take place within the body of the mother. Newborn are highly developed and free swimming. Newborn males of some species are reproductively mature.

**Redtail Surfperch** are also known as redbait. The fish’s body is short and compressed. The mouth is rather small. The color is light green above, silver on the sides and below, with 9 to 10 vertical orange-to-brassy bars alternating at the lateral line. The pelvic, anal and caudal fins are light red.

Redtail surfperch occur from Monterey Bay, California to Vancouver Island, Canada. They are most abundant from San Francisco Bay, California to Washington. Redtail surfperch are schooling fish that usually live along sandy shores, from the surface down to about 20 feet. They are also found near jetties and piers inside harbors and bays.

Redtail surfperch breed in the winter and spawn from April through September. Females produce 8 to 45 live young. Redtail surfperch live for about 9 years, reaching a length of 16 inches and a weight of 3.7 pounds.

**Barred Surfperch** are also known as surffish. The fish’s body is oval and compressed. The head is blunt. The mouth is comparatively large. The color is olive green to yellow green above, becoming silver below, with bronze, brassy or yellow vertical bars and spots on the sides. Barred surfperch occur from central Baja to Bodega Bay, California.

**Calico Surfperch** have a short and compressed body. The mouth is rather small. The color is silvery, with olive-green mottling and broken bars down each side. Calico surfperch occur from northern Baja California to north central Washington.

# CALIFORNIA SEAFOOD



**Pile Perch** are also known as piler. The fish's body is short and compressed. The head is compressed. The mouth is small. The color is silvery with a dark vertical bar about midbody, and a unique dorsal fin with the first few soft dorsal rays longer than any of the others, giving the fin a peaked appearance. Pile Perch occur from northern Baja California to southeastern Alaska.

**Rubberlip Surfperch** are also known as rubberlips, bigmouth surfperch and alfione. The fish's body is compressed. The mouth is moderate with large, thick lips. The color is olive- to brassy-brown above, with one or two dusky bars on adult fish. The pectoral fins are yellow to orange; the pelvic fins are usually black. Rubberlips occur from central Baja to northern California.

**Striped Surfperch** are also known as stripes, rainbow perch, barred perch, blue surfperch and blue perch. The fish's body is short and compressed. The mouth is small. The sides of the fish have alternating orange and blue stripes. The head has neon blue mottling. Striped Surfperch occur from northern Baja California to southeastern Alaska.

**Walleye Surfperch** are also known as walleyes, walleye seaperch and white perch. The fish's body is short and compressed. The mouth is rather small. The eyes are large. The color is silver to bluish above, with very faint pink bars that fade quickly after death. The tips of the pelvic fins are black. Walleyes occur from northern Baja California to Vancouver Island, British Columbia.



**PRODUCTION:** Surfperch are harvested with seines and hook-and-line. The season is July 16 to April 30. Barred, redbtail and calico surfperch may not be taken commercially in southern California.



**PRODUCT FORMS:** Surfperch are available live and whole, fresh and frozen.



**SIZES AND GRADES:** Whole and H&G surfperch range in size from 1 to 2 pounds. Size varies with each species. Live, whole, dressed and H&G fish are usually graded randomly by size.

# CALIFORNIA SEAFOOD



**QUALITY FACTORS:** The color of surfperch meat is white to pinkish. The texture is delicate when cooked. The flavor when cooked is mild.

For more information about quality factors, see page 3.



**PACKAGING:** For information about packaging see page 5.



**LABELING:** The FDA approved market and common names are listed in table 1. The use of the scientific name is recommended along with the approved market or common name.

**Table 1. Common surfperch species.**

Common Name	Scientific Name	Market Name
Barred surfperch	<i>Amphistichus argenteus</i>	Surfperch
Calico surfperch	<i>Amphistichus koelzi</i>	Surfperch
Pile perch	<i>Rhacochilus vacca</i>	Pile perch
Redtail surfperch	<i>Amphistichus rhodoterus</i>	Surfperch
Rubberlip surfperch	<i>Rhacochilus toxotes</i>	Surfperch
Striped surfperch	<i>Embiotoca lateralis</i>	Surfperch
Walleye surfperch	<i>Hyperprosopon argenteum</i>	Surfperch

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, surfperch do not pose a health problem. Occasionally surfperch may harbor tiny parasites, which are visible and completely harmless when the fish is cooked or properly frozen before eating.

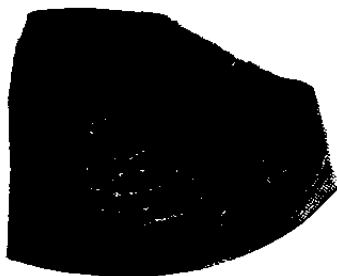
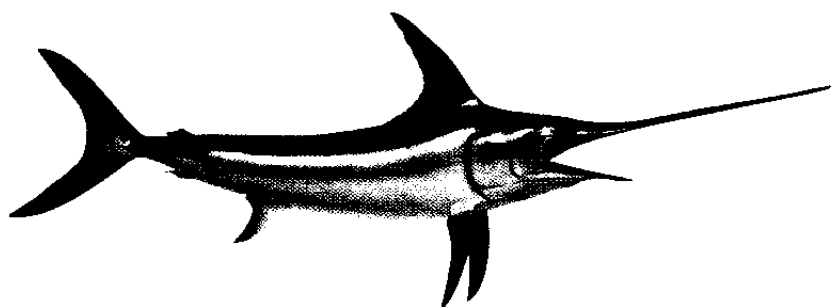
Fresh surfperch should have an acceptable shelf life of 5 days at 40°F; frozen, of 9-12 months at 0°F.



**NUTRITIONAL VALUE:** Not available.

CALIFORNIA SEAFOOD

# SWORDFISH



Swordfish steak

FRUITS DE MER • MARISCOS • 海産食品 • MEERESFRÜCHTE • FISKEMAT



**PRODUCT DESCRIPTION:** Swordfish, *Xiphias gladius*, are members of the swordfish family of fishes. They are known regionally as broadbill swordfish, broadbill, espada, and emperado. The fish's body is elongate and somewhat compressed. The upper jaw is very much extended, forming a long, flat sword. The color is dark gray to black above, becoming gray to yellowish below.



**NATURAL HISTORY:** Swordfish reach maturity in 5 to 6 years. They spawn in the North Pacific from March through July. Fertilization is external. Swordfish live at least 9 years. They grow to at least 1,200 pounds and 14 feet in length. Juvenile swordfish feed on squid and small fishes; adults feed on squid, fishes and crustaceans. In certain conditions, swordfish rise to surface waters to feed at night and spend most of the day in deep water. At other times they bask on the surface in the daytime, becoming available to harpoon. Predators of adult swordfish include whales and large sharks.



**PRODUCTION:** Swordfish occur worldwide in tropical, subtropical and temperate seas. In the eastern Pacific, they occur from Chile to Oregon. Most swordfish are harvested with large mesh gill nets and long lines, although some are taken by harpoon. Swordfish are taken at depths to 120 feet, although they can be found to depths of 2,000 feet.



**PRODUCT FORMS:** Swordfish are available as carcasses, sides, chunks, wheels, steaks, loins and fillets, fresh and frozen.



## **SIZES AND GRADES:**

**Whole** swordfish usually range in size from 80 to 300 pounds, with a maximum of about 500 pounds.

**H&G** swordfish are usually graded by size: "Rats" are less than 25 pounds, "pups" are 25 to 49 pounds, "mediums" are 50 to 99 pounds, and "markers" are 100 pounds and up.

Loins average 10-20 pounds.

# C A L I F O R N I A   S E A F O O D



**Wheels** average 30-50 pounds.

**Chunks** are less than 25 pounds.

**Steaks** average 4 to 8 ounces and can be ordered by thickness or by size category, usually in 1 ounce increments.



**QUALITY FACTORS:** The color of swordfish meat is white and ivory to pink and orange. The texture is firm. The flavor when cooked is mild.

For more information about quality factors, see page 3.



**PACKAGING:** For information about packaging see page 5.



**LABELING:** The FDA approved market name is swordfish. The approved common name is swordfish. The use of the scientific name, *Xiphias gladius*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, swordfish does not pose a health problem.

Fresh swordfish should have an acceptable shelf life of 10-15 days at 40°F; frozen, of 9-12 months at 0°F.



# CALIFORNIA SEAFOOD

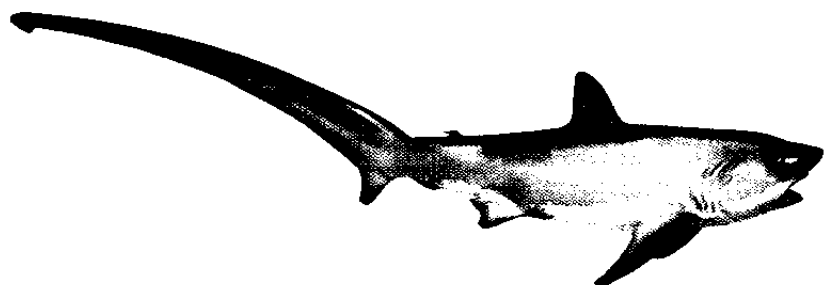


## NUTRITIONAL VALUE (3 ounces, cooked, dry heat):

132	Kilocalories	
22	g	Protein
0	g	Carbohydrates
4	g	Total Fat
1	g	Saturated Fatty Acids
43	mg	Cholesterol
98	mg	Sodium
2	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
<2	%	U.S. RDA Calcium
5	%	U.S. RDA Iron

CALIFORNIA SEAFOOD

# THRESHER SHARK



Thresher Shark steak

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Thresher shark, *Alopias vulpinus*, is a member of the thresher shark family of fishes. It is known regionally as common thresher, fox shark, sea fox, swingletail, whiptail shark, and thintail shark. The fish's tail is about as long as the body. The first dorsal fin is well ahead of the pelvic fins. The color is brown to blue-gray or black above, white below.



**NATURAL HISTORY:** Female thresher sharks reach maturity at about 7 years and 14 feet in length; male thresher sharks at about 5 years and 11 feet in length. Thresher sharks give birth to live, fully developed pups. Mating takes place during midsummer, and the pups are born 9 months later. Thresher sharks may live for more than 30 years and weigh as much as 900 pounds. Females will attain a maximum length of about 20 feet; males will reach about 16 feet. Thresher sharks feed on anchovies and other small fish. The only reported predator is the mako shark.



**PRODUCTION:** Thresher sharks occur worldwide in coastal warm and temperate waters. They are most abundant within 50 miles of the coast. Most thresher sharks are harvested with large mesh gill nets.



**PRODUCT FORMS:** Thresher shark is available as H&G, steaks and loins, fresh and frozen. Loins are available smoked.



## **SIZES AND GRADES:**

H&G thresher shark usually ranges in size from 25 to 200 pounds, with a maximum of about 250 pounds. H&G fish are usually randomly graded size.

**Loins** average 10-15 pounds and are usually graded randomly.

**Steaks** can be ordered by thickness or by size category, usually in 4 to 8 ounce increments.

**Smoked** shark meat loins average 4 to 8 ounces, and can be ordered in distinct size categories, usually in 2 ounce increments (i.e., 4-6 ounces, 6-8 ounces).

# CALIFORNIA SEAFOOD



**QUALITY FACTORS:** The color of thresher shark meat is white to pink and orange or tan. The texture is firm and dense. The flavor when cooked is mild.

For more information about quality factors, see page 3.



**PACKAGING:** For information about packaging see page 5.



**LABELING:** The FDA approved market name is thresher shark. The approved common name is thresher shark. The use of the scientific name, *Alopias vulpinus*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, thresher shark does not pose a health problem.

Fresh fish should have an acceptable shelf life after processing of 5-7 days at 40°F. Frozen fish should have an acceptable shelf life of 9 months at 0°F.



**NUTRITIONAL VALUE** (3 oz raw, mixed species):

111	Kilocalories	
18	g	Protein
0	g	Carbohydrates
4	g	Total Fat
1	g	Saturated Fatty Acids
43	mg	Cholesterol
67	mg	Sodium
4	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
3	%	U.S. RDA Calcium
4	%	U.S. RDA Iron

CALIFORNIA SEAFOOD

# WHITE SEABASS



White Seabass Fillet

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** White seabass, *Atractoscion nobilis*, is a member of the croaker and drum family of fishes. It is known regionally as corbina, California white seabass, sea trout, weakfish, king croaker. The fish's body is elongate and somewhat compressed. The head is pointed and slightly compressed. The mouth is large. The lower jaw protrudes slightly. The color is bluish to gray above, with dark speckling, becoming silver below.



**NATURAL HISTORY:** White seabass reach maturity at 20-32 inches in length and 3-6 years old. They spawn from April through August. Fertilization is external. White seabass reach a maximum length of 5 feet, a weight of 90 pounds, and may live to be 20 years old. They feed on Pacific mackerel, squid, red crabs, and Pacific herring.



**PRODUCTION:** White seabass occur from southern Baja California to Northern California. During strong El Niño conditions, white seabass were reported as far north as Juneau, Alaska. White seabass are harvested primarily with gill nets although also caught by hook-and-line.

Adult white seabass are usually found singly or in schools near reefs or kelp beds. Juveniles often occupy bays and shallow coastal waters near rocks or kelp. Some large adults move into deep water (120-350 feet) during winter. Commercially taken white seabass must be at least 28" in length. The season is closed March 15 to June 15 south of Point Conception.



**PRODUCT FORMS:** White seabass are available fresh as whole, dressed and fillets, and frozen as whole and fillets.



## **SIZES AND GRADES:**

**Whole** white seabass usually range in size from 10 to 60 pounds. Whole fish are random sized.

**Dressed** fish average 20 pounds and are random sized.

# CALIFORNIA SEAFOOD



**Fillets** average 4 to 6 ounces and are random sized.



**QUALITY FACTORS:** The color of white seabass meat is white to beige. The texture is firm. The flavor is mild.

For more information on quality factors, see page 3.



**PACKAGING:** For information about packaging, see page 5.



**LABELING:** The FDA approved market name is sea trout. The approved common name is white seabass. The use of the scientific name, *Atractoscion nobilis*, is recommended along with the approved market or common name.

For more information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, white seabass do not pose a health problem.

Fresh white seabass should have an acceptable shelf life of 5 days at 40°F; frozen, of 9 months at 0°F.

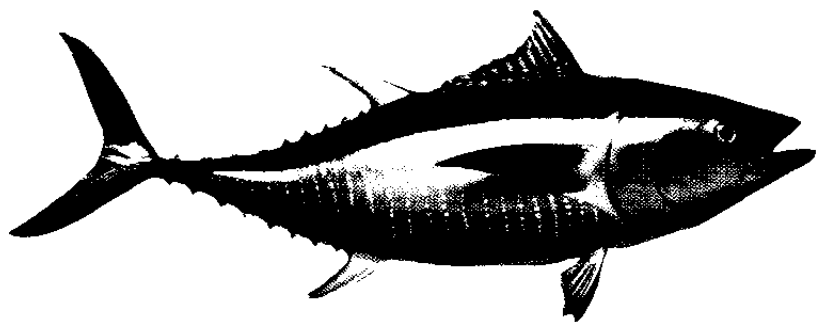


## NUTRITIONAL VALUE (3 ounces, raw):

88	Kilocalories	
14	g	Protein
0	g	Carbohydrates
3	g	Total Fat
1	g	Saturated Fatty Acids
71	mg	Cholesterol
49	mg	Sodium
N/A	%	U.S. RDA Vitamin A
N/A	%	U.S. RDA Vitamin C
4	%	U.S. RDA Calcium
4	%	U.S. RDA Iron

CALIFORNIA SEAFOOD

# YELLOWFIN TUNA



Yellowfin Tuna steak

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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Yellowfin tuna, *Thunnus albacares*, are members of the mackerel family of fishes. They are known regionally as ahi, Allison tuna, and Pacific yellowfin. The fish's body is cigar-shaped. The head is conical. The color is dark brownish-blue to dark yellow above, gray or whitish below.



**NATURAL HISTORY:** Yellowfin tuna reach maturity at about 2 to 3 years old. They spawn all year across the Pacific in tropical and subtropical waters. Yellowfin tuna reach 450 pounds. They feed on small fishes, crustaceans and squid.



**PRODUCTION:** Yellowfin tuna occur throughout the Pacific Ocean in tropical, subtropical and temperate waters. In the eastern Pacific, they have been found from northern Chile to southern California. Most Yellowfin tuna are harvested by purse seine, although some are taken by hook-and-line.



**PRODUCT FORMS:** Yellowfin tuna are available canned and as whole fish, H&G, steaks and loins, fresh and frozen.



## **SIZES AND GRADES:**

Whole yellowfin tuna usually range in size from 80 to 225 pounds for seine-caught fish, and about 20 to 100 pounds for hook-and-line caught fish, with a maximum of about 400 pounds. Whole fish are usually randomly graded by size.

H&G fish average 40-60 pounds and are usually randomly graded by size.

Loins average 8-10 pounds and are usually randomly graded by size.

Steaks can be ordered by thickness or by size category.

Canned yellowfin tuna are usually packed in 6 and 14 ounce cans.

# C A L I F O R N I A   S E A F O O D



**QUALITY FACTORS:** The color of yellowfin tuna meat is bright red and turns ivory when cooked. The texture is firm. The flavor when cooked is mild.



**PACKAGING:** Fresh whole and H&G yellowfin tuna are placed in 100-pound waxed cardboard containers in ice. Frozen whole and H&G fish are ice glazed and packed in 100-pound cardboard containers with poly liners.

Fresh steaks are packed in 10- and 20-pound poly trays with snap on lids, 10-pound poly bags, and 10-pound poly bags in cardboard boxes. IQF steaks are ice glazed and packed in 10-pound poly bags, or packed in 5- and 10-pound shatter-packs or layer packs. Frozen steaks may be individually vacuum packaged and packed in 10 pound cardboard containers.

Fresh loins are individually poly-wrapped and packed in ice in 100-pound waxed cardboard containers. Frozen loins are individually ice glazed or vacuum packed and packaged in 100-pound waxed cardboard containers.

Canned yellowfin tuna are packed in 3-can packs and in 24- and 48-can cases.



**LABELING:** The FDA approved market name is tuna. The approved common name is yellowfin tuna. The use of the scientific name, *Thunnus albacares*, is recommended along with the approved market or common name.

For more information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, yellowfin tuna do not pose a health problem. Improperly handled yellowfin tuna can produce histamine, the causative agent of scombroid poisoning.

Fresh yellowfin tuna should have an acceptable shelf life of 5-7 days at 40°F; frozen, of 6-9 months at 0°F.

# CALIFORNIA SEAFOOD



## NUTRITIONAL VALUE (3 ounces, raw):

92	Kilocalories	
20	g	Protein
0	g	Carbohydrates
1	g	Total Fat
0	g	Saturated Fatty Acids
38	mg	Cholesterol
31	mg	Sodium
<2	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
<2	%	U.S. RDA Calcium
3	%	U.S. RDA Iron



# CALIFORNIA SHELLFISH

California Spiny Lobster

Dungeness Crab

Kellett's Whelk

Market Squid

Ridgeback Shrimp

Rock Crab: Brown

Red

Yellow

Sea Cucumber

Sheep Crab

Spot Shrimp

CALIFORNIA SEAFOOD

# CALIFORNIA SPINY LOBSTER



FRUITS DE MER • MARISCOS • 海産食品 • MEERESFRÜCHTE • FISKEMAT



**PRODUCT DESCRIPTION:** The California spiny lobster, *Panulirus interruptus*, is one of 14 recognized species in its genus and one of 35 species in 8 genera making up the tropical family *Palinuridae*. The California lobster has a hard-shelled carapace, long antennae and 10 legs. The color varies from dark black-red to light red in the live state. The body is armed with sharp spines for protection. These forward-facing spines are prominent above the eyes and along the tail. California spiny lobsters lack the edible claws characteristic of eastern lobsters; however, the meat yield from spiny lobster tails is greater than that from clawed or American lobster tails.



**NATURAL HISTORY:** California spiny lobsters of both sexes reach maturity at five or six years and 2.5 inches carapace length. After maturity, male lobsters grow faster, live longer, and reach larger sizes than females. Bull lobsters have been recorded weighing more than 26 pounds and attaining a total length of three feet. Biologists estimated the age of one such animal at 75 years.

Mating generally occurs from November through May. Berried females may harbor as many as 680,000 eggs which they carry on the underside of their tail for about 10 weeks. Once hatched, larvae drift in the ocean for up to 18 months and molt 12 times before settling on the bottom. Adult lobsters generally molt once a year. As with other crustaceans, spiny lobsters grow only after shedding their exoskeleton. These lobsters are omnivorous, consuming algae and a wide variety of marine invertebrates and fish.



**PRODUCTION:** The California spiny lobster ranges from Monterey Bay, California to Manzanillo, Mexico. The majority of the population is found between Point Conception, California and Magdalena Bay, Baja California. Adult lobsters usually inhabit rocky areas from the intertidal zone to depths of 240 feet or more. California lobsters are taken solely by trap. Open season extends from the first Wednesday in October to mid-March; the fishery is closed in spring through early fall to protect spiny lobsters during their reproductive cycle. The minimum legal size is 3 1/4 inches measured lengthwise along the body shell, or carapace. Traps are required to have an escape port at the bottom of the catch chamber to allow undersized lobsters to get out. California's spiny lobster regulations have been very effective; the fishery has sustained landings averaging more than 500,000 pounds a year for the past 15 years.



## PRODUCT FORMS:

Live spiny lobsters are available in season and are the primary market form in California.

**Whole raw** spiny lobsters are available fresh or frozen.

**Whole cooked** spiny lobsters are usually frozen, but fresh lobsters are available. Includes the carapace (head) and attached tail (body). Frozen whole lobster has become a secondary market form in recent years with the increasing availability of live tanks at restaurants and retail.

**Split whole** lobsters may be requested, usually at the point of retail purchase.

**Meat raw or cooked** is available fresh or frozen. Taken from the body and/or carapace, and often used in soups, newbergs, thermadors, etc.



## SIZES AND GRADES:

Whole spiny lobsters generally range from approximately 1 to 5 pounds; they have been caught weighing up to 12 pounds. The average size is 1-1/2 to 2 pounds. The minimum size lobster, 3-1/4 inches carapace length, weighs approximately 1-1/4 pounds. California spiny lobsters are usually graded in 1/4 pound increments up to 2-1/2 pounds, over 3 to 4 pounds, and 4 and up.



**QUALITY FACTORS:** Meat is white with red tinges, the tail meat is firm. Pacific-caught spiny lobsters tend to have a greenish cast on the shell. Spiny lobster tail meat is sweet and succulent. Color of the shell should be clean and blemish free. The raw meat is somewhat translucent with a pink, cream or whitish-grey tint, depending on the lobster diet. The cooked shell color is red-orange and the cooked meat is opaque and white.

Discoloration or blackening on the abdomen about the anus or along the edge of the shell, particularly where cut from the carapace, is called "blackspot." This condition is not harmful, but excessive blackening is a poor quality attribute.



**PACKAGING:** California spiny lobsters are packaged in random box weights requested by the customer. In the case of live shipments, the packaging varies according to the specifications of the airfreight company accepting the shipment. The typical box weight is 10 to 15 kilos.

Glazing (ice coating) can be used to protect frozen pieces but is usually not

# CALIFORNIA SEAFOOD



done. In the cooking process, which is normally done by the first receiver, lobsters are immediately chilled to arrest cooking. In this process the lobsters will retain 1 to 2 percent water by weight, which normally collects between the shell and the tail meat. This adds to the glazing needed for freezing.

The typical packaging for fresh cooked lobster and frozen cooked lobster is an overwrap of white butcher paper, plastic coated on one side, with an allowance given for the paper weight.



**LABELING:** The market name is spiny lobster. The common name is California spiny lobster or lobster. The use of the scientific name, *Panulirus interruptus*, is recommended along with the approved market or common name.

Packaged containers and/or accompanying invoices should list: product name or identity, product form (live, whole cooked fresh, whole cooked frozen, split tails, or meat), quantity (total net weight, usually pounds), grade size (e.g., 1-1/2 - 2; 2 - 2-1/2, etc.), name and address of the processor or distributor and country of origin.

For more information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** Properly handled spiny lobster poses no known health hazards.

Live lobsters stored in live tanks should remain alive for at least 3-4 weeks. Fresh cooked lobsters should have an acceptable shelf life of 4 to 5 days if stored at 32°-35° F. The refrigerated shelf life for frozen cooked and thawed lobsters is 3 to 4 days. Frozen spiny lobster should have an acceptable shelf life of 6 months if stored at 0°F.



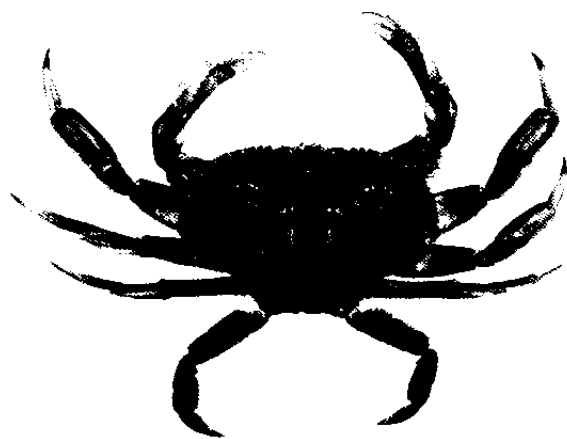
## NUTRITIONAL VALUE (3 ounces boiled):

100	Kilocalories	
20	g	Protein
1	g	Carbohydrates
1	g	Total Fat
0	g	Saturated Fatty acids
100	g	Cholesterol
320	mg	Sodium
<2	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
5	%	U.S. RDA Calcium
2	%	U.S. RDA Iron



CALIFORNIA SEAFOOD

# DUNGENESS CRAB



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# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Dungeness crab, *Cancer magister*, are members of the hard shell family of crabs. They are also known as market crab and San Francisco crab. The color is light reddish brown on the back, sometimes with a purplish wash toward the front; the underside is whitish to light orange. The pincers on the claws are white-tipped. The tip of the last segment of the tail flap is rounded.



**NATURAL HISTORY:** Dungeness crabs reach maturity at about 2 years and 4 inches across the back. Mating occurs from March through July. Spawning occurs from October through December. Male Dungeness crabs can reach 9 inches across the back and live for 6 years. Only a small portion of female Dungeness crabs reach 6-1/2 inches across the back. Dungeness crabs feed on clams, fish, small crustaceans and other crabs. Predators include octopuses, larger crabs, and many species of fishes.



**PRODUCTION:** Dungeness crabs occur from the eastern Aleutian Islands, Alaska, to about Santa Barbara, California. They are most abundant from northern California northward. Dungeness crabs are found from the intertidal zone to a depth of at least 750 feet. Dungeness crabs are harvested with traps. The minimum size limit is 6-1/4 inches across the back, and only male Dungeness crabs are taken commercially. The central California season is from the second Tuesday in November through June 30. The northern California season is from December 1 to July 15. Fishermen usually catch Dungeness crabs at depths of less than 300 feet. Most Dungeness crabs are taken off northern California during December.



**PRODUCT FORMS:** Dungeness crabs are available live, and as cooked, whole crab, cooked sections or clusters, and cooked, picked crab meat, fresh, frozen and canned.



**SIZES AND GRADES:** Live and whole Dungeness crabs usually range in size from 1-1/2 to 3 pounds, with a maximum of about 4 pounds. Live, whole crab and sections are usually randomly graded by size.

# C A L I F O R N I A   S E A F O O D



Picked crab meat is available in several mixtures including: all legs; 60% body meat and 40% leg meat; 45% body meat, 45% broken leg meat and 10% leg meat.



**QUALITY FACTORS:** Live crab should be alive when purchased.

The appearance of fresh whole cooked crab should be clean with no excessive extraneous material. The shell color should be bright red. The back should not be cracked and all legs should be present. The aroma is fresh, mild, and non-fishy. Frozen thawed crab should be free of discoloration or signs of freezer burn.

The appearance of fresh crab sections should be clean with no excessive extraneous material. The crab meat should be opaque white. The aroma is fresh, mild, and non-fishy. Frozen thawed crab sections should be free of discoloration or signs of freezer burn.

Picked crab meat should be opaque white in color. The texture should be delicate and flaky. The flavor should be sweet and mild. Frozen thawed picked crab meat should be free of discoloration or signs of freezer burn.



## **PACKAGING:**

Live crab are packed in various containers.

**Whole fresh cooked crab** are usually packed with 25 crabs in a 50-pound box. **Whole frozen cooked crab** are ice glazed and usually packed with about 12 crabs in a 30-pound box. **Fresh crab sections** are usually poly bagged and packed in 25-, 50- and 70-pound containers. **Frozen crab sections** are ice glazed, poly bagged, and packed in 25-, 50- and 70-pound containers.

**Fresh and frozen picked crab meat** is usually vacuum-packed in 5 pound metal cans. The cans are not shelf stable. Cans are packed 6 to a case. The internal temperature of fresh crab should be close to 32°F and never above 40°F. The temperature of frozen crab should be -10°F and never above 0°F.

# CALIFORNIA SEAFOOD



**LABELING:** The FDA approved market name is Dungeness crab.

The approved common name is Dungeness crab. An alternate name "market crab" may be used for Dungeness crab landed and sold within California. Alternate names are not approved by the U.S. FDA for crab shipped out of California. The use of the scientific name, *Cancer magister*, is recommended along with the market or common name.

For more information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, Dungeness crab does not pose a health problem.

Crab viscera may contain heat-resistant biotoxins and should not be eaten.

Live Dungeness crabs should have an acceptable shelf life of several weeks in a live tank. Fresh cooked crabs should have an acceptable shelf life after processing of 5 days at 40°F; frozen, of 9 months at 0°F.

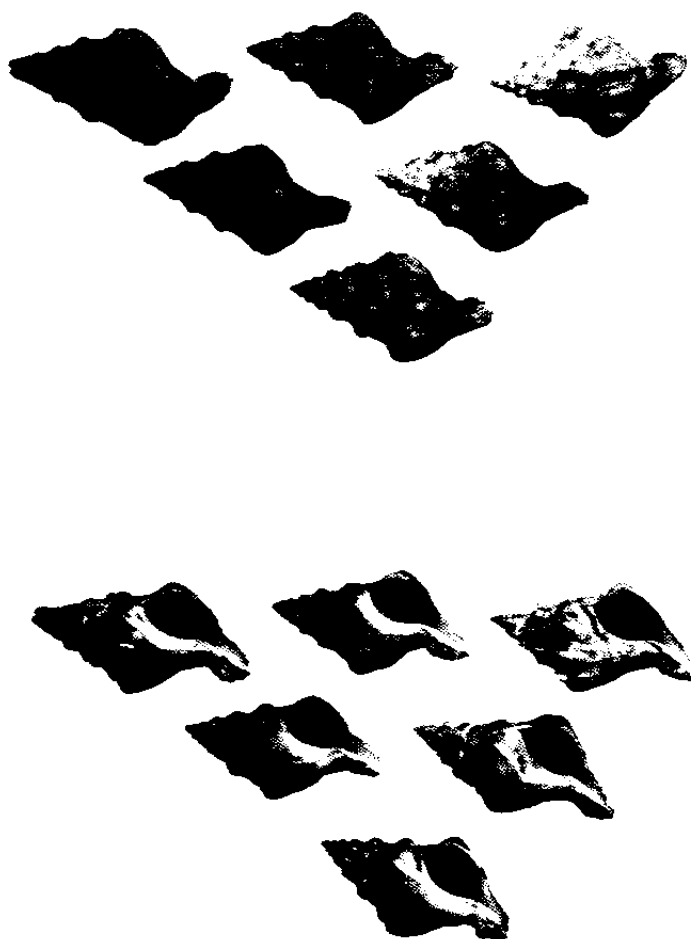


**NUTRITIONAL VALUE** (3 ounces, raw):

73	Kilocalories	
15	g	Protein
1	g	Carbohydrates
1	g	Total Fat
0	g	Saturated Fatty Acids
50	mg	Cholesterol
251	mg	Sodium
<2	%	U.S. RDA Vitamin A
<2	%	U.S. RDA Vitamin C
4	%	U.S. RDA Calcium
2	%	U.S. RDA Iron

CALIFORNIA SEAFOOD

# KELLET'S WHELK



FRUITS DE MER • MARISCOS • 海産食品 • MEERESFRÜCHTE • FISKEMAT

# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Keller's whelk, *Kelletia kelletii*, are members of the sea snail family. The shell is grayish white, often with a greenish tinge.



**NATURAL HISTORY:** Keller's whelk reach maturity at about 2.8 inches shell length for females and somewhat smaller for males. Spawning occurs during the spring. Keller's whelk grow to a maximum size of about 6 inches in shell length. They feed on detritus, barnacles, and worms. Predators include octopus and starfish.



**PRODUCTION:** Keller's whelk occur from central Baja California to Morro Bay, California. They are common from Point Conception, California southward. Most Keller's whelk are an incidental catch in rock crab and lobster traps, although some are taken by divers.

Keller's whelk are usually found in or near kelp beds and in near-shore areas with rocky bottoms. They are commonly found at depths of 6 to 130 feet, and occasionally to 200 feet. The season is year-round.



**PRODUCT FORMS:** Keller's whelk are available live and whole fresh.



**SIZES AND GRADES:** Live Keller's whelk usually range in size from 2 to 3 inches long.



**QUALITY FACTORS:** The color of Keller's whelk meat is light orange to white. The texture is very firm. The flavor when cooked is mild.

For more information on quality factors, see page 3.



**PACKAGING:** Live Keller's whelk are packed in fish totes. Live whelk should be held at or below 45°F.

# C A L I F O R N I A   S E A F O O D



**LABELING:** The market name is whelk. The common name is Kellet's whelk. The use of the scientific name, *Kelletia kelletii*, is recommended along with the market or common name.

For more information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, Kellet's whelk do not pose a health problem.

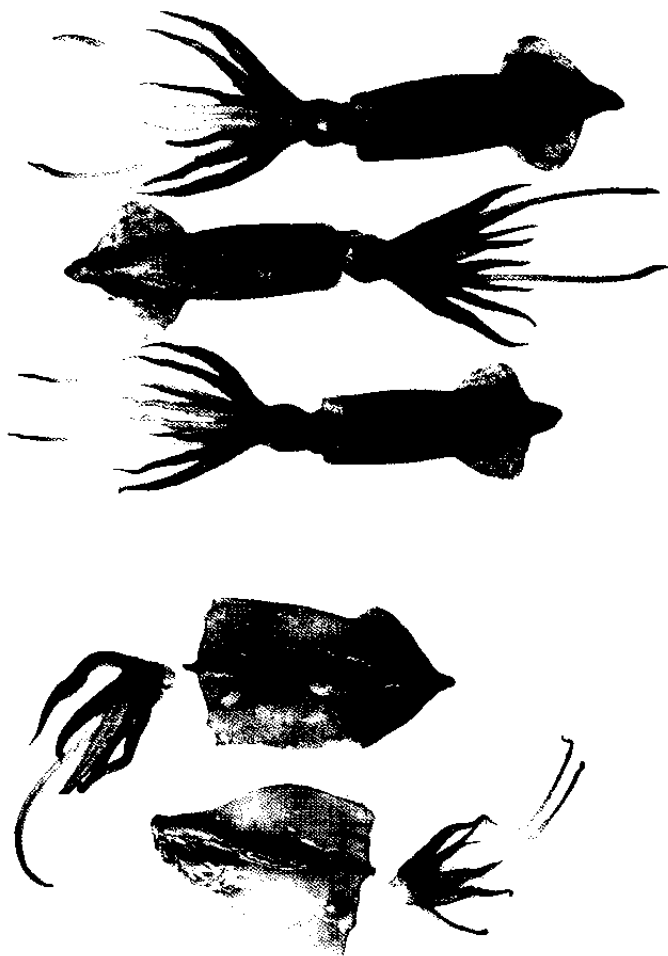
Live Kellet's whelk should have an acceptable shelf life of several weeks.



**NUTRITIONAL VALUE:** Not available.

CALIFORNIA SEAFOOD

# MARKET SQUID



FRUITS DE MER • MARISCOS • 海産食品 • MEERESFRÜCHTE • FISKEMAT



# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Market squid, *Loligo opalescens*, is a cephalopod. It is a close relative of the octopus and a distant relative of clams, mussels and oysters. Market squid is known regionally as common squid, California market squid, opalescent squid, inkfish, calamari, squid, Monterey squid and San Pedro squid. The squids' body (mantle or tube) is conical in shape with fleshy fins (wings) along the narrow end of the cone. Squid have 8 arms and 2 tentacles. The body is covered with a thin skin.



**NATURAL HISTORY:** Market squid reach maturity at about 1 year of age and die after spawning. Mass spawning occurs from April through November in northern California, and from October through May in southern California. Spawning usually takes place in semi-protected bays over sand bottoms with rocky outcroppings. Market squid may reach 12 inches in length. They feed on small crustaceans, worms, small fishes and smaller squids. Predators include marine birds and mammals, and many fish species.



**PRODUCTION:** Market squid occur from Baja California to southeastern Alaska. They are most abundant in southern and central California. Most squid are harvested with purse seines and drum seines, although some are taken with lampara nets. Fishermen usually catch market squid at depths of 15 to 50 fathoms, or by attracting them to the surface with lights. Most market squid are caught off southern California during November through March and off central California from May through October.



**PRODUCT FORMS:** Market Squid are available canned in their ink or tomato sauce, and whole and cleaned, fresh and frozen.



## **SIZES AND GRADES:**

Whole market squid usually average 8 to 10 per pound.  
Whole squid are usually randomly graded by size.

Cleaned squid average 16 to 20 per pound and are usually graded by tube length, 3-5 inches or 5-8 inches.

# C A L I F O R N I A   S E A   F O O D



Canned squid are usually packed in 15 ounce cans.



**QUALITY FACTORS:** The color of market squid meat is ivory, without excessive pink to purple discolorations. The texture is tender, unless overcooked. The flavor when cooked is mild.

For more information on quality factors, see page 3.



**PACKAGING:** Fresh and frozen whole squid and squid products are packed in 1, 2, 3, 5 and 25 pound boxes.

Canned squid are packed in 24 or 48 can cases.



**LABELING:** The FDA approved market name is squid. The approved common name is California market squid. The use of the scientific name, *Loligo opalescens*, is recommended along with the approved market or common name.

For information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, squid do not pose a health problem.

Fresh squid should have an acceptable shelf life after processing of 5 days at 40°F; frozen, of 18 months at 0°F.



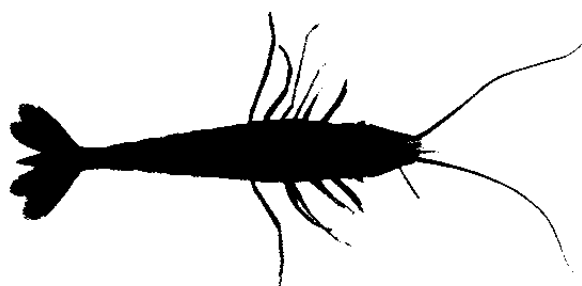
**NUTRITIONAL VALUE** (3 ounces, raw, mixed species):

78	Kilocalories	
13	g	Protein
3	g	Carbohydrates
1	g	Total Fat
0	g	Saturated Fatty Acids
198	mg	Cholesterol
37	mg	Sodium
<2	%	U.S. RDA Vitamin A
7	%	U.S. RDA Vitamin C
3	%	U.S. RDA Calcium
3	%	U.S. RDA Iron

CALIFORNIA SEAFOOD



# RIDGEBACK SHRIMP



FRUITS DE MER • MARISCOS • 海産食品 • MEERESFRÜCHTE • FISKEMAT

# CALIFORNIA SEAFOOD



**PRODUCT DESCRIPTION:** Ridgeback shrimp, *Sicyonia ingentis*, are members of the rock shrimp family. The shell is heavily calcified.



**NATURAL HISTORY:** Ridgeback shrimp reach maturity at 1 to 2 years of age. Spawning occurs from June through October. Ridgeback shrimp are free spawners and do not carry their eggs. After spawning, both sexes undergo molting and continue to molt throughout winter and spring. Their maximum life span is 5 years. Females reach a maximum size of 1.8 inches along the back; males a maximum of 1.5 inches along the back. Ridgeback shrimp may be detritus feeders.



**PRODUCTION:** Ridgeback shrimp occur from Baja California to central California. The commercial fishery is centered in the Santa Barbara Channel and off Santa Monica Bay, California. Most ridgeback shrimp are harvested with small-mesh trawl nets at depths ranging from 145 to 525 feet. They are usually found over sand, shell or green mud bottoms. The California commercial ridgeback shrimp season runs from October 1 through May 31.



**PRODUCT FORMS:** Ridgeback shrimp are available live and fresh, as whole shrimp and as headless shell-on shrimp.



## **SIZES AND GRADES:**

Whole ridgeback shrimp usually range in size from 15 to 20 to the pound, with a maximum of about 1 ounce each. Whole shrimp are randomly graded by size.

Headless shell-on ridgeback shrimp average about 1/2 ounce, and are usually graded by count per pound (i.e., 30-40 count per pound).



**QUALITY FACTORS:** The color of ridgeback shrimp meat is pinkish-white to rosy red. The texture is firm. The flavor when cooked is mild.

# C A L I F O R N I A   S E A F O O D



**PACKAGING:** For information about packaging, see page 5.



**LABELING:** The market name is rock shrimp. The common name is ridgeback shrimp. The use of the scientific name, *Sicyonia ingentis*, is recommended along with the approved market or common name.

For more information on labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, ridgeback shrimp do not pose a health problem.

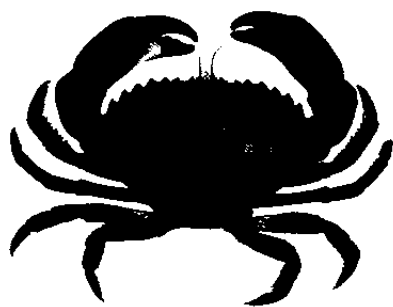
Live shrimp should have an acceptable shelf life of several weeks. Fresh shrimp should have an acceptable shelf life of 5 days at 32-40°F. High quality and shelf life of fresh shrimp are extended if shrimp are stored in slush ice. Slush should be changed daily.



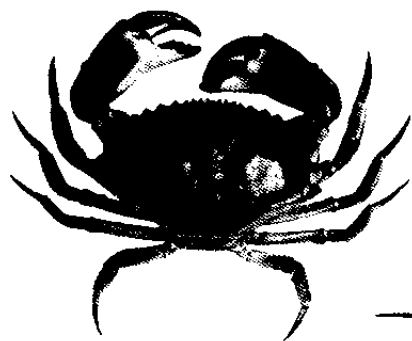
## **NUTRITIONAL VALUE (3 ounces, boiled):**

110	Kilocalories	
22	g	Protein
0	g	Carbohydrates
2	g	Total Fat
0	g	Saturated Fatty Acids
160	mg	Cholesterol
155	mg	Sodium
<2	%	U.S. RDA Vitamin A
3	%	U.S. RDA Vitamin C
3	%	U.S. RDA Calcium
15	%	U.S. RDA Iron

# ROCK CRAB



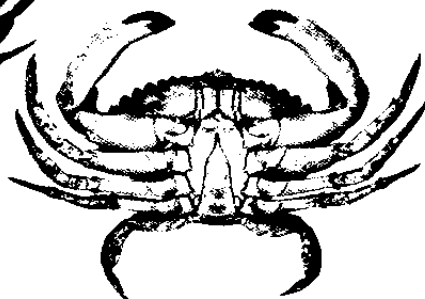
Brown Rock Crab



Yellow Rock Crab



Red Rock Crab





**PRODUCT DESCRIPTION:** Rock crabs are members of the rock crab family. They grow in a step-wise fashion with each molt of the shell. Males attain sizes 10% to 15% larger than females. For all three species, pinchers on the claws are black-tipped. The tip of the last tail flap segment is pointed in both males and females. The female's tail flap is broader than the male's.

**Red Rock Crab,** *Cancer productus*, are known regionally as red crab and rock crab. The color is medium to dark red above, yellowish white below with red blotches. The hands of the claws are noticeably roughened. Red rock crab occur from central Baja California to Kodiak Island, Alaska. They may grow to reach 8 inches across the back.

**Brown Rock Crab,** *Cancer antennarius*, are known regionally as rock crab, spotbelled rock crab and common rock crab. They are similar to East Coast Jonah crab. The color is medium to dark red-brown, usually mottled with a lighter grayish tinge above, yellowish white with some red below. There are a number of small red spots on the underside. Brown rock crab occur from central Baja California to northern Washington, usually in shallower water than other rock crab. They may grow to reach 6-1/2 inches across the back.

**Yellow Rock Crab,** *Cancer anthonyi*, are known regionally as yellow crab. The color is yellow-brown, with a purple wash anteriorly above, yellow or yellowish-white below. The hands of the claws are large and quite smooth. Yellow rock crab occur from southern Baja California to northern California. They may grow to reach 7 inches across the back.



**NATURAL HISTORY:** Rock crabs mate throughout the year after the females molt and are still in the soft shell condition. About three months after mating, the eggs are laid, then fertilized from stored sperm. After another 6 to 8 weeks, the eggs hatch into planktonic larvae that undergo 7 molts before settling to the bottom as juveniles. Rock crabs may reach 5 or 6 years of age. They feed on snails, clams, abalone, barnacles and oysters.



**PRODUCTION:** Rock crabs are fished the entire California coast. The commercial fishery is most important in southern California from Morro Bay south. Rock crabs inhabit waters from the intertidal zone to depths of 300 feet or more. Rock crabs are

# C A L I F O R N I A   S E A F O O D



harvested with traps. The minimum size limit is 4 1/4 inches across the back. The season is year-around.



**PRODUCT FORMS:** Rock crab is available live, and as whole, cooked crab and crab claws, fresh and frozen.



## **SIZES AND GRADES:**

Live and whole rock crabs usually range in size from one to two pounds, with a maximum of about three pounds. Live, whole crab and **cocktail claws** are usually randomly graded by size.



**QUALITY FACTORS:** The best way to determine the quality of rock crab is by using subjective sensory evaluations (look, smell and touch). Frozen crab should first be thawed and rinsed. Fresh crab should be unpackaged and rinsed to remove odors from stale air in the package and from packaging materials. Live crab should be alive when purchased.

**Fresh whole cooked** crab should be clean with no excessive extraneous material. The back should be intact and all legs should be present. The aroma is fresh, mild and non-fishy.

**Frozen thawed** crab and **cocktail claws** should be free of discoloration or signs of freezer burn.

**Fresh cocktail claws** should be clean with no excessive extraneous material. The crab meat should be opaque white. The aroma is fresh, mild and non-fishy.



## **PACKAGING:**

The internal temperature of fresh crab should be close to 32°F and never above 40°F. The temperature of frozen crab should be around -10°F and never above 0°F.

Live crabs are packed in various containers.

Whole fresh cooked crabs are usually packed 25 crabs in a 50 pound box.



# CALIFORNIA SEAFOOD



**Whole frozen cooked** crabs are ice glazed and usually packed with about 12 crabs in a 30 pound box.

**Fresh cocktail claws** are usually poly bagged and packed in 25, 50 and 70 pound containers.

**Frozen cocktail claws** are ice glazed, poly bagged and packed in 25, 50 and 70 pound containers.



**LABELING:** The market name is crab. The common names are red rock crab, brown rock crab and yellow rock crab. The use of scientific names, *Cancer productus*, *C. antennarius* and *C. anthonyi*, is recommended along with the market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, Rock crab does not pose a health problem. Crab viscera may contain heat resistant biotoxins and should not be eaten.

Live crab will last for several weeks in a live tank. Fresh cooked crab should have an acceptable shelf-life after processing of 5 days at 40°F. Frozen cooked crab should have an acceptable shelf life of 9 months at 0°F.

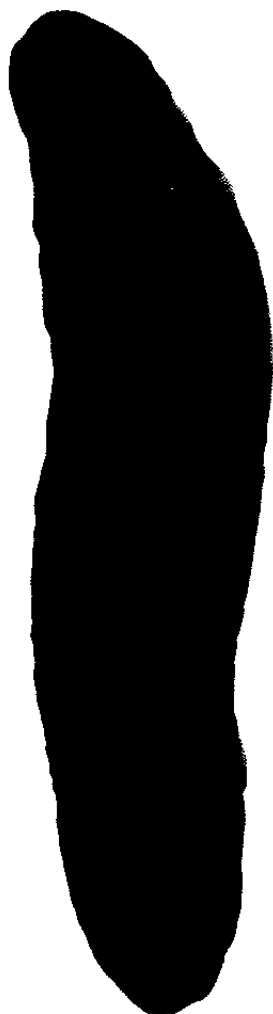


**NUTRITIONAL VALUE:**  
Not available.

CALIFORNIA SEAFOOD



# SEA CUCUMBER



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**PRODUCT DESCRIPTION:** Sea cucumbers are echinoderms, a phylum that also includes sea urchins and sea stars. Their body is elongate and cylindrical in shape. The mouth and anus are at opposite ends of the cylinder. Sea cucumbers possess tube feet that are used for locomotion, respiration and sensory perception. They also have papillae (nipple-like projections) on the dorsal surface that are modified tube feet.

Sea cucumbers reach maturity at about 4 to 8 years. They are broadcast spawners and spawning occurs in spring and summer months. Sea cucumbers reach a maximum age of about 12 years. They are surface deposit feeders, ingesting mud, sand and detritus. Predators include sea stars, sea otters, kelp greenling and hermit crabs.



## PRODUCTION:

**Giant Red Sea Cucumber**, *Parastichopus californicus*, are known regionally as California sea cucumber. They possess fewer papillae than the warty sea cucumber. Giant red sea cucumbers occur on the west coast of North America from Baja California to the eastern Gulf of Alaska. They are found in low intertidal and subtidal waters in the northern part of their range, and subtidal to 840 feet deep off California. Giant red sea cucumbers prefer areas without strong wave action. They can grow to 16 inches in length.

**Warty Sea Cucumber**, *Parastichopus parvimensis*, occur from Baja California to Monterey Bay, California. They are uncommon north of Santa Barbara, California. Their papillae are short and black-tipped. Warty sea cucumbers are commonly found intertidally to at least 50 feet.



**PRODUCTION:** Most sea cucumbers are harvested with trawl nets, although some are taken by divers. Most sea cucumbers are caught in the Santa Barbara Channel. The commercial fishery requires special State permits.



**PRODUCT FORMS:** Sea cucumbers are available whole, fresh and frozen, and as gutted, boiled and dried sea cucumber.



## **SIZES AND GRADES:**

Whole sea cucumbers usually range in size from 5 to 12 inches. Whole and dried sea cucumbers are usually randomly graded by size.



**QUALITY FACTORS:** The color of sea cucumber meat is tan to white. The texture is soft. The flavor when cooked and dried is distinctive. The flavor of the muscle strip inside the cucumber is similar to clam.

For more information about quality factors, see page 3.



## **PACKAGING:**

For information about packaging see page 5.



**LABELING:** The market name is sea cucumber. The common name is giant red sea cucumber or warty sea cucumber. The use of the scientific names, *Parastichopus californicus* or *Parastichopus parvimensis*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, sea cucumber does not pose a health problem.

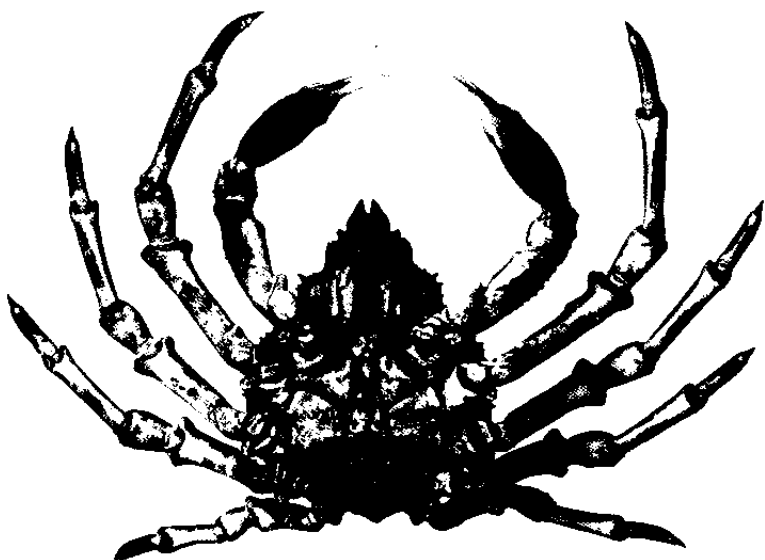
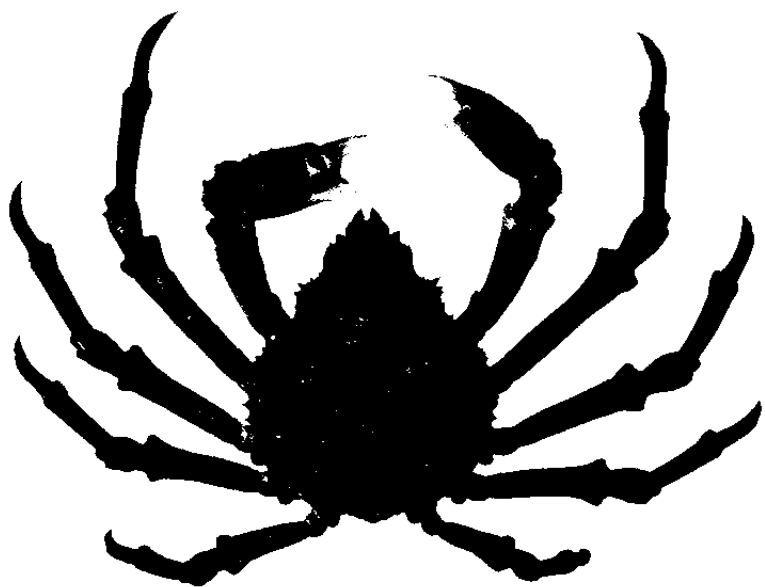
Fresh sea cucumbers should have an acceptable shelf life after processing of 5 days at 40°F. Frozen sea cucumbers should have an acceptable shelf life of 9 months at 0°F. Dried sea cucumbers should have an acceptable shelf life of one year or more.



**NUTRITIONAL VALUE:** Not available.

CALIFORNIA SEAFOOD

# SHEEP CRAB



FRUITS DE MER • MARISCOS • 海産食品 • MEERESFRÜCHTE • FISKEMAT

# CALIFORNIA SEAFOOD



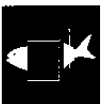
**PRODUCT DESCRIPTION:** Sheep crab, *Loxorhynchus grandis*, are members of the spider crab family of crabs. They are also known as spider crabs. The color is reddish to brownish to bluish above, whitish below. The legs are long. The shell is heavily calcified and sometimes appears hairy.



**NATURAL HISTORY:** Sheep crabs mate throughout the year when soft or hard shelled. They may live to be at least 4 years old. Sheep crab feed on fish, mussels and kelp. Predators of juvenile crab include cabezon, sheephead, octopus, sharks and rays.



**PRODUCTION:** Sheep crab occur from Baja California to Northern California. They are most abundant in Southern California. The commercial fishery is centered in the Santa Barbara Channel and around the northern Channel Islands. Sheep crab inhabit waters from 20 to 410 feet deep. Most sheep crab are harvested with traps. The season is year-round.



**PRODUCT FORMS:** Sheep crab are available live, whole and as cocktail claws, fresh and frozen.



## **SIZES AND GRADES:**

Live and whole sheep crab usually range in size from 2-1/2 to 5 pounds. Live and whole crab are usually randomly graded by size.

Cocktail claws are usually randomly graded by size.



**QUALITY FACTORS:** Live crab should be alive when purchased.

The appearance of fresh whole cooked crab should be clean with no excessive extraneous material. The back should not be cracked and all legs should be present. The aroma is fresh, mild, and non-fishy. Frozen thawed crab should be free of discoloration or signs of freezer burn.

# CALIFORNIA SEAFOOD



The appearance of fresh cocktail claws should be clean with no excessive extraneous material. The crab meat should be opaque white. The aroma is fresh, mild, and non-fishy. Frozen thawed crab claws should be free of discoloration or signs of freezer burn.

For more information about quality factors, see page 3.



## PACKAGING:

Live crab are packed in various containers.

**Whole fresh cooked** crab are usually packed with 25 crabs in a 50-pound box.

**Whole frozen cooked** crab are ice glazed and usually packed with about 12 crabs in a 30-pound box.

**Fresh cocktail claws** are usually poly bagged and packed in 25-, 50- and 70-pound containers. Frozen cocktail claws are ice glazed, poly bagged, and packed in 25-, 50- and 70-pound containers.



**LABELING:** The market name is crab. The common name is sheep crab. The use of scientific name, *Loxorhynchus grandis*, is recommended along with the market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, Sheep crab does not pose a health problem. Crab viscera may contain heat resistant biotoxins and should not be eaten.

Live crab will last for several weeks in a live-rank. Fresh cooked crab should have an acceptable shelf life after processing of 5 days at 40°F. Frozen cooked crab should have an acceptable shelf life of 9 months at 0°F.



**NUTRITIONAL VALUE:** Not available.

CALIFORNIA SEAFOOD



# SPOT SHRIMP



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**PRODUCT DESCRIPTION:** Spot shrimp, *Pandalus platyceros*, is a member of the ocean shrimp family. It is regionally known as prawn and spot prawn. Spot shrimp have lateral white stripes along the sides of the carapace and white spots on the tail segments.



**NATURAL HISTORY:** Spot shrimp begin life as males and reach maturity at 3 years. Males change into females and reach maturity at 4 years. Spawning occurs once a year in September, and each individual mates once as a male and once or twice as a female. Females carry the eggs for 4 to 5 months before they hatch. The life span of spot shrimp ranges from 4 years off Canada to 6 years off southern California. Spot shrimp reach a maximum size of 10 inches in length. Spot shrimp feed on other shrimp, plankton, small mollusks, worms, sponges and fish carcasses. They usually forage on the bottom throughout the day and night.



**PRODUCTION:** Spot shrimp occur from Southern California to the Bering Sea and Japan. Major California populations occur off Monterey and the Channel Islands. Most spot shrimp are harvested with trawl nets and traps at depths ranging from 150 to 900 feet, although they can be found as deep as 1,600 feet. They are usually found along submarine canyons and steeply sloping hard bottoms. The season is year-round.



**PRODUCT FORMS:** Spot shrimp are available live, whole and headless, shell-on, fresh and frozen.



**SIZES AND GRADES:** Live and whole, fresh spot shrimp are randomly graded by size.

Whole frozen spot shrimp are usually graded by count per pound (U10, U15, 16-20, 21-25, 26-30, etc.).

Frozen headless spot shrimp are usually graded by count per pound (U10, U15, 16-20, 21-25, 26-30, etc.).



**QUALITY FACTORS:** The color of spot shrimp meat is transparent to slightly opaque white. The texture is firm. The flavor when cooked is mild.

For more information about quality factors, see page 3.



**PACKAGING:** Fresh whole spot shrimp are placed or layered in 50 pound waxed cardboard containers in ice.

Fresh headless spot shrimp are packed in 10 and 20 pound poly trays with snap on lids, 10 poly bags, and 10 pound poly bags in cardboard boxes. Frozen headless spot shrimp are ice glazed and packed in 5 pound containers.



## **LABELING:**

The market name is shrimp. The common name is spot shrimp. The use of the scientific name, *Pandalus platyceros*, is recommended along with the approved market or common name.

For more information about labeling, see page 6.



**SAFETY & HANDLING GUIDELINES:** With proper handling, spot shrimp do not pose a health problem.

Live spot shrimp have a tank-shelf life of 4 days to 2 weeks. Fresh shrimp should have an acceptable shelf life after processing of 5 days at 40°F. Frozen shrimp should have an acceptable shelf life of 9 months at 0°F.

# CALIFORNIA SEAFOOD



## NUTRITIONAL VALUE (3 ounces, boiled):

110	Kilocalories	
22	g	Protein
0	g	Carbohydrates
2	g	Total Fat
0	g	Saturated Fatty Acids
160	mg	Cholesterol
155	mg	Sodium
<2	%	U.S. RDA Vitamin A
3	%	U.S. RDA Vitamin C
3	%	U.S. RDA Calcium
15	%	U.S. RDA Iron



## REFERENCES

- Allen, J. 1991. "Common and Scientific Names of Fishes from the United States and Canada, 5th Edition." Special Publication 20, American Fisheries Society, Bethesda, MD.
- Dore, I. 1984. "Fresh Seafood: The Commercial Buyer's Guide," Osprey Books, Huntington, NY.
- Dore, I. 1989. "The New Frozen Seafood Handbook," Van Nostrand Reinhold, New York.
- Dore, I. 1990. "Salmon: The Illustrated Handbook for Commercial Uses," Van Nostrand Reinhold, New York.
- Dore, I. 1991. "Shellfish: A Guide to Oysters, Mussels, Scallops, Clams and Similar Products for the Commercial User," Van Nostrand Reinhold, New York.
- Dore, I. 1991. "The New Fresh Seafood Buyer's Guide," Van Nostrand Reinhold, New York.
- FDA. 1991. Food Labeling: Nutrition Labeling of Raw Fruit, Vegetables, and Fish; Guidelines for Voluntary Nutrition Labeling of Raw Fruit, Vegetables, and Fish; Identification of the 20 Most Frequently Consumed Raw Fruit, Vegetables, and Fish; Definition of Substantial Compliance. Food and Drug Administration, Washington, DC. Federal Register 56(229):60880.
- Hart, J.L. 1973. Pacific fishes of Canada. Bulletin 180, Fisheries Research Board of Canada, Ottawa.
- Hasselback, N.H. (Ed.) 1984. "The Seafood Handbook," Seafood Business Report, Camden, ME.
- Hasselback, N.H. (Ed.) 1986. "The Seafood Handbook, 2nd Ed.," Seafood Business, Rockland, ME.
- Hasselback, N.H. (Ed.) 1987. "The Seafood Handbook, Vol.1," Seafood Business, Rockland, ME.
- Hasselback, N.H. (Ed.) 1988. "The Seafood Handbook, Vol.2," Seafood Business, Rockland, ME.
- Kramer, D.E. and O'Connell, V.M. 1988. Guide to northeast Pacific rockfishes. Alaska Sea Grant Marine Advisory Bulletin #25. University of Alaska, Fairbanks, AK.
- Leet, W.S., Dewees, C.M., and Haugen, C.W. 1992. "California's Living Marine Resources and Their Utilization," UCSGEP-92-12, Sea Grant Extension Program, Department of Wildlife and Fisheries Biology, University of California, Davis, CA.

# C A L I F O R N I A   S E A F O O D



- Love, R.M. 1991. "Probably More Than You Wanted to Know About The Fishes Of The Pacific Coast," Really Big Press, Santa Barbara, CA.
- McClane, A.J. (Ed.) 1974. "Field Guide to Saltwater Fishes of North America," Holt, Rinehart and Winston, New York.
- Miller, D.J. and Lea, R.N. 1972. Guide to the coastal marine fishes of California, (California Fish Bulletin 157). Publication 4065, Division of Agricultural Sciences, University of California, Oakland, CA.
- NZFIB. 1981. "Guide Book to New Zealand Commercial Fish Species," New Zealand Fishing Industry Board, Kel Aiken Print Ltd., Wellington.
- Otwell, W.S. (Ed.) No Date. Seafood Product Quality Code. Southeastern Fisheries Association, Tallahassee, FL.
- Perkins, C. 1992. "The Advanced Seafood Handbook," Seafood Business, Rockland, ME.
- Phillips, J.B. 1973. California market crab and its close relatives. Marine Resources Leaflet No. 5, State of California, The Resources Agency, Department of Fish and Game, Long Beach, CA.
- Redmayne, P. 1989. "1989 Seafood Buyer's Guide," Seafood Leader, Seattle, WA, 9(1).
- Redmayne, P. 1990. "1990 Seafood Buyer's Guide," Seafood Leader, Seattle, WA, 10(2).
- Redmayne, P. 1992. "1992 Seafood Buyer's Guide," Seafood Leader, Seattle, WA, 12(2).
- Rodger, R.W.A. 1991. "Fish Facts, An Illustrated Guide to Commercial Species," Van Nostrand Reinhold, New York.
- Slavin, J.W. 1986. "Fish Facts II," Food Marketing Institute, Washington, D.C.
- Straus, K. (Ed.) 1989. "The Seafood Handbook '89: Selling Seafood," Seafood Business, Rockland, ME.
- Straus, K. (Ed.) 1991. "The Seafood Handbook, Seafood Standards," Seafood Business, Rockland, ME.
- Taucher, C. (Ed.) 1987. "Marine Sportfish Identification, California Department of Fish and Game, Sacramento, CA.
- Turner, C.H. and Sexsmith, J.C. 1964. "Marine Baits of California," California Department of Fish and Game, Sacramento, CA.
- USDA. 1987. Composition of foods: Finfish and shellfish products. Agriculture Handbook No. 8-15. U.S. Department of Agriculture, Washington, DC.