Species, Harvest and Handling

- Species
- Harvest
- Handling

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http://www.afsc.noaa.gov/default.htm

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Fish Watch

U.S. Seafood Facts

http://www.nmfs.noaa.gov/fishwatch/

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ASMI

http://www.alaskaseafood.org/

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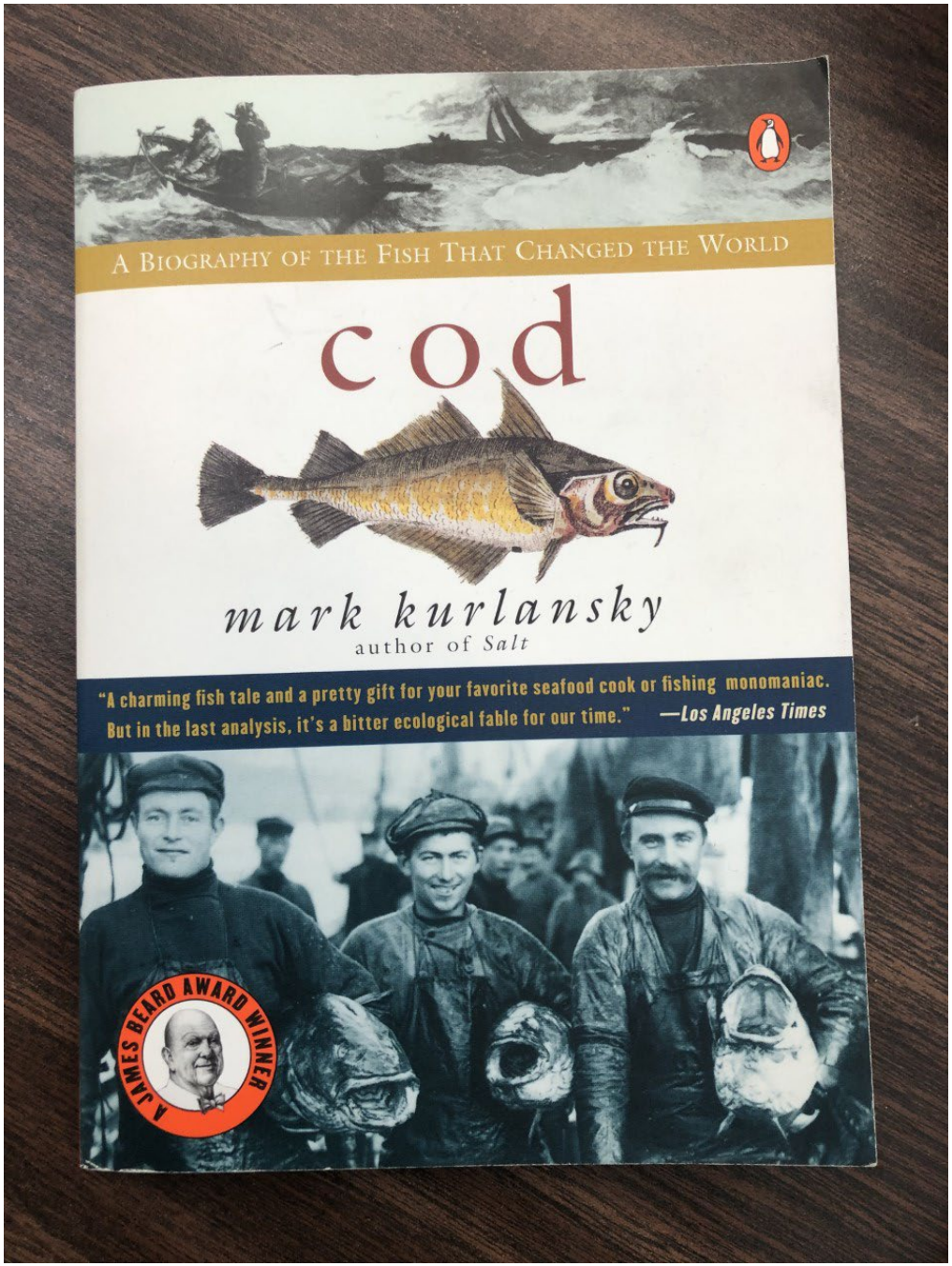

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Species for this Workshop

- P. Cod

- Pollock

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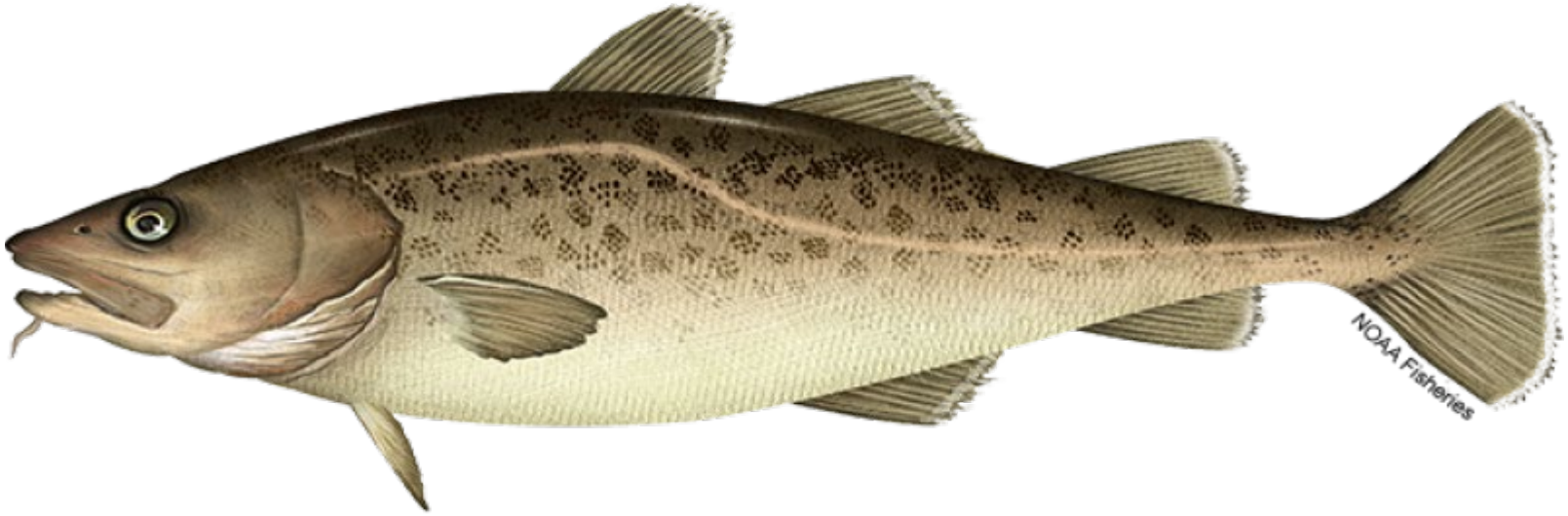
Pacific Cod

Gadus macrocephalus



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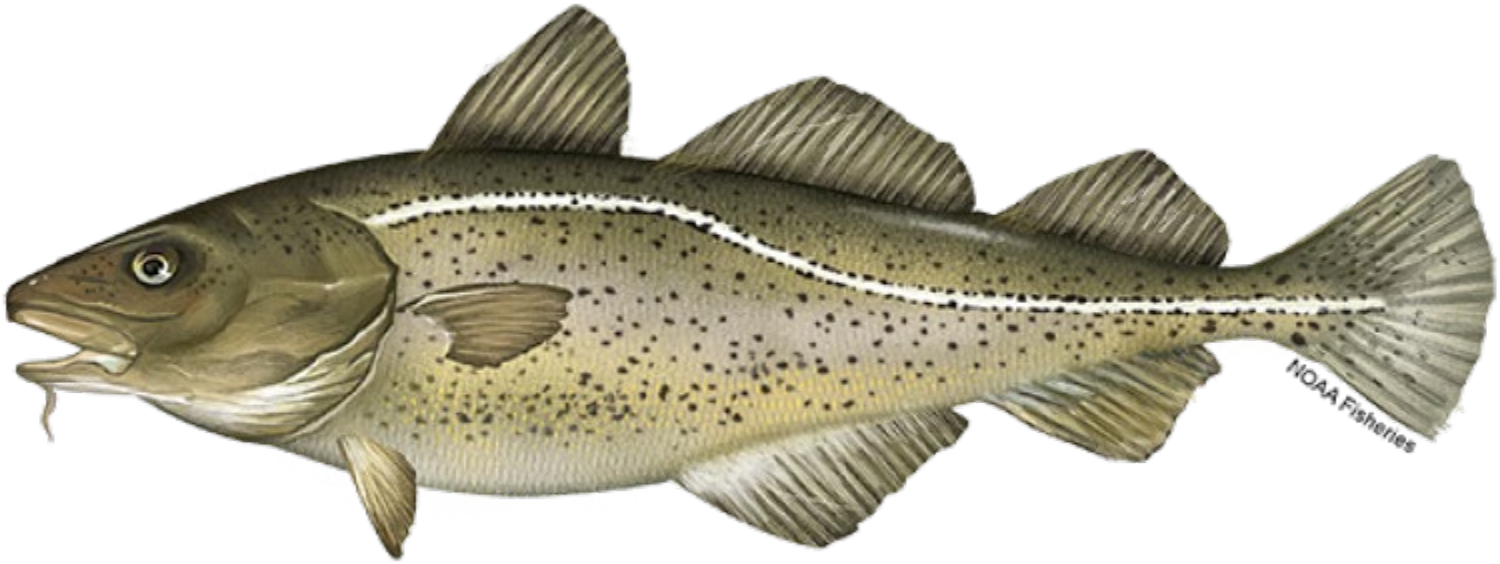
Atlantic Cod

Gadus morhua



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Lingcod

Ophiodon elongatus

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The Seafood List (fda.gov)

Scientific Name: *Gadus macrocephalus*

Acceptable Market Name(s):	Cod or Alaska Cod
Common Name:	Pacific Cod
Scientific Name:	Gadus macrocephalus
DNA Sequence Data:	DNA
Regulatory Fish Encyclopedia (RFE) Photos and Data:	RFE
Hazard Information:	HAZ
ITIS TSN (see note below):	TSN 164711
Vernacular Name(s) (See note below.*):	Grey Cod True Cod Treska

*** Note:** The Vernacular Name(s) (if any listed above) are for **CROSS REFERENCE ONLY**, and generally not acceptable for product labeling in interstate commerce. Their use may result in seafood misbranding.

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Pacific Cod
(*Gadus macrocephalus)*

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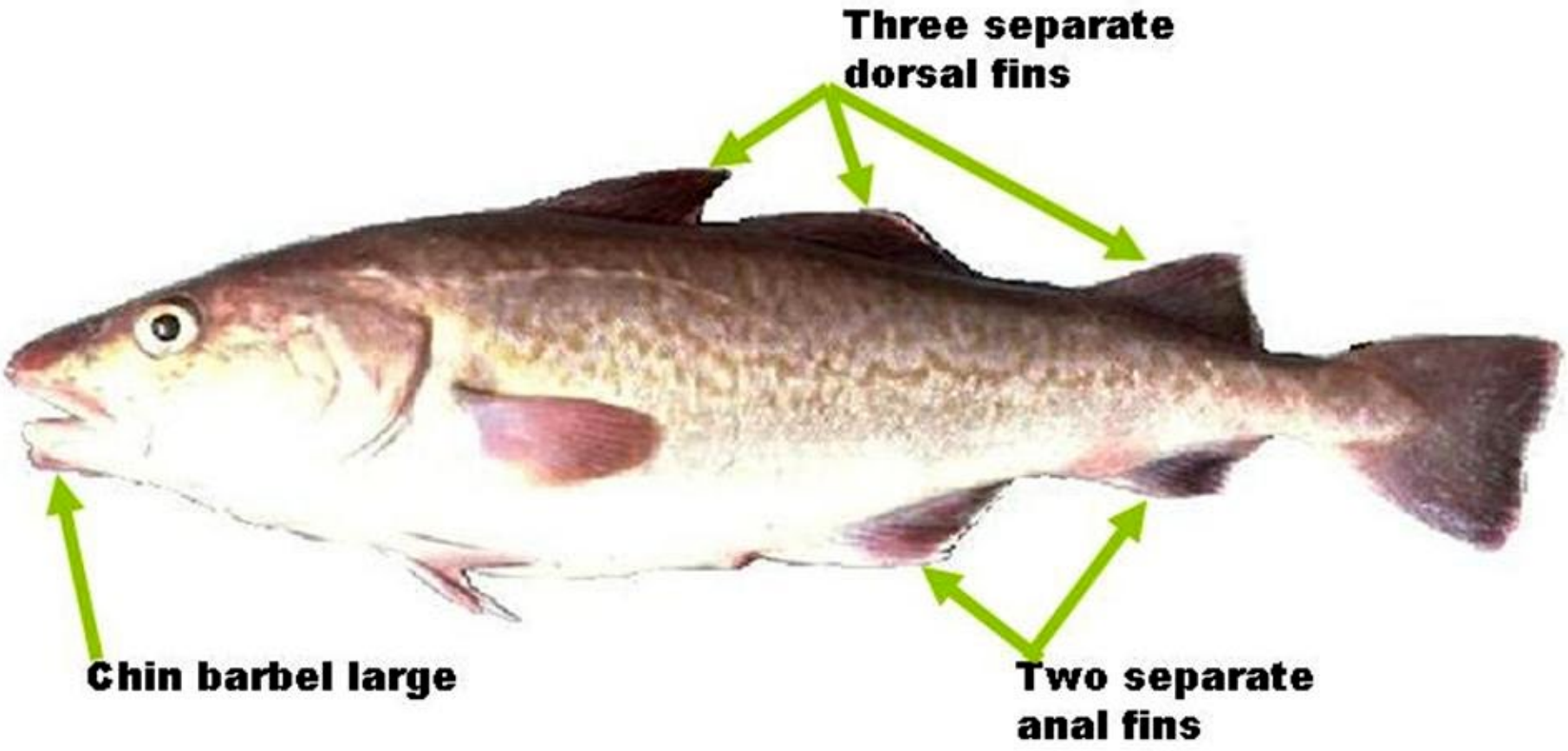
Pacific Cod (*Gadus macrocephalus*)



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2040 SE Marine Science Dr., Newport, Oregon 97365
(541)867-4741

- Commercial fishery: Pacific cod is the second largest commercial groundfish catch off Alaska and virtually all of the United States.
- In 2021, commercial harvest of Pacific cod totaled 330.4 million pounds, and was worth $86.5 million, according to the NOAA Fisheries commercial fishing landings database.

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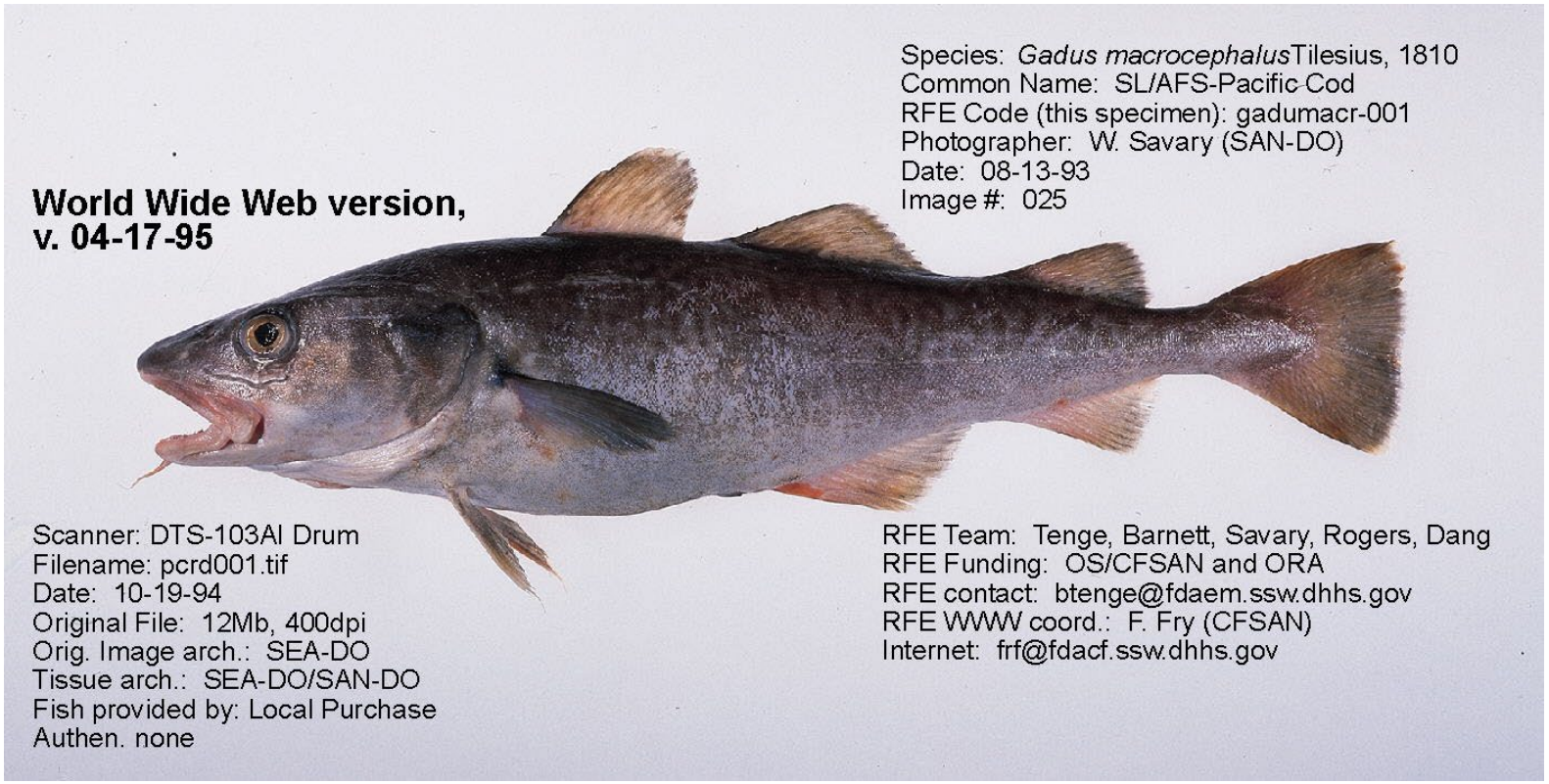

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Life History and Habitat

- **Geographic range:** In the North Pacific Ocean from Port Arthur, China, in the northern Yellow Sea, north around the Pacific Rim into the Bering Sea as far north as the Chukchi Sea, and south along the North American coast to Santa Monica Bay, California. Also found off the east coast of Japan from Tokyo Bay to northern Hokkaido, on the west coast of Japan in the Sea of Japan, and off the coasts of the Sakhalin and Kurile Islands. Pacific cod are rare in the southern part of their range.

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Life History and Habitat

- **Habitat:** Cod live near the bottom. They concentrate on the shelf edge and upper slope (328 to 820 feet deep) in the winter and move to shallower waters (less than 328 feet deep) in the summer. Pacific cod have been found as deep as 2,871 feet. Adults and large juveniles prefer mud, sand, and clay habitats.
- **Life span:** Relatively short-lived – maximum age of about 19 years
- **Food:** Clams, worms, crabs, shrimp, and juvenile fish
- **Growth rate:** Moderately fast growing
- **Maximum size:** Over 6 feet

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Life History and Habitat

- **Reaches reproductive maturity:** Females mature around of 1.6 to 1.9 feet in length and at about 4-5 years of age.
- **Reproduction:** Females have high reproductive potential – a mature female can produce over 5 million eggs. Pacific cod release all of their ripe eggs in a single spawning event within a few minutes time.
- **Spawning season:** From January through May, depending on location
- **Spawning grounds:** On the shelf edge and upper slope (328-820 feet deep)
- **Migrations:** Individual adults have been found to move more than 621 miles. Pacific cod also move seasonally from deep outer and upper shelf spawning areas to shallow middle-upper shelf feeding grounds. They are a schooling fish.

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Life History and Habitat

- **Predators:** Halibut, sharks, seabirds, and marine mammals.
- **Commercial or recreational interest:** Both
- **Distinguishing characteristics:** Pacific cod are brown or grayish with dark spots or patterns on the sides and a paler belly. They have a long chin barbell (a whisker-like organ near the mouth like on a catfish) and dusky fins with white edges.

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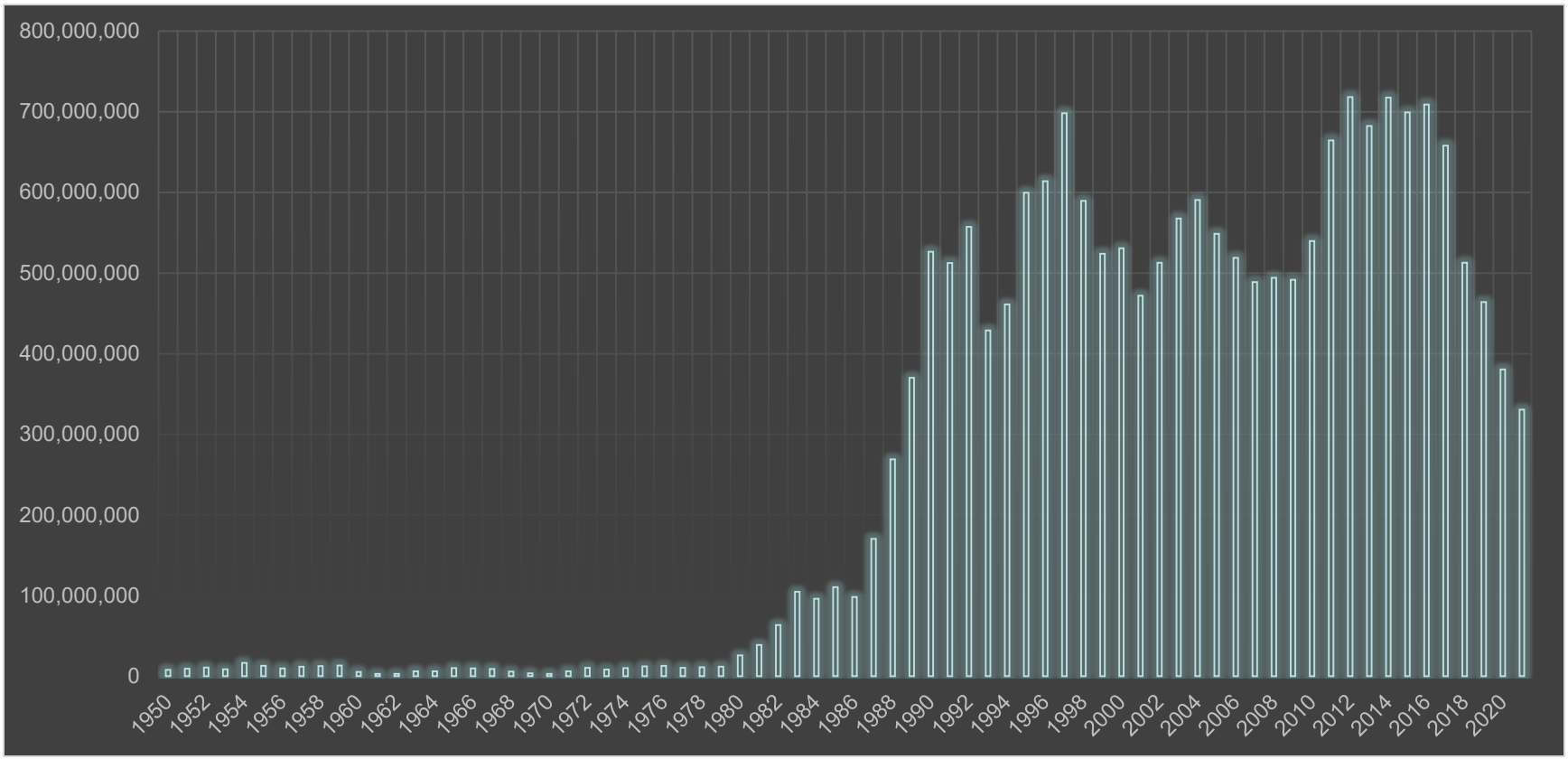
Cod Landings



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

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Pollock

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Pollock

Gadus chalcogrammus

Atlantic Pollock

Pollachius virens

Also Known As

Saithe, Coalfish, Coley, Green cod, Boston bluefish

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Scientific Name Debate

New DNA research changes Alaska pollock classification (adn.com)

- Alaska Pollock vs Pollock
- *Gadus chalcogrammus vs Theragra chalcaogramma*

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Scientific Name: *Gadus chalcogrammus*

Acceptable Market Name(s):	Pollock
Common Name:	Walleye Pollock †
Scientific Name:	Gadus chalcogrammus
DNA Sequence Data:	DNA
Regulatory Fish Encyclopedia (RFE) Photos and Data:	RFE
Hazard Information:	HAZ
ITIS TSN (see note below):	TSN 934083
Additional Information:	The Scientific Name has been changed from *Theragra chalcogramma* to *Gadus chalcogrammus* by American Fisheries Society (AFS). Market Name Change from Alaska Pollock to Pollock by Legislative actions: Congress mandated in **H.R. 2029 Consolidated Appropriations Act, 2016 (Omnibus Bill)**, that only *Gadus chalcogrammus* caught in Alaskan waters or the exclusive economic zone (as defined in section 3 of the Magnuson-Stevens Fishery Conservation and Management Act) adjacent to Alaska can be called Alaskan 'pollock' or Alaska """"pollock'.
Vernacular Name(s) (See note below.*):	Whiting Pacific Tomcod Pacific Pollock

*** Note:** The Vernacular Name(s) (if any listed above) are for **CROSS REFERENCE ONLY**, and generally not acceptable for product labeling in interstate commerce. Their use may result in seafood misbranding.

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Atlantic Pollock not on FDA Fish List

There were no records found that match your search criteria.

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European Pollock

	Acceptable Market Name(s)	Common Name	Scientific Name	Vernacular (Vernacular names are not acceptable names*)
	Pollock	European Pollock	*Pollachius pollachius*	Lythe Saithe Dover Hake Grass Whiting Greenfish Margate Hake
	Pollock	Pollock	*Pollachius virens*	Saithe Coalfish Coley Green Cod Boston Bluefish

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In general, *P. pollachius* is a brown or golden colour with a dark back while *P. virens* is bright silver with a very dark green back.

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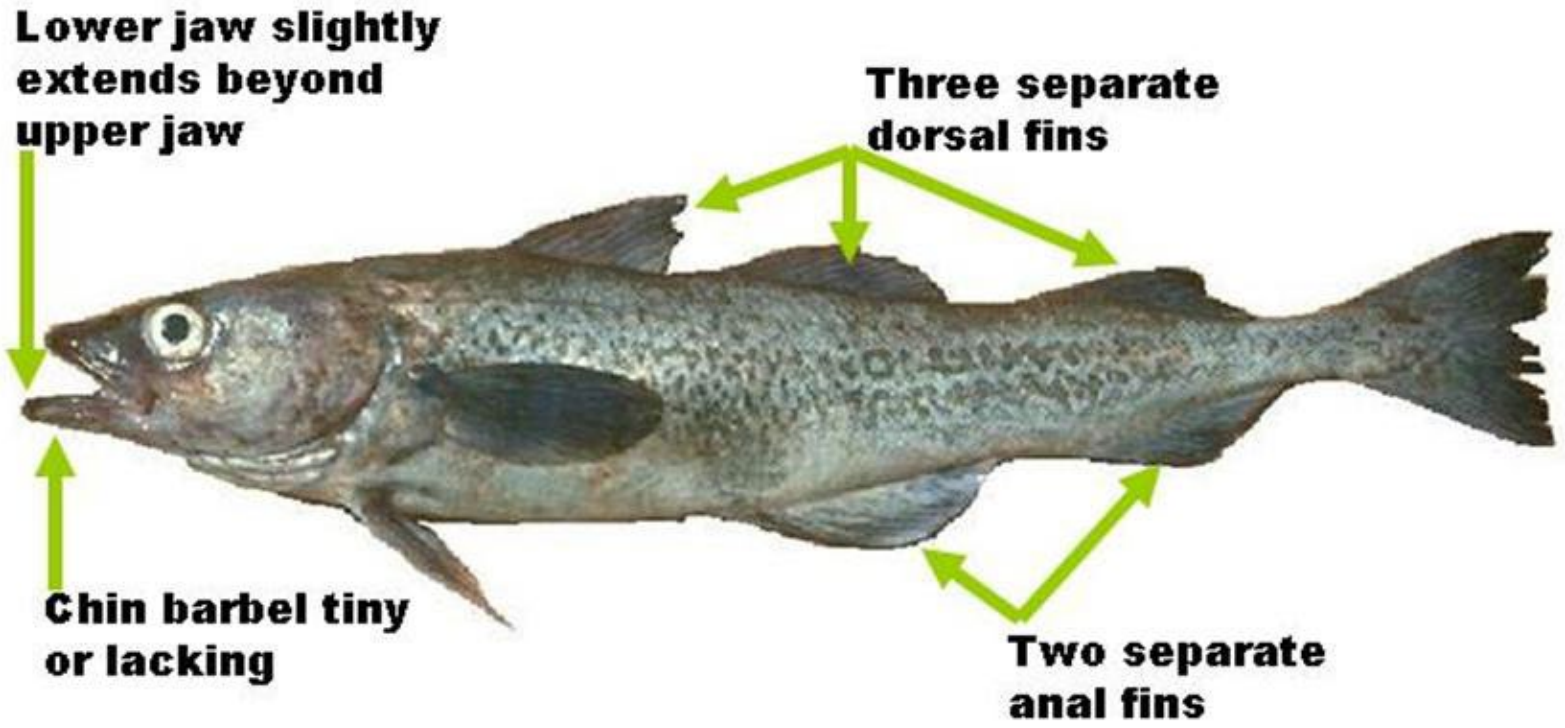
Gadus chalcogrammus

Walleye Pollock (*Theragra chalcoramma*)



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2040 SE Marine Science Dr., Newport, Oregon 97365
(541)867-4741

World Wide Web Ver., v. 01-05-96

Species: *Theragra chalcogramma* (Pallas, 1814)
Common Name: SL/AFS-Walleye Pollock
RFE Code: therchal 001
Photographer: W. Savary (SAN-DO)
Date: 09-01-93
Image #: 105

Scanner: DTS-103AI Drum
Filename: wehrd001.tif
Date: 10-19-94
Original File: 12Mb, 400dpi
Orig. Image arch.: SEA-DO
Tissue arch.: SEA-DO/SAN-DO
Fish Provided by: Local Purchase
No Authentication

RFE Team: Tenge, Barnett, Savary, Rogers, Dang
RFE Funding: OS/CFSAN and ORA
RFE contact: btenge@fdaem.ssw.dhhs.gov
RFE WWW coord.: F. Fry (CFSAN)
Internet: frf@fdacf.ssw.dhhs.gov

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World Wide Web Ver., v. 01-05-96

Species: *Theragra chalcogramma* (Pallas, 1814)
Common Name: SL/AFS-Walleye Pollock
RFE Code: therchal 002
Photographer: W. Savary (SAN-DO)
Date: 09-01-93
Image #: 104

RFE Team: Tenge, Barnett, Savary, Rogers, Dang
RFE Funding: OS/CFSAN and ORA
RFE contact: btenge@fdaem.ssw.dhhs.gov
RFE WWW coord.: F. Fry (CFSAN)
Internet: frf@fdacf.ssw.dhhs.gov

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Fish Provided by: Local Purchase
No Authentication

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Alaska Pollock

- The Alaska pollock fishery is the largest U.S. fishery by volume. Annual catches from 2000-2009 have averaged 2.9 billion pounds. Alaska pollock makes up over 40% of the global whitefish production.

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Life History and Habitat

- **Geographic range:** Throughout the North Pacific with the largest concentrations in the Bering Sea.
- **Habitat:** In mid-water to the ocean floor, usually between depths of 330 to 985 feet but up to 3,280 feet deep. Adolescent and young adult pollock tend to form large schools and live in the mid-water region. Older pollock (above age 5) typically reside near the bottom.
- **Life span:** Up to 17 years
- **Food:** Juveniles feed on zooplankton and small fish, including other smaller pollock; older fish feed mainly on other fish.
- **Growth rate:** Relatively fast
- **Maximum size:** Up to 3.3 feet in length

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Life History and Habitat

- **Reaches reproductive maturity:** Between the ages of 3 and 4
- **Reproduction:** Pollock have high reproductive potential – female pollock can produce more than 2 million eggs over the course of several weeks.
- **Spawning season:** February through April
- **Spawning grounds:** Aleutian Basin, Bering Sea, Gulf of Alaska, northwest of the Pribilof Islands, and the Strait of Georgia
- **Migrations:** Seasonal from spawning grounds to feeding grounds
- **Predators:** Fish and marine mammals, specifically Steller sea lions
- **Commercial or recreational interest:** Commercial
- **Distinguishing characteristics:** Speckled coloring helps pollock blend in with the seafloor to avoid predators.

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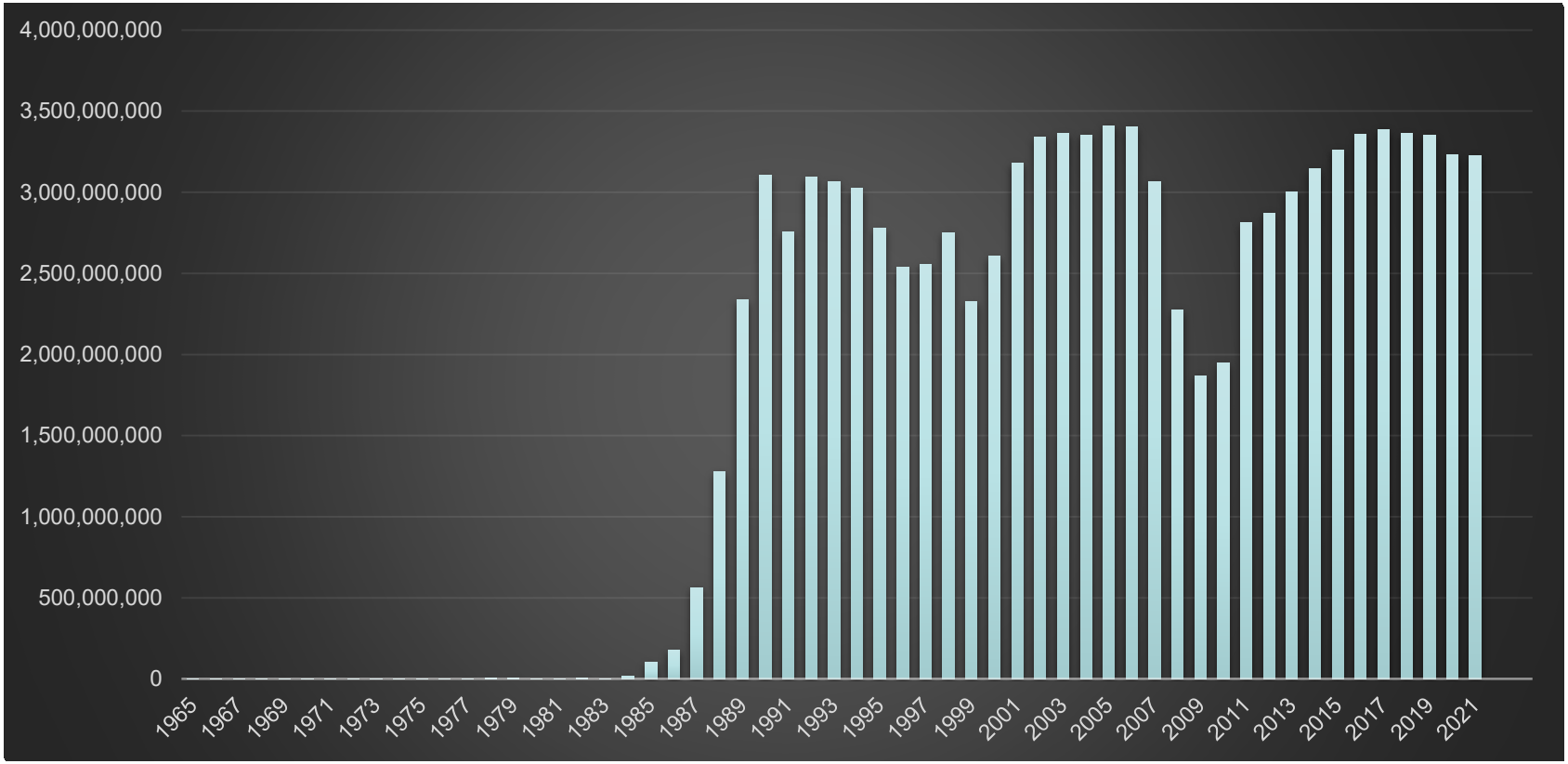
Pollock Landings



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Harvest

THE BANK HAND-LINE COD FISHERY.

Hand-line dory cod fishing on the Grand Bank. (Sect. v, vol. i, p. 126.)

Drawing by H. W. Elliott and Capt. J. W. Collins.

PLATE 24.

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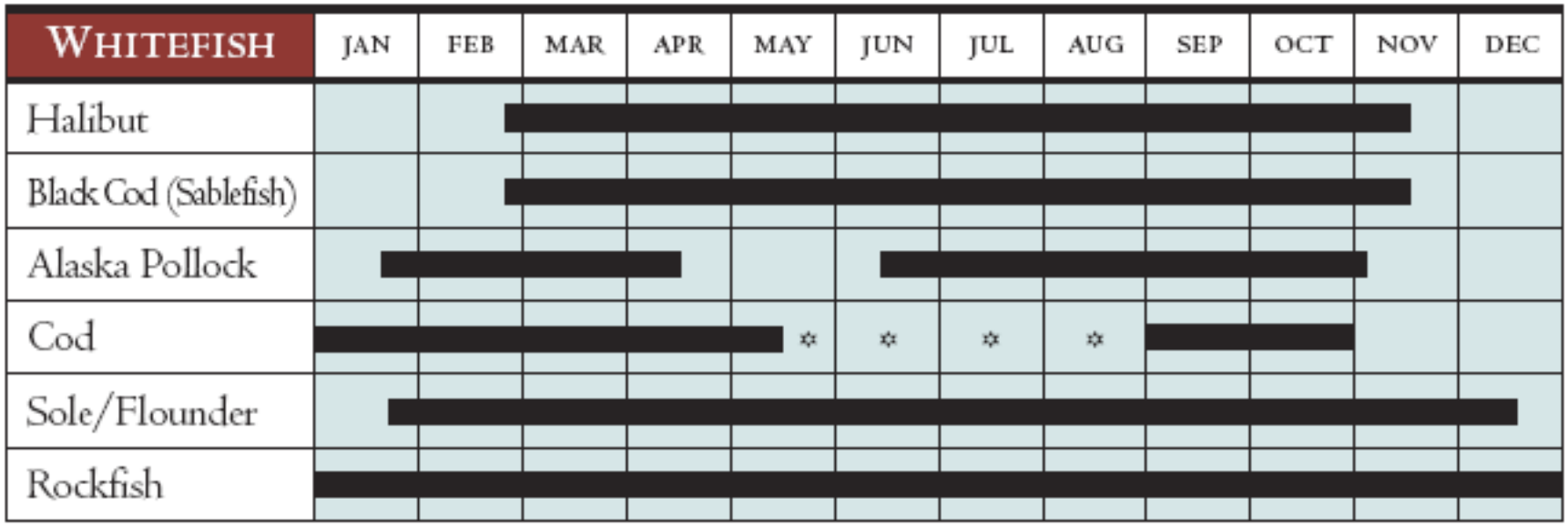
Harvest Seasons



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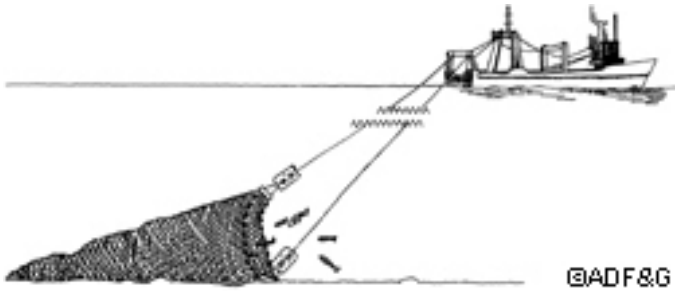
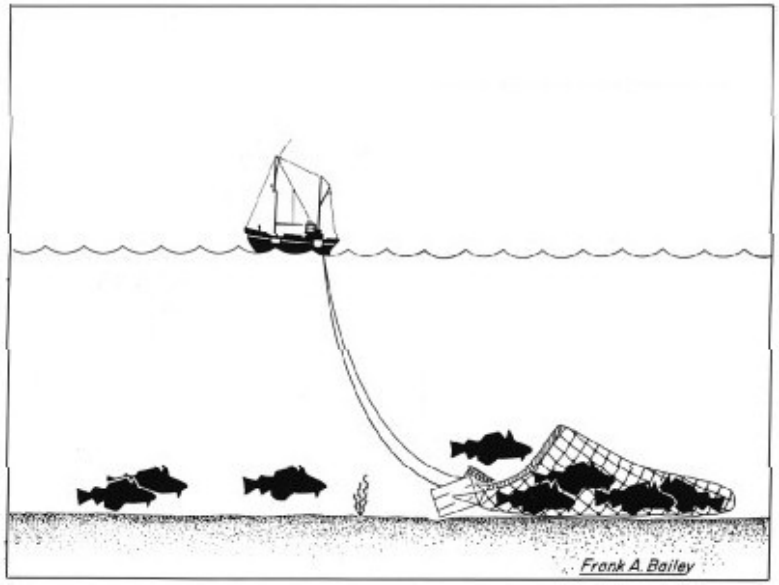
Trawling





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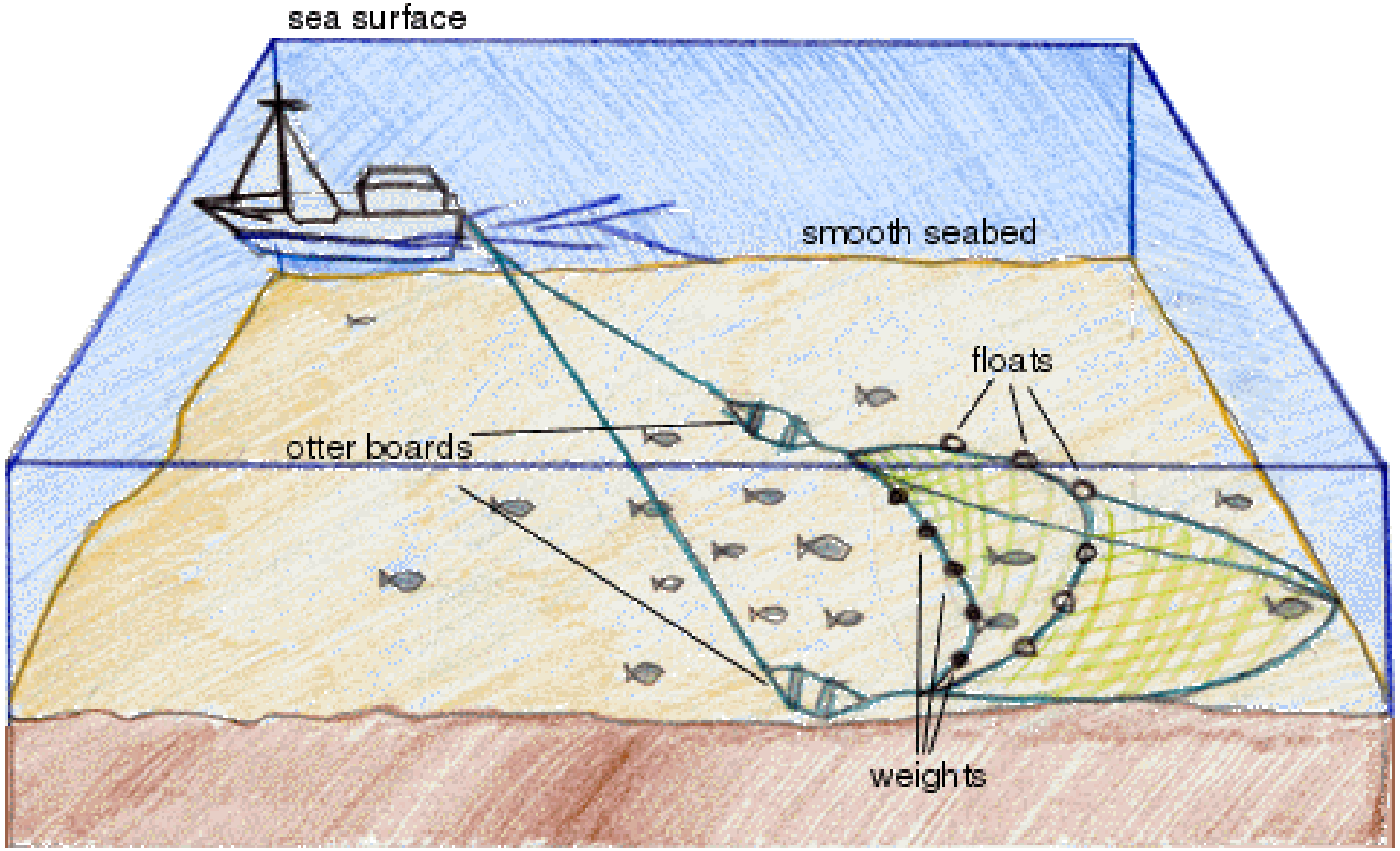

TRAWLING

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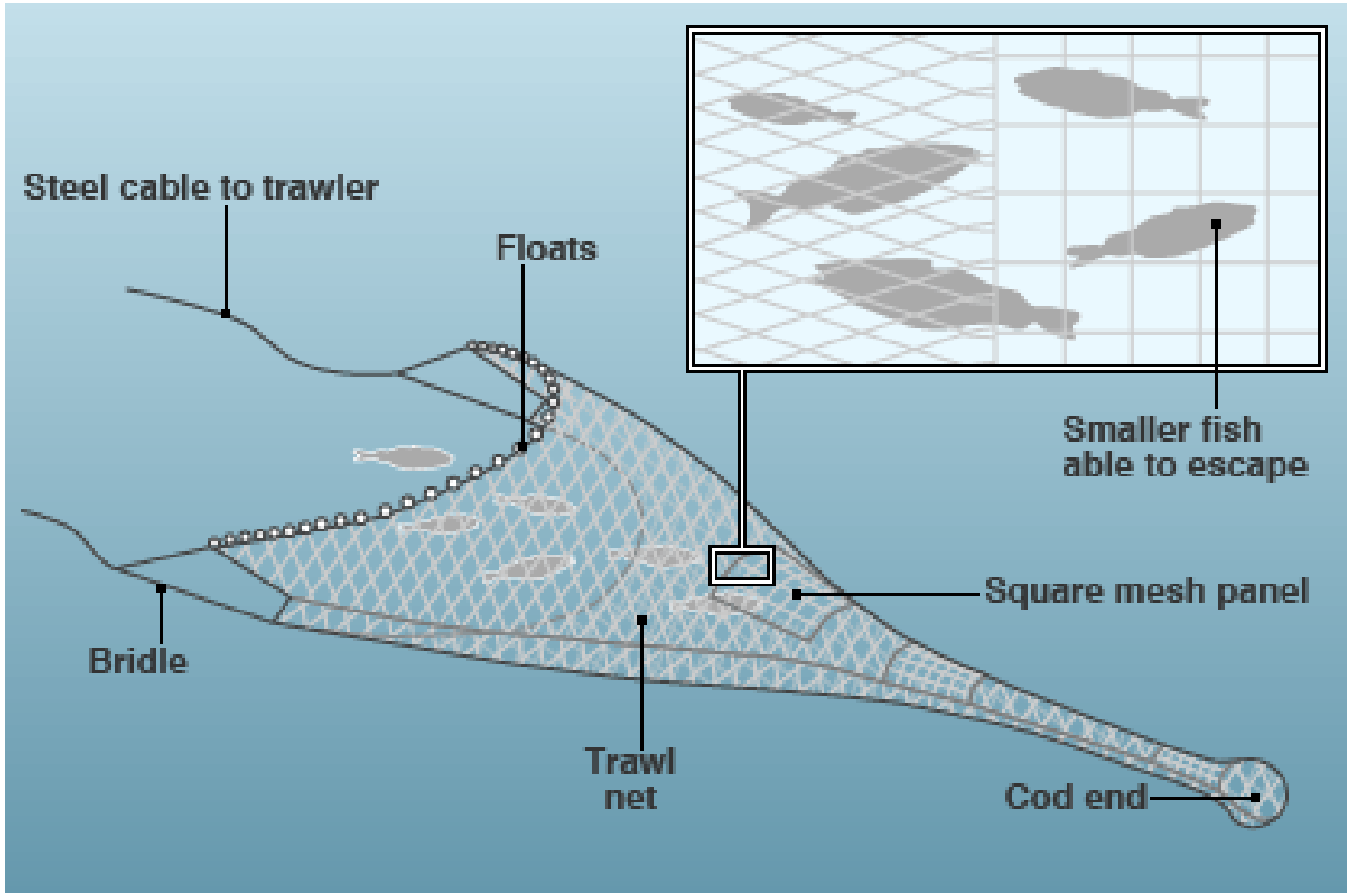
HOW A TRAWL NET WORKS



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F/V Anita J **heads towards Dutch Harbor with holds full and pollock on deck after a lucky streak far north on the Bering Sea.**

Photo by Jenn Padilla

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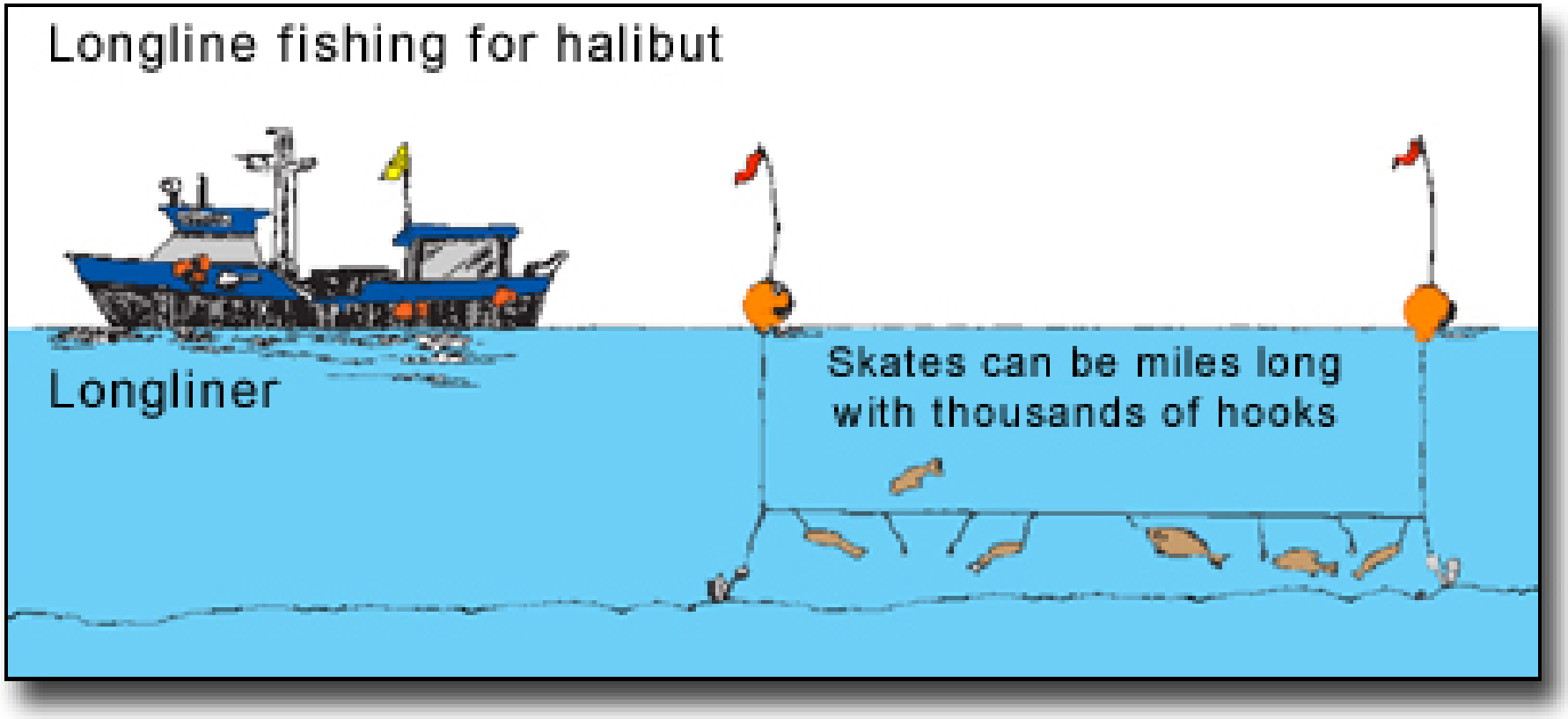

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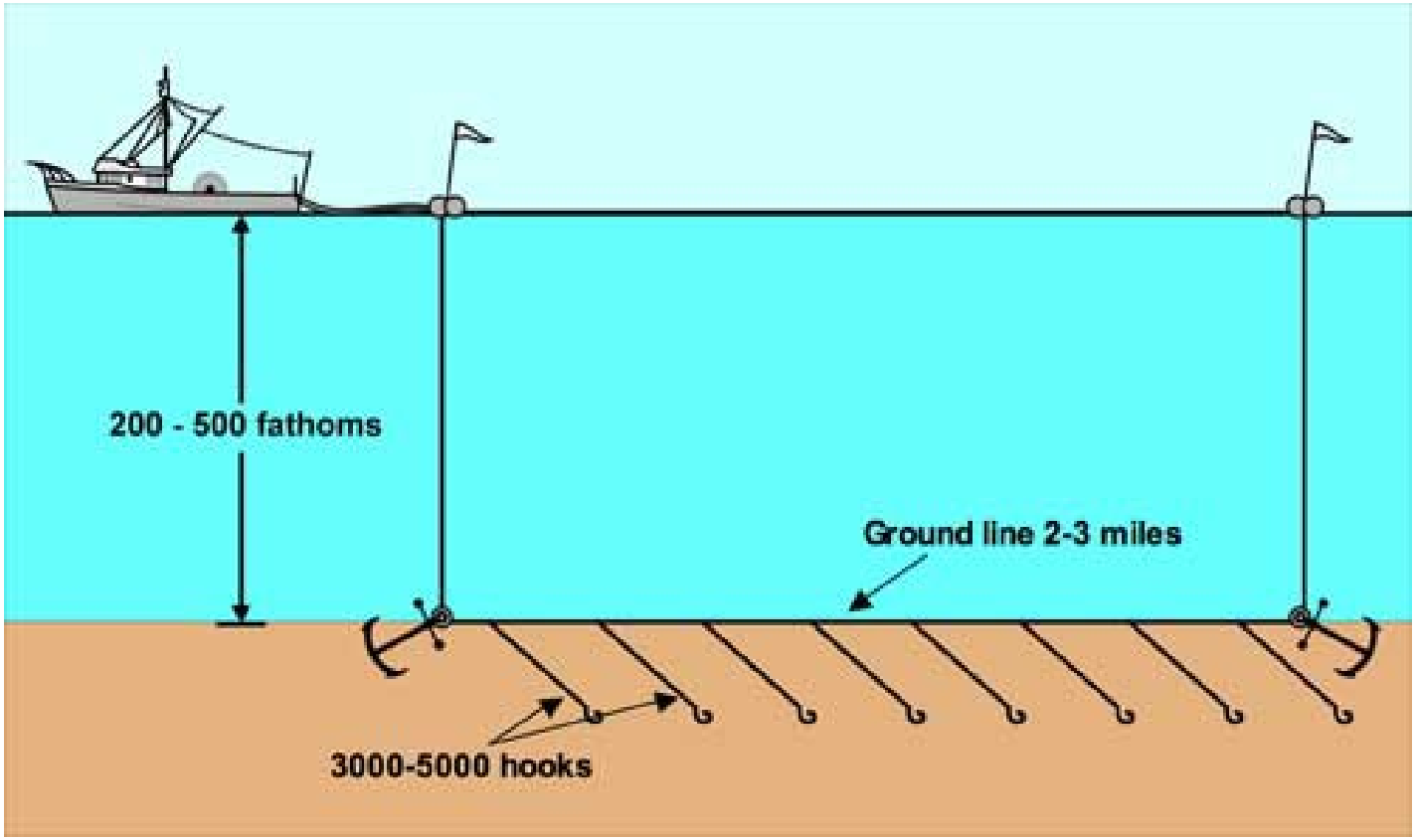

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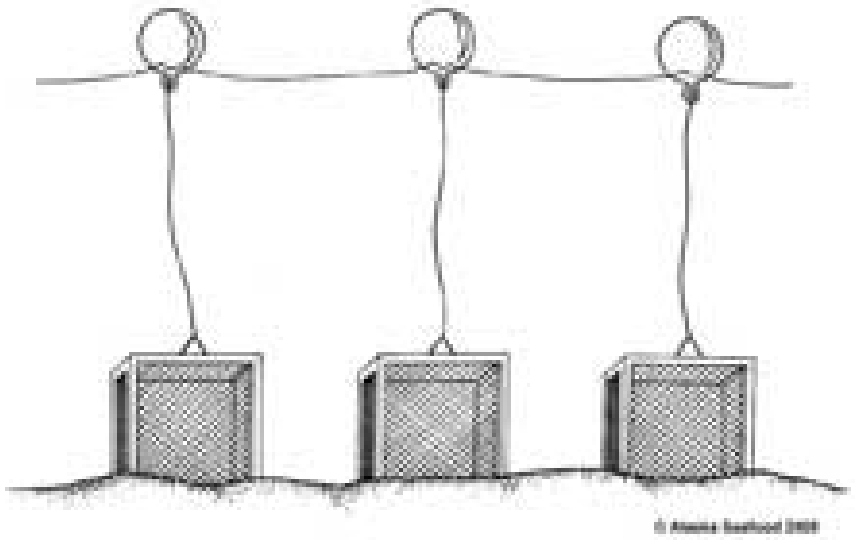
Pots



http://www.fao.org/docrep/004/x2590e/x2590e07.htm

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Pots

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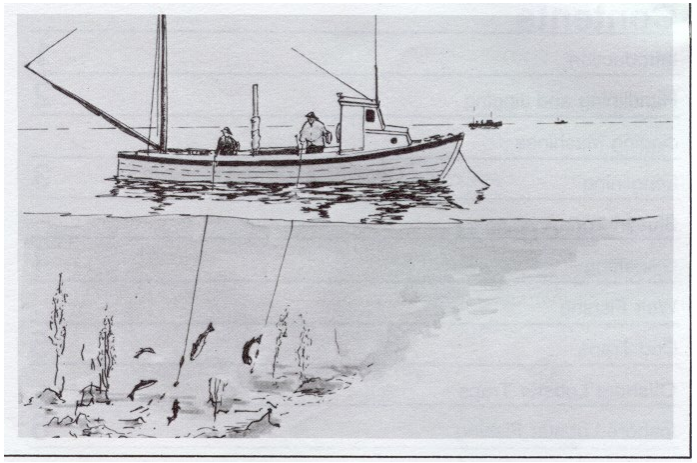
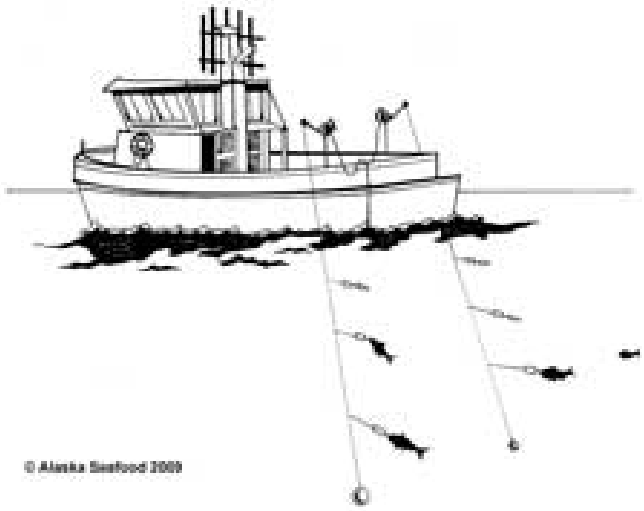
Jigging





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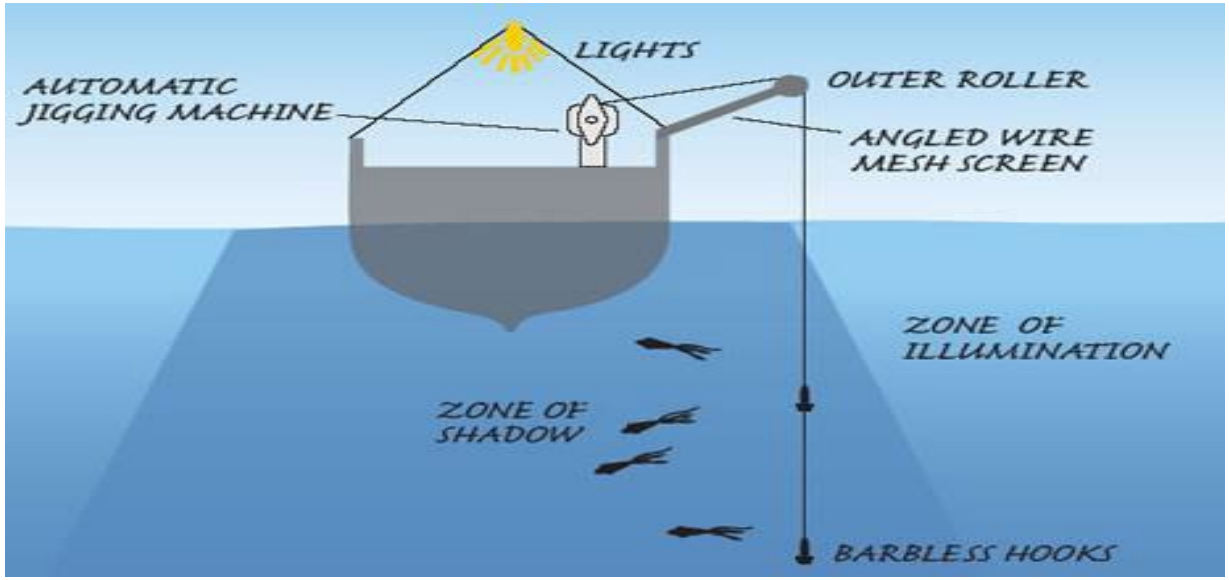
Jigging Machine



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Recommended Whitefish Quality Guidelines

For Fishing and Processing Operations

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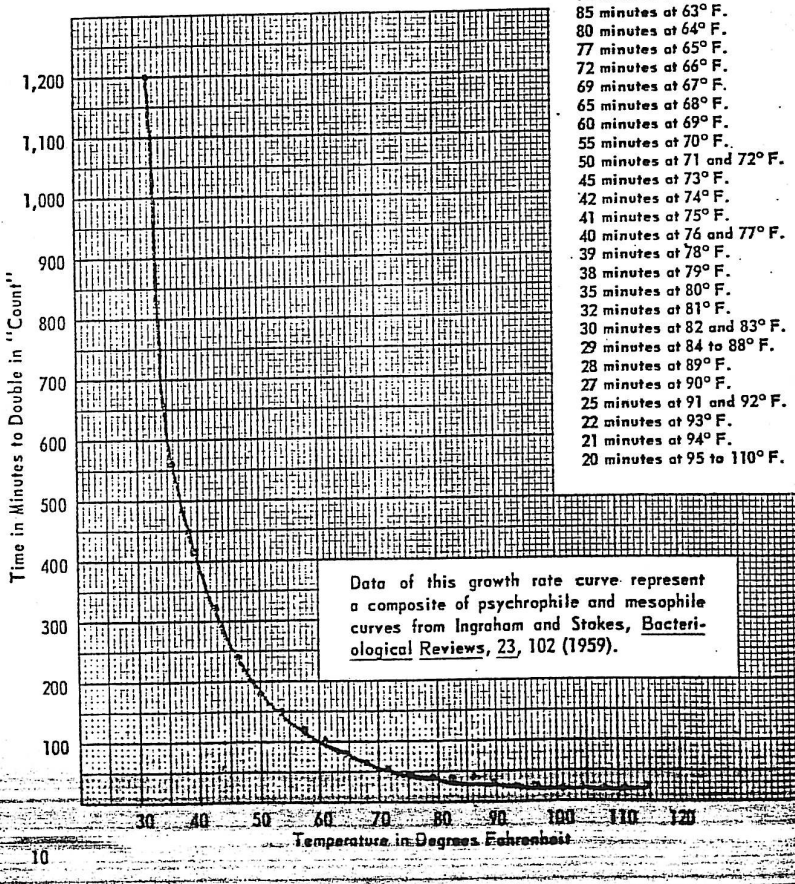
GROWTH RATES FOR BACTERIA *Minutes for "Count" to Double*

1,200 minutes at 32° F.
900 minutes at 33° F.
750 minutes at 34° F.
600 minutes at 35° F.
550 minutes at 36° F.
510 minutes at 37° F.
470 minutes at 38° F.
430 minutes at 39° F.
400 minutes at 40° F.
365 minutes at 41° F.
330 minutes at 42° F.
305 minutes at 43° F.
280 minutes at 44° F.
260 minutes at 45° F.
240 minutes at 46° F.
225 minutes at 47° F.
210 minutes at 48° F.
194 minutes at 49° F.
180 minutes at 50° F.
168 minutes at 51° F.
155 minutes at 52° F.
150 minutes at 53° F.
145 minutes at 54° F.
130 minutes at 55° F.
125 minutes at 56° F.
120 minutes at 57° F.
110 minutes at 58° F.
105 minutes at 59° F.
100 minutes at 60° F.
95 minutes at 61° F.
90 minutes at 62° F.
85 minutes at 63° F.
80 minutes at 64° F.
77 minutes at 65° F.
72 minutes at 66° F.
69 minutes at 67° F.
65 minutes at 68° F.
60 minutes at 69° F.
55 minutes at 70° F.
50 minutes at 71 and 72° F.
45 minutes at 73° F.
42 minutes at 74° F.
41 minutes at 75° F.
40 minutes at 76 and 77° F.
39 minutes at 78° F.
38 minutes at 79° F.
35 minutes at 80° F.
32 minutes at 81° F.
30 minutes at 82 and 83° F.
29 minutes at 84 to 88° F.
28 minutes at 89° F.
27 minutes at 90° F.
25 minutes at 91 and 92° F.
22 minutes at 93° F.
21 minutes at 94° F.
20 minutes at 95 to 110° F.



Data of this growth rate curve represent a composite of psychrophile and mesophile curves from Ingraham and Stokes, Bacteriological Reviews, 23, 102 (1959).

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SEAgram

ALASKA SEA GRANT
MARINE ADVISORY PROGRAM

Single Copies Free
No. 30 1989 (2nd Printing 1995)

Seafood Shelf Life as a Function of Temperature

by John P. Doyle

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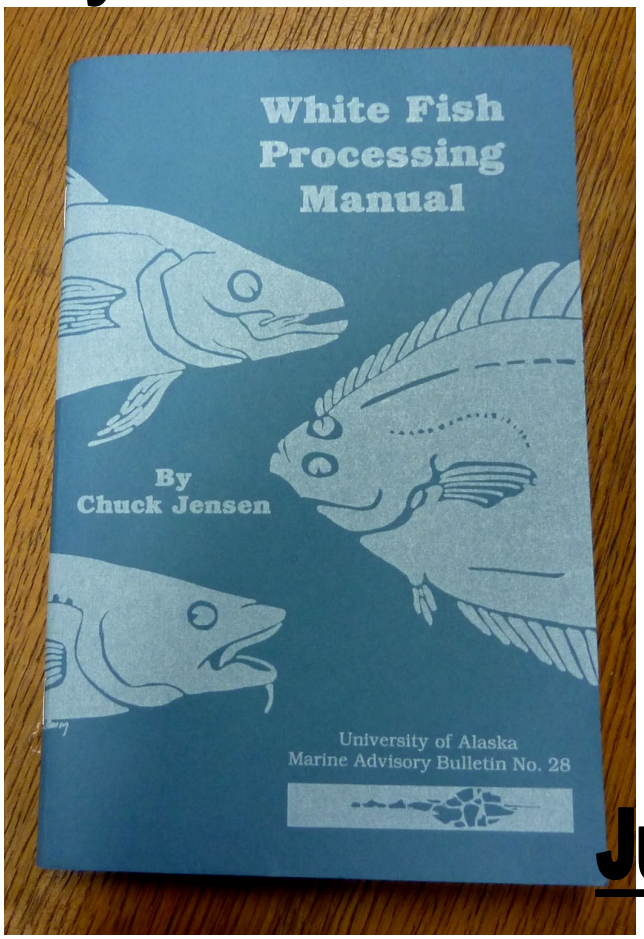
University of Alaska Marine Advisory Bulletin No. 28



June 1987

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Fresh Fish Quality Inspection

Vessel/Truck__Date_____Time_____Plant_____
Species _____Temperature_Inspector_____

Score	AA (Top of catch)	A (Good)	B (Fair)	C (Poor)	Enter Score
ODOR	Fresh, strong, seaweedy, shellfishy	No odor; neutral odor	Definite musty, mousy, bready, malty odor Process immediately!	Acetic, fruity, sulphic, fecal REJECT	
GUT CAVITY	Glossy, brilliant, difficult to tear from flesh	Slightly dull, difficult to tear from flesh	Somewhat gritty, somewhat easy to tear from flesh	Gritty, easily torn from flesh	
GILLS	Bright red mucus, translucent	Pink mucus slightly opaque	Grey, bleached, mucus opaque and thick	Brown, bleached mucus yellowish-gray, clotted	
EYES	Convex, black pupil translucent cornea	Flat, slightly opaque pupil	Slightly concave, gray pupil; opaque cornea	Completely sunken gray pupil; opaque, discolored cornea	
OUTER SLIME	Transparent or water white	Milky	Yellowish-gray, some clotting	Yellowish-brown, gray, clotted and thick	
SKIN	Bright, shining, iridescent, no bleaching	Wavy, slight dullness, slight loss of brightness	Dull, some bleaching	Dull, gritty, marked bleaching and shrinkage	

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Memo

TO: All Skippers/Vessel Owners
FROM: Manager, U-Know-Who Fish Co.

Due to current and projected market conditions the following handling procedures for white fish must be observed. Rejection of the entire load is possible if not followed to the letter:

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ROUND FISH:

1) Fish must be delivered within 48 hours of when first fish put down.
2) All fish must be bled and gutted.
3) All fish must exceed 21 inches.
4) All fish must be free of ulcers and other deformities.
5) All fish must be separated by species.
6) All fish must be boxed in containers not exceeding 100 pounds.
7) Ice must be used in a 1:2 ratio.
8) All fish must have an internal temperature of less than 32°F when delivered.

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FLATFISH:

1) Fish must be delivered within 72 hours of when first fish put down.
2) All fish must exceed 13 ½ inches.
3) All fish must be free of ulcers and other deformities.
4) All fish must be graded by species.
5) All fish must be boxed with black side down.
6) Ice must be used in a 1:2 ratio.
7) All fish must have an internal temperature of less than 32°F.
8) Roe fish must be separated from non-roe fish.

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SEAFOOD PRODUCTS ASSOCIATION

Memo:

TO: Un-loaders and Dock Crew
FROM: Manager, U-Know-Who Fish Co.

Attached is a memo sent to all individuals fishing for this company. If any deviation from these rules is observed, the manager and quality control person must be notified and unloading stopped until they are on the scene.

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In addition, the following procedure must be followed:

1) The oldest fish must come out first.
2) Fish temperature must be taken every tenth box and recorded.
3) Ice must cover fish in each box.
4) Every 20th box must be inspected for “FRESHNESS” and recorded.
5) No more than ten boxes per pallet.
6) Every pallet tagged with name, date, time, temperature and species.
7) Every pallet of fish must be stored in cool area until needed.

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FRESH FISH EVALUATION:

1) Eyes should be clear and bright, not opaque.
2) Gill should be red, normal in appearance and practically odorless.
3) Skin should be bright, shiny and tight; not dried, dull and wrinkled.
4) There should be no “belly burn.”
5) Flesh should be resilient.
6) There should be a “fresh fish” odor.

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SEAFOOD PRODUCTS ASSOCIATION

Memo

TO: All Fillet Line Employees
FROM: Manager, U-Know-Who Fish Co.

SPA
SEAFOOD PRODUCTS ASSOCIATION

COD FILLETS FOR "SHATTER PACK" SHALL MEET FOLLOWING SPECIFICATIONS:

1) Color – Creamy white to white, no bruises, blood spots
2) or other discoloration.
3) Texture – Firm, resilient.
4) Odor – Fresh, seaweedy.
5) Appearance – No cuts, no gaping, no feathers,
6) symmetrical, no holes.
7) Size/Weight – Minimum 6 inches; maximum 16 inches;
8) minimum weight 3 ounces; maximum weight 20 ounces.

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Defects Not Allowed:

- Bones
- Skin

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STANDARD FOR BLOCKS:

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Bacteriological Standards:

Bug	Maximum
• TPC	• 100,000 colonies/grams
• E. Coli	• 1.0/10 grams
• Coag. Pos.	• .5 colonies/gram

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Standards cont.:

- Only one visible parasite per ten pounds of product will be allowed.
- No bone shall be tolerated.
- Skin over one-fourth square inch will be a major defect. Feathers shall constitute a minor defect.
- Discoloration or dehydration exceeding one-half square inch shall be a major defect.
- Two majors or four minors in any sample shall be basis for rejection.
- Color shall be uniform and natural.
- Weight shall be 16.5 pounds/block, one percent variation allowed. Size shall be 19” x 10” x 2.5”.
- No PCBs, Hg or pesticide allowed.

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Many Specs and Standards

- CODEX

http://www.codexalimentarius.net/web/index_en.jsp

- USDC

http://www.seafood.nmfs.noaa.gov/

- Buyers

http://www.alaskaseafood.org/industry/qc/

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