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Guide to Some Trawl-Caught Marine Fishes From Maine to Cape Hatteras, North Carolina

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Richard A. Frank, Administrator
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CONTENTS

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DONALD D. FLESCHER[1]

ABSTRACT

Fishes covered are those regularly caught during trawling operations. Similar shaped fishes are grouped together. On each page the written keys are connected by lines to the fish illustrations; consequently, technical terms in the keys are illustrated as they are used. Notes on the size and range of each fish are included.

INTRODUCTION

This guide is designed for the quick identification of trawl caught fishes under sometimes difficult field conditions. The species that are included are abundant in bottom trawl catches of National Marine Fisheries Service (NMFS) research cruises on the continental shelf. These cruises cover the area slightly northeast of the Gulf of Maine to Cape Hatteras, N.C., from about 5 to 200 fathoms. Estuaries are not included.

Fishes with similar characteristics are grouped together even though they may not be related. When identifying a fish, if you cannot decide on which page to begin after leafing through the guide, you can use the introductory key on pages 3 to 7. The keys are for identifying adult fishes. The body proportions of immature fishes may be quite different, and some body parts may not have developed yet.

A geographical range is given for each species. This is the total area over which it has been found. It may be expected to be abundant within a small area of this range.

Many species occur quite frequently in NMFS trawl catches but are not considered to be abundant. These species are omitted in order to keep the guide small. Therefore any fish that does not exactly fit the key characteristics or that looks different from the majority of the individuals can be preserved (10% Formalin or full strength alcohol works well) or frozen for later identification. The reader is referred to the following texts for a more extensive coverage of the fishes:

"Field Book of Marine Fishes of the Atlantic Coast" by Charles M. Breder, Jr. 1948. G. P. Putnam's Sons, 332 p. This book also includes the estuarine species as well as those whose center of abundance is south of Cape Hatteras. It is pocket-sized, which is helpful for in-the-field use.

"Fishes of the Gulf of Maine" by Henry Bigelow and William Schroeder. 1953. U.S. Fish and Wildlife Service, Fishery Bulletin, vol. 53, 577 p. [Available as a reprint from the Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138.] It includes not only the usual fishes of the Gulf of Maine and Georges Bank but all that have ever strayed into that area. Extensive information is given on the biology and economics of each species.

"Fishes of Chesapeake Bay" by Samuel Hildebrand and William Schroeder. 1928. Bulletin of the U.S. Bureau of Fisheries, 43(1): 1-366. [A 1972 reprint is available from T. F. H. Publications, Inc., Neptune, NJ 07753.] Although about 50 years old, this publication gives good coverage of the biology and economic importance of each species. The T. F. H. Publications reprint brings the scientific names up to date.

"Fishes of the Atlantic Coast of Canada" by A. H. Leim and W. B. Scott. 1966. Fisheries Research Board of Canada, Bulletin 155, 485 p. It covers the fishes found between the Gulf of Maine and Labrador out to 1,000 fathoms.

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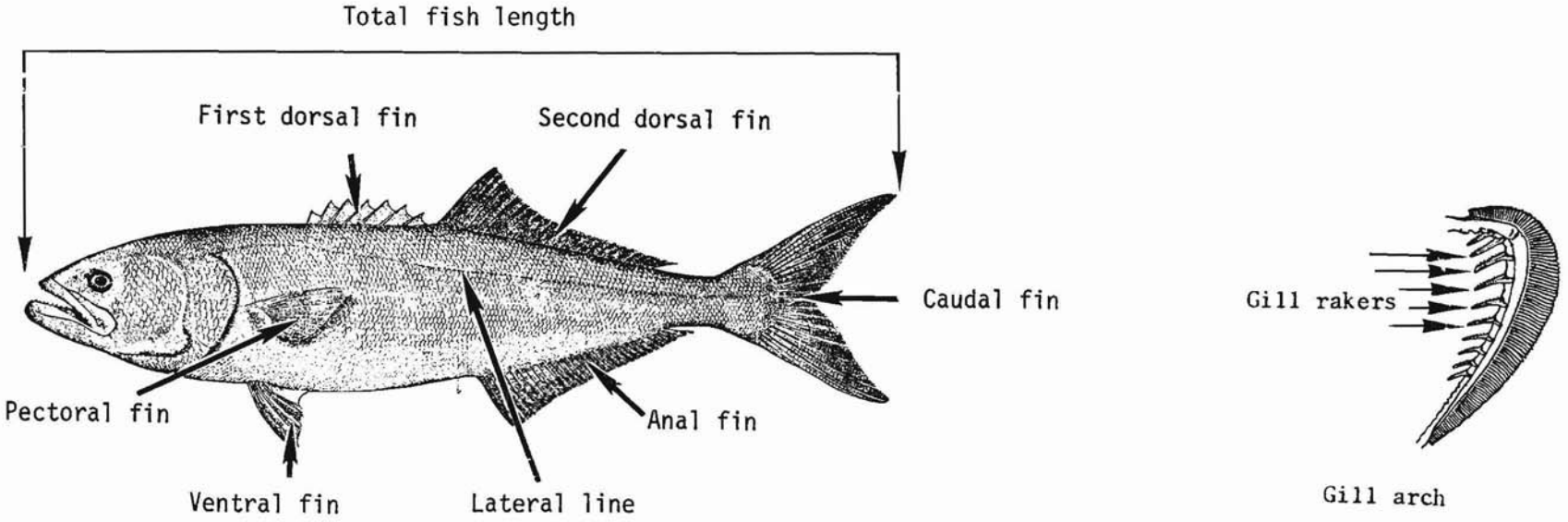
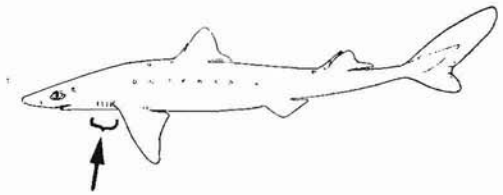
Source of Drawings

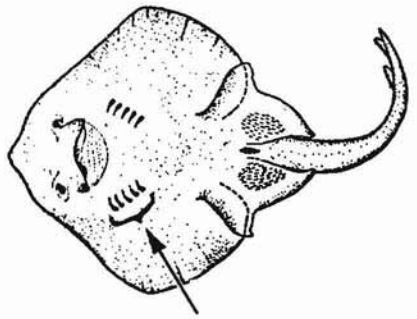
Forty-eight of the drawings came from the files of the United States National Museum (Smithsonian Institution). Thirty-one are from the book "The Fishery Industries of the United States, Section I, History of Aquatic Animals" by George B. Goode, 1884. Twenty-one are from the books "Fishes of the Western North Atlantic," Part 1, 1948; Part 2, 1953; Part 3, 1963; and Part 6, 1973 (Sears Foundation for Marine Research, Memoir 1). Four are from "Oceanic Ichthyology" by George B. Goode and Tarleton H. Bean, 1896. Six other government and museum publications were each the source of one or two drawings. Illustrators at the National Marine Fisheries Service, NOAA, Woods Hole, Mass., drew the undersides of the winter and little skates and the gill rakers of red and white hake.



Parts of a fish used for fish identification.

INTRODUCTORY KEY





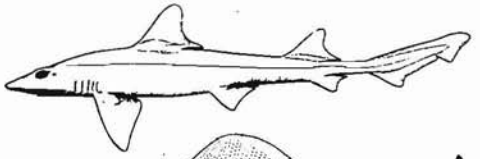
1a. Has five gill openings on each side.

Go to 2.

1b. Has either one or no gill opening on each side.

Go to 3.

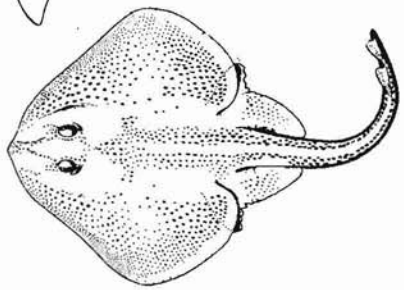
cross-section



2a. The body in cross section is more or less rounded.

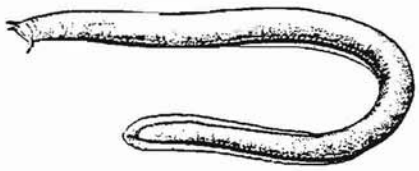
See sharks except angel shark, p. 8.

cross-section



2b. The body in cross section is flattened from belly to back.

See skates, rays and angel shark, p. 9 to 12.

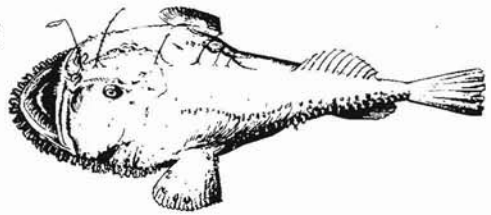


3a. Has no jaws, no pectoral fin and no external eyes.

See hagfish, p. 13.

3b. Has jaws, pectoral fin and external eyes.

Go to 4.

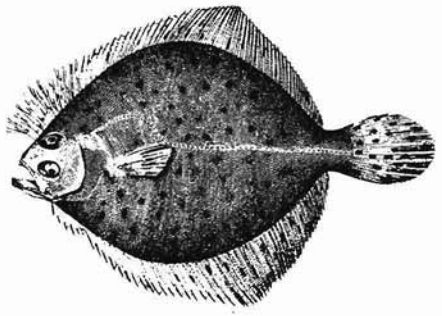


4a. Mouth enormous and directed upward with lower jaw projecting so far beyond upper that most teeth in lower jaw exposed when mouth closed.

See goosefish, p. 28.

4b. Mouth not enormous, most teeth in lower jaw not exposed when mouth closed.

Go to 5.

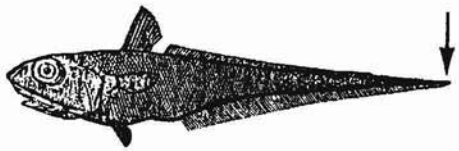


5a. Body flattened in cross section; both eyes on the same side of the head.

See flatfishes, p. 25, 26.

5b. Body more or less rounded in cross section; one eye on each side of head.

Go to 6.

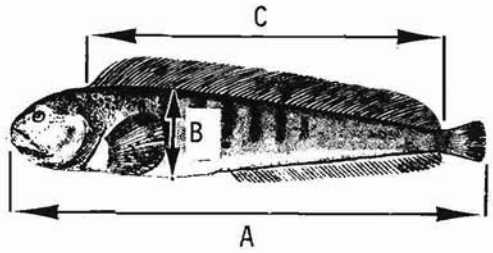


6a. Body tapers to a whiplike tail ("rattail").

See grenadier, p. 13.

6b. Tail not whiplike.

Go to 7.



7a. Body long and slender: body's greatest height (not counting dorsal fin) less than or equal to 1/5 of total body length; has only one dorsal fin which is at least 2/3 as long as total body length.

See eel-shaped fishes, p. 13, 14.

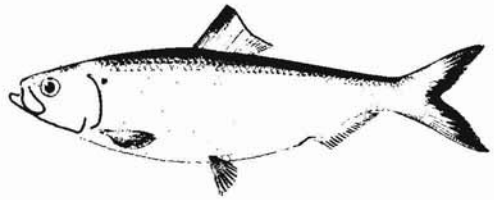
$B \leq 1/5\ A$ $C \geq 2/3\ A$

7b. Body shorter and stouter: body's greatest height (not counting dorsal fin) greater than or equal to 1/4 of total body length or the longest dorsal fin is less than 2/3 of the total body length.

Go to 8.

8a. The belly in cross-section has a bottom edge that is sharp edged.

See herrings, p. 15, 16 and butterfish, p. 28.

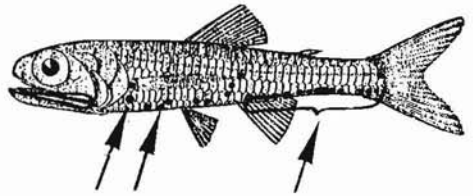


8b. The belly in cross-section has a bottom edge that is more or less rounded.

Go to 9.

9a. Numerous light-producing organs (photophores) along the ventral surface.

See pearlsides and lanternfish, p. 17.

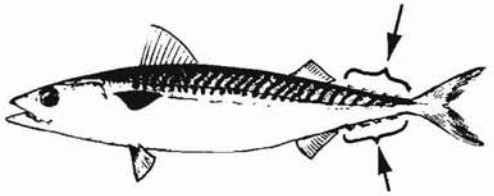


9b. No light-producing organs (photophores) along the ventral surface.

Go to 10.

10a. Four or more small fins between last dorsal fin and caudal fin and between anal fin and caudal fin.

See mackerel and tuna-shaped fishes, p. 27.

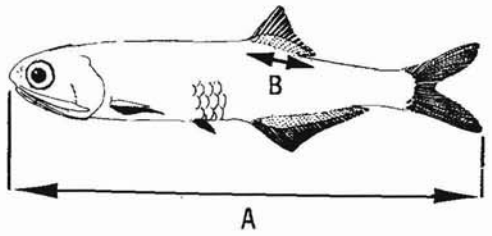


10b. No small fins between last dorsal fin and caudal fin and between anal fin and caudal fin.

Go to 11.

11a. Base of longest dorsal fin 1/7 or less of total body length.

See anchovy-shaped fishes, p. 17, 18.



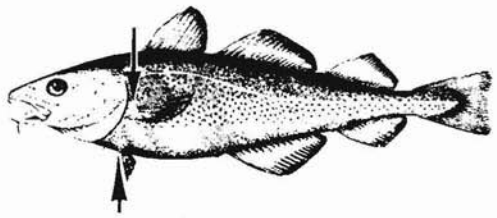
$B \leq {}^{1}/_{7}\ A$

11b. Base of longest dorsal fin 1/6 or more of total body length.

Go to 12.

12a. The front half of the first dorsal fin is supported entirely by segmented, fairly soft bones (called rays); start of ventral fin is located directly beneath or forward of start of pectoral fin.

See cod-family, p. 19, 20.



12b. The front half of the first dorsal fin is supported entirely by unsegmented, often very hard bones (called spines); or start of ventral fin is located behind start of pectoral fin.

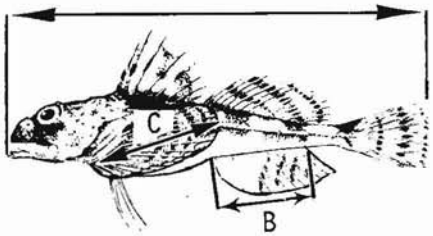
Go to 13.

13a. Two dorsal fins. Base of anal fin long, more than 1/5 of total body length. Pectoral fins large, usually more than 1/5 of total body length.

See searobins and sculpins, p. 23, 24.

B > 1/5 A

usually C > 1/5 A

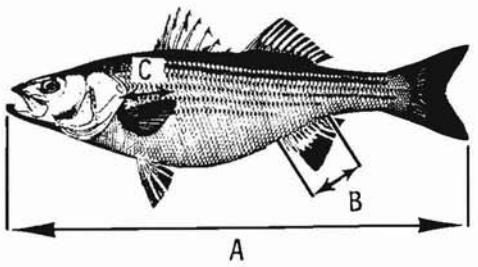


13b. One or two dorsal fins. If two dorsal fins are present, base of anal fin usually less than 1/5 of total body length. Pectoral fins small, usually less than 1/5 of total body length.

See bass-shaped fishes, p. 21, 22.

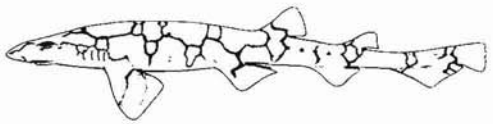
usually B < 1/5 A

usually C < 1/5 A



SHARKS EXCEPT ANGEL SHARK

A chain-like pattern of black stripes on back and sides.



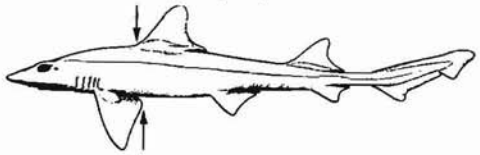
CHAIN DOGFISH *Scyliorhinus retifer*
Maximum size: 2½ feet
Range: Offshore (40 to 125 fathoms) from New York to North Carolina.

No chain-like pattern of black stripes on back and sides.

An anal fin. No spine in front of each dorsal fin.

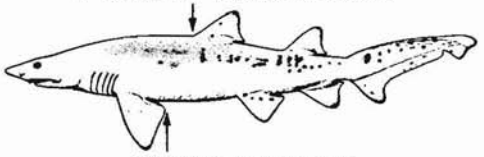
First and second dorsal fins about equal in size.

First dorsal fin begins over rear edge of pectoral fin. Teeth tiny, flat, and pavement-like.



SMOOTH DOGFISH *Mustelus canis*
Maximum size: 5 feet
Range: Cape Cod to as far south as Uruguay.

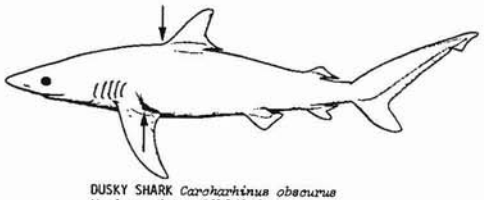
First dorsal fin begins far behind rear edge of pectoral fin. Teeth large and pointed.



SAND TIGER *Odontaspis taurus*
Maximum size: about 10½ feet
Range: Gulf of Maine to Florida.

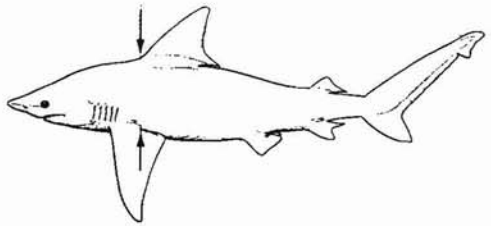
First dorsal fin much larger than second dorsal fin.

Start of first dorsal fin behind inner angle (armpit) of pectoral fin. First dorsal fin smaller, its height is less than distance from eye to first gill opening.



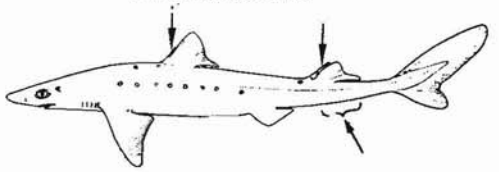
DUSKY SHARK *Carcharhinus obscurus*
Maximum size: 11'2/3 feet
Range: Common in inshore and offshore waters from Cape Cod to Florida.

Start of first dorsal about over the free inner angle (armpit) of pectoral fin. First dorsal fin larger, its height is at least as great as distance from eye to third gill opening.



SANDBAR SHARK *Carcharhinus milberti*
(Brown shark)
Maximum size: 7 2/3 feet
Range: Common in inshore and offshore waters from Cape Cod to Florida.

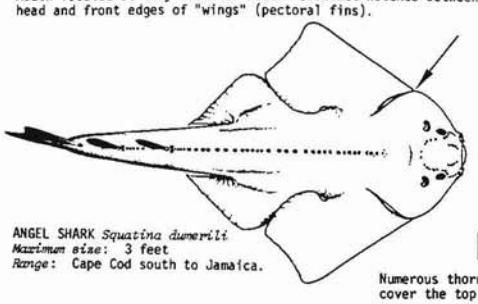
No anal fin. A spine in front of each dorsal fin.



SPINY DOGFISH *Squalus acanthias*
Maximum size: 4 feet
Range: Worldwide in temperate and subarctic latitudes.

SKATES, RAYS AND ANGEL SHARK

Mouth located at very front of head. Distinct notches between head and front edges of "wings" (pectoral fins).



ANGEL SHARK *Squatina dumerili*
Maximum size: 3 feet
Range: Cape Cod south to Jamaica.

Mouth located some distance back on underside of head. No notches between head and front edges of "wings" (pectoral fins).

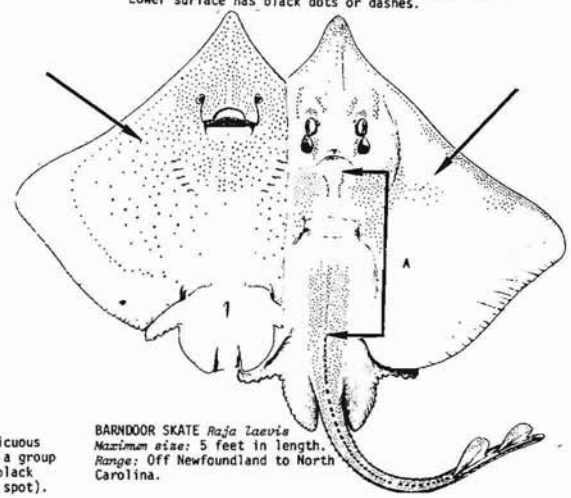
There are two dorsal fins at tip of tail. There are never any spines ("stingers") on tail.

There are no dorsal fins at tip of tail. There may be one or more spines ("stingers") on tail.

SEE RAYS, PAGE 11

One or more rows of conspicuous thorns in middle of back in area A. No black dots or dashes on lower surface.

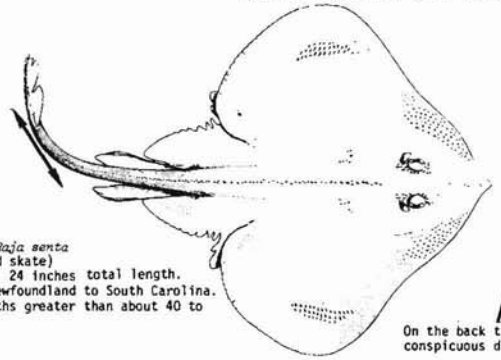
No conspicuous thorns in middle of back, in area A. Lower surface has black dots or dashes.



BARNDOOR SKATE *Raja laevis*
Maximum size: 5 feet in length.
Range: Off Newfoundland to North Carolina.

Numerous thorns, all very tiny, cover the top of rear 1/3 of tail.

One or more rows of moderate to large thorns on top of rear 1/3 of tail.



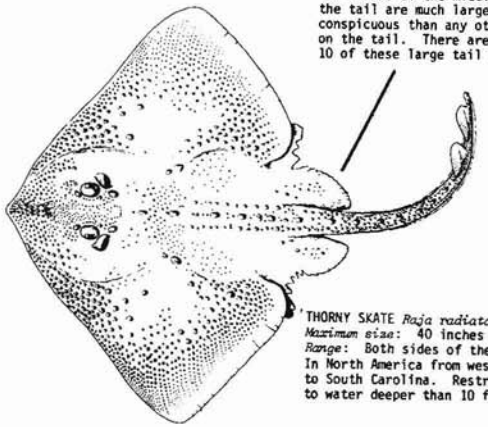
SMOOTH SKATE *Raja senta*
(Smooth-tailed skate)
Maximum size: 24 inches total length.
Range: Off Newfoundland to South Carolina. Mostly in depths greater than about 40 to 50 fathoms.

On the back there are no conspicuous dark rosettes.

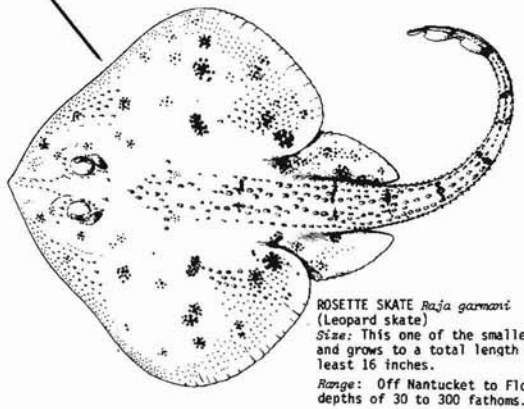
On the back there are conspicuous dark rosettes (a rosette is a group of 6 or more dark brown or black spots surrounding a central spot).

The thorns of the middle row on the tail are much larger and conspicuous than any other thorns on the tail. There are 9 or 10 of these large tail thorns.

No one row of thorns on the tail is much larger or more conspicuous than the other thorns on the tail. There are at least 15 thorns in each of the rows on the tail.



THORNY SKATE *Raja radiata*
Maximum size: 40 inches
Range: Both sides of the North Atlantic. In North America from west of Greenland to South Carolina. Restricted in general to water deeper than 10 fathoms.



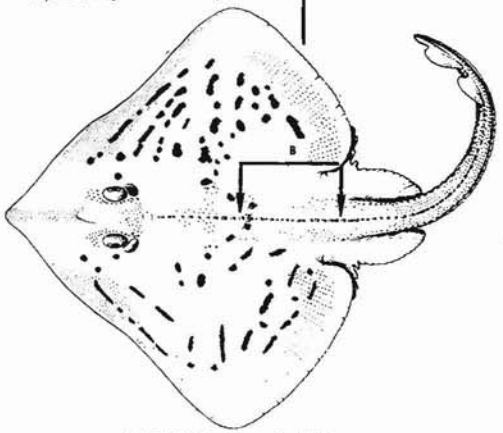
ROSETTE SKATE *Raja garmani*
(Leopard skate)
Size: This one of the smaller skates and grows to a total length of at least 16 inches.
Range: Off Nantucket to Florida, in depths of 30 to 300 fathoms.

(continued on next page)

SKATES, RAYS — SKATES

(continued from preceding page)

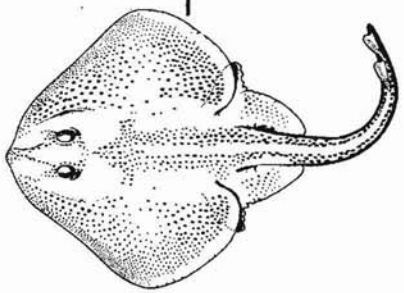
Only one row of large thorns in the middle of the back, in area B. Upper surface of body marked with roundish spots and short bars. The first and second dorsal fins are separated by a definite space or at least 1 or 2 thorns.



CLEARNOSE SKATE *Raja eglanteria*
(Brier skate)
Maximum size: 37 inches in total length.
Range: Massachusetts to Florida.

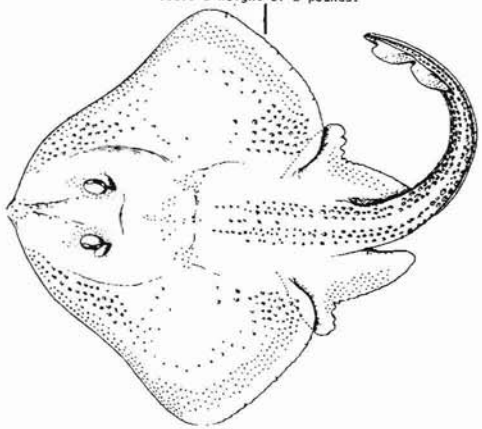
There are at least three rows of thorns in middle of back in area B. Upper surface of body marked with spots but has no short bars. The first and second dorsal fins are not separated by a definite space or by a thorn or thorns.

Generally less than 54 rows of teeth in upper jaw. Rarely exceeds length of about 21 inches (54 centimeters) or weight of 2 pounds.



LITTLE SKATE *Raja erinacea*
Maximum size: Rarely exceeds a total length of about 21 inches (54 centimeters) in U.S. waters.
Range: Gulf of St. Lawrence to Virginia.

Generally more than 80 rows of teeth in upper jaw. Grows to a length of about 43 inches (109 centimeters) and often exceeds a weight of 2 pounds.

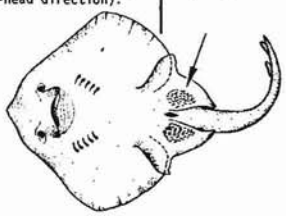


WINTER SKATE *Raja ocellata*
(Big skate)
Maximum size: About 43 inches
Range: Off Newfoundland to North Carolina.

Note: In U.S. waters, fish longer than 54 centimeters (21 inches) will usually turn out to be winter skates, and specimens longer than about 60 centimeters (24 inches) are almost certainly winter skates. There is a problem when separating winter skates that are less than 54 centimeters from little skates by counting rows of teeth, since it is so time-consuming as to be impractical in the field. However, if each sex is considered separately, those in the size range of 35 centimeters (14 inches) to 54 centimeters can be readily identified. This is the size range in which little skates show maturing or mature external sex characters and the winter skate shows immature external sex characters. For fish under about 35 centimeters, though, both species are immature and there is no easy characteristic for quickly separating them in the field. The sexes can be separated as follows: males have 2 claspers (copulatory organs), one at each side of the start of the tail; females lack claspers.

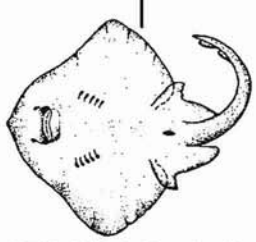
Fish between 35 and 54 centimeters

On underside of body there are two patches of spines, one on each side of the vent. (Note: The spines are often difficult to see even in good light conditions but they can be felt if you move your fingertip in the tail-toward-head direction).



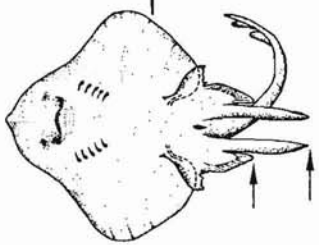
LITTLE SKATE, female, underside

On underside of body there is no patch of spines on each side of vent.



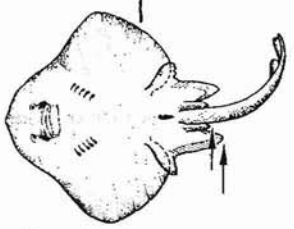
WINTER SKATE, female, underside

The claspers extend well beyond posterior edge of disc.



LITTLE SKATE, male, underside

The claspers either don't reach posterior edge of disc or extend barely beyond it.



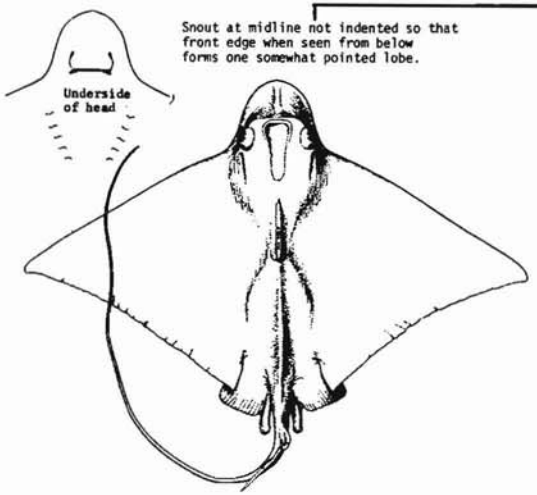
WINTER SKATE, male, underside

SKATES, RAYS — RAYS

Outline of front edge of fish, from wingtip to wingtip, interrupted by head protruding forward.

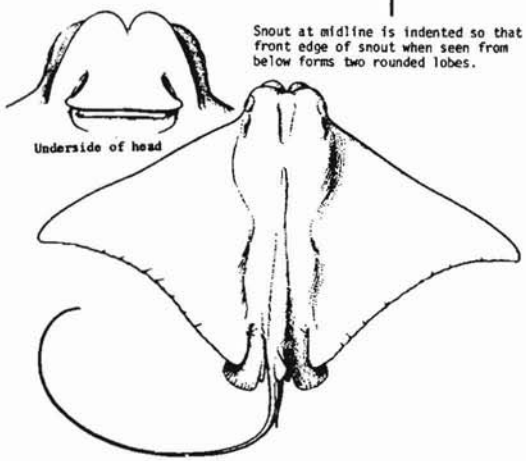
Outline of front edge of fish, from wingtip to wingtip, is approximately v-shaped. That is, head doesn't protrude forward appreciably.

Snout at midline not indented so that front edge when seen from below forms one somewhat pointed lobe.



BULLNOSE RAY: *Myliobatis freminvillei*
Maximum size: 34 inches wingtip to wingtip.
Range: Cape Cod to Brazil.

Snout at midline is indented so that front edge of snout when seen from below forms two rounded lobes.

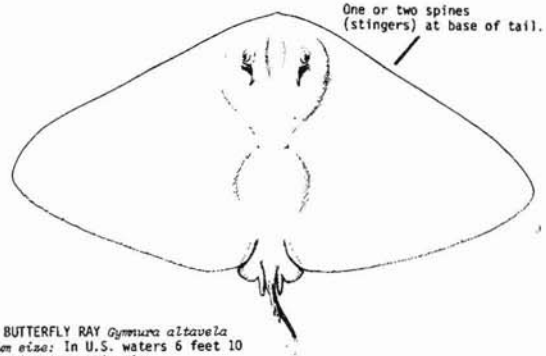


COWNOSE RAY *Rhinoptera bonasus*
Maximum size: About 38 inches wingtip to wingtip.
Range: Vicinity of Cape Cod (Nantucket, Woods Hole) to Brazil.

Tail short, much shorter than distance from snout to start of tail. Wingtip to wingtip distance much greater than distance from snout to end of tail.

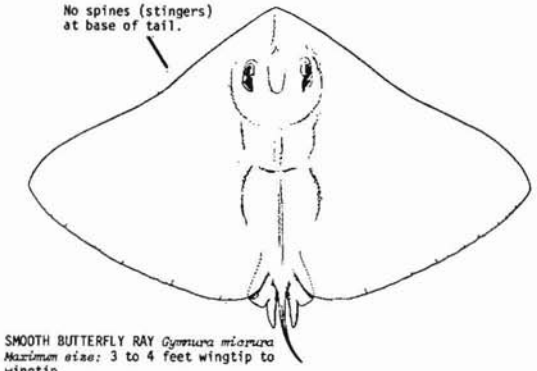
Tail long, whiplike, much longer than distance from snout to start of tail. Wingtip to wingtip distance much less than distance from snout to tip of tail.

One or two spines (stingers) at base of tail.



SPINY BUTTERFLY RAY *Gymnura altavela*
Maximum size: In U.S. waters 6 feet 10 inches wingtip to wingtip.
Range: Both sides of Atlantic. In western Atlantic Cape Cod to South America.

No spines (stingers) at base of tail.



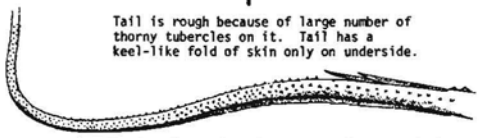
SMOOTH BUTTERFLY RAY *Gymnura micrura*
Maximum size: 3 to 4 feet wingtip to wingtip.
Range: Cape Cod to Brazil

(continued on next page)

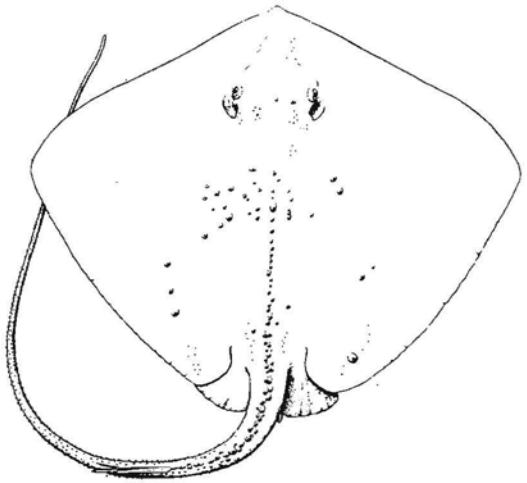
SKATES, RAYS — STINGRAYS

(continued from preceding page)

Tail is rough because of large number of thorny tubercles on it. Tail has a keel-like fold of skin only on underside.

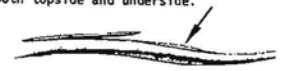


Detail of tail showing thorny tubercles and single keel-like skin fold located on underside of tail.

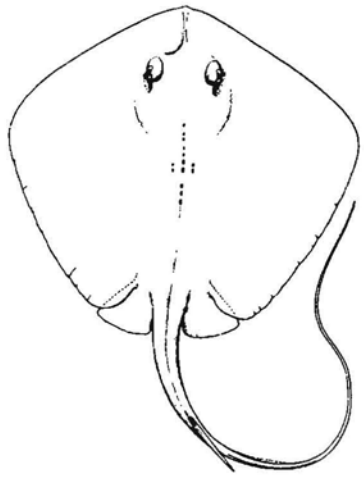


ROUGHTAIL STINGRAY *Dasyatis centroura*
(Northern stingray)
Maximum size: Nearly 7 feet wingtip to wingtip.
Range: Cape Cod to Florida.

Tail is smooth, lacks thorny tubercles. Tail has a keel-like fold of skin on both topside and underside.



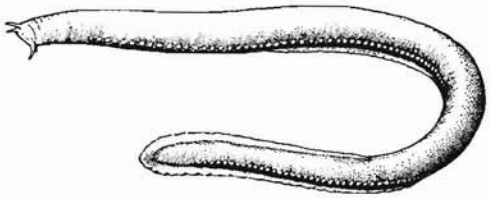
Detail of tail showing two keel-like skin folds just behind "stinger."



BLUNTNOSE STINGRAY *Dasyatis sayi*
Maximum size: One meter (about 39 inches) wingtip to wingtip.
Range: Southern Massachusetts to Brazil or farther south.

EEL-SHAPED FISHES

Has no jaws, no pectoral fin and no external eyes.



ATLANTIC HAGFISH *Myxine glutinosa*
Maximum size: 31 inches
Range: Both sides of Atlantic. In North America, Arctic to North Carolina.

Has jaws, pectoral fin and external eyes.

Has one dorsal fin.

Three barbels above the mouth: one in front of each nostril and the third on the top of the snout. A fourth barbel hangs from the chin.

FOURBEARD ROCKLING *Enchelyopus cimbrius*
Maximum size: 12 inches in North America
Range: Both sides of North Atlantic. In North America, Gulf of St. Lawrence to North Carolina.

No barbels above the mouth.

Anal fin and caudal fin not separated by deep notch or gap.

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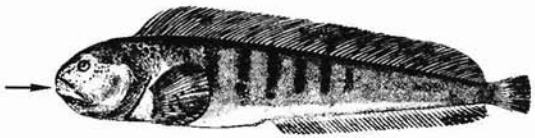
Anal fin and caudal fin separated by deep notch or gap.

No ventral fins or chin barbel.

Snout rounded and large canine teeth present.



ATLANTIC WOLFFISH *Anarhichas lupus*
(Ocean catfish)
Maximum size: 5 feet, 40 pounds
Range: Both sides of North Atlantic. In North America, Greenland to New Jersey.

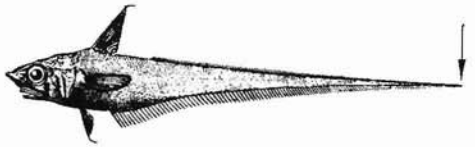
Snout pointed and no large canine teeth.

SAND LANCE *Ammodytes* species
Maximum size: 7 inches
Range: Labrador to North Carolina.

Ventral fins and chin barbel present.

CUSK *Brosme brosme*
Maximum size: 3½ feet, 27 pounds
Range: Both sides of North Atlantic. In North America, Newfoundland to Virginia.

Has two dorsal fins but the second one is so much lower than the first that it may be difficult to see. Body tapers to an elongated whiplike tail ("rattail") with no distinctive caudal fin.



GRENADIERS ("RATTAILS")

Note: There are many species of grenadiers and all live in deep water. In U.S. waters a few are occasionally caught in depths less than 100 fathoms. One, the Marlinspike, *Nezumia bairdi*, is shown above.

(continued from preceding page)

EEL-SHAPED FISHES (CONTINUED)

Dorsal fin seems separated from caudal fin by a considerable gap.

OCEAN POUT *Macrozoarces americanus*
(Eelpout)
Maximum size: 3½ feet, 12 pounds
Range: Newfoundland to Delaware.

Dorsal, caudal, and anal fins form one continuous fin.

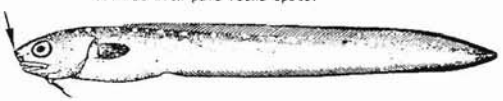
No barbel-like fins on the throat.

Barbel-like fins on the throat.

No short spine on snout. Upper sides not covered with pale round spots.

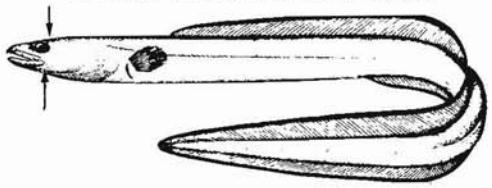
STRIPED CUSK-EEL *Rissola marginata*
Maximum size: 6 inches
Range: New York to Texas.

A short sharp spine on the top of snout which is easily felt if not seen (for it is nearly hidden in skin). Upper sides covered with pale round spots.



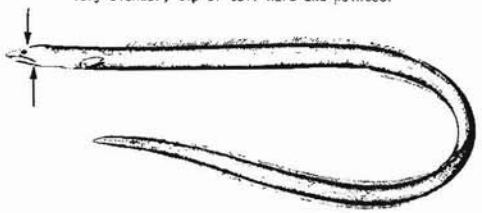
FAWN CUSK-EEL *Lepophidium cervinum*
Maximum size: more than 10 inches
Range: Georges Bank to Florida.

Gape of mouth reaches only about as far as rear of eye; body thick; tip of tail soft and rounded.



CONGER EEL *Conger oceanicus*
Maximum size: 7 feet, 22 pounds in North America
Range: Continental shelf of eastern North America, reaching as far north as Nova Scotia.

Gape of mouth reaches well beyond eye; body very slender; tip of tail hard and pointed.



SNAKE EEL *Ophichthys cruentifer*
Maximum size: More than 16 inches
Range: Gulf of Maine to Virginia.

HERRING FAMILY

Belly (A) is sharp-edged in cross section.

Belly (B) is more or less rounded in cross section.

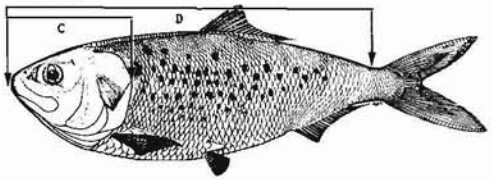
Two rows of distinctive scales along middle of back between head and dorsal fin. Head (C) large, about 1/3 of body length to narrowest part of tail (D).

Top view of fish to show scales

No rows of distinctive scales along middle of back between head and dorsal fin. Head (C) smaller, about ¼ or less of (D).

ROUND HERRING *Etrumeus teres*
Maximum size: 10 inches
Range: Bay of Fundy to Gulf of Mexico

C = 1/3 D

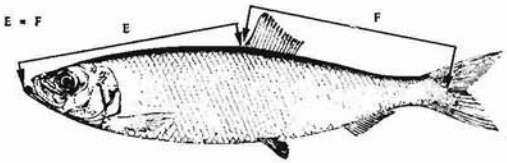


ATLANTIC MENHADEN *Brevoortia tyrannus*
(Pogy)
Maximum size: 20 inches, about 1 3/4 pounds
Range: Nova Scotia to Florida.

(E) much less than (F). Belly very sawtoothed.

Distance from tip of lower jaw to start of dorsal fin (E) equals distance from start of dorsal fin to last large scales on the middle of the tail (F). Belly slightly sawtoothed.

E = F



ATLANTIC HERRING *Clupea harengus*
(Sea herring)
Maximum size: 17 inches, about 1½ pounds
Range: Both sides of the North Atlantic. In North America, Greenland to North Carolina.

Tip of lower jaw does not extend much beyond upper jaw when mouth closed

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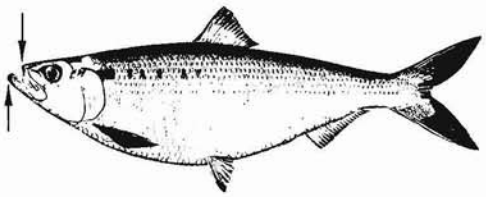
Tip of lower jaw extends beyond upper jaw when mouth is closed



HICKORY SHAD *Alosa mediocris*
Maximum size: 2 feet
Range: Bay of Fundy to Florida.

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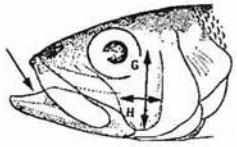
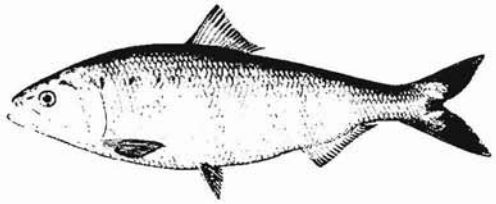
HERRING FAMILY (CONTINUED)

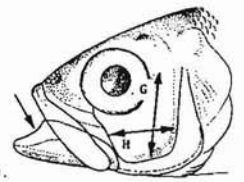


Upper outline of forward part of lower jaw nearly straight. Cheek bone much higher (G) than long (H).

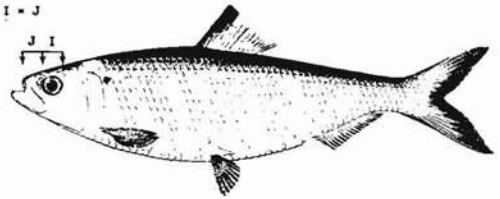


AMERICAN SHAD *Alosa sapidissima*
Maximum size: 2½ feet, 13½ pounds
Range: Newfoundland to Florida, and on the United States' Pacific coast.

Upper outline of forward part of lower jaw with pronounced angle. Cheek bone only slightly higher (G) than long (H).

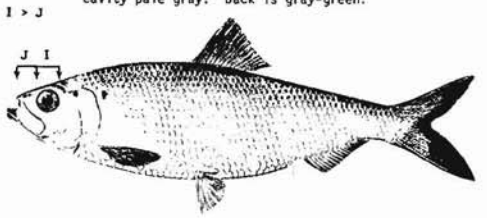


Eye width (I) equal to distance from front of eye to tip of snout (J). Lining of belly cavity black or sooty. Back is blue-green.



BLUEBACK HERRING *Alosa aestivalis*
Maximum size: 15 inches
Range: Nova Scotia to Florida.

Eye width (I) greater than distance from front of eye to tip of snout (J). Lining of belly cavity pale gray. Back is gray-green.



ALEWIFE *Alosa pseudoharengus*
(Freshwater herring)
Maximum size: 15 inches
Range: Gulf of St. Lawrence to North Carolina.

ANCHOVY-SHAPED FISHES

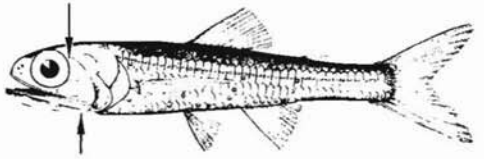
No light-producing organs (photophores) present.

Light-producing organs (photophores) present.

Mouth small, extends only to about front of eye.

PEARLSIDES *Maurolicus muelleri*
Maximum size: 2½ inches
Range: The open Atlantic.

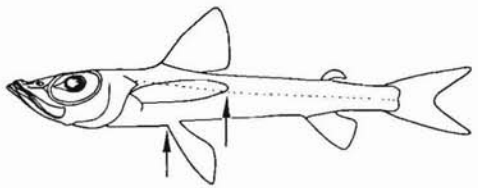
Mouth large, extends beyond eye.



LANTERNFISHES (MYCTOPHIDS)

Many species of lanternfishes exist. Identification depends mostly on the position and number of their light-producing organs (photophores). They are small fishes (most will be shorter than 3 or 4 inches) which are most abundant in the open ocean beyond the continental shelf. One fairly common species is the HORNED LANTERNFISH *Ceratoscopelus maderensis*, shown above, which has a small spine ("horn") pointing forward just above each eye.

Start of ventral fins in front of rear tip of pectoral fins.



SHORTNOSE GREENEYE *Chlorophthalmus agassizi*
Maximum size: About 6½ inches
Range: South of Cape Cod to South America, in 81 to 400 fathoms.

Start of ventral fins well behind rear tip of pectoral fins.

No small fleshy fin (adipose fin) behind the dorsal fin.

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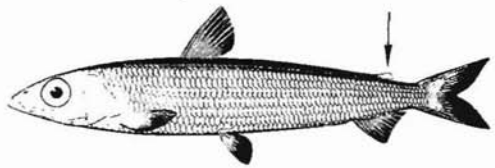
A small fleshy fin (adipose fin) behind the dorsal fin.

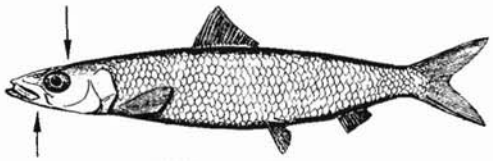


ATLANTIC ARGENTINE *Argentina silus*
Maximum size: 18 inches
Range: Both sides of North Atlantic usually in water as deep as 80 to 300 fathoms. In North America from Nova Scotia to off southern New England.

ANCHOVY - SHAPED FISHES (CONTINUED)

(continued from preceding page)

Ventral fins located far behind dorsal fin. Mouth doesn't extend beyond eye.

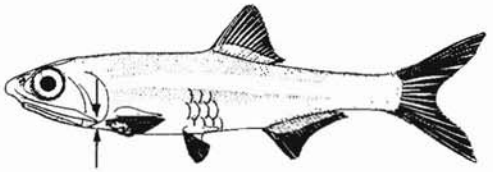


ROUND HERRING *Etrumeus teres*
Maximum size: 10 inches
Range: Bay of Fundy to Gulf of Mexico.

Ventral fins located in front of dorsal fin. Mouth extends beyond eye.

Start of dorsal fin farther forward than start of anal fin.

Bone (maxillary bone) forming the bottom edge of upper jaw reaches about to gill opening and is pointed at its posterior tip.

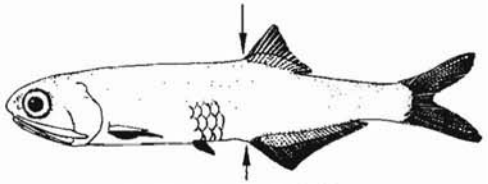


STRIPED ANCHOVY *Anchoa hepsetus*
Maximum size: About 6 inches
Range: Nova Scotia to Uruguay.

Bone (maxillary bone) forming bottom edge of upper jaw stops far in front of gill opening and is rounded at its posterior tip.

SILVER ANCHOVY *Engraulis eurystole*
Maximum size: About 6 inches
Range: In summer it is common offshore between Massachusetts and North Carolina.

Start of dorsal fin directly over start of anal fin.



BAY ANCHOVY *Anchoa mitchilli*
Maximum size: About 3½ inches
Range: Maine to Texas.

COD FAMILY — ONE OR THREE DORSAL FINS

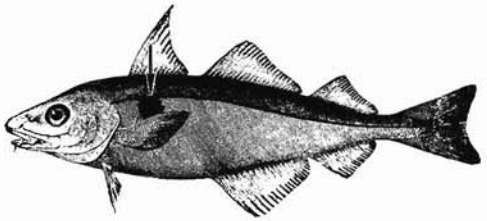
Three separate dorsal fins
and two anal fins.

One dorsal fin
and one anal fin.

CUSK *Brosme brosme*
Maximum size: 3½ feet, about 27 pounds
Range: Both sides of the North Atlantic.
In North America, from Newfoundland to New
Jersey in moderately deep water.

Although the cusk has the fin shape of the eels
(that is, a single, long dorsal fin and a single long anal
fin) and is included in the eel section of this
guide, it is also included here since the cusk
is a relative of the cod-like fishes and has a
stout body like them.

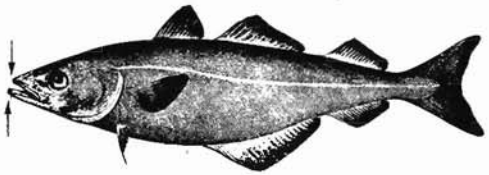
The lateral line is black;
a black blotch on each shoulder.



HADDOCK *Melanogrammus aeglefinus*
Maximum size: 44 inches, about 37 pounds
Range: Both sides of the Atlantic. In
North America, from West Greenland to North Carolina.

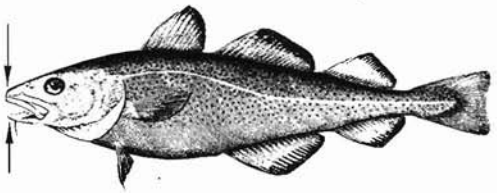
The lateral line is pale;
there is no shoulder blotch.

The lower jaw projects beyond
the upper; the chin barbel is
very small, if there is one.



POLLOCK *Pollachius virens*
Maximum size: 3½ feet, about 35 pounds
Range: Both sides of the North Atlantic. In
North America, from Gulf of St. Lawrence to
North Carolina.

The upper jaw projects beyond
the lower; the chin barbel is large.



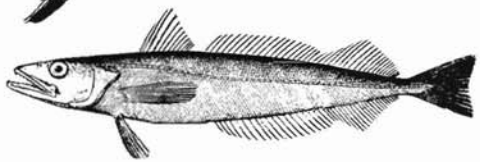
ATLANTIC COD *Gadus morhua*
Maximum size: More than 6 feet, about 210 pounds
Range: Both sides of the North Atlantic. In North
America, from West Greenland to North Carolina.

COD FAMILY — TWO DORSAL FINS

The ventral fins are short and of ordinary form

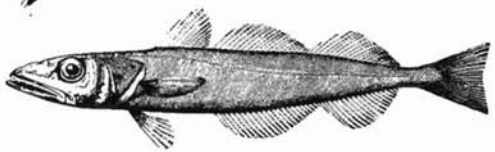
The ventral fins are very long and feeler-like

15-22 gill rakers on first gill arch (A). Scales larger (103 to 130 scales along the lateral line).



SILVER HAKE *Merluccius bilinearis*
(Whiting)
Maximum size: 2½ feet, 5 pounds
Range: Off Newfoundland to South Carolina.

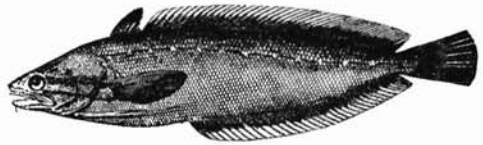
9-11 gill rakers on first gill arch (A). Scales smaller (130 to 148 scales along the lateral line).



OFFSHORE HAKE *Merluccius albidus*
Range: From Georges Bank southward, deeper than 50 fathoms.

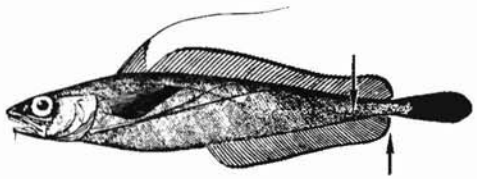
Lateral line is unbroken; front of first dorsal fin projects as a thread

Lateral line is broken up by white spots; first dorsal fin doesn't project as a thread



SPOTTED HAKE *Urophycis regius*
Maximum size: About 16 inches, about 1½ pounds
Range: Nova Scotia to Florida. Occurs regularly from southern New England to Gulf of Mexico.

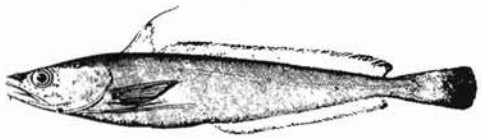
The ventral fins long, reaching beyond the middle of the anal fin.



LONGFIN HAKE *Phycis chesteri*
Maximum size: 15 inches
Range: Off Newfoundland to North Carolina. In deep water, mainly between 100 and 500 fathoms.

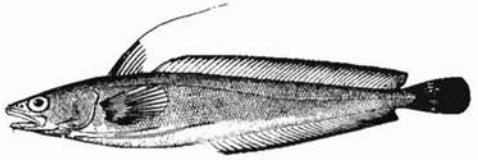
The ventral fins shorter, do not reach back to the middle of the anal fin.

Two gill rakers on the upper segment of the first gill arch (A). Scales smaller (120 to 149 scales along the lateral line). Grayish or purplish in color. Often heavier than 4 pounds. Length often exceeds 20 inches (50 centimeters).



WHITE HAKE *Urophycis tenuis*
(Ling)
Maximum size: 4 feet, 40 pounds
Range: Iceland to Florida.

Three gill rakers on the upper segment of the first gill arch (A). Scales larger (95 to 117 scales along the lateral line). Brownish to bronze in color. Very rarely heavier than 4 pounds. Length never over 20 inches (50 centimeters), and usually not over 16 inches (40 centimeters).



RED HAKE *Urophycis chuss*
(Squirrel hake, ling)
Maximum size: 20 inches
Range: Southern Nova Scotia to North Carolina.

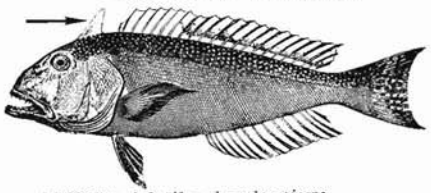
BASS-SHAPED FISHES — ONE DORSAL FIN

No long filaments on chin.

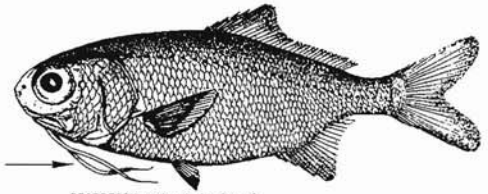
Two long filaments on chin.

A large fleshy flap on top of head.

No large fleshy flap on top of head.



TILEFISH *Lopholatilus chamaeleonticeps*
Maximum size: At least 42 inches, 35 pounds
Range: Nova Scotia to Gulf of Mexico, in depths of 45 to perhaps 200 fathoms.



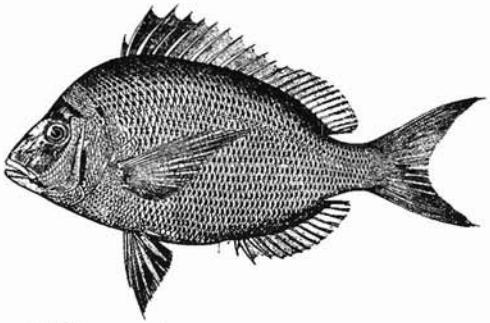
BEARDFISH *Polymixia lowei*
Maximum size: About 7 1/2 inches
Range: New Jersey to South America. Deep water, caught mostly between 100 and 300 fathoms.

No spines on cheeks. Eyes smaller.

Body red or orange. Spines on cheeks. Eyes larger.

Tail forked.

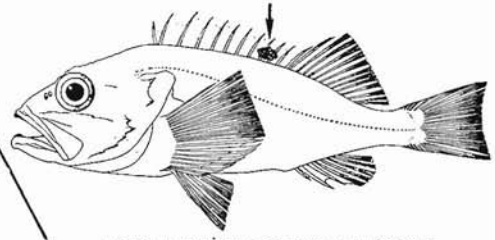
Tail rounded.



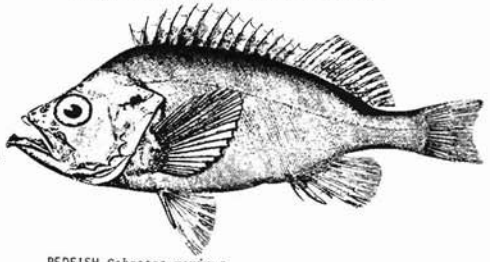
SCUP *Stenotomus chrysops*
(Porgy)
Maximum size: 18 inches, 4 pounds
Range: Gulf of Maine to North Carolina. Abundant along the mid Atlantic states up to southern Massachusetts, but never plentiful on Georges Bank or in the Gulf of Maine.

Black spot on dorsal fin. Dorsal fin has 12 hard spines in front, followed by fairly soft fin bones (rays).

No black spot on dorsal fin. Dorsal fin has 14 or 15 hard spines in front, followed by fairly soft fin bones (rays).



BLACKBELLY ROSEFISH *Helicolenus dactylopterus*
Maximum size: 15 inches
Range: Both sides of the North Atlantic. In North America, from Georges Bank to Florida, in depths of 68 to 373 fathoms.



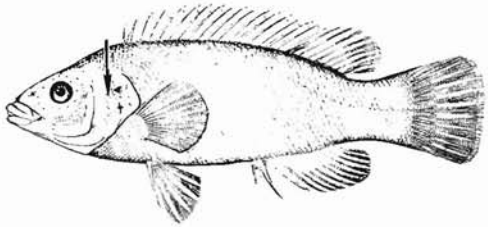
REDFISH *Sebastes marinus*
(Ocean perch)
Maximum size: Off North America, 27 inches, 13 1/2 pounds
Range: Both sides of North Atlantic. In North America, west of Greenland to New Jersey.

Start of pectoral fin is in front of start of ventral fin. Pectoral fin shorter, end of pectoral fin far in front of start of anal fin.

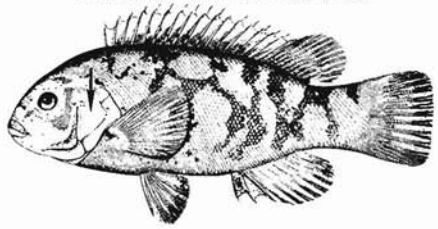
Start of pectoral fin is behind the start of ventral fin. Pectoral fin long, end of pectoral fin often reaches to start of anal fin.

Scales on rear part of gill cover. Snout somewhat pointed. Profile of head rather flat.

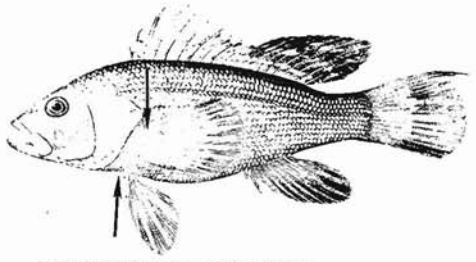
No scales on rear part of gill cover. Snout rounded. Profile of head rounded



CUNNER *Tautogolabrus adspersus*
Maximum size: 15 inches, 2 1/2 pounds
Range: Newfoundland to Chesapeake Bay.



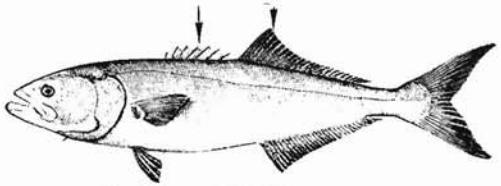
TAUTOG *Tautoga onitis*
Maximum size: 3 feet, about 22 pounds
Range: Nova Scotia to South Carolina. In shallow depths in the immediate vicinity of the coast.



BLACK SEA BASS *Centropristis striata*
Maximum size: At least 2 feet. A weight of 7 1/2 pounds.
Range: Maine to Florida.

BASS-SHAPED FISHES — TWO DORSAL FINS

First dorsal fin is much lower than second dorsal fin.



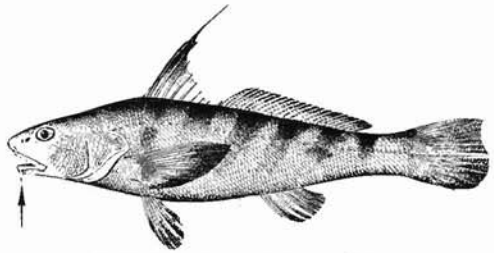
BLUEFISH *Pomatomus saltatrix*
(Young are called Snapper)
Maximum size: About 3 1/2 feet, 31 pounds
Range: In several oceans. On east coast of the Americas, Nova Scotia to Argentina.

First dorsal fin is as high or higher than second dorsal fin.

Second dorsal fin about twice as long as anal.

Chin has one or more barbels.

A single thick barbel at tip of lower jaw.



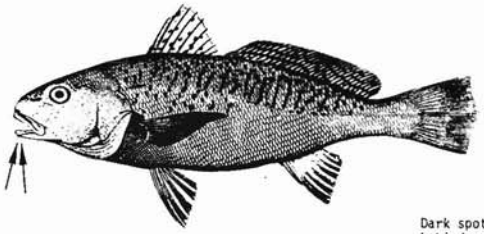
NORTHERN KINGFISH *Menticirrhus saxatilis*
Maximum size: 17 inches, 3 pounds
Range: Maine to Florida. Most numerous from Chesapeake Bay to New York.

The northern kingfish is common only north of Chesapeake Bay. South of Chesapeake Bay a close relative, the SOUTHERN KINGFISH *Menticirrhus americanus*, will be common. The two species can be distinguished as follows.

NORTHERN KINGFISH: A dark "V" shaped mark on the side of the body in the shoulder region. Front of first dorsal fin very high and when laid back it reaches well beyond start of second dorsal fin. Color is usually dark.

SOUTHERN KINGFISH: No dark "V" shaped mark on the side of the body in the shoulder region. Front of first dorsal fin lower and when laid back it barely reaches the start of second dorsal fin. Color usually light.

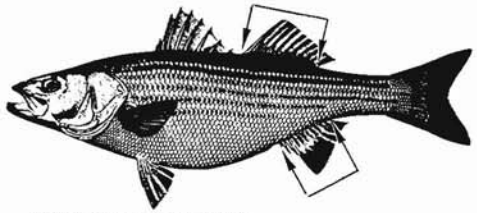
A row of minute barbels on each side of lower jaw.



ATLANTIC CROAKER *Micropogon undulatus*
Maximum size: A little over a foot.
Range: New York to Texas.

Chin has no barbels.

Second dorsal fin not much longer than anal fin.

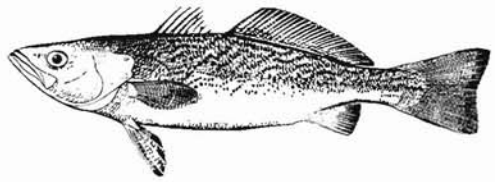


STRIPED BASS *Morone saxatilis*
Maximum size: About 6 feet, 125 pounds
Range: Atlantic and Pacific coasts of United States. On Atlantic coast, St. Lawrence River to Florida and the northern Gulf of Mexico.

Dark spot on body just behind upper edge of gill cover.

SPOT *Leiostomus xanthurus*
Maximum size: 14 inches, 1 pound 6 ounces.
Range: Massachusetts Bay to Texas.

No dark spot on body just behind upper edge of gill cover.



WEAKFISH *Cynoscion regalis*
(Squeteague, Seatrout)
Maximum size: Rarely over 3 feet. May have reached 30 pounds in the past; 17 1/2 pounds was a recent record.
Range: Florida to Massachusetts Bay; may stray to Nova Scotia.

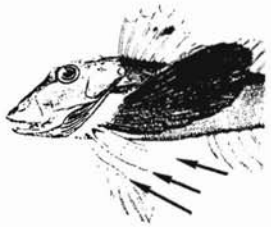
Going south from about Delaware, the SPOTTED SEATROUT *Cynoscion nebulosus*, a close relative of the weakfish, will be encountered regularly. These two species can be distinguished as follows.

WEAKFISH: Body covered with numerous irregular blotches, some of which form wavy lines running forward and downward. Soft segmented bones of anal fin and second dorsal fin have scales.

SPOTTED SEATROUT: Body covered with round black spots. Soft segmented bones of anal fin and second dorsal fin scaleless.

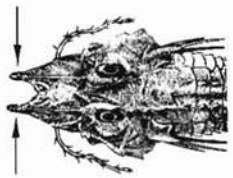
SEAROBINS AND SCULPINS – SEAROBINS

Lower part of pectoral fins in the form of feelers and separated from remainder of fin.



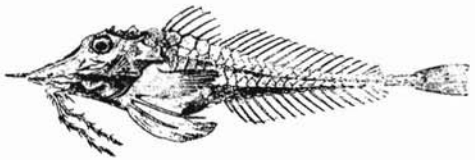
Lower part of pectoral fins not in the form of feelers and not separated from remainder of fin.

(see SCULPINS, next page)



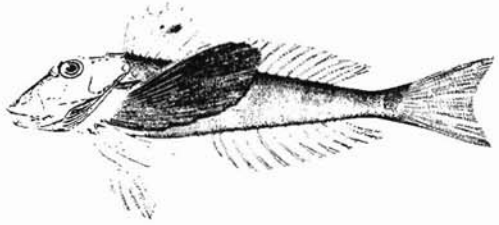
Snout seems double when seen from above.

Snout not double when seen from above.



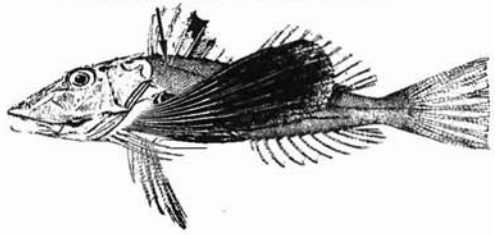
ARMORED SEAROBIN *Peristedion miniatum*
Maximum size: 14 inches
Range: Georges Bank to South Carolina. In deeper water, from 50 fathoms to over 200 fathoms.

No stripe down side of body. Pectoral fin shorter, reaching only 1/2 the way to end of base of second dorsal fin.



NORTHERN SEAROBIN *Prionotus carolinus*
Maximum size: 16 inches
Range: Bay of Fundy to South Carolina, mainly west and south from Cape Cod.

A prominent dark-brown stripe down side of body. Pectoral fin longer, reaching about 3/4 of the way to end of base of second dorsal fin.

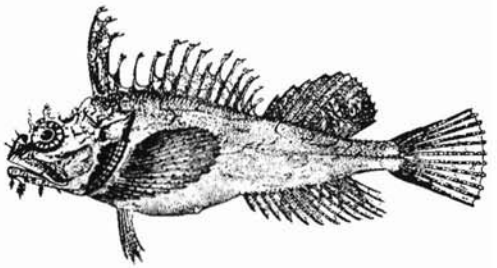


STRIPED SEAROBIN *Prionotus evolans*
Maximum size: 18 inches
Range: Gulf of Maine to South Carolina.

SEAROBINS AND SCULPINS – SCULPINS

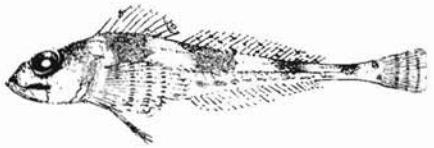
No fleshy flaps on lower jaw, top of head, or first dorsal fin.

Lower jaw, top of head, and top edge of first dorsal fin have ragged fleshy flaps.



SEA RAVEN *Hemitripterus americanus*
Maximum size: 25 inches, at least 7 pounds
Range: Newfoundland to Chesapeake Bay

A series of bony plates on each side of body.

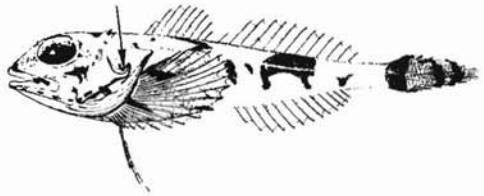


MOUSTACHE SCULPIN *Triglops murrayi*
(Mailed sculpin)
Maximum size: 8 inches
Range: Both sides of the North Atlantic. In North America, north of Labrador to Cape Cod.

No bony plates on each side of body.

The long spine on the cheek is straight.

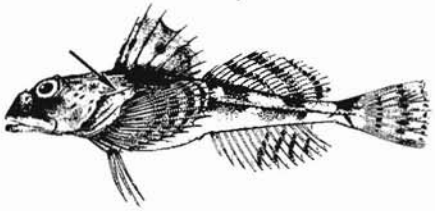
The long spine on the cheek hooks upward.



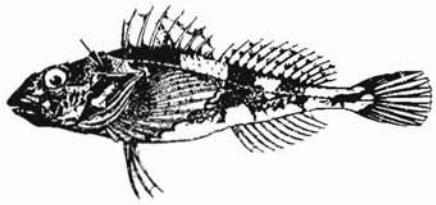
HOOKEAR SCULPIN *Artediellus* species
Maximum size: 4 inches
Range: Both sides of North Atlantic. In North America, Labrador to Cape Cod.

The longest (uppermost) cheek spine is four times as long as the spine below it and reaches back to the edge of the gill cover.

The longest (uppermost) cheek spine is not more than twice as long as the spine below it and does not reach more than about 1/2 way to the edge of the gill cover.



LONGHORN SCULPIN *Myoxocephalus octodecemspinosus*
Maximum size: 18 inches
Range: Newfoundland to Virginia



GRUBBY *Myoxocephalus aenaeus*
Maximum size: 8 inches
Range: Newfoundland to New Jersey.

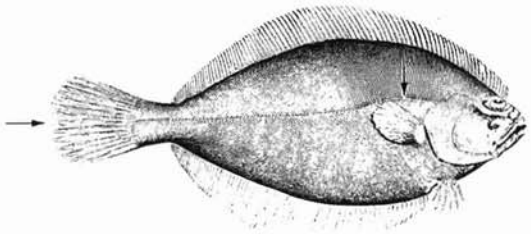
FLATFISHES — RIGHT-EYED FLATFISHES

Large mouth, gaping back as far as the eye

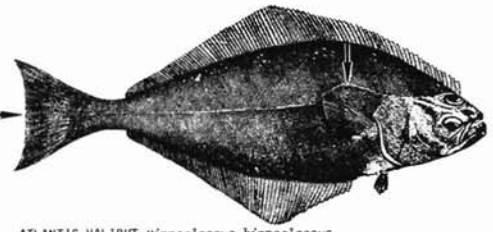
Small mouth, not gaping back as far as the eye

Margin of tail rounded; lateral line nearly straight just behind gill opening

Margin of tail has sharp corners and is slightly concave; lateral line arched just behind gill opening.



AMERICAN PLAICE *Hippoglossoides platessoides*
(American dab, Dab)
Maximum size: 32 1/2 inches, 14 pounds
Range: Both sides of the North Atlantic. In North America, Labrador to Montauk Point, New York.



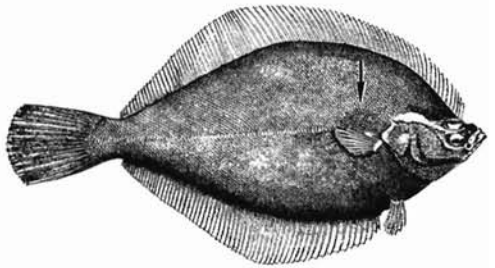
ATLANTIC HALIBUT *Hippoglossus hippoglossus*
Maximum size: An 8-foot halibut weighs about 350 pounds. Known to reach about 700 pounds.
Range: Both sides of the North Atlantic. In North America, from Virginia north to, or beyond, Labrador.

Lateral line nearly straight behind gill opening.

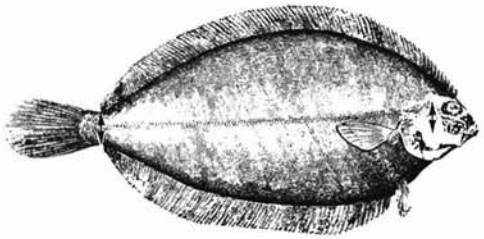
Lateral line arched behind gill opening

Depth of base of tail about equal to distance between outer margins of eyes

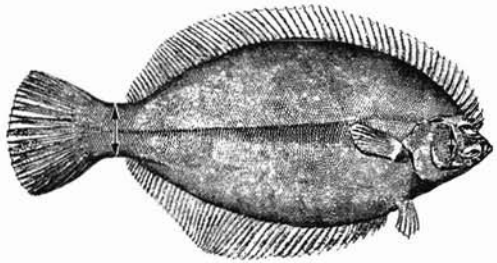
Depth of base of tail much more than distance between outer margins of eyes



YELLOWTAIL FLOUNDER *Limanda ferruginea*
Maximum size: 21 3/4 inches
Range: Labrador to Chesapeake Bay.



WITCH FLOUNDER *Glyptocephalus cynoglossus*
(Gray sole)
Maximum size: 25 inches, about 4 pounds
Range: Both sides of the North Atlantic. In North America, north of Newfoundland to North Carolina. Found in moderately deep water.



WINTER FLOUNDER *Pseudopleuronectes americanus*
(Blackback, Lemon sole)
Maximum size: 25 inches, 8 pounds
Range: Newfoundland to Georgia.

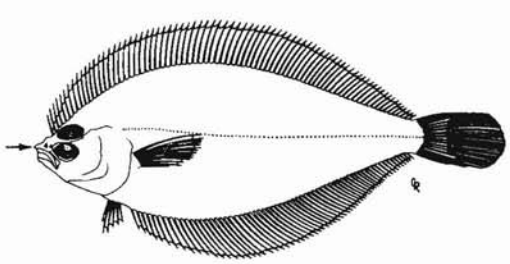
FLATFISHES — LEFT-EYED FLATFISHES

Lateral line arched over pectoral fin.
Often much longer than 7 inches.

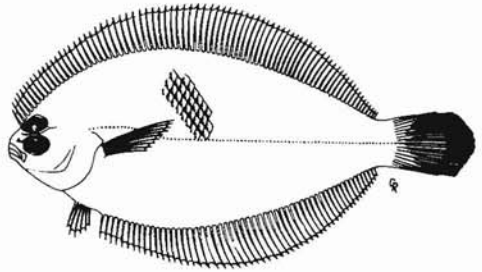
Lateral line is nearly straight.
Maximum is 7 inches or less.

Snout has a well developed bony protuberance, extending horizontally.

No bony protuberance extending horizontally on snout.

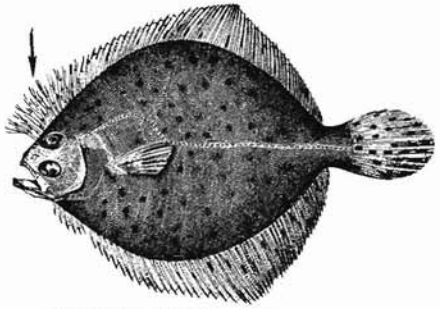


GULF STREAM FLOUNDER *Citharichthys arctifrons*
Maximum size: 7 inches
Range: Georges Bank to Yucatan, Mexico. Occurs mainly at depths of 25 to 200 fathoms, seldom as shallow as 12 fathoms.



SMALLMOUTH FLOUNDER *Etropus microstomus*
Maximum size: 6 inches
Range: New England to the Gulf of Mexico. Common at depths of 2-15 fathoms, seldom deeper than 25 fathoms.

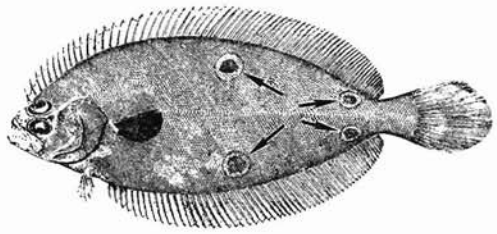
Body more round in outline, body about 1 1/2 times as long as broad. Front part of dorsal fin is enlarged and fringe-like.



WINDOWPANE *Scophthalmus aquosus*
(Sand dab, Sand flounder, Sundial)
Maximum size: 18 inches, 2 pounds
Range: Gulf of St. Lawrence to South Carolina.

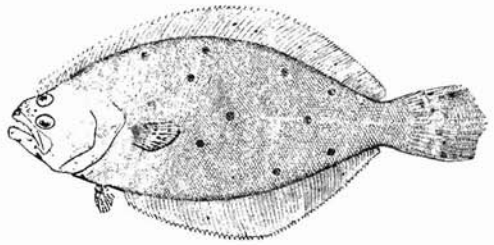
Body more elongate in outline; body about 2 times as long as broad. Front part of dorsal fin is about like the rest of dorsal fin.

Four large spots on upper side.



FOURSPOT FLOUNDER *Hippoglossus oblongus*
Maximum size: 16 inches
Range: Georges Bank to South Carolina.

Many small spots on upper side.

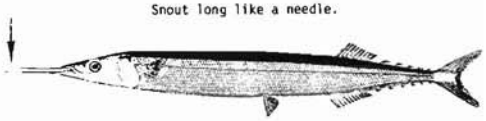


SUMMER FLOUNDER *Paralichthys dentatus*
(Fluke)
Maximum size: A 37" fish has been caught which weighed 20 pounds. May reach 30 pounds.
Range: Maine to South Carolina, maybe to Florida.

MACKEREL AND TUNA-SHAPED FISHES

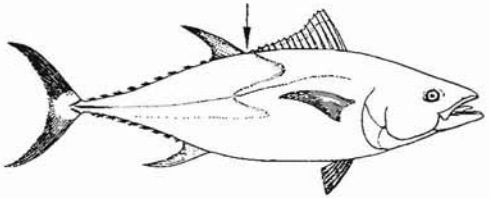
Snout short, not like a needle.

Snout long like a needle.



ATLANTIC SAURY *Scomberesox saurus*
(Needlefish)
Maximum size: 18 inches
Range: Both sides of the North Atlantic. In North America from Newfoundland to the West Indies.

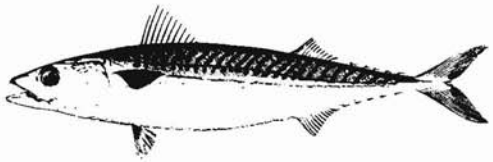
The two dorsal fins touch each other or are separated by a space much shorter than the length of the first dorsal fin.



TUNAS - A group of similar looking fishes, fast swimming and seldom caught in otter trawls. One species, the BLUEFIN TUNA *Thunnus thynnus*, shown above, attains a weight well above 1000 pounds.

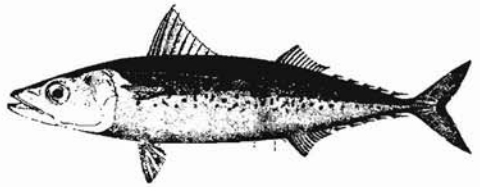
The two dorsal fins are separated by a space at least as long as the length of the first dorsal fin.

The sides below the midline are silvery, not spotted.



ATLANTIC MACKEREL *Scomber scombrus*
Maximum size: A few reach 22 inches and about 4 pounds. One weighing 7 1/2 pounds is mentioned in "Fishes of the Gulf of Maine."
Range: Both sides of the North Atlantic. In North America, Newfoundland to North Carolina.

The sides below the midline are spotted.

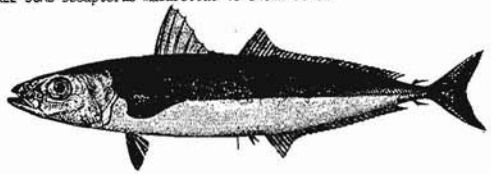


CHUB MACKEREL *Scomber japonicus*
Maximum size: 14 inches
Range: Gulf of St. Lawrence to Virginia.

Another group of fishes, the jacks (also called carangids) contain several fishes that look like the mackerels. The jacks can be separated from the mackerels by the following characters.

MACKERELS: The length of the base of the second dorsal is about equal to or smaller than the base of the first dorsal fin. There are four or more little fins (called finlets) between the last dorsal fin and the caudal fin.

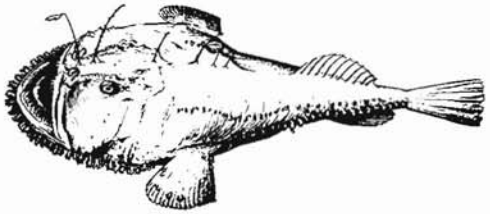
JACKS: When two dorsal fins are present some are present (some jacks have only one dorsal fin) the base of the second dorsal is much longer than the base of the first. There is one or no little fins between the last dorsal fin and the caudal fin. One of the jacks, the MACKEREL SCAD *Decapterus macarellus* is shown below.



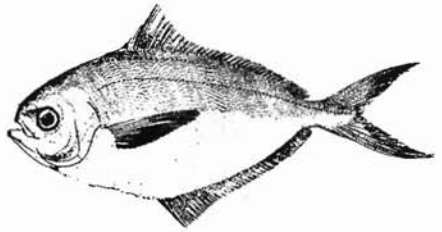
MACKEREL SCAD *Decapterus macarellus*
Maximum size: About 1 foot
Range: Nova Scotia south to warm parts of the Atlantic.

GOOSEFISH AND BUTTERFISH

Note: These two fishes should be easily distinguishable from all other fishes in the guide. They are placed together here for lack of a better place and not because they resemble each other.



GOOSEFISH *Lophius americanus*
(Angler, Monkfish)
Maximum size: 4 feet, 50 pounds
Range: Near Newfoundland to North Carolina. Same or similar species off South America.



BUTTERFISH *Peprilus triacanthus*
Maximum size: 12 inches, 1¼ pound
Range: Gulf of St. Lawrence to South Carolina.

Another group of fishes, the jacks (also called carangids) contain several fishes that somewhat resemble the butterfish. They can be distinguished because all jacks have ventral fins. Butterfish lack ventral fins.

INDEX OF COMMON NAMES

INDEX OF SCIENTIFIC NAMES

ERRATA

NOAA Technical Report NMFS Circular 428: Morphological Comparisons of North American Sea Bass Larvae (Pisces: Serranidae), by Arthur W. Kendall, Jr.

Page 7, Figure 6d is incorrect. See correct Figure 6d below.

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