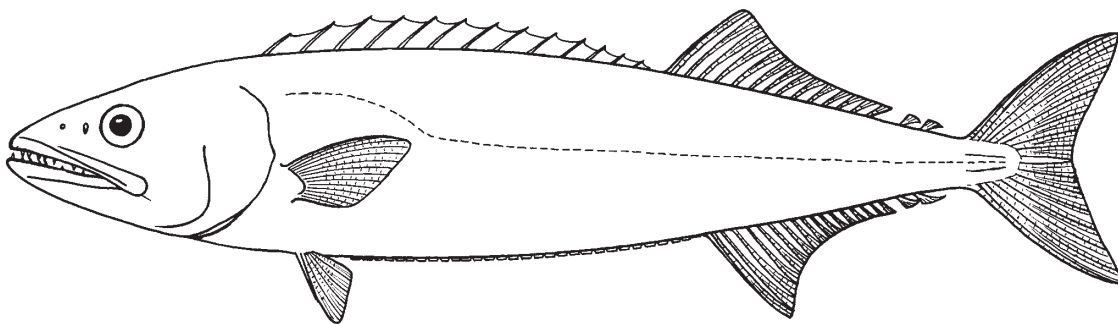


GEMPYLIDAE

Snake mackerels (escalars, oilfishes)

by N.V. Parin, P.P. Shirshov Institute of Oceanology, Russia and I. Nakamura, Kyoto University, Japan

Diagnostic charactes: Medium-sized to large fishes (25 cm to 3 m total length). Body elongate, compressed, or semi-fusiform. Two nostrils on each side of snout. Mouth large. **Teeth strong, at front of upper jaw usually fang-like**; a pair of fangs in front of lower jaw. **Two dorsal fins followed by finlets in some species.** First dorsal fin with 8 to 10 spines. Second dorsal fin, with 0 or 1 spine and 17 to 44 soft rays (including finlets). **Second dorsal-fin base shorter than first dorsal-fin base.** Anal fin similar to second dorsal fin, with 0 to 3 spines and 12 to 37 soft rays (including finlets). Caudal fin forked. Pectoral fins shorter than head. **Pelvic fins small, rudimentary, or absent in adults of some species.** Lateral line single or double, ending at caudal-fin base. No keels on caudal peduncle (except in *Lepidocybium*). Scales small to minute, or variously modified. Vertebrae generally about 35 except in *Gempylus* (about 50) and *Diplospinus* (about 60). **Colour: body usually brown, without distinct dark marks or blotches**; lower sides and belly sometimes silvery. Fins usually dark.



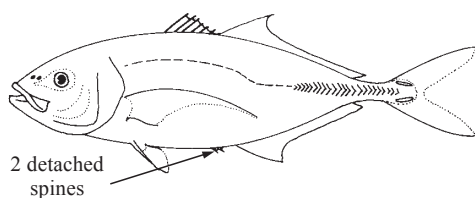
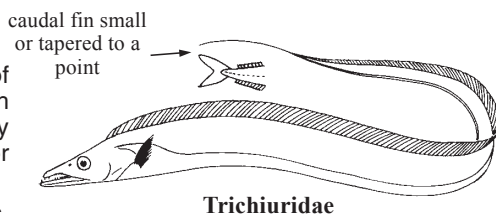
Habitat, biology, and fisheries: Usually inhabits deep waters at 200 to 500 m, both on slope and in the open ocean. Some species migrate to surface at night. Swift predators, feeding on fish and squid. Some species are frequently taken as bycatch in the tuna longline fishery. Flesh edible but oily, with purgative properties in some species. No catch statistics from Area 31.

Similar families occurring in the area

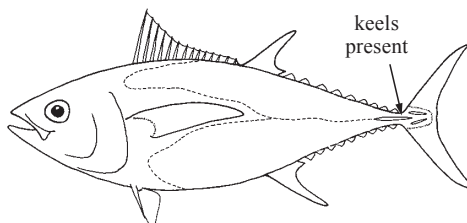
Trichiuridae: body more elongated; 1 nostril on each side of snout; very long single dorsal fin, running almost entire length of body; no dorsal or anal finlets; caudal fin either small or body tapering to a point; pelvic fins reduced to scale-like spines, or absent.

Scombridae: body fusiform; back not brown, often with bars, spots, or other dark markings; keels present on caudal peduncle.

Carangidae: base of first dorsal fin shorter than that of second; 2 detached spines usually visible in front of anal fin; scutes often present along lateral line; dorsal and anal finlets only presented in *Decapterus*, *Elagatis*, and *Oligoplites*.



Carangidae



Scombridae

Key to the species of Gempylidae occurring in the area

- 1a. Dorsal-fin elements more than 60, distance from anus to anal-fin origin equal or greater than snout length (Fig. 1) *Diplospinus multistriatus*
- 1b. Dorsal-fin elements, including finlets, less than 55; distance from anus to anal-fin origin much shorter than snout length, about equal to eye diameter (Fig. 2) → 2

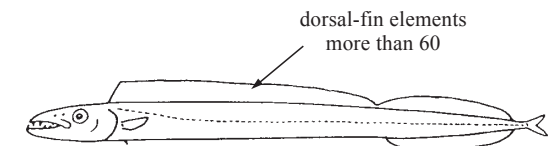


Fig. 1 *Diplospinus multistriatus*

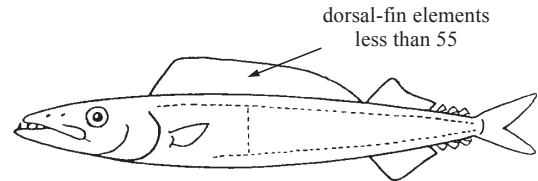


Fig. 2

- 2a. Caudal peduncle with a prominent median keel and 2 supplemental keels above and below (Fig. 3); dorsal-fin spines 8 or 9; lateral line single, extremely sinuous (Fig. 4) *Lepidocybium flavobrunneum*
- 2b. Caudal peduncle without keels; dorsal-fin spines more than 12; lateral line single or bifurcated, but not sinuous (Fig. 5) → 3

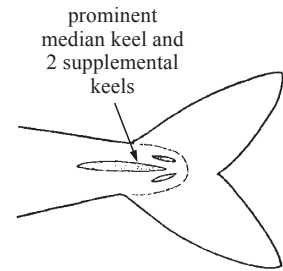


Fig. 3 caudal fin

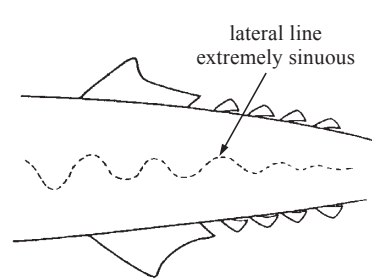


Fig. 4 *Lepidocybium flavobrunneum*

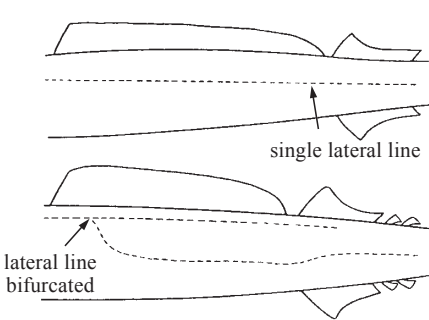


Fig. 5 lateral line

- 3a. Skin very rough; scales medium-sized, interspersed with spinous bony tubercles (Fig. 6); midventral keel on belly (Fig. 7); lateral line single, obscure *Ruvettus pretiosus*
- 3b. Skin moderately smooth, scales small, not interspersed with spinous bony tubercles; no midventral keel on belly; lateral line single or double, always obvious → 4

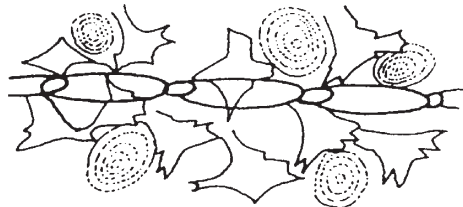


Fig. 6 skin, scales, and bony tubercles
(*Ruvettus pretiosus*)

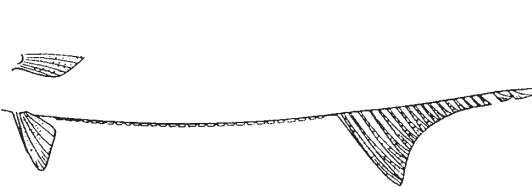


Fig. 7 *Ruvettus pretiosus*

- 4a. Two lateral lines, lower running along ventral contour (Fig. 8); body depth about 4 times in standard length; finlets absent → 5
- 4b. One or 2 lateral lines, lower running along midbody (Fig. 5); body depth more than 5 times in standard length; 2 to 6 finlets present → 6

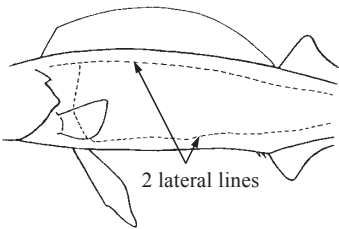


Fig. 8 lateral view of body

- 5a. Lower lateral line branching off under fifth to sixth dorsal-fin spines; 2 small spines on lower angle of preopercle (Fig. 9). *Epinnula magistralis*
- 5b. Both lateral lines originated at 1 point, at upper edge of opercle; no spines on preopercle (Fig. 10) *Neopinnula americana*

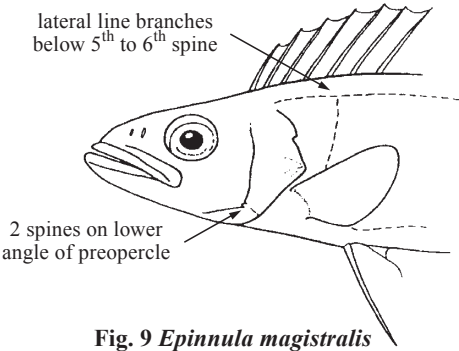


Fig. 9 *Epinnula magistralis*

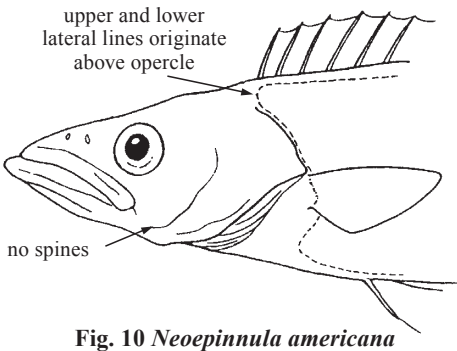


Fig. 10 *Neopinnula americana*

- 6a. Two lateral lines (Fig. 11); dorsal-fin spines 26 to 32; 5 to 7 finlets behind both dorsal and anal fins; body depth 15 to 18 in standard length. *Gempylus serpens*
- 6b. One lateral line (Fig. 12); dorsal-fin spines 17 to 21; 2 finlets behind both dorsal and anal fins; body depth less than 13 times in standard length. → 7

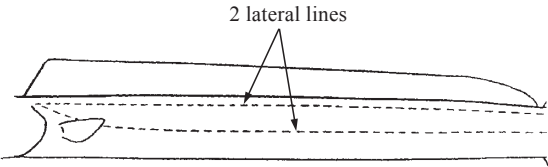


Fig. 11 *Gempylus serpens*

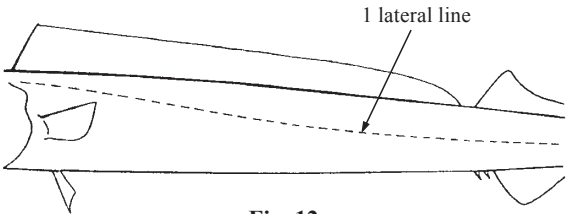


Fig. 12

- 7a. Pelvic fins well developed, with 1 spine and 5 soft rays; body depth 10 to 13 times in standard length *Nesiarchus nasutus*
- 7b. Pelvic fins rudimentary, of a single spine; body depth 6.5 to 9 times in standard length. → 8

- 8a. Two free anal-fin spines behind anus, first of them large, dagger-shaped; lateral line fairly straight (Fig.13); dorsal-fin spines 20 or 21*Nealotus tripes*
- 8b. No free anal fin behind anus; lateral line curved abruptly downward anteriorly (Fig. 14); dor-
sal-fin spines 17 or 18.*Promethichthys prometheus*

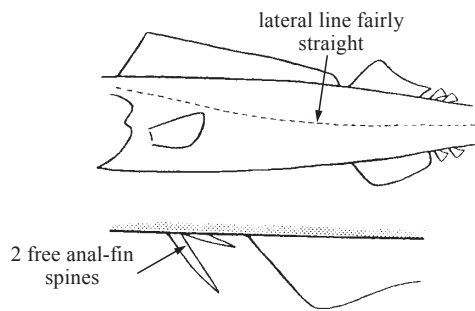


Fig. 13 *Neolotus tripes*

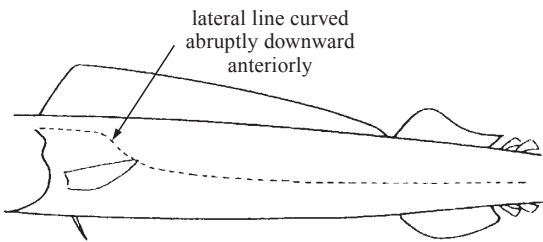


Fig. 14 *Promethichthys prometheus*

List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Diplospinus multistriatus* Maul, 1948.
-  *Epinnula magistralis* Poey, 1854.
-  *Gempylus serpens* Cuvier, 1829.
-  *Lepidocybium flavobrunneum* (Smith, 1843).
-  *Nealotus tripes* Johnson, 1865.
-  *Neopinnula americana* (Grey, 1953).
-  *Nesiarchus nasutus* Johnson, 1862.
-  *Promethichthys prometheus* (Cuvier, 1832).
-  *Ruvettus pretiosus* Cocco, 1833.

Reference

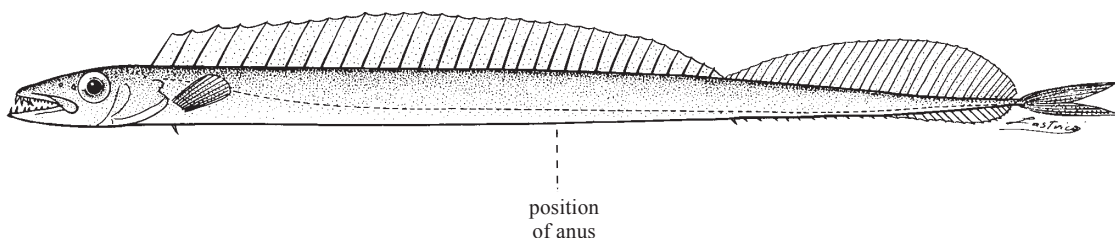
Nakamura, I. and N.V. Parin. 1993. FAO species catalogue. Vol. 15. Snake mackerels and cutlassfishes of the World (families Gempylidae and Trichiuridae), *FAO Fish. Syn.*, (125)Vol.15:136 p.

Diplospinus multistriatus Maul, 1948

DLT

Frequent synonyms / misidentifications: None / None.

FAO names: En - Striped escolar; Fr - Escolier rayé; Sp - Escolar rayado.

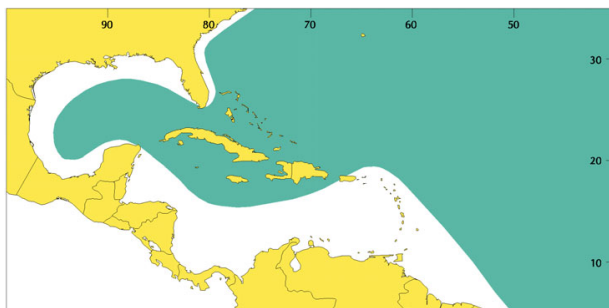


Diagnostic characters: Body extremely elongate and compressed. Depth 13 to 18 in standard length. **Anus midway between tip of snout and tip of caudal fin, in front of first anal-fin spine by a distance equal to head length.** Head 6 times in standard length. **First dorsal fin with 30 to 36 spines; second dorsal fin with 35 to 44 rays,** its base about half the length of first dorsal-fin base. Anal fin with 2 small free spines and 28 to 35 soft rays. Pectoral fins with 11 to 13 rays. Pelvic fins reduced to a minute spine in adults. A single lateral line, situated closer to ventral profile than dorsal profile posteriorly. Vertebrae 57 to 64. **Colour:** silvery with narrow dark dotted lines along body; gill membranes jet-black.

Size: Maximum to about 20 cm standard length.

Habitat, biology, and fisheries: Oceanic, mesopelagic at depths to about 1 000 m. Rather common. Migrates upward at night to 100 to 200 m. Feeds on crustaceans and small fishes. Reproductive throughout the year. Of no importance to fisheries.

Distribution: Central water masses of all oceans, including the Western Central Atlantic, the Gulf of Mexico, and the Caribbean Sea.

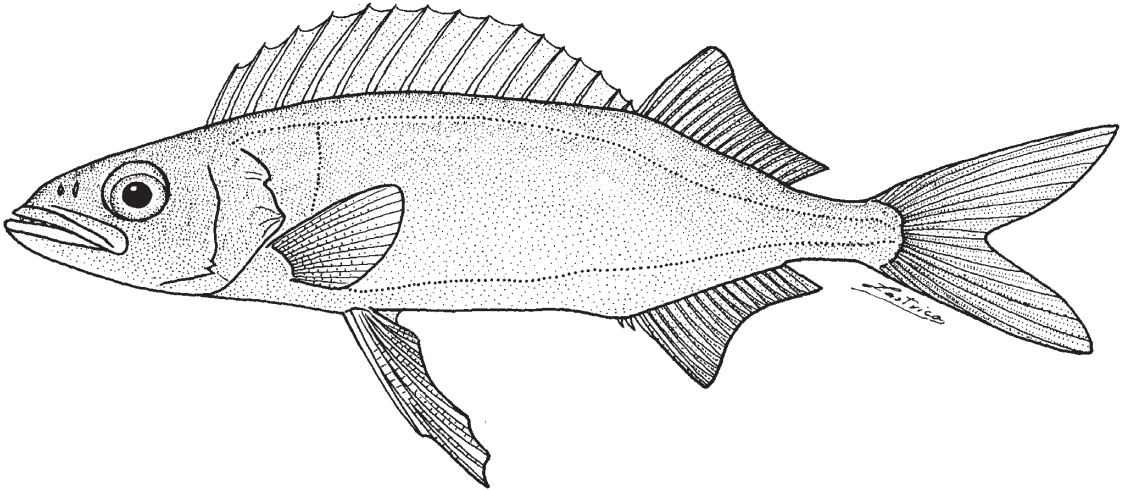


Epinnula magistralis Poey, 1854

EMG

Frequent synonyms / misidentifications: None / None.

FAO names: En - Domine; Fr - Escolier maître; Sp - Dómine.

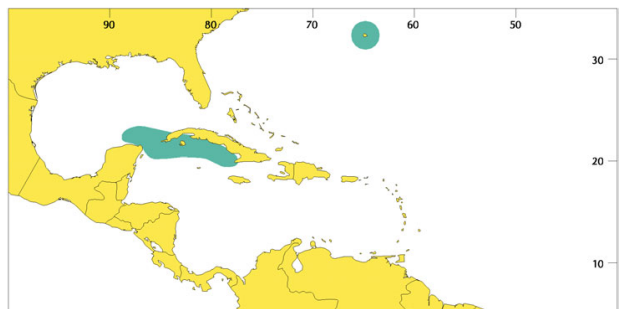


Diagnostic characters: Body deep and compressed. Depth 4.1 to 5.6 in standard length. Head 3.0 to 4.1 in standard length. Two small, sharp spines at lower angle of preopercle. First dorsal fin fairly high, with 15 or 16 spines; second dorsal fin high anteriorly, with 13 to 17 rays. Anal fin a little smaller than second dorsal fin with 2 free and 1 comprised spines and 13 to 17 rays. Pectoral fin short and rounded, with 15 rays. Pelvic fins larger than pectoral fins, with 1 spine and 5 rays. **Two lateral lines, the lower branched off under fifth to sixth dorsal-fin spines**, descending vertically and running near ventral contour. Vertebrae 32. **Colour:** body light greyish blue; fin membranes of first dorsal and pelvic fins black; anal fin blackish; buccal and branchial cavities brownish; peritoneum black.

Size: Maximum to 1 m standard length, usually less than 45 cm standard length.

Habitat, biology, and fisheries: Probably mesobenthopelagic. Rare species known from a few specimens. Of no importance to fisheries.

Distribution: Only known from the Caribbean Sea off Cuba, Bermuda Islands, the southern Japan and the eastern North Indian Oceans.

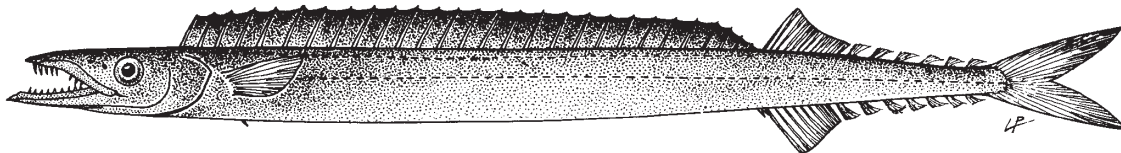


Gempylus serpens Cuvier, 1829

GES

Frequent synonyms / misidentifications: None / None.

FAO names: En - Snake mackerel; Fr - Escolier serpent; Sp - Escolar de canal.

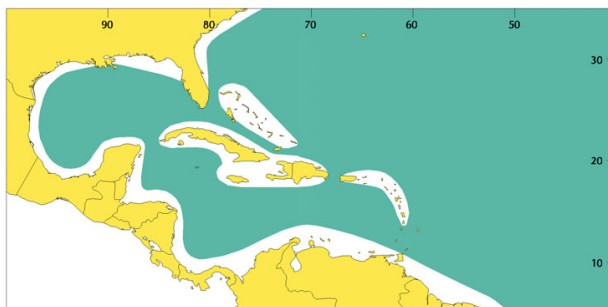


Diagnostic characters: Body elongate and compressed. Depth 15 to 18 in standard length. Head 5.5 to 6 in standard length. Lower jaw extends anterior to upper jaw, tips of both jaws with dermal processes. **First dorsal fin long, with 26 to 32 spines; second dorsal fin with a minute spine and 11 to 14 rays followed by 5 or 6 finlets.** Anal fin with 2 free and 1 comprised spine and 10 to 12 rays followed by 6 or 7 finlets. Pectoral fins with 12 to 15 rays. Pelvic fins reduced to 1 spine and 3 or 4 soft rays. **Two lateral lines, both originating below first spine of dorsal fin**, upper follows dorsal contour of body to end of first dorsal-fin base, the lower descends gradually posterior to about tip of pectoral fin and runs midlaterally. Vertebrae 48 to 55. **Colour:** body dark brown; all fins dark brown with darker margins.

Size: Maximum to 1 m standard length, common to 60 cm.

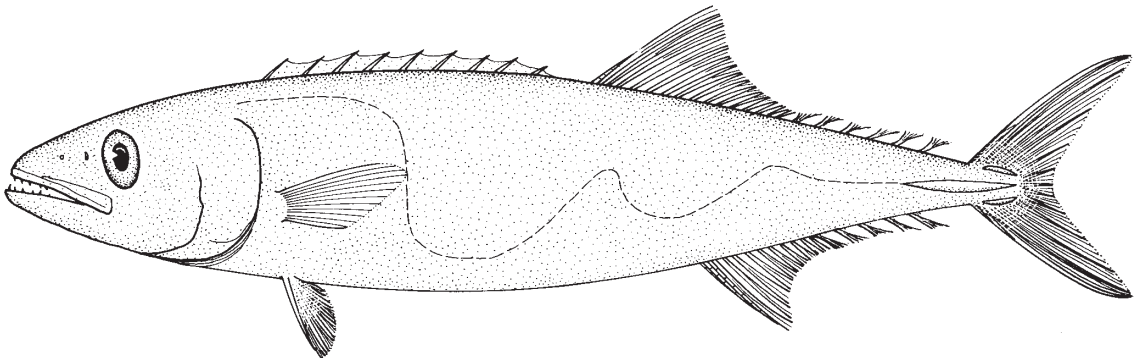
Habitat, biology, and fisheries: Oceanic, epi- and mesopelagic from surface to depths of 200 m, perhaps deeper. Usually solitary. Common. Feeds on fishes (myctophids, exocoetids, sauries, scombrids), squid, and crustaceans. Males mature at 43 cm standard length, females at 50 cm. Spawns in tropical waters throughout the year. Fecundity of about 300 000 to 1 000 000 eggs. No special fishery, but appears sometimes as bycatch in tuna longline fishery.

Distribution: Worldwide in the tropical and sub-tropical seas, including the Caribbean Sea and the Gulf of Mexico.



***Lepidocybium flavobrunneum* (Smith, 1843)**

LEC

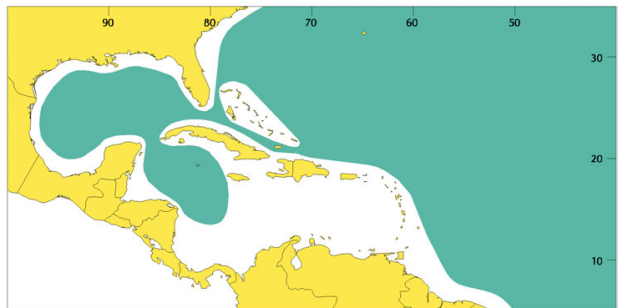
Frequent synonyms / misidentifications: None / None.**FAO names:** **En** - Escolar; **Fr** - Escolier noir; **Sp** - Escolar negro.

Diagnostic characters: Body semi-fusiform, slightly compressed. Depth 4.1 to 4.3 in standard length. Head 3.6 to 3.7 in standard length. Tips of both jaws without dermal processes. First dorsal fin very low, with 8 or 9 spines, well-separated from the second; second dorsal fin with 16 to 18 rays followed by 4 to 6 finlets. Anal fin with 1 or 2 comprised spines and 12 to 14 rays. Pectoral fins with 15 to 17 rays. Pelvic fins well developed, with 1 spine and 5 rays. **Caudal peduncle with a strong median keel, flanked by 2 supplementary keels, one on each side of the median keel. Lateral line single, sinuous.** Scales moderately small. Vertebrae 31. **Colour:** body almost uniformly dark brown, becoming almost black with age.

Size: Maximum about 2 m standard length, common to 1.5 m.

Habitat, biology, and fisheries: Mostly over the continental slope, down to 200 m and more; not common offshore. Often migrates upward at night. Feeds on squid, fishes (bramids, coryphaenids, scombrids, etc.), and crustaceans. No target fisheries, but appears as bycatch in tuna longline fishery.

Distribution: Widely distributed in tropical and subtropical seas, including the Western Central Atlantic; not known from the Caribbean Sea.

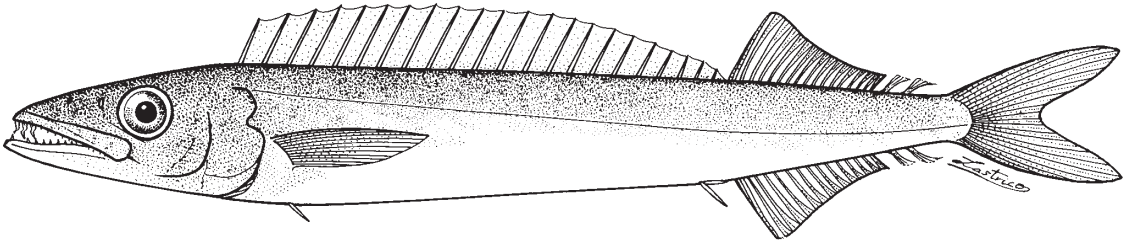


Nealotus tripes Johnson, 1865

NLT

Frequent synonyms / misidentifications: None / None.

FAO names: **En** - Black snake mackerel; **Fr** - Escolier reptile; **Sp** - Escolar oscuro.

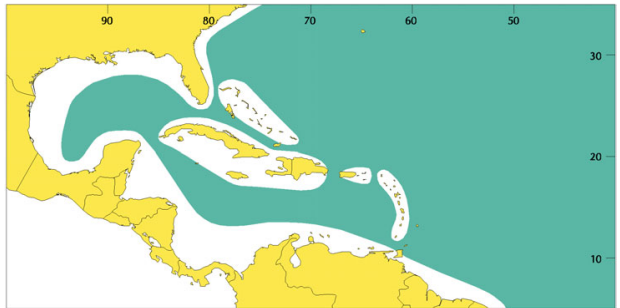


Diagnostic characters: Body elongate and compressed. Depth 7 to 9 in standard length. Head about 4 in standard length. Tips of jaws without dermal processes. **First dorsal fin with 20 or 21 spines.** Second dorsal fin with 16 to 19 rays followed by 2 finlets. **Anal fin with 2 free spines, the first dagger-shaped,** the second smaller and parallel to ventral contour, and 15 to 19 rays followed by 2 finlets. Pectoral fins with 13 or 14 rays. Pelvic fins reduced to 1 small spine. **Lateral line single, fairly straight.** Scales large, easily deciduous. Vertebrae 36 to 38. **Colour:** body blackish brown, dorsal and anal fins brownish.

Size: Maximum 25 cm standard length, common to 15 cm.

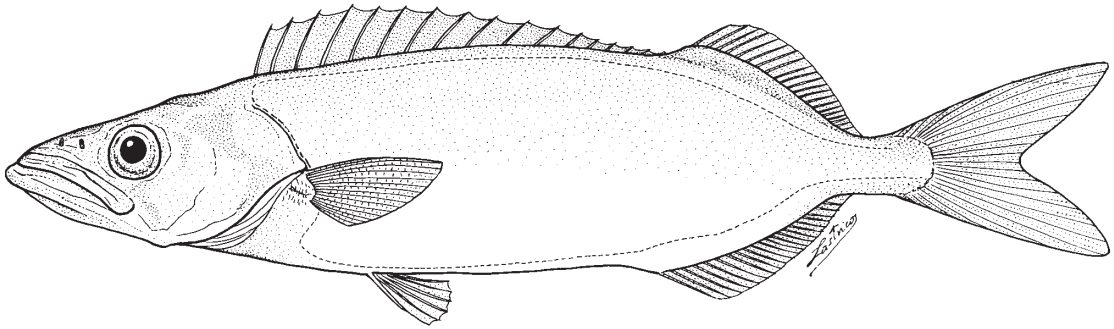
Habitat, biology, and fisheries: Oceanic, epi- to mesopelagic from surface to about 600 m depth. Uncommon. Migrates to surface at nights. Feeds on myctophids and other small fishes, squids, and crustaceans. Matures at 15 cm standard length. Of no importance to fisheries.

Distribution: Tropical and temperate waters of all oceans, including the Gulf of Mexico and the Caribbean Sea.



Neopinnula americana (Grey, 1953)

NIM

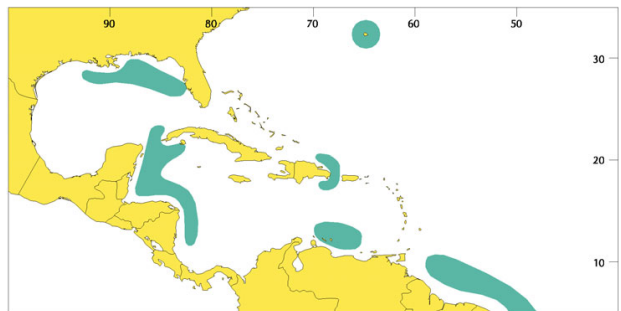
Frequent synonyms / misidentifications: None / None.**FAO names:** **En** - American sackfish; **Fr** - Escolier américain; **Sp** - Escolar americano.

Diagnostic characters: Body moderately deep, compressed. Depth 4.2 to 4.7 in standard length. Head 3.2 to 3.4 in standard length. Interorbital space narrower than eye diameter. No spines at lower angle of preopercle, Lower jaw extends anterior to upper jaw. **First dorsal fin** inserted above or slightly behind margin of preopercle, **with 16 spines**; second dorsal fin with 1 spine and 17 to 20 rays. Anal fin with 2 free and 1 comprised spine and 17 to 20 rays. Pectoral fins with 15 or 16 rays. Pelvic fins inserted beneath middle of pectoral fins, with 1 spine and 5 rays. **Two lateral lines, both originating above upper angle of gill opening**; the upper follows dorsal contour of body, the lower descends down along margin of gill opening, around pectoral-fin base and follows ventral contour of body. Vertebrae 32. **Colour:** sides of body silvery, back brown, first dorsal fin blackish; second dorsal fin black anteriorly.

Size: Maximum 22 cm standard length.

Habitat, biology, and fisheries: Benthopelagic at 180 to 460 m depth. Of no importance to fisheries.

Distribution: Known only from the western Atlantic Ocean (Bermuda Islands, the Gulf of Mexico, Yucatán Channel, the Caribbean Sea off Venezuela and Haiti, and off Suriname).

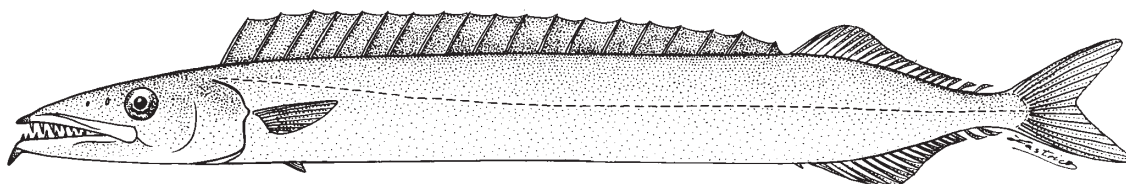


Nesiarchus nasutus Johnson, 1862

NEN

Frequent synonyms / misidentifications: None / None.

FAO names: **En** - Black gemfish; **Fr** - Escolier long nez; **Sp** - Escolar narigudo.

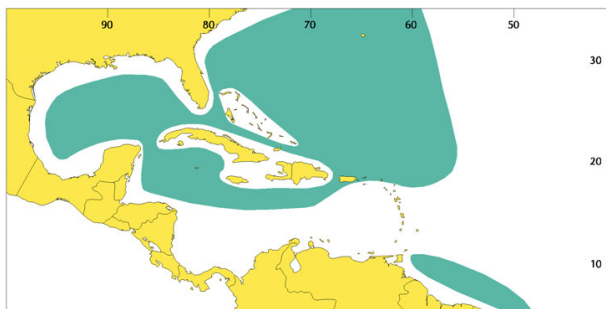


Diagnostic characters: Body fairly elongate and strongly compressed. **Depth 10 to 13 in standard length.** Head 4.2 to 4.6 in standard length. Lower jaw strongly extends anterior to upper jaw; **conical dermal process at tip of each jaw.** First dorsal fin long, with 19 to 21 spines. Second dorsal fin short, with 2 comprised spines and 19 to 24 rays including 2 finlets in adults (finlets not developed in juveniles). Anal fin a little shorter than second dorsal fin, with 2 comprised spines and 18 to 21 rays. Pectoral fins short, with 12 to 14 rays. **Pelvic fins shorter than pectoral fins, with 1 small spine and 5 rays.** Lateral line single, gradually sloping posteriorly and running midlaterally in hind part of body. Vertebrae 34 or 35. **Colour:** body dark brown, with violet tint; fin membranes black.

Size: Maximum 1.3 m standard length, common to 80 cm.

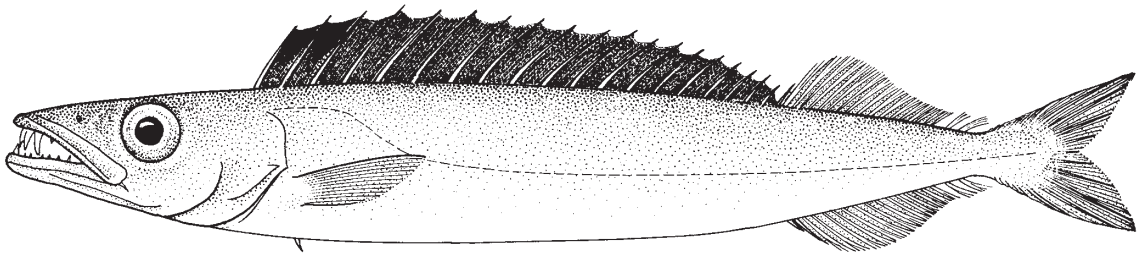
Habitat, biology, and fisheries: Adults benthopelagic, dwelling on continental slope or underwater rises at about 200 m and deeper, migrates to midwater at night. Feeds on squid, fish, and crustaceans. Reproduces throughout the year in warm water. No special fishery.

Distribution: Probably worldwide in the tropical and subtropical seas, known in the Western Central Atlantic, including the Gulf of Mexico and the Caribbean Sea.



***Promethichthys prometheus* (Cuvier, 1832)**

PRP

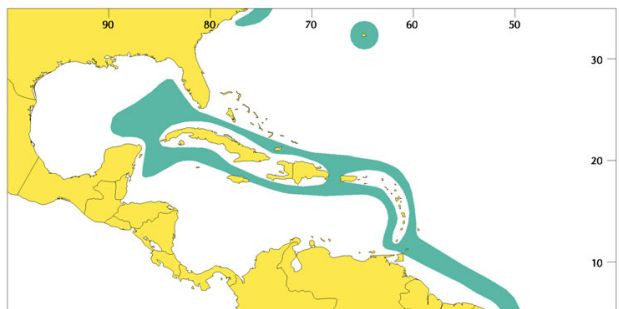
Frequent synonyms / misidentifications: None / None.**FAO names:** **En** - Roudi escolar; **Fr** - Escolier clair; **Sp** - Escolar prometeo.

Diagnostic characters: Body moderately elongate and compressed. Depth 6.5 to 7 in standard length. Head 3.5 to 3.7 in standard length. Jaws without dermal processes. First dorsal fin with 17 to 19 spines; second dorsal fin 2.5 times shorter than first dorsal fin, with 1 spine and 17 to 20 rays followed by 2 finlets. Anal fin with 2 (rarely 3) comprised spines and 15 to 17 rays followed by 2 finlets. Pectoral fins about equal to half of head length, with 13 or 14 rays. Pelvic fins entirely absent at more than 40 cm standard length (in smaller specimens represented by 1 spine that reduces with growth), underskin articulation on pelvic girdle before pectoral-fin base. **Lateral line single**, running subdorsally from above upper angle of gill opening to under fourth dorsal-fin spine, then **abruptly curving down and running midlaterally**. Body entirely scaled at more than 20 to 25 cm standard length. Vertebrae 33 to 35. **Colour:** body greyish to copper brown; fins blackish.

Size: Maximum 1 m standard length.

Habitat, biology, and fisheries: Benthopelagic at continental slope, around islands and submarine rises at 100 to 750 m. Migrates to midwater at night. Feeds on fishes, cephalopods, and crustaceans. No special fishery exists.

Distribution: Tropical and subtropical waters of all oceans. Within the area known from the eastern Atlantic coast of the USA, off Bermuda, in the Caribbean Sea and off Suriname.

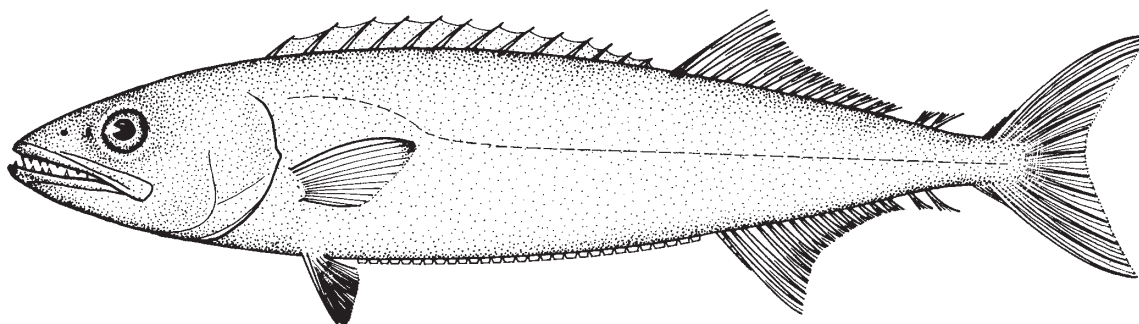


Ruvettus pretiosus Cocco, 1833

OIL

Frequent synonyms / misidentifications: None / None.

FAO names: En - Oilfish; Fr - Rouvet; Sp - Escolar clavo.



Diagnostic characters: Body semi-fusiform and slightly compressed. Depth 4.3 to 4.9 in standard length. Head 3.3 to 3.7 in standard length. Jaws without dermal processes. First dorsal fin low, with 13 to 15 spines. Second dorsal fin with 15 to 18 rays followed by 2 finlets. Anal fin with 15 to 18 rays followed by 2 finlets. Pectoral fins with about 15 rays. Pelvic fins well developed, with 1 spine and 5 rays. **Lateral line single**, often obscure. **Belly keeled by bony scales between pelvic fins and anus**. No caudal keels. Small cycloid scales, interspersed with rows of sharp spiny tubercles. Vertebrae 32. **Colour:** body uniformly brown to dark brown, tips of pectoral and pelvic fins black.

Size: Maximum up to 3 m total length, common to 1.5 m standard length.

Habitat, biology, and fisheries: Oceanic, benthopelagic on continental slope and sea rises from about 100 to 700 m. Usually solitary or in pairs near sea bottom. Feeds on fishes, squids, and crustaceans. Caught as bycatch in tuna longline fishery at depths from 100 to 400 m. Flesh very oily, with purgative properties.

Distribution: Widely distributed in the tropical and warm-temperate seas of the world. Within the area more common off the West Indies and Bermuda, straying sometimes as far as Georges Bank.

