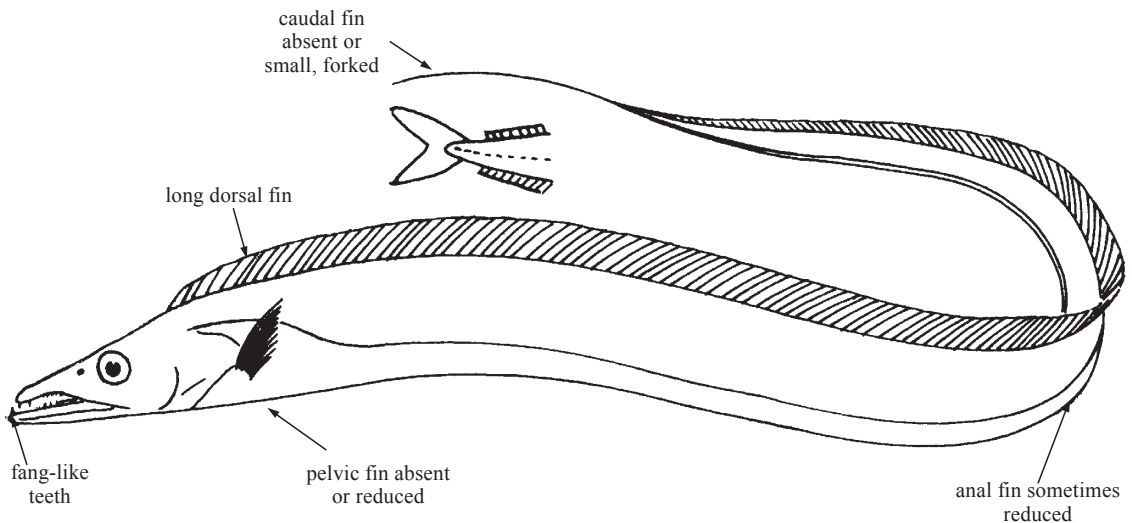


## TRICHIURIDAE

## Scabbardfishes (hairtails, frostfishes)

by N.V. Parin, P.P. Shirshov Institute of Oceanology, Russia  
and I. Nakamura, Kyoto University, Japan (after Vergara, 1978)

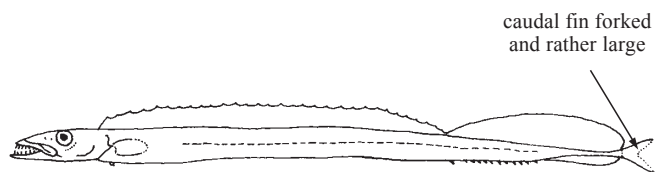
**Diagnostic characters:** Predominantly large fishes (to 1 to 2 m total length). **Body remarkably elongate and compressed, ribbon-like.** A single nostril on each side of snout. Mouth large. **Teeth strong, usually fang-like at front of upper jaw and sometimes in anterior part of lower jaw.** A single dorsal fin running almost entire length of body; its spinous portion either short and continuous with very long soft portion, or moderately long, not shorter than half of soft portion length, and separated from soft portion by a notch. Anal fin preceded by 2 free spines behind anus (first inconspicuous and second variously enlarged), with absent or reduced (sometimes restricted to posterior part of fin) soft rays. Pectoral fins with 12 rays, moderately small and situated midlaterally or lower on sides. **Pelvic fins absent or reduced** to 1 flattened spine and 0 to 1 tiny soft rays. Caudal fin either small and forked, or absent. Lateral line single. Scales absent. No keels on caudal peduncle. Vertebrae 97 to 158. **Colour:** body silvery to black with iridescent tint. Fins usually paler.



**Habitat, biology, and fisheries:** Benthopelagic on continental shelves and slopes, and underwater rises from surface to about 1 600 m deep. Voracious predators feeding on fishes, squids, and crustaceans. Eggs and larvae pelagic. Several species exploited commercially out of Area 31. Though flesh scanty, meat excellent to eat. Marketed mostly fresh, salted, or frozen.

**Similar families occurring in the area**

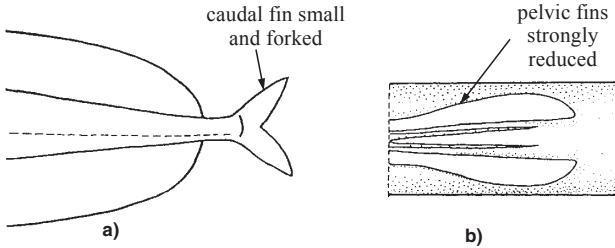
Gempylidae: body less elongated; 2 nostrils on each side of snout; 2 dorsal fins always well defined, first dorsal fin longer than second one; dorsal and anal finlets present in many species; caudal fin forked and moderately large; pelvic fins well developed in some species.



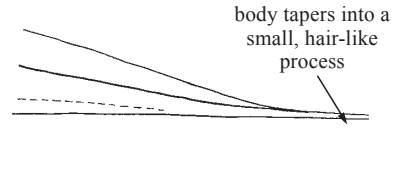
Gempylidae

**Key to the species of Trichiuridae occurring in the area**

- 1a. Caudal fin present, small, and forked (Fig.1a); pelvic fins present, but strongly reduced, modified to a scale-like process (flattened spine) with 0 to 2 tiny soft rays (Fig. 1b) (totally absent in adult *Aphanopus*) . . . . . → 2
- 1b. Caudal fin absent, body tapering into a hair-like process (Fig. 2b); pelvic fins absent . . . . . *Trichiurus lepturus*

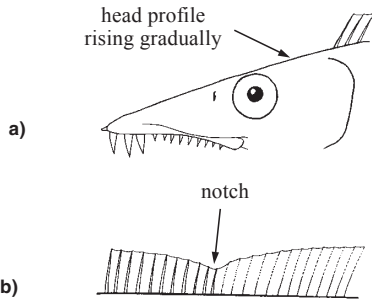


**Fig. 1 caudal and pelvic fins**

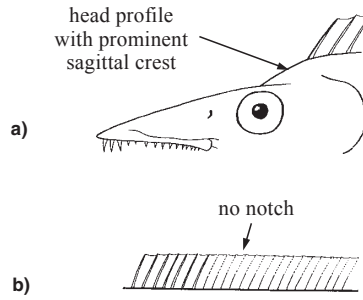


**Fig. 2 *Trichiurus lepturus* caudal fin**

- 2a. Head profile rising very gradually from tip of snout to origin of dorsal fin, without forming a sagittal crest (Fig. 3a); spinous part of dorsal fin long (not shorter than half of soft-ray part), with 38 to 46 not very weak spines well-differing from subsequent rays), divided by notch from soft-ray part (Fig. 3b) . . . . . → 3
- 2b. Head profile with a prominent sagittal crest (Fig. 4a); spinous part of dorsal fin short, with 10 or fewer very weak spines (hardly differing from subsequent rays), not divided by notch from soft-rayed part (Fig. 4b) . . . . . → 6



**Fig. 3**



**Fig. 4**

- 3a. Spinous part of dorsal fin only slightly shorter than soft part; 102 or fewer total dorsal-fin elements; second anal-fin spine strong, dagger-like . . . . . → 4
- 3b. Spinous part of dorsal fin about half as long as soft part; 125 or more total dorsal-fin elements; second anal-fin spine delicate, scale-like . . . . . → 5
- 4a. Total dorsal-fin elements 90 to 96; dorsal-fin spines 38 to 41 . . . . . *Aphanopus carbo*
- 4b. Total dorsal-fin elements 96 to 102; dorsal-fin spines 40 to 44 . . . . . *Aphanopus intermedius*

- 5a. Scale-like pelvic fins inserted behind pectoral-fin base (Fig. 5); total dorsal-fin elements 148 to 155  
 . . . . . *Benthodesmus simonyi*
- 5b. Scale-like pelvic fins inserted before pectoral-fin base; total dorsal-fin elements 125 to 129  
 . . . . . *Benthodesmus tenuis*

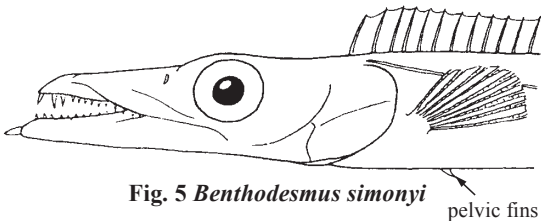


Fig. 5 *Benthodesmus simonyi*

- 6a. Total dorsal-fin elements 81 to 96; body in adults 11 to 13 times in standard length . . . . . → 7
- 6b. Total dorsal-fin elements 116 to 123; body depth in adults 25 to 28 times in standard length  
 . . . . . *Assurger anzac*
- 7a. Head about 6 times in standard length, with upper profile almost straight, gently rising from tip of snout to dorsal-fin origin (Fig. 6); total dorsal-fin elements 90 to 96 . . . . . *Lepidopus altifrons*
- 7b. Head about 8 times in standard length, with upper profile convex, steeply rising from tip of snout to dorsal-fin origin (Fig. 7); total dorsal-fin elements 81 to 88 . . . . . *Evoxymetopon taeniatus*

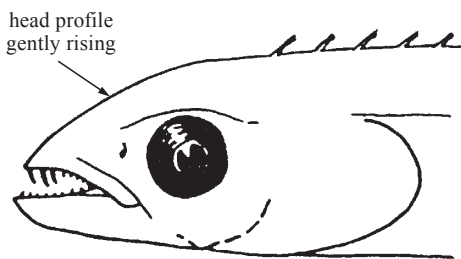


Fig. 6 *Lepidopus altifrons*

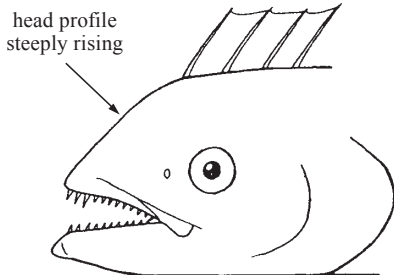











Fig. 7 *Evoxymetopon taeniatus*

**List of species occurring in the area**

The symbol  is given when species accounts are included.

-  *Aphanopus carbo* Lowe, 1839.
-  *Aphanopus intermedius* Parin, 1983.
-  *Assurger anzac* (Alexander, 1917).
-  *Benthodesmus simonyi* (Steindachner, 1891).
-  *Benthodesmus tenuis* (Günther, 1877).
-  *Evoxymetopon taeniatus* Gill, 1863.
-  *Lepidopus altifrons* Parin and Collette, 1993.
-  *Trichiurus lepturus* Linnaeus, 1758.

**References**

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

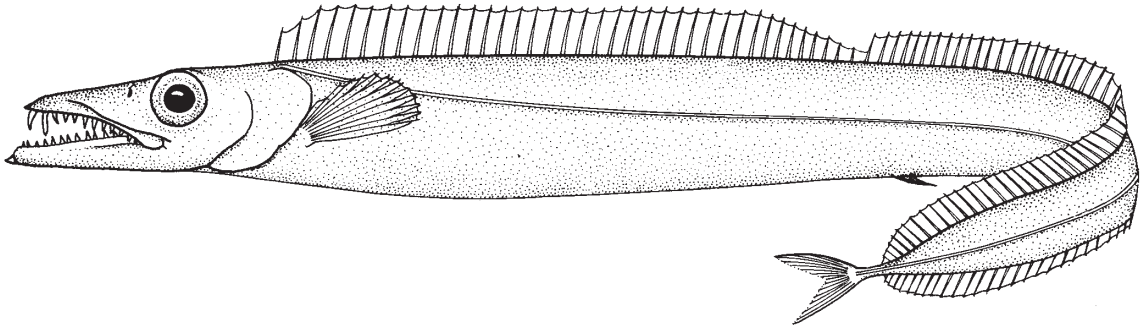
Parin, N.V. 1994. Three new species and new records of the black scabbard fishes, genus *Aphanopus* (Trichiuridae). *Voprosy Ikhtiol.*, 34(6):740-746.

*Aphanopus carbo* Lowe, 1839

BSF

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** **En** - Black scabbardfish; **Fr** - Sabre noir; **Sp** - Sable negro.

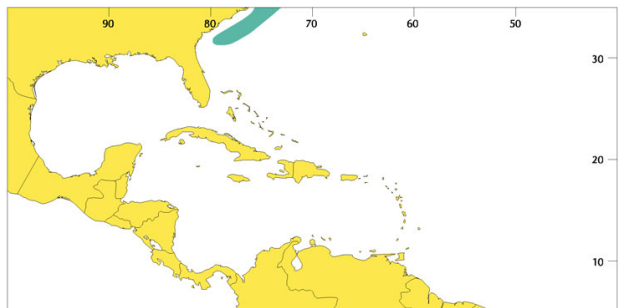


**Diagnostic characters:** Body elongate. Depth 10.8 to 13.4 in standard length. Head 4.7 to 5.2 in standard length, with upper profile smooth, gently rising from snout to dorsal-fin origin. **Interorbital space and nape flattened, without sagittal crest.** Eye 4.9 to 5.9 in head; situated near dorsal contour. **Dorsal fin with 38 to 40 spines and 52 to 56 soft rays (totally 90 to 96 fin elements), partly divided by deep notch,** base of spinous part only slightly shorter than soft part. Anal fin with 2 close-set free spines well-detached from the rest of fin, the second spine very strong, dagger-like, with 44 to 48 soft rays. **Caudal fin forked.** Pelvic fins absent in adults. Vertebrae 97 to 100. **Colour:** body coppery black with iridescent tint.

**Size:** Maximum 1.1 m standard length.

**Habitat, biology, and fisheries:** Benthopelagic at 200 to 1 600 m, juveniles mesopelagic. Migrates to midwater at night. Feeds on crustaceans and fishes. Matures at 80 cm. Rare. Of no importance to fisheries in the area; commercially exploited in Madeira.

**Distribution:** North Atlantic Ocean. Within the area known only from off Georgia, USA.

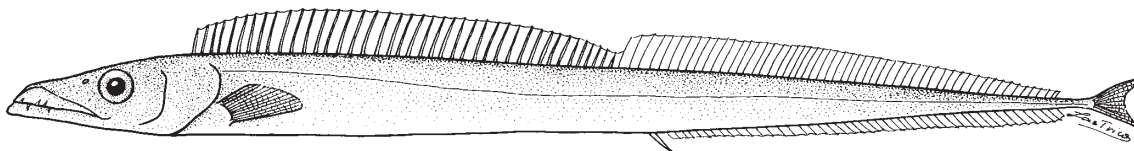


*Aphanopus intermedius* Parin, 1983

APH

**Frequent synonyms / misidentifications:** None / *Aphanopus carbo* Lowe, 1839.

**FAO names:** En - Intermediate scabbardfish; Fr - Poisson sabre tachuo; Sp - Sable intermedio.

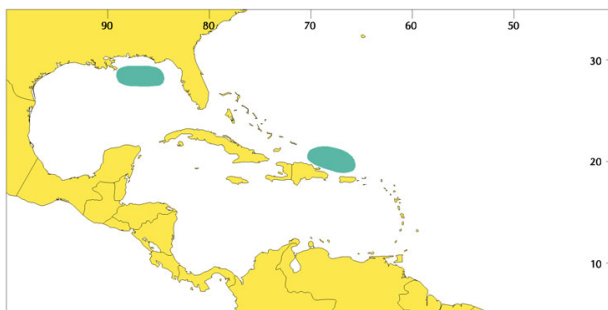


**Diagnostic characters:** Body elongate. Depth 12.0 to 16.4 in standard length. Head 4.9 to 5.5 in standard length, with upper profile smooth, gently rising from snout to dorsal-fin origin. **Interorbital space and nape flattened, without sagittal crest.** Eye 5.0 to 6.0 in head, situated near dorsal contour. **Dorsal fin with 40 to 44 spines and 54 to 59 soft rays (totally 96 to 102 fin elements), partly divided by deep notch,** base of spinous part only slightly shorter than the soft part. Anal fin with 2 free close-set spines well-detached from the rest of fin, the second fin very strong, dagger-like, and 46 to 50 rays. **Caudal fin forked.** Pelvic fins absent in adults. Vertebrae 102 to 107. **Colour:** body black.

**Size:** Maximum 1 m standard length.

**Habitat, biology, and fisheries:** Benthopelagic at 800 to 1 300 m. Rare within the area. Of no importance to fisheries.

**Distribution:** Tropical and warm waters of the Atlantic Ocean. Within the area off Haiti and in the Gulf of Mexico.

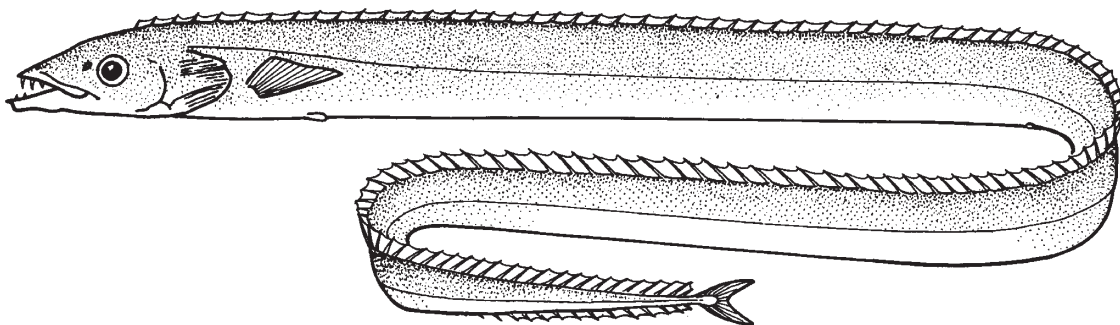


*Assurger anzac* (Alexander, 1917)

ASZ

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** **En** - Razorback scabbardfish; **Fr** - Poisson sabre rasoir; **Sp** - Sable aserrado.

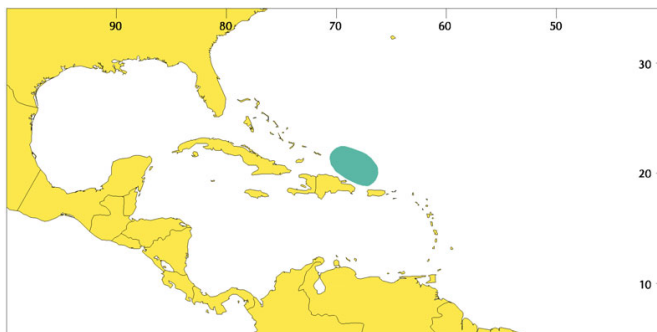


**Diagnostic characters:** Body extremely elongate. Depth 25.1 to 28.0 in standard length. Head 12.1 to 13.5 in standard length, with upper profile straight or scarcely convex, gently rising from tip of snout to dorsal-fin origin. **Interorbital space and nape convex, with sagittal crest strongly elevated.** Eye 7.4 to 8.0 in head, situated laterally. **Dorsal fin with** a few weak anterior spines hardly differing from soft rays, **totally 116 to 123 fin elements.** Anal fin with 2 close-set free spines well-detached from rest of fin, the second small and scale-like, with only 14 to 17 external soft rays, confined to posterior portion of fin. Caudal fin forked. Pelvic fins of 1 scale-like spine and 1 tiny soft ray. **Caudal fin forked.** Vertebrae 125 to 129. **Colour:** body silvery, dorsal-fin membrane black anteriorly.

**Size:** Maximum 225 cm standard length.

**Habitat, biology, and fisheries:** Probably benthopelagic at 150 to 400 m, juveniles epi- or mesopelagic. Feeds on fishes and squids. Of no importance to fisheries.

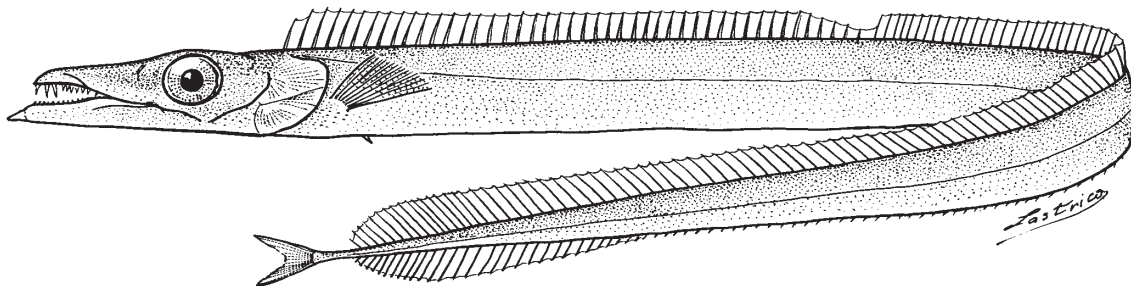
**Distribution:** Subtropical and warm-temperate waters of both the northern and the southern hemispheres. In the Western Central Atlantic known from off Puerto Rico.



***Benthodesmus simonyi*** (Steindachner, 1891)

**Frequent synonyms / misidentifications:** *Benthodesmus atlanticus* Goode and Bean, 1896 / None.

**FAO names:** **En** - Simony's frostfish; **Fr** - Poisson sabre ganse; **Sp** - Cintilla de Simony.

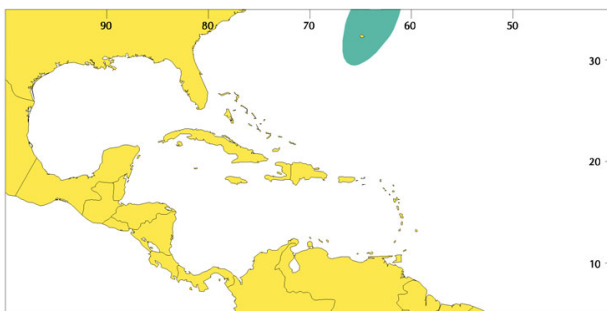


**Diagnostic characters:** Body extremely elongated. Depth 22.0 to 27.1 in standard length. Head 7.0 to 8.0 in standard length, with upper profile smooth, gently rising from tip of snout to dorsal-fin origin. **Interorbital space and nape flattened, without sagittal crest.** Eye 5.1 to 5.8 in head, situated near dorsal contour. **Dorsal fin with 36 to 39 spines and 92 to 99 soft rays (totally 129 to 137 fin elements), partly divided by deep notch,** base of spinous part about twice shorter than soft part. Anal fin with 2 free close-set spines well-detached from the rest of fin, the second spine delicate, of cardiform shape, and 93 to 102 soft rays (external soft rays developed only in last third of fin base). **Caudal fin forked. Pelvic fins diminutive, composed of a scale-like spine and a rudimentary ray, inserted well behind pectoral-fin base.** Vertebrae 153 to 158. **Color:** body silvery, jaws and opercle blackish.

**Size:** Maximum 1.3 m standard length.

**Habitat, biology, and fisheries:** Benthopelagic at 200 to 900 m on continental slope and under-water rises; juveniles mesopelagic. Of no importance to fisheries.

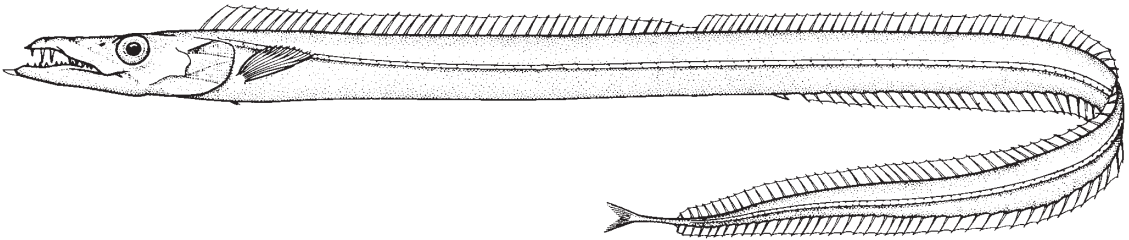
**Distribution:** The North Atlantic Ocean. Within the area known from off Bermuda Islands.



***Benthodesmus tenuis*** (Göther, 1877)

**Frequent synonyms / misidentifications:** None / *Benthodesmus atlanticus* Goode and Bean, 1896.

**FAO names:** En - Slender frostfish; Fr - Sabre fleuret; Sp - Cintilla.



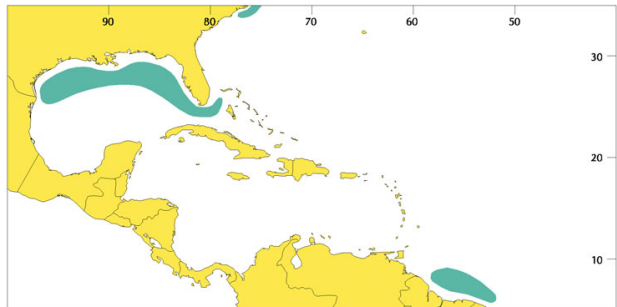
**Diagnostic characters:** Body extremely elongated. Depth 25 to 31 in standard length. Head 7.3 to 7.8 in standard length, upper profile smooth, gently rising from tip of snout to dorsal-fin origin, **interorbital space and nape flattened, without sagittal crest**. Eye 5.9 to 7.5 in standard length, situated near dorsal contour. **Dorsal fin with 40 to 42 spines and 83 to 87 soft rays (totally 125 to 129 fin elements), partly divided by deep notch**, base of spinous part about twice shorter than soft part. Anal fin with 2 free close-set spines detached from the rest of fin, the second spine delicate, cardiform, and 72 to 75 soft rays, all of them external. **Caudal fin forked**. **Pelvic fins** diminutive, **inserted well before or below pectoral-fin base**. Vertebrae 129 to 131. **Colour:** body silvery, jaws and opercle blackish.

**Size:** Maximum 70 cm standard length.

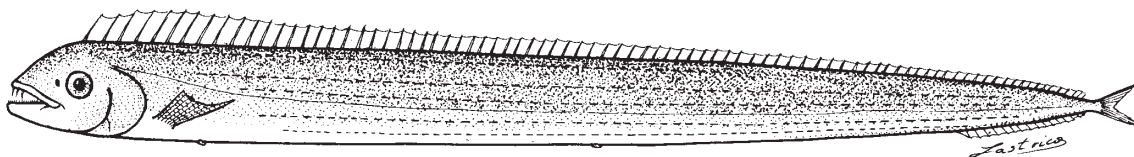
**Habitat, biology, and fisheries:** Benthopelagic at 200 to 850 m; juveniles mesopelagic. Of no importance to fisheries.

**Distribution:** In the western Atlantic off Cape Hatteras, the Gulf of Mexico, off Suriname and southern Brazil. Also reported from the eastern Atlantic, Indian, and Pacific oceans.

**Note:** It is possible that *B. tenuis* may represent a group of closely related species. Meristics and proportions given in this account based only on the western Atlantic specimens.





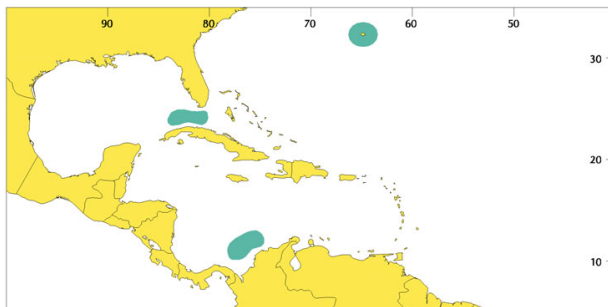
***Evoxymetopon taeniatus* Gill, 1863****Frequent synonyms / misidentifications:** None / None.**FAO names:** En - Channel scabbardfish; Fr - Poisson sabre canal; Sp - Tajalí de canal.

**Diagnostic characters:** Body elongate and remarkably compressed. Depth 11.5 to 12.5 in standard length. **Head 7.5 to 8.0 in standard length, with upper profile convex, steeply rising** from tip of snout to dorsal-fin origin. **Interorbital space and nape convex, with sagittal crest strongly elevated.** Eye about 5.0 to 5.5 in head, situated laterally. **Dorsal fin with** a few weak anterior spines hardly differing from soft rays (**totally 81 to 88 fin elements**). Anal fin with a diminutive, free scale-like spine, and with a few external soft rays, confined to posterior portion of fin. **Caudal fin small, forked.** Pelvic fin reduced to a scale-like spine. **Colour:** body silvery white with slight red brownish tint on dorsal part; several longitudinal pale yellow stripes on body; anterior part of dorsal fin blackish.

**Size:** Maximum 2 m standard length.

**Habitat, biology, and fisheries:** Benthopelagic on continental slope, and sometimes on shelf. Very rare. Of no importance to fisheries.

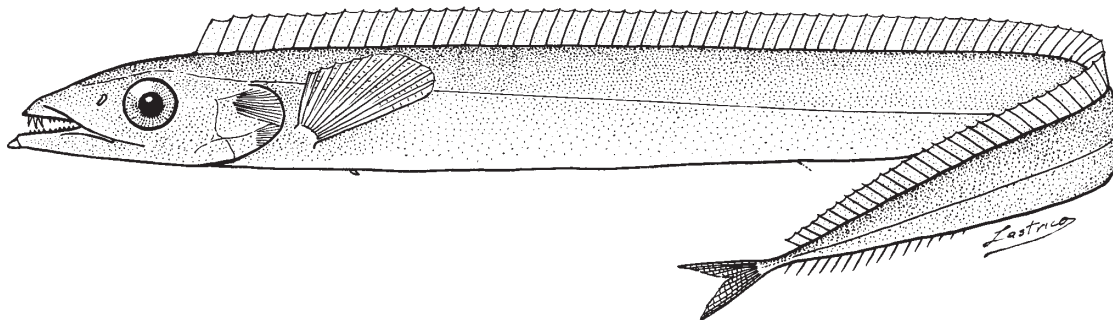
**Distribution:** In the western Atlantic Ocean known from off Bermuda and Bahamas, the Caribbean Sea, and off southern Brazil. Reported also from the western North Pacific.



*Lepidopus altifrons* Parin and Collette, 1993

**Frequent synonyms / misidentifications:** None / *Evoxymetopon taeniatus* Gill, 1863.

**FAO names:** En - Crested scabbardfish; Fr - Poisson sabre crénelé; Sp - Pez cinto encrestado.

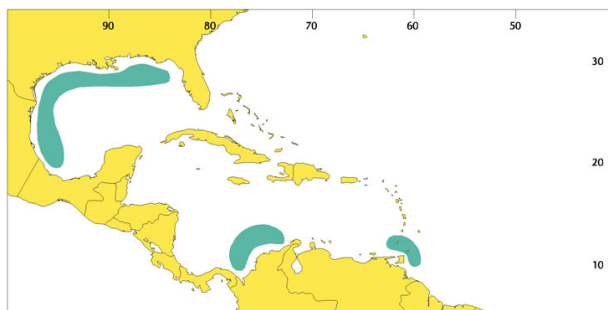


**Diagnostic characters:** Body elongate and compressed. Depth 10.9 to 13.0 in standard length. **Head 5.9 to 6.5 in standard length, with upper profile almost straight, gently rising** from snout to dorsal-fin origin. **Interorbital space and nape convex, with sagittal crest elevated.** Eye 4.9 to 5.1 in head, situated laterally. **Dorsal fin with** a few weak anterior spines hardly differing from soft rays (**totally 90 to 96 fin-elements**). Anal fin with 2 close-set spines well-detached from rest of fin, the second spine flat, triangular, and with 52 to 58 soft rays. **Caudal fin forked.** Pelvic fins reduced, scale-like. **Colour:** body silvery to brownish, darker along lateral line.

**Size:** Maximum about 70 cm standard length.

**Habitat, biology, and fisheries:** Benthopelagic from 200 to 500 m; juveniles pelagic. Of no importance to fisheries.

**Distribution:** The western Atlantic Ocean from 47°N off the Scotian Shelf to 35°S off southern Brazil, including the Gulf of Mexico and the Caribbean Sea.

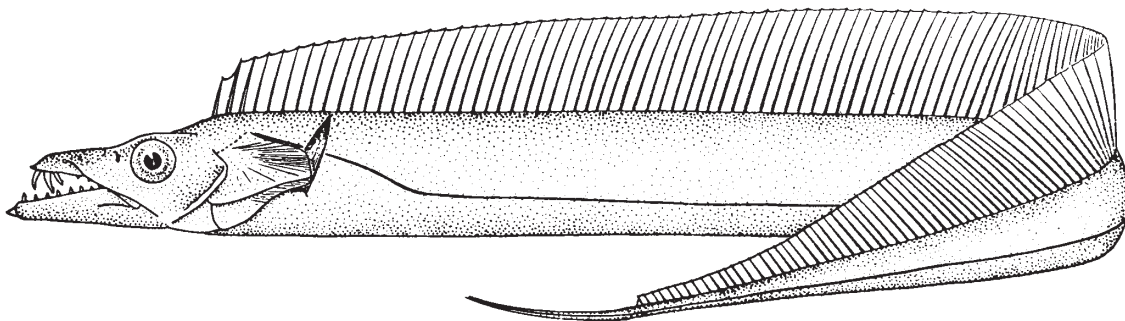


*Trichiurus lepturus* Linnaeus, 1758

LHT

**Frequent synonyms: misidentifications:** None / None.

**FAO names:** **En** - Largehead hairtail (AFS: Atlantic cutlassfish); **Fr** - Poisson sabre commun; **Sp** - Pez sable.



**Diagnostic characters:** **Body elongate and strongly compressed, ribbon-like, tapering to a point** (tip often broken). Depth about 15 to 18 in total length. Head about 6 to 8 in total length, with upper profile slightly concave, gently rising from snout to dorsal-fin origin. Interorbital space and nape convex, with sagittal crest elevated. Eye 5 to 7 in head, nearly touching upper profile. Dorsal fin moderately high, very long, with 3 spines and 130 to 135 rays, not divided by notch. Anal fin reduced to about 100 to 105 minute spinules, usually embedded in skin or slightly breaking through. **No caudal fin.** Pectoral fins directed upward, with 1 spine and 11 to 13 rays. **Pelvic fins absent.** **Colour:** fresh specimens steel blue with silvery reflection, pectoral fins semitransparent, other fins sometimes tinged with pale yellow; the colour becomes uniform silvery grey after death.

**Size:** Maximum 1.2 m total length, common 50 to 100 cm.

**Habitat, biology, and fisheries:** Benthopelagic on continental shelf to 100 m depth, usually in shallow coastal waters over muddy bottoms, occasionally at surface at night. Young and immature specimens feed on crustaceans and small fishes; adults more piscivorous. Matures at about 2 years. Eggs pelagic. Commercial species. Caught mainly with bottom trawls and beach seines, also trammel nets, purse seines, and handlines. Marketed fresh, frozen, and salted.

**Distribution:** Throughout tropical and temperate waters of the world. Moderately abundant in the Gulf of Mexico and the Caribbean Sea, along the Atlantic coast extending from northern Virginia (exceptionally Cape Cod) to northern Argentina.

