

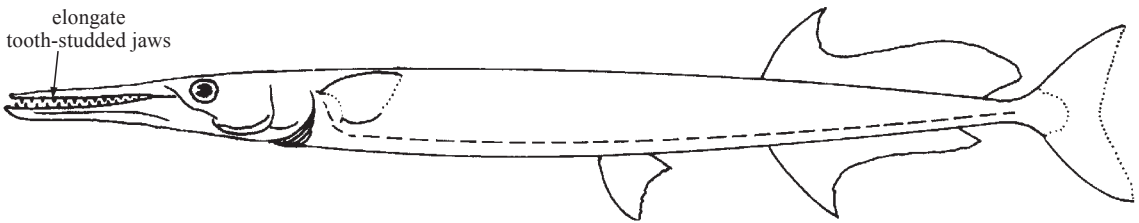
Order BELONIFORMES

BELONIDAE

Needlefishes

by B.B. Collette, National Marine Fisheries, Service, National Museum of Natural History, Washington D.C., USA

Diagnostic characters: Small to medium-sized (up to 2 m) with elongate bodies. Head with **both upper and lower jaws extended into long beaks filled with sharp teeth**; nostrils in a pit anterior to eyes. No spines in fins; dorsal and anal fins posterior in position; pelvic fins located in abdominal position with 6 soft rays; pectoral fins short. Lateral line running down from pectoral-fin origin and then along ventral margin of body. Scales small, cycloid (smooth), easily detached. **Colour:** these fishes live at the surface and are protectively coloured for this mode of life by being green or blue on the back and silvery white on the lower sides and belly. A dusky or dark blue stripe usually present along sides in life; tip of lower jaw frequently red or orange.

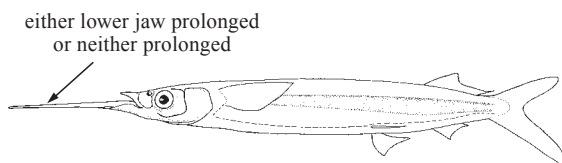


Habitat, biology, and fisheries: Most species are marine, but some occur in fresh waters. Carnivorous, feeding largely on small fishes which they catch sideways in their beaks and then turn and swallow head first. Needlefishes tend to leap and skitter at the surface and some people have been severely injured when accidentally struck by them, particularly at night when needlefishes are attracted to lights. Needlefishes are caught by casting or trolling surface or near-surface lures and with seines. The flesh is excellent and needlefishes are popular foodfishes in some parts of the world although some people have misgivings about eating them due to the green colour of their bones.

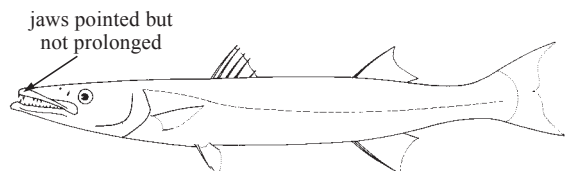
Similar families occurring in the area

Hemiramphidae: either the lower jaw prolonged or neither (*Chriodorus*) of the jaws prolonged.

Sphyraenidae: jaws pointed, but not prolonged into a beak; 2 dorsal fins, the first spiny; pelvic fins in thoracic position.



Hemiramphidae



Sphyraenidae

Key to the species of Belonidae occurring in the area

- 1a. Body strongly laterally compressed and marked with a series of vertical bars (Fig. 1); anal-fin rays 24 to 28 *Ablennes hians*
- 1b. Body rounded or squarish in cross-section; no vertical bars present; anal-fin rays 13 to 24 → 2

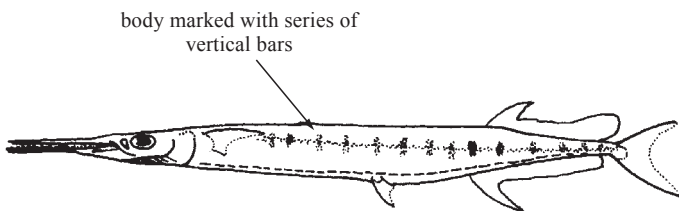


Fig. 1 *Ablennes hians*

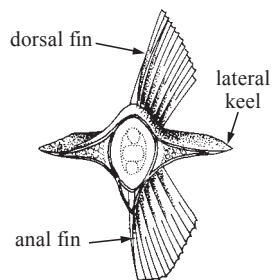


Fig. 2 cross-section of caudal peduncle

- 2a. Caudal peduncle strongly depressed (flattened dorsoventrally) and with well-developed lateral keels, least depth of caudal peduncle about half the width (Fig. 2); gill rakers present *Platybelone argalus argalus*
- 2b. Caudal peduncle not strongly depressed, a small lateral keel on caudal peduncle or no keel at all, caudal peduncle deeper than wide; gill rakers absent → 3

- 3a. Dorsal-fin rays 12 to 17; no keels on caudal peduncle; caudal fin emarginate, lower lobe not much longer than upper; no expanded black posterior dorsal-fin lobe at any size (*Strongylura*) → 4

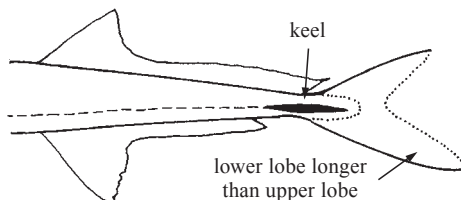


Fig. 3


- 3b. Dorsal-fin rays 21 to 26; a weak, darkly pigmented lateral keel on each side of caudal peduncle (Fig. 3); lower lobe of caudal fin much longer than upper lobe; juveniles with an expanded black lobe in the posterior part of the dorsal fin (*Tylosurus*) → 6


- 4a. Maxilla completely covered by preorbital bone; anal-fin rays 12 to 15; predorsal scales 76 to 117; vertebrae 53 to 61 *Strongylura notata*
- 4b. Maxilla exposed posteriorly; anal-fin rays 16 to 20; predorsal scales 120 to 304; vertebrae 68 to 77. → 5

- 5a. Predorsal scales 120 to 185; 2 gonads in both sexes *Strongylura timucu*
- 5b. Predorsal scales 213 to 304; only right gonad present *Strongylura marina*

- 6a. Dorsal- and anal-fin lobes relatively low compared to body length (10.1 to 13.3 and 9.7 to 11.7 times in body length, respectively); pectoral and pelvic fins relatively short (8.0 to 12.4 and 10.0 to 14.1 times in body length, respectively); upper and lower jaw teeth straight at all sizes; left gonad absent or greatly reduced in length *Tylosurus acus acus*
- 6b. Dorsal- and anal-fin lobes relatively high compared to body length (5.4 to 10.6 and 5.5 to 8.0 times in body length, respectively); pectoral and pelvic fins relatively long (6.6 to 8.3 and 7.3 to 10.6 times in body length, respectively); upper and lower jaw teeth point distinctly anterior in juveniles; left gonad distinct although shorter than right *Tylosurus crocodilus crocodilus*


List of species occurring in the area


The symbol  is given when species accounts are included.


 *Ablennes hians* (Valenciennes, 1846).


 *Platybelone argalus argalus* (Lesueur, 1821).

 *Strongylura marina* (Walbaum, 1792).

 *Strongylura notata* (Poey, 1860).

 *Strongylura timucu* (Walbaum, 1792).

 *Tylosurus acus acus* (Lacepède, 1803).

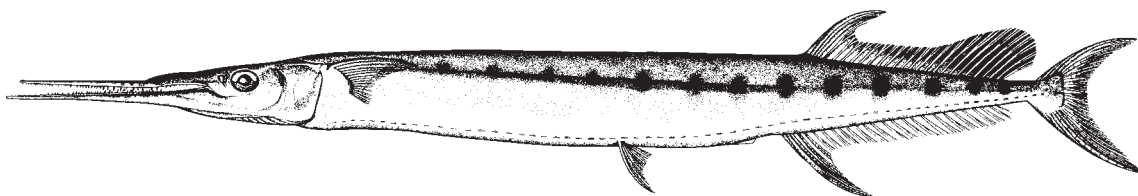
 *Tylosurus crocodilus crocodilus* (Péron and Lesueur, 1821).

References

- Collette, B.B. 1968. *Strongylura timucu* (Walbaum): a valid species of western Atlantic needlefish. *Copeia*, 1968:189-192
- Collette, B.B. 1974. *Strongylura hubbsi*, a new species of freshwater needlefish from the Usumacinta Province of Guatemala and México. *Copeia*, 1974:611-619.
- Collette, B.B. and N.V. Parin. 1970. Needlefishes (Belonidae) of the eastern Atlantic Ocean. *Atlantide Rept.*, 11:8-60.

Ablennes hians (Valenciennes, 1846)

BAF

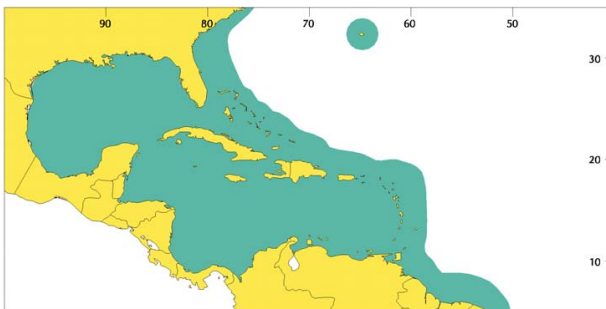
Frequent synonyms / misidentifications: None / None.**FAO names:** En - Flat needlefish; Fr - Orphie plate; Sp - Agujón sable.

Diagnostic characters: Body elongate and **greatly compressed laterally**. Upper and lower jaws greatly elongate and studded with small sharp teeth. Gill rakers absent. **Anterior parts of dorsal and anal fins with high falcate lobes**, dorsal-fin rays numerous, 23 to 26, usually 24 or 25; **anal-fin rays numerous, 24 to 28**, usually 26 or 27; caudal peduncle without lateral keels; caudal fin deeply forked, lower lobe longer than upper lobe; **pectoral fins falcate**, with 13 to 15 rays. Females lack the right gonad and males either lack it or have it greatly reduced in length. Total number of vertebrae 93 to 97. **Colour:** bluish green above, silvery white below. A broad dark blue stripe along sides and **about 12 to 14 prominent dark vertical bars on body**; tip of lower jaw red. **Juveniles and adults have an elevated black lobe in the posterior part of the dorsal fin.**

Size: Maximum to at least 82.5 cm standard length (without caudal fin) and 63 cm body length (without beak and caudal fin); commonly to 70 cm standard length. The IGFA all-tackle gamefish record is 4.80 kg for a fish caught in Mozambique in 1997.

Habitat, biology, and fisheries: A pelagic species inhabiting offshore surface waters; inshore occurrences seem to be more frequent around islands than along the mainland coast. Carnivorous, feeding mainly on small fishes. Caught mainly by casting or trolling surface or near-surface lures; also with seines and trammel nets (mandingas) often using lights. Marketed fresh or salted. Separate statistics are not collected for this species.

Distribution: Throughout the area, northward extending to Massachusetts and southward at least to Rio de Janeiro; worldwide in tropical and warm-temperate waters.

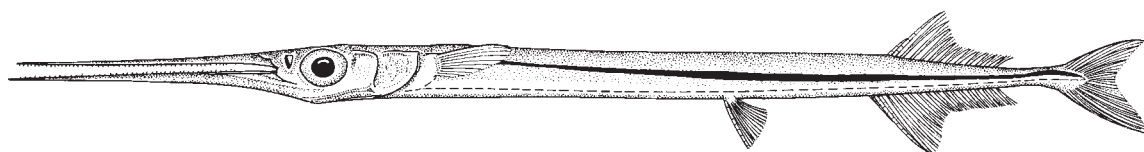


Platybelone argalus argalus (Lesueur, 1821)

PTA

Frequent synonyms / misidentifications: *Belone platyura* Bennett, 1832; *Strongylura ardeola* (Valenciennes, 1846) / None.

FAO names: **En** - Keeltail needlefish; **Fr** - Orphie carénée; **Sp** - Aguji3n de quilla.

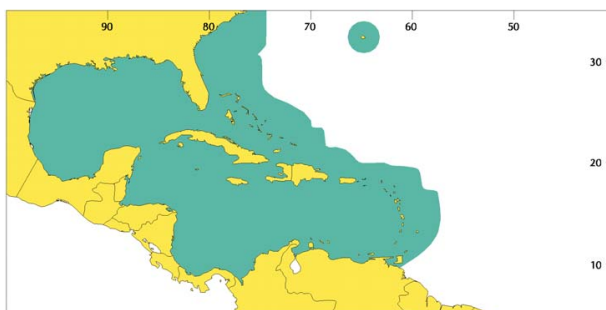


Diagnostic characters: Body elongate, rounded in cross-section. Upper and especially lower jaws greatly elongate and studded with fine teeth. **Gill-rakers present.** Anterior parts of dorsal and anal fins not forming prominent lobes; **dorsal-fin rays few, 12 to 15** (usually 13); anal-fin rays 17 to 20 (usually 18); **caudal peduncle greatly depressed, least caudal peduncle depth about half the width, with very large lateral keels**; caudal fin forked, upper and lower lobes of about equal length; pectoral fin not falcate, pectoral-fin rays 10 to 12 (usually 11). Predorsal scales (in front of dorsal fin) comparatively few and large, 107 to 128. Both right and left gonads present, right longer than left. Total vertebrae 70 to 74. **Colour:** bluish green above, silvery below. A dark blue stripe along sides. Fins clear, without pigment. Scales and bones green.

Size: Maximum to at least 38.2 cm standard length (without caudal fin) and 25.6 cm body length (without beak and caudal fin) in the Western Central Atlantic; commonly to 30 cm standard length.

Habitat, biology, and fisheries: An offshore pelagic species frequently found in inshore waters, particularly abundant about the islands of the Bahamas and Antilles. Carnivorous, feeding mainly on small fishes. Caught mainly by casting or trolling surface or near-surface lures; also with seines and trammel nets, often using lights. Separate statistics are not reported for this species.

Distribution: From Virginia south, at Bermuda, throughout the Gulf of Mexico and the Caribbean Sea to Trinidad; a polytypic species (with 7 subspecies) found worldwide in tropical and warm-temperate waters.

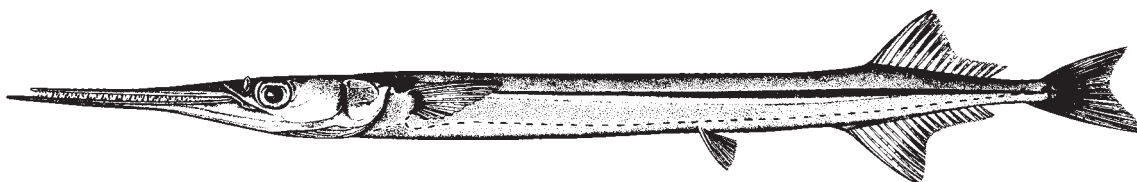


Strongylura marina (Walbaum, 1792)

NFA

Frequent synonyms / misidentifications: None / None.

FAO names: **En** - Atlantic needlefish; **Fr** - Aiguillette verte; **Sp** - Agujón verde.

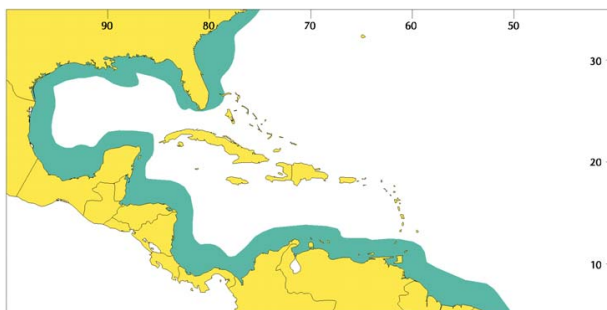


Diagnostic characters: Body elongate, rounded in cross-section. Upper and lower jaws greatly elongate and studded with sharp teeth; **maxilla exposed posteriorly**. Gill rakers absent. Anterior parts of dorsal and anal fins not forming prominent lobes; dorsal-fin rays 14 to 17; anal-fin rays 16 to 20; pectoral fins not falcate; **caudal peduncle without lateral keels**, deeper than wide; caudal fin emarginate, not deeply forked; pectoral-fin rays 10 to 12 (usually 11). **Predorsal scales numerous and tiny, 213 to 304. Only the right gonad present.** Total number of vertebrae 69 to 77. **Colour:** bluish green above, silvery below. A conspicuous dark blue stripe along sides; **black pigment behind eyes, usually not extending below middle of orbit**, preorbital bone slightly pigmented.

Size: Maximum to 64 cm standard length (without caudal fin) and 42 cm body length (without beak and caudal fin); commonly to 50 cm standard length. The IGFA all-tackle gamefish record is 1.47 kg for a fish caught in New Jersey in 1990.

Habitat, biology, and fisheries: Inhabits coastal areas and mangrove-lined lagoons, where it is moderately common (especially small individuals) and also enters fresh water. Feeds on a wide variety of small fishes and crustaceans. Caught by casting or trolling surface or near-surface lures; also with seines and trammel nets, often using lights and with cast nets in mangrove-lined lagoons (Venezuela). The primary interest in this species is as bait for sport fishes such as marlins. It is sometimes marketed fresh. Separate statistics are not reported for this species.

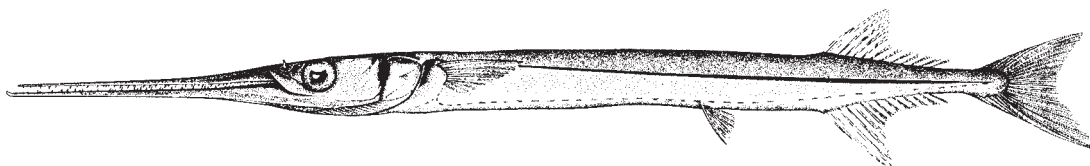
Distribution: Western Atlantic from Massachusetts south around the Florida peninsula, through the Gulf of Mexico, along the coast of Central America, south at least to Rio de Janeiro. Absent from the Bahamas and Antilles.



Strongylura notata (Poey, 1860)

Frequent synonyms / misidentifications: None / None.

FAO names: **En** - Redfin needlefish; **Sp** - Agujón de aletas rojas.



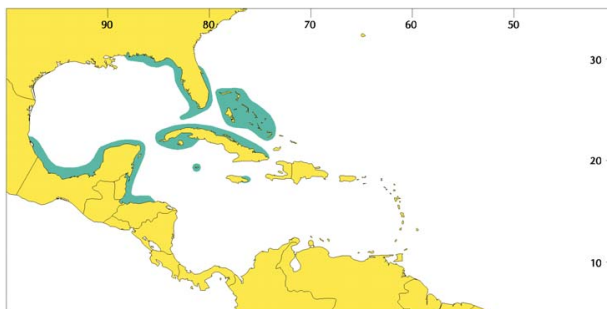
Diagnostic characters: Body elongate, rounded in cross-section. Upper and lower jaws greatly elongate and studded with sharp teeth; **maxilla concealed under preorbital bone when jaws closed**. Gill rakers absent. Anterior parts of dorsal and anal fins not forming prominent lobes; dorsal-fin rays 12 to 15; **anal-fin rays 12 to 15**; caudal peduncle without lateral keels, deeper than wide; caudal fin emarginate, not deeply forked; pectoral fin not falcate; pectoral-fin rays 10 to 12. **Predorsal scales few and large, 76 to 117**. Both right and left gonads present, right longer than left. Total number of vertebrae 53 to 61. **Colour:** bluish green above, silvery below. **Distinct vertical bar at posterior margin of preopercle. Dorsal, anal, and caudal fins red or orange.**

Size: Maximum to 411 mm standard length (without caudal fin) and 245 mm body length (without beak and caudal fin).

Habitat, biology, and fisheries: Inhabits coastal areas and mangrove-lined lagoons, where it is moderately common (especially small individuals). Carnivorous, feeding mainly on small fishes and shrimps. Separate statistics are not reported for this species.

Distribution: Western Atlantic, peninsular Florida, Bahamas, West Indies, and Central America from Belize to Honduras.

Remarks: Two subspecies are recognized: *Strongylura notata notata* (Poey, 1860) from Cuba, Jamaica, Mexico, Belize, and Honduras and *Strongylura notata forsythia* Breder, 1932 from the Bahamas, Florida Keys, and southern Florida. *S. n. forsythia* differs from *S. n. notata* primarily in having more predorsal scales (usually more than 90) and more vertebrae (usually more than 57).



Strongylura timucu (Walbaum, 1792)

SGR

Frequent synonyms/ misidentifications: None / *Strongylura marina* (Walbaum, 1792).

FAO names: **En** - Timucu; **Fr** - Aiguillette timucu; **Sp** - Agujón timucu.

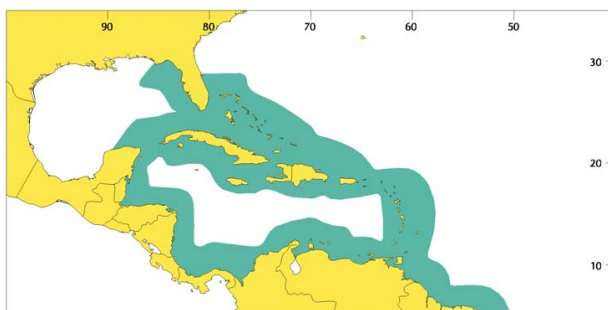


Diagnostic characters: Body elongate, rounded in cross-section. Upper and lower jaws greatly elongate and studded with sharp teeth; **maxilla exposed**. Gill rakers absent. Anterior parts of dorsal and anal fins not forming prominent lobes; dorsal-fin rays 14 to 17 (usually 16); anal-fin rays 16 to 20 (usually 17 or 18); pectoral fin not falcate; pectoral-fin rays 10 or 11. Caudal peduncle without lateral keels, deeper than wide; caudal fin emarginate, not deeply forked. **Predorsal scales relatively few and large, 120 to 185. Both right and left gonads present, right longer than left.** Total number of vertebrae 68 to 75. **Colour:** bluish green above, silvery below. A broad lateral dusky band on sides. **Black pigment behind eyes usually extending to ventral margin of orbit, preorbital bone densely pigmented.**

Size: Maximum to 42 cm standard length (without caudal fin) and 31 cm body length (without beak and caudal fin); commonly to 30 cm standard length.

Habitat, biology, and fisheries: Inhabits coastal areas and mangrove-lined lagoons, where it is moderately common (especially small individuals). Carnivorous, feeding mainly on small fishes. Caught with trammel nets (mandingas), often using lights and with cast nets (especially in mangrove-lined lagoons in Venezuela and Colombia). Separate statistics are not reported for this species.

Distribution: Western Atlantic from Jupiter Inlet on the east coast of Florida and Pensacola on the west coast south through the Florida Keys, the Bahamas, and Antilles; along the coasts of Central America and South America from Yucatán at least to Rio de Janeiro. Particularly common in the Bahamas and Antilles; absent from the north-eastern Gulf of Mexico.



Tylosurus acus acus (Lacepède, 1803)

AND

Frequent synonyms / misidentifications: *Tylosurus imperialis* (Rafinesque, 1810) / None.

FAO names: En - Agujon needlefish; Fr - Aiguille voyeuse; Sp - Marao ojón.

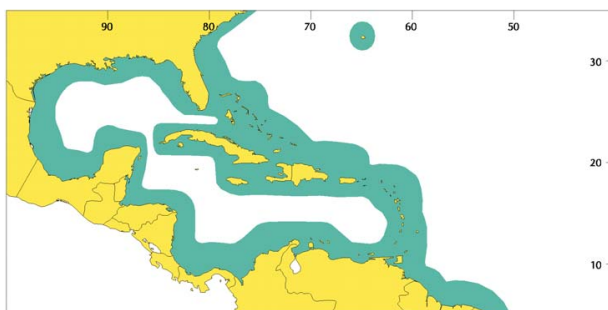


Diagnostic characters: Body elongate, rounded in cross-section. Upper and lower jaws greatly elongate and studded with sharp teeth; **teeth straight at all sizes**. Gill rakers absent. Anterior part of dorsal fin with a low lobe, contained 10.5 to 13.3 times in body length; dorsal-fin rays numerous, 22 to 26 (usually 24); anal-fin lobe low, contained 9.7 to 11.7 times in body length; **anal-fin rays numerous, 20 to 24 (usually 21 or 22); a small black lateral keel on caudal peduncle**, caudal peduncle deeper than wide; caudal fin deeply forked, lower lobe much longer than upper; pectoral and pelvic fins relatively short, 8.0 to 12.4 and 10.0 to 14.1 times in body length, respectively; pectoral-fin rays 13 or 14. **Predorsal scales tiny and very numerous, 320 to 390**. Left gonad absent or greatly reduced in length in both sexes. Total number of vertebrae 90 to 95. **Colour:** dark bluish above, silvery white below. A dark blue stripe along sides. **Juveniles have an elevated black lobe in the posterior part of the dorsal fin which is lost with growth.**

Size: Maximum to 128.5 cm standard length (without caudal fin) and 95 cm body length (without beak and caudal fin); commonly to 90 cm standard length. The IGFA all-tackle gamefish record is 3.71 kg for a fish caught in North Carolina in 1986.

Habitat, biology, and fisheries: A pelagic species inhabiting more offshore waters than *Tylosurus crocodilus*, but also found in coastal waters. Carnivorous, feeding mainly on small fishes. Caught by casting or trolling surface or near-surface lures; also with seines and trammel nets, often using lights. Marketed mostly fresh and salted. The flesh is of good quality. Separate statistics are not collected for this species.

Distribution: Throughout the area, northward extending to Massachusetts and Bermuda and southward at least to Rio de Janeiro; a polytypic species (with 4 subspecies) found worldwide in tropical and warm-temperate waters. Replaced in the eastern tropical Pacific by *Tylosurus pacificus*.

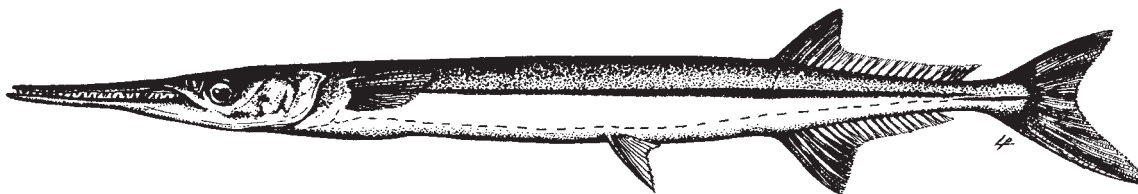


Tylosurus crocodilus crocodilus (Péron and Lesueur, 1821)

BTS

Frequent synonyms / misidentifications: *Tylosurus raphidoma* (Ranzani, 1842) / None.

FAO names: En - Hound needlefish (AFS: Houndfish); Fr - Aiguille crocodile; Sp - Marao lisero.

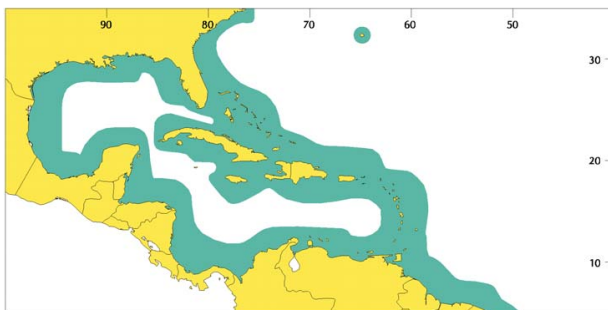


Diagnostic characters: Body elongate, rounded in cross-section. Upper and lower jaws greatly elongate and studded with sharp teeth, **teeth in both jaws point anteriorly in juveniles**. Gill rakers absent. Anterior part of dorsal and anal fins with relatively high lobes, contained 5.4 to 10.6 and 5.5 to 8.0 times in body length, respectively; dorsal-fin rays 21 to 23 (usually 22 or 23); **anal-fin rays 18 to 22 (usually 20 or 21); a small black lateral keel on caudal peduncle**, caudal peduncle deeper than wide; caudal fin deeply forked, lower lobe much longer than upper; pectoral and pelvic fins relatively long, contained 6.6 to 8.3 and 7.3 to 10.6 times in body length, respectively; pectoral-fin rays 13 to 15 (usually 14 or 15). **Predorsal scales tiny and very numerous, 240 to 290**. Both right and left gonads present, right longer than left. Total number of vertebrae 80 to 84. **Colour:** dark bluish green above, silvery white below. A dark blue stripe along sides. **Juveniles have an elevated black lobe in the posterior part of the dorsal fin which is lost with growth.**

Size: Maximum to at least 101.3 cm standard length (without caudal fin) and 71.5 cm body length (without beak and caudal fin) in the Western Central Atlantic; commonly to 90 cm standard length. The IGFA all-tackle gamefish record is 3.4 kg for a fish caught in Florida in 1999.

Habitat, biology, and fisheries: A pelagic species inhabiting more coastal waters than *Tylosurus acus*, but also found in offshore waters. Carnivorous, feeding mainly on small fishes. Injuries and a few fatalities from houndfish colliding with people, particularly when attracted to lights at night. Caught by casting or trolling surface or near-surface lures; also with seines and trammel nets. Marketed mostly fresh and salted. It is considered a high quality food fish in Venezuela. Separate statistics are not reported for this species.

Distribution: Throughout the area, northward extending to North Carolina and Bermuda and southward at least as far as Salvador, Brazil; worldwide in tropical and warm-temperate waters. Replaced in the tropical eastern Pacific by *Tylosurus crocodilus fodiator*.



SCOMBERESOCIDAE

Sauries

by B.B. Collette, National Marine Fisheries Service, National Museum of Natural History, Washington D.C., USA

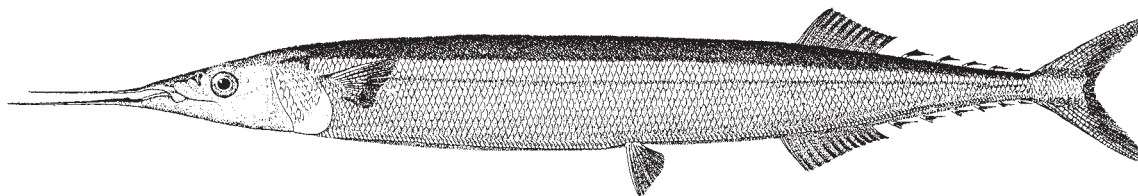
A single species occurring in the area.

Scomberesox saurus saurus (Walbaum, 1792)

SAU

Frequent synonyms / misidentifications: None / None.

FAO names: **En** - Atlantic saury; **Fr** - Balaou atlantique; **Sp** - Paparada del Atlántico.



Diagnostic characters: Upper and lower jaws prolonged. Five or six small separate finlets, dorsally between dorsal and caudal fins, ventrally between anal and caudal fins. Body about 9 times as long as deep, laterally flattened, tapering toward head and tail, with slender caudal peduncle. Lower jaw projecting a little beyond upper; teeth pointed but small. All fins small. Dorsal fin originates slightly behind origin of anal fin; these fins similar in outline, originating posteriorly. Pelvic fins situated about midway along body. Caudal fin deeply forked and symmetrical, similar to a mackerel tail. Trunk covered with small scales. Patch of scales on each gill cover. Dorsal-fin soft rays 9 to 12 plus 5 or 6 finlets; anal-fin soft rays 12 or 13 plus 5 to 7 finlets; pectoral-fin soft rays 12 to 15; predorsal scales 73 to 81; gill rakers on first arch 34 to 45; precaudal vertebrae 39 to 43, caudal vertebrae 24 to 28, total 64 to 70. **Colour:** olive green above with a silver band on each side at the level of the eye and about as broad as the latter. There is a dark green spot above the base of each pectoral fin; dorsal fin greenish; lower parts are silvery with golden gloss. Young fry, which live in the surface waters of the open Atlantic, have dark blue backs and silvery sides.

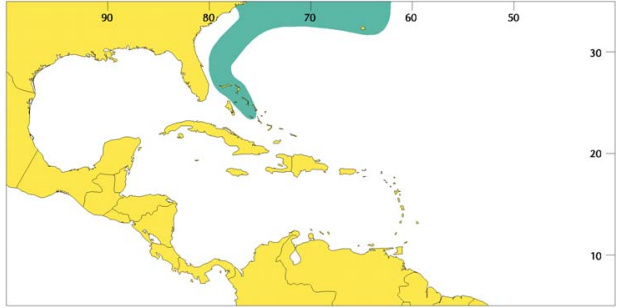
Size: Maximum size 762 mm standard length.

Similar families occurring in the area

Scomberesocidae resembles needlefish in the slender form and in the fact that both upper and lower jaws are prolonged, but differs in having a series of 5 or 6 small separate finlets, both dorsally between dorsal and caudal fins, and ventrally between anal and caudal fins.

Habitat, biology, and fisheries: Sauries spend most of their life in warm homogeneous surface layers of the open sea, far from shallow continental shelf waters. They live close to the surface; so close that in English waters, where they are plentiful in summer, few are caught in nets as deep as 2 m. Atlantic saury are one of the most abundant epipelagic planktivores inhabiting the open part of the Atlantic Ocean, feeding mainly on siphonophores, copepods, euphausiids, and amphipods. Larvae of polychaetes, decapods, isopods, ostracods, cirripeds, siphonophores, fish eggs and larvae, protozoans, and algae are also present in the diet. In winter, most sauries caught in the southern part of the area (34°N) feed on larvae of decapods, hyperiid amphipods, molluscs, and foraminiferans. Atlantic saury serve as food for many inhabitants of the sea, such as squids, swordfish, marlins, sharks, tunas, dolphins, whales, and birds. The great abundance of sauries and their wide distribution make them an important link in the epipelagic food chain of the ocean by transferring energy from lower to higher trophic levels. Valuable foodfishes in some parts of the world; Atlantic saury are important in the Mediterranean. At present, there is no fishery in the northwest Atlantic, but an experimental fishery was conducted by Russian vessels during 1969 to 1974. Caught in nets suspended from booms along the side of the vessels; the fish are attracted by bright lights at night.

Distribution: Antitropical in temperate parts of the Atlantic, Pacific, and Indian oceans. Two subspecies recognized with the nominal subspecies broadly distributed in the northern Atlantic Ocean (mostly north of 30°N) and throughout the Mediterranean Sea. In the northwest Atlantic, found from Cape Hatteras to Newfoundland. The area to the west of the Gulf Stream core is the main habitat of Atlantic saury in the open sea of the northwest Atlantic, although they have been taken east of the Gulf Stream. Generally, the area of distribution extends from coastal waters eastward to 40°W and from 32°N northward to 50°N. There are scattered records at the southern limit of the range, from Bermuda, northern Florida, the Bahamas, and Cuba.



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