

Collette, B.B. Belonidae. In Carpenter, K.E. and De Angelis, N., eds. 2016. The living marine resources of the Eastern Central Atlantic. Volume 3: Bony fishes part 1 (Elopiformes to Scorpaeniformes). FAO Species Identification Guide for Fishery Purposes, Rome, FAO. pp. 2118-2126.

FAO SPECIES IDENTIFICATION GUIDE FOR FISHERY PURPOSES

THE LIVING MARINE RESOURCES OF THE EASTERN CENTRAL ATLANTIC

VOLUME 3

Bony fishes part 1 (Elopiformes to Scorpaeniformes)

edited by

Kent E. Carpenter

Department of Biological Sciences
Old Dominion University
Norfolk, Virginia, USA

and

Nicoletta De Angelis

(former FAO, Rome)

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 2016

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ISBN 978-92-5-109266-8

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Carpenter, K.E. & De Angelis, N., eds. 2016.

The living marine resources of the Eastern Central Atlantic. Volume 3: Bony fishes part 1 (Elopiformes to Scorpaeniformes).

FAO Species Identification Guide for Fishery Purposes, Rome, FAO. pp. 1511–2342.

SUMMARY

This multivolume field guide covers the species of interest to fisheries of the major marine resource groups exploited in the Eastern Central Atlantic. The area of coverage includes FAO fishing area 34 and part of 47. The marine resource groups included are bivalves, gastropods, chitons, cephalopods, stomatopods, shrimps, lobsters, crabs, hagfishes, sharks, batoid fishes, chimaeras, bony fishes and sea turtles. The introductory chapter outlines the environmental, ecological, and biogeographical factors influencing the marine biota, and the basic components of the fisheries in the Eastern Central Atlantic. Within the field guide, the sections on the resource groups are arranged phylogenetically according to higher taxonomic levels such as class, order, and family. Each resource group is introduced by general remarks on the group, an illustrated section on technical terms and measurements, and a key or guide to orders or families. Each family generally has an account summarizing family diagnostic characters, biological and fisheries information, notes on similar families occurring in the area, a key to species, a checklist of species, and a short list of relevant literature. Families that are less important to fisheries include an abbreviated family account and no detailed species information. Species in the important families are treated in detail (arranged alphabetically by genus and species) and include the species name, frequent synonyms and names of similar species, an illustration, FAO common name(s), diagnostic characters, biology and fisheries information, notes on geographical distribution, and a distribution map. For less important species, abbreviated accounts are used. Generally, this includes the species name, FAO common name(s), an illustration, a distribution map, and notes on biology, fisheries, and distribution. Each volume concludes with its own index of scientific and common names.

Production staff: FAO FishFinder, Marine and Inland Fisheries Branch, Fisheries and Aquaculture Resources Use and Conservation Division, Fisheries and Aquaculture Department, FAO.

Project coordinators: P. Oliver (former FAO, Rome), J. Lleonart (former FAO, Rome), M. Lamboeuf (former FAO, Rome), J. Fischer (former FAO, Rome).

Programme manager: K. Friedman (FAO, Rome).

Scientific reviser: N. De Angelis (former FAO, Rome).

Editorial assistance: M. Kautenberger-Longo (former FAO, Rome), E. Biesack (Old Dominion University, Norfolk, VA, USA), B. Polidoro (Arizona State University, Phoenix, AR, USA).

Desktop publisher: M. Kautenberger-Longo (former FAO, Rome).

Scientific illustrator: E. D'Antoni (FAO, Rome).

Cover: E. D'Antoni (FAO, Rome).

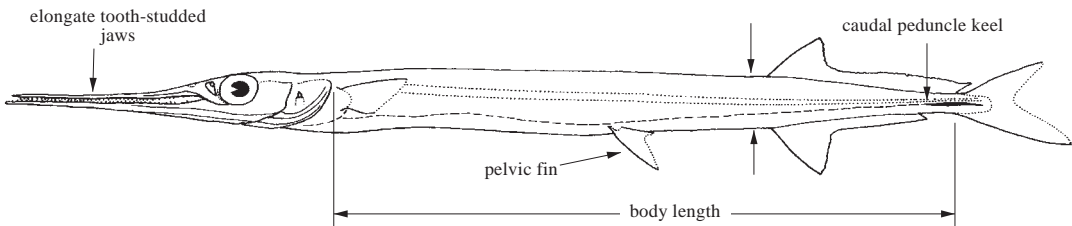
Order BELONIFORMES

BELONIDAE

Needlefishes

by B.B. Collette, National Marine Fisheries Service Systematics Laboratory,
National Museum of Natural History, Washington, DC, USA

Diagnostic characters: Small to large-sized (up to 2 m) elongate fishes 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, with 11 to 43 rays, and anal fins, with 12 to 39 rays, are posterior in position; pelvic fins located in abdominal position and with 6 soft rays; pectoral fins short, with 5 to 15 rays. Lateral line running ventrally from pectoral-fin origin and then posteriorly along ventral margin of body. Scales small, cycloid, easily detached. Vertebrae 52 to 97. Bones and fin rays green due to presence of biliverdin. **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. Usually, a dusky or dark blue stripe along sides; tip of lower jaw frequently red or orange.

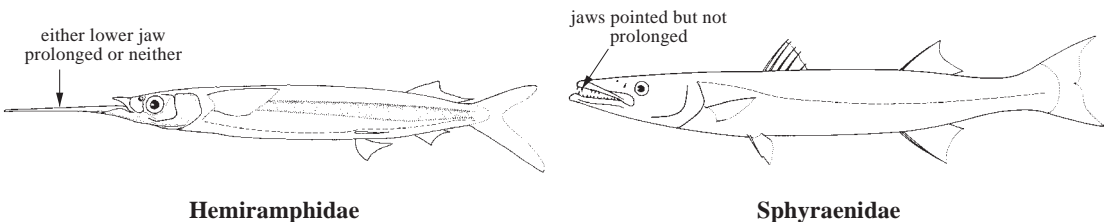


Habitat, biology, and fisheries: Most species are marine, but some occur in freshwaters. Carnivorous, feeding largely on small fishes which they catch sideways in their beaks. Needlefishes are all oviparous. There is a tendency for the right gonad to be reduced or even lost completely in some species, particularly in females. Eggs are large and covered with well-developed sticky chorionic filaments. Most needlefishes go through a "halfbeak" stage where the lower jaw elongates before the upper jaw. Needlefishes tend to leap and skitter at the surface and some people have been injured when accidentally struck by them, particularly at night when the fishes are attracted by lights. Caught by casting or trolling surface or near-surface lures. Flesh excellent in flavour 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 the bones.

Similar families occurring in the area

Hemiramphidae (halfbeaks): only the lower jaw prolonged or none of the jaws prolonged (*Oxyporhamphus*) and lacking the needle-sharp teeth that stud the needlefishes upper and lower jaws.

Sphyraenidae (barracudas): 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

Out of 10 genera and 34 species in the family, 9 species and subspecies belonging to 5 genera occur in the eastern central Atlantic.

1a. Dorsal-fin rays 12 to 16; anal-fin rays 15 to 20; pectoral-fin rays 9 to 12 → **2**

1b. Dorsal-fin rays 16 to 26; anal-fin rays 19 to 28; pectoral-fin rays 11 to 15 → **3**

2a. Caudal peduncle strongly depressed (flattened dorsoventrally) and with well-developed lateral keels; least depth of caudal peduncle about half the width (Fig. 1); gill rakers present ***Platybelone argalus***

2b. Caudal peduncle not strongly depressed, no lateral keels on caudal peduncle; caudal peduncle deeper than wide; gill rakers absent ***Strongylura senegalensis***

3a. Dorsal-fin rays 16 to 20; gill rakers present, 27 to 40 on first gill arch ***Belone acus***

3b. Dorsal-fin rays 20 to 26; gill rakers absent → **4**

4a. Body strongly laterally compressed and marked with a series of vertical bars (Fig. 2); no keels on caudal peduncle; anal-fin rays 24 to 28 ***Ablennes hians***

4b. Body rounded or squarish in cross-section; no vertical bars present; a weak, darkly pigmented lateral keel on each side of caudal peduncle (Fig. 3); anal-fin rays 19 to 23 → **5**

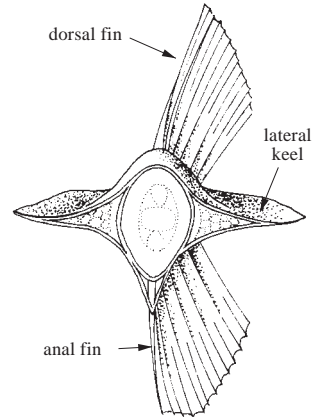


Fig. 1 cross-section of caudal peduncle

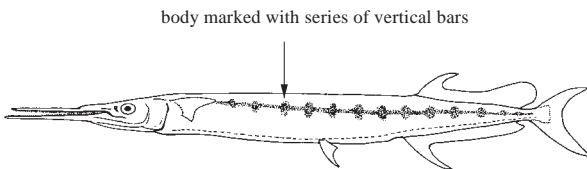


Fig. 2 *Ablennes hians*

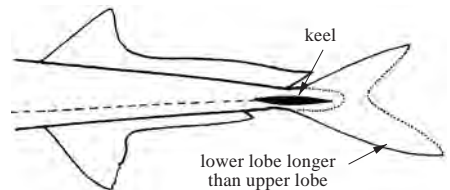









Fig. 3

5a. Dorsal- and anal-fin lobes relatively low compared to body length (10.5 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***

5b. 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***

List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Ablennes hians* (Valenciennes, 1846).
-  *Belone acus* Risso, 1827.
-  *Platybelone argalus loyii* (Günther, 1866).
Platybelone argalus annobonensis Collette and Parin, 1970.
Platybelone argalus trachura (Valenciennes, 1846).
-  *Strongylura senegalensis* (Valenciennes, 1846).
-  *Tylosurus acus rafale* Collette and Parin, 1970.
Tylosurus acus imperialis (Rafinesque, 1810).
-  *Tylosurus crocodilus crocodilus* (Péron and Lesueur, 1821).

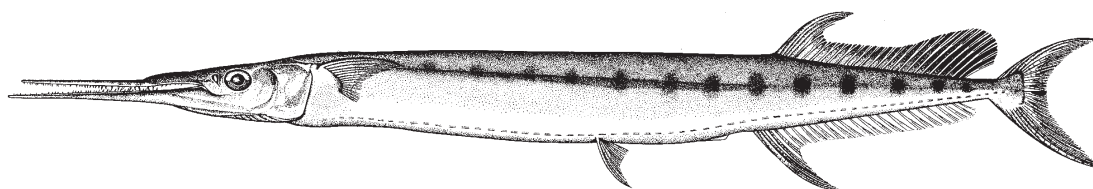
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Ablennes hians (Valenciennes, 1846)

Frequent synonyms / misidentifications: None / None.

FAO names: En – Flat needlefish; Fr – Orphie plate; Sp – Agujón sable.



Diagnostic characters: Body elongate and greatly compressed laterally. 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; posterior part of dorsal fin with a prominent dark lobe; **anal-fin rays numerous, 24 to 28**, usually 26 or 27; **pectoral fins falcate**, with 13 to 15 fin rays; caudal peduncle without lateral keels, caudal fin deeply forked, lower lobe longer than upper. Females lack the right gonad and males either lack it or have it greatly reduced. Total number of vertebrae 87 to 93. **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 95 cm standard length (without caudal fin) and 77 cm body length (without beak and caudal fin). The IGFA all-tackle gamefish record is 4.8 kg for a fish caught in Mozambique in 1997.

Habitat, biology, and fisheries: A pelagic species inhabiting offshore surface waters. Carnivorous, feeding mainly on small fishes. A 27.8 cm body length female contained 660 eggs averaging 3.16 mm in diameter. Eggs covered with uniformly spaced tufts of filaments, 1 to 6 per tuft; filaments longer than egg diameter. Caught mainly by casting or trolling surface or near-surface lures; also with seines. Marketed mostly fresh, salted and smoked. Separate statistics are not collected for this species.

Distribution: Worldwide in tropical and subtropical seas. In the eastern Atlantic, known from the Cape Verde Islands and Mauritania south through the Gulf of Guinea to the Congo and Moçamedes, southern Angola.



***Belone belone acus* Risso, 1827**

Frequent synonyms / misidentifications: *Belone belone* Risso, 1827; *Belone gracilis* Lowe, 1839 / None.

FAO names: En – Garfish; Fr – Orphie; Sp – Aguja.



Diagnostic characters: Body elongate, somewhat compressed laterally. **Gill rakers present**, 27 to 40 on first gill arch. **Larger individuals usually have teeth on the vomer**. Anterior parts of dorsal and anal fin not forming prominent lobes; dorsal-fin rays 16 to 20; anal-fin rays 19 to 23; pectoral fins not falcate, with 11 to 14 rays. **Caudal peduncle without lateral keels**; caudal fin forked. Left and right gonads of both sexes about equal in length. Total number of vertebrae 75 to 84. **Colour:** brilliant blue-green on back, fins with blue-green tints; lower sides and belly silver-white.

Size: Maximum to at least 62 cm body length. The IGFA all-tackle game fish record is 1.2 kg for a fish caught in France in 2002.

Habitat, biology, and fisheries: Epipelagic, neritic. Food consists mostly of clupeids and anchovies. Spawns from February to May in Algeria. A 51.3-cm body length female contained 2 561 eggs in the left ovary, 3 406 in the right, averaging 2.60 mm in diameter. Exploited in the Black Sea and Mediterranean.

Distribution: Barely enters Fishing Area 34 at Madeira and the Canary Islands. Endemic to the northeastern Atlantic from Trondheim, Norway, and occasionally further north, south through the North Sea and Baltic Sea to the Azores, Madeira and Canary Islands, and also throughout most of the Mediterranean and Black seas. Three subspecies of *Belone belone* (Linnaeus, 1761) are recognized: *B. belone belone* Linnaeus, 1761 from Europe north of the Mediterranean Sea; *B. belone euxini* Günther, 1866 from the Black Sea and Sea of Azov; and *B. belone acus* Risso, 1827 from the Mediterranean Sea and adjacent parts of the Atlantic Ocean, Madeira, Azores and Canary Islands.

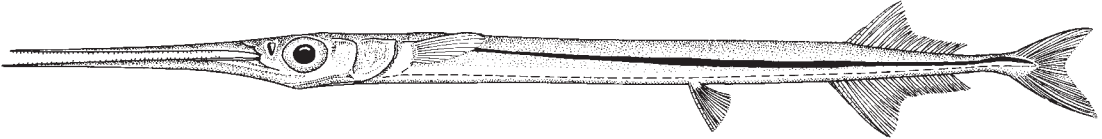


***Platybelone argalus* (Lesueur, 1821)**

Subspecies: *Platybelone argalus annobonensis* Collette and Parin, 1970; *P. a. lovii* (Günther, 1866); *P. a. trachura* (Valenciennes, 1846).

Frequent synonyms / misidentifications: None / None.

FAO names: En – Keeltail needlefish; Fr – Orphie carènée; Sp – Agujón de quilla.

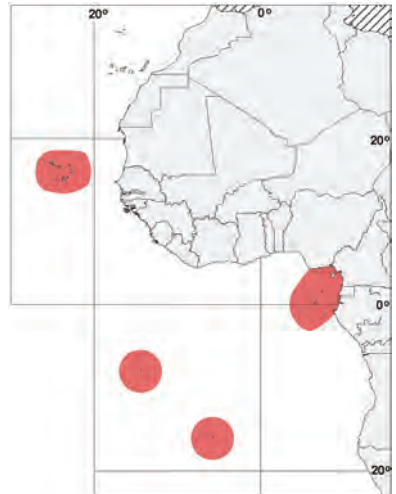


Diagnostic characters: Body elongate, rounded in cross-section. Upper and especially lower jaws greatly elongated and studded with fine teeth. **Gill rakers present.** Anterior parts of dorsal and anal fins not forming prominent lobes; **dorsal-fin rays few, 12 to 16**; anal-fin rays 17 to 19; pectoral fins not falcate, pectoral-fin rays 10 to 12, usually 11; **caudal peduncle greatly depressed**, least caudal peduncle depth about equal to half caudal peduncle width, with very large lateral keels; caudal fin forked, upper and lower lobes of about equal length. Predorsal scales (in front of dorsal fin) comparatively few and large, 107 to 138. Both right and left gonads present, right longer than left. Total vertebrae 66 to 76, number depending on subspecies. **Colour:** bluish green above, silvery below. A dark blue stripe along sides. Fins clear, without pigment.

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 eastern central Atlantic; common to 30 cm standard length.

Habitat, biology, and fisheries: Pelagic, abundant around islands. Carnivorous, feeding mainly on small fishes. A 26.6-cm body length female from the eastern Pacific contained 944 eggs in the left ovary, 1 136 in the right, averaging 1.61 mm in diameter. Taken incidentally in surface waters, but no special fishery. Caught mainly by casting or trolling surface or near-surface lures; also with seines and trammel nets. Apparently not regularly consumed. Separate statistics are not reported for this species.

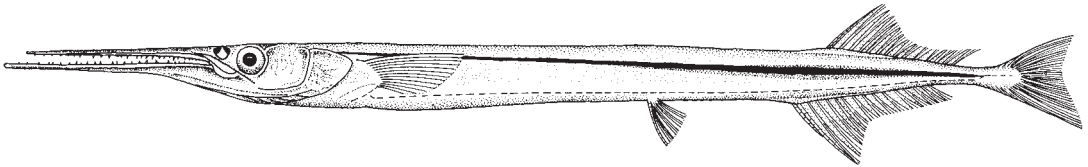
Distribution: A pelagic polytypic species (with 7 subspecies) inhabiting tropical offshore surface waters but particularly abundant about islands. In the eastern Atlantic, known only from near islands: Azores; Cape Verde (*P. argalus lovii* with 69 to 73 vertebrae, usually 71 or 72); Fernando Póo, São Tomé and Annobón in the Gulf of Guinea (*P. argalus annobonensis* with only 66 to 70 vertebrae, usually 67 or 68), and Ascension and St Helena (*P. argalus trachura* with 72 to 76 vertebrae, usually 73 or more). Other subspecies are found in other tropical and warm-temperate seas.



Strongylura senegalensis (Valenciennes, 1846)

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

FAO names: En – Senegal needlefish; Fr – Aiguillette sénégalaise; Sp – Agujón senegalés.



Diagnostic characters: Body elongate, rounded in cross-section. Gill rakers absent. Anterior parts of dorsal and anal fins not forming prominent lobes; dorsal-fin rays 13 to 16; anal-fin rays 14 to 18; pectoral fins not falcate, with 10 to 12 fin rays, usually 11. **Caudal peduncle without lateral keels, caudal fin emarginate, not deeply forked. Predorsal scales** (in front of dorsal fin) 113 to 137, average 125. Both gonads developed in both sexes, right gonad a little bit longer than left. Total number of vertebrae 62 to 67. **Colour:** bluish green above, silvery below. A conspicuous dark blue stripe along sides.

Size: Maximum to at least 64 cm standard length (without caudal fin) and 42 cm body length (without beak and caudal fin).

Habitat, biology, and fisheries: Inhabits coastal areas and brackish lagoons. Carnivorous, feeding mainly on small fishes. A 20.3 cm body length female contained 154 eggs in the left ovary, 165 eggs in the right ovary, averaging 1.70 mm in diameter. Inshore waters, but no special fishery. Caught by casting or trolling surface or near surface lures; also with purse seines. Marketed fresh. Separate statistics are not reported for this species.

Distribution: Restricted to the west African coast from Mauritania and Guinea southward through the Gulf of Guinea to Angola.



Tylosurus acus (Lacépède, 1803)

Subspecies: *Tylosurus acus imperialis* (Rafinesque, 1810); *T. a. rafale* Collette and Parin, 1970.

Frequent synonyms / misidentifications: None / *Tylosurus crocodilus* (Péron and Lesueur, 1821).

FAO names: **En** – Agujon needlefish (AFS: Atlantic Agujón); **Fr** – Aiguille voyeuse; **Sp** – Marao ojón (= Aguja imperial).

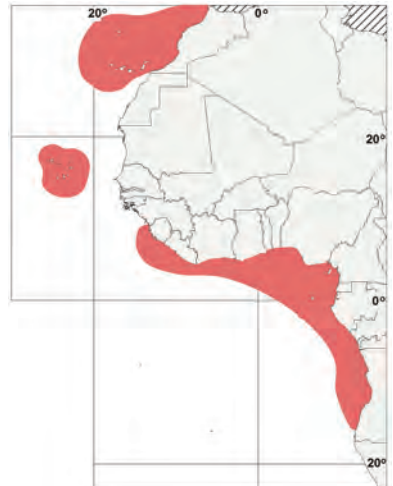


Diagnostic characters: Body elongate, rounded in cross section. Gill rakers absent. **Anterior part of dorsal fin with a low lobe, contained 10.5 to 13.3 times in body length; dorsal-fin rays numerous, 20 to 26;** anal fin lobe low, contained 9.7 to 11.7 times in body length; anal-fin rays numerous, 20 to 24, usually 21 or 22; 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; **a small black lateral keel on caudal peduncle;** caudal fin deeply forked, lower lobe much longer than upper. Predorsal scales (in front of dorsal fin) very numerous and tiny, 267 to 430. Left gonad absent or greatly reduced in both sexes. Total number of vertebrae 93 to 96 in *T. acus imperialis*, 82 to 88 in *T. acus rafale*. **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); common to 90 cm standard length.

Habitat, biology, and fisheries: A pelagic species inhabiting more offshore waters than *T. crocodilus*, but also found in coastal waters. Carnivorous, feeding mainly on small fishes. A 48.6-cm female from the Philippine Islands contained only 116 eggs in the left ovary but 1 676 eggs in the right ovary, averaging 2.69 mm in diameter. Data on gear and utilization not available. Separate statistics are not reported for this species.

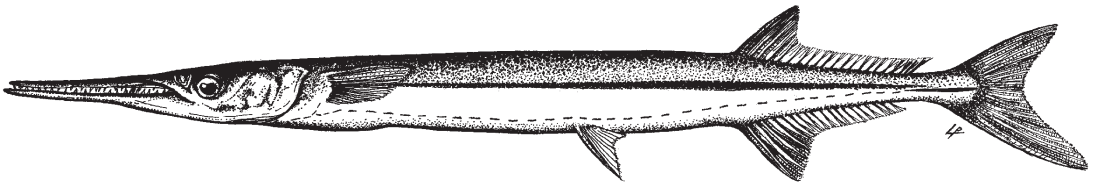
Distribution: *Tylosurus acus rafale* is confined to the Gulf of Guinea from Freetown, Sierra Leone south to Moçâmedes, Angola. May occur north to Dakar, Senegal. It is replaced by *T. acus imperialis* in the Mediterranean Sea and around the Canary and Cape Verde Islands and Morocco. A polytypic species (4 subspecies) found worldwide in tropical and warm-temperate seas except replaced in the eastern Pacific by *Tylosurus pacificus*.



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

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. 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; 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; **a small black lateral keel on caudal peduncle**; caudal fin deeply forked, lower lobe much longer than upper. Predorsal scales (in front of dorsal fin) numerous and tiny, 240 to 290. Both right and left gonads present, right longer than left. Total number of vertebrae 79 to 84. **Colour:** dark bluish green above, silvery 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 and 71.5 cm body length (without beak and caudal fin) in the eastern Atlantic, but unpublished reports give up to 150 cm total length; common to 90 cm standard length. The IGFA all-tackle game fish record is 4.88 kg for a fish caught in the Bahamas in 2013.

Habitat, biology, and fisheries: A pelagic species inhabiting more coastal waters than *T. acus*. Carnivorous, feeding mainly on small fishes. Large individuals may be dangerous when leaping out of the water. An 86 cm body length female contained about 7 535 eggs in the left ovary, 23 721 in the right, averaging 4.10 mm in diameter. Inshore and offshore waters. Caught by casting or trolling surface or near-surface lures; also with purse seines. Data on utilization not available. Separate statistics are not reported for this species.

Distribution: A worldwide species in tropical and warm-temperate waters. In the eastern Atlantic positively known from only a few specimens taken off Fernando Póo, Cameroon, and Liberia in the Gulf of Guinea, and at Ascension Island. Replaced in the eastern Pacific by *Tylosurus crocodilus fodiator*.

