Suborder ACANTHUROIDEI

EPHIPPIDAE

Spadefishes

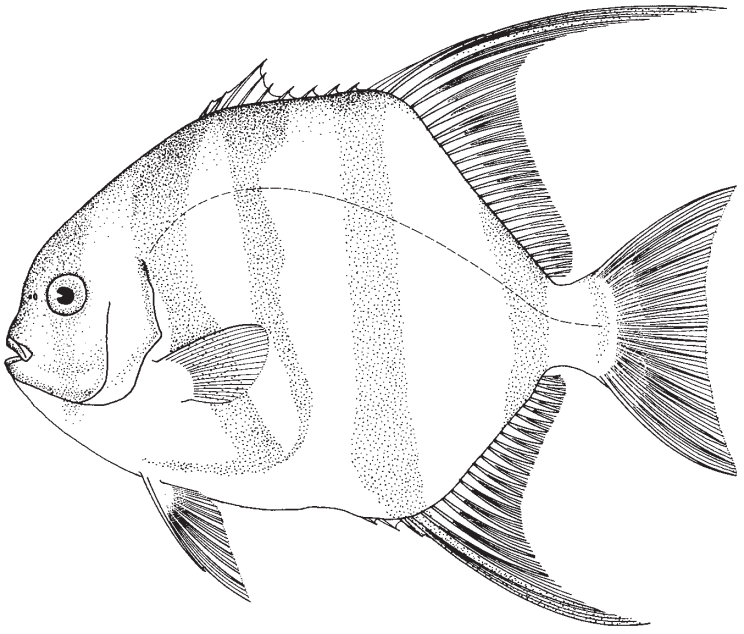
by W.E. Burgess, Red Bank, New Jersey, USA

A single species occurring in the area.

Chaetodipterus faber (Broussonet, 1782) HRF

Frequent synonyms / misidentifications: None / None.

FAO names: En - Atlantic spadefish; **Fr** - Disque portuguais; **Sp** - Paguara.



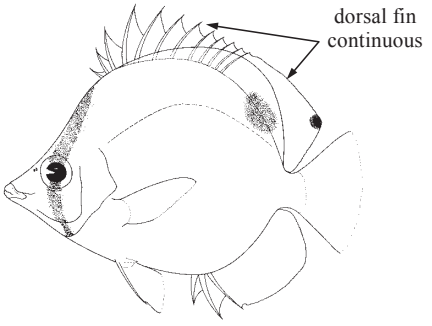
Diagnostic characters: Body deep, included 1.2 to 1.5 times in standard length, orbicular, strongly compressed. Mouth small, terminal, **jaws provided with bands of brush-like teeth, outer row larger and slightly compressed** but pointed at tip. Vomer and palatines toothless. Preopercular margin finely serrate; opercle ends in blunt point. Dorsal fin with 9 spines and 21 to 23 soft rays. **Spinous portion of dorsal fin low in adults, distinct from soft-rayed portion; anterior portion of soft dorsal and anal fins prolonged**. Juveniles with third dorsal fin spine prolonged, becoming proportionately smaller with age. Anal fin with 3 spines and 18 or 19 rays. Pectoral fins short, about 1.6 in head, with 17 or 18 soft rays. Caudal fin emarginate. Pelvic fins long, extending to origin of anal fin in adults, beyond that in young. Lateral-line scales 45 to 50. Head and fins scaled. **Colour: silvery grey with blackish bars** (bars may fade in large individuals) as follows: Eye bar extends from nape through eye to chest; first body bar starts at predorsal area, crosses body behind pectoral fin insertion, and ends on abdomen; second body bar incomplete, extending from anterior dorsal-fin spines vertically toward abdomen but ending just below level of pectoral-fin base; third body bar extends from anterior rays of dorsal fin across body to anterior rays of anal fin; last body bar runs from the middle soft dorsal fin rays to middle soft anal-fin rays; last bar crosses caudal peduncle at caudal-fin base. Young entirely dark brown or blackish with white mottling; caudal fin, pectoral fins, and edges of soft dorsal and anal fins hyaline.

Similar families occurring in the area

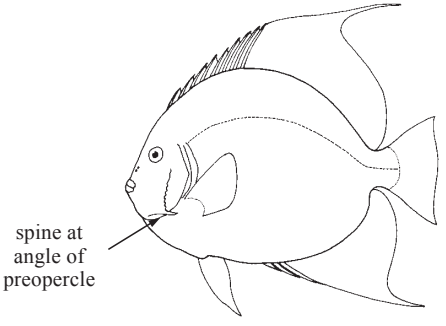
None of the similar families have a notched dorsal fin, and none have outer jaw teeth larger (and slightly flattened) than inner rows.

Chaetodontidae: possess tholichthys larvae; dorsal fin continuous, soft rays not prolonged; teeth in brush-like bands with outer row not enlarged or flattened.

Pomacanthidae: strong spine at angle of preopercle, dorsal fin continuous, soft portion of dorsal and anal fins with prolonged rays in some species, teeth in brush-like bands, outer row not enlarged and flattened.



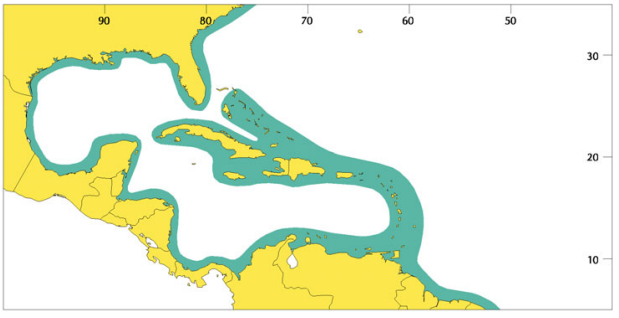
Chaetodontidae



Pomacanthidae

Size: Maximum to 1 m, commonly to 50 cm.

Habitat, biology, and fisheries: Inhabits a variety of different habitats along shallow coastal waters, including reefs, mangroves, sandy beaches, harbours, around wrecks and pilings, and under bridges. They are often seen in large schools of more than 500 adult individuals. Juveniles are apt to be encountered around mangroves in their dark coloration with white mottling. This cryptic coloration, when combined with the juveniles' habit of floating tilted on its side, mimics the dead mangrove leaves and possibly other floating objects making the fish difficult to detect. Fish even up to a foot in length may take on the dark colour and float tilted on their sides over the light coloured sand. The barred forms are almost always vertically oriented. Feeds on a variety of invertebrates, both benthic and planktonic, as well as algae. Adult spadefish will readily take a baited hook and have a firm, well-flavoured flesh. There is no extensive fishery for them. Juveniles are occasionally caught for the live topical fish hobby market, but are not as greatly prized as many of the more colourful reef species.



Distribution: Massachusetts to southeastern Brazil, including the Gulf of Mexico. Introduced to Bermuda.

Note: In turbid waters the fish tend to be lighter than those in clear water.

References

Böhlke, J.E. and C.C.G. Chaplin. 1968. *Fishes of the Bahamas and adjacent tropical waters*. Wynnewood, Pennsylvania, Livingston Publishing Co., 771 p.

Nelson, J.S. 1994. *Fishes of the World*, 3rd edition. John Wiley and Sons, Inc., 600 p.

Randall, J.E. 1996. *Caribbean Reef Fishes*. Neptune City, NJ, T.F.H. Publications, Inc., 368 p.

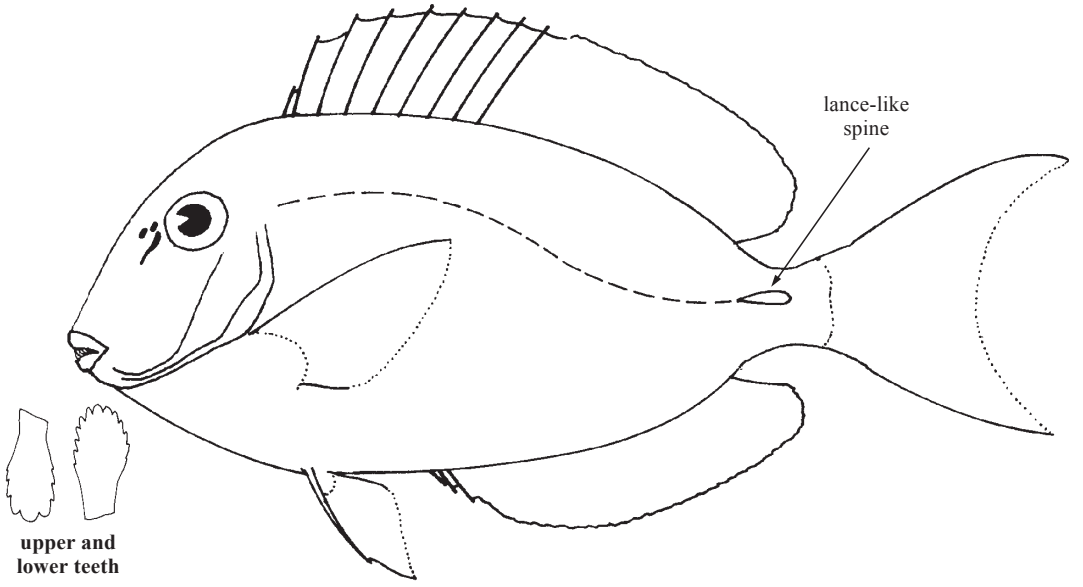
Robins, C.R. and G.C. Ray. 1986. *A Field Guide to the Atlantic Coast Fishes of North America*. Peterson Field Guide Series. Boston, Haughton Mifflin Company, 354 p.

ACANTHURIDAE

Surgeonfishes

by J.E. Randall, B. P. Bishop Museum, Hawaii, USA

Diagnostic characters: Small to medium-sized fishes (to 36 cm in the area) with a **deep, compressed body and a lancet-like spine that fits into a horizontal groove on side of caudal peduncle**. Dorsal profile of head steep. Eye high on head. **Mouth small, not protusible, and low on head, with close-set spatulate teeth that are denticulate on edges. Dorsal fin continuous with 9 dorsal spines, 23 to 28 soft rays**, and no notch between spinous and soft portions. Anal fin with 3 spines and 21 to 26 soft rays. Caudal fin slightly to moderately emarginate. Paired fins of moderate size, the pectoral fins with 15 to 17 rays, the pelvic fins with 1 spine and 5 soft rays, their origin below lower base of pectoral fins. Scales very small and ctenoid (rough-edged). **Colour:** brown, grey, or blue, the young of *Acanthurus coeruleus* bright yellow.



Habitat, biology, and fisheries: Surgeonfishes are shallow-water coral reef fishes, but they venture into adjacent sand, rubble, and seagrass habitats. They are diurnal, retiring to the shelter of the reef to sleep at night. The Atlantic species feed on benthic algae, especially filamentous species for which their close-set denticulate teeth (see illustration) are well suited. As is characteristic of herbivorous fishes, they have a very long digestive tract. Three of the 4 western Atlantic species (*Acanthurus coeruleus* excepted) have a thick-walled, gizzard-like stomach; they often ingest sand with their algal food which serves to triturate the algae in the stomach, making it more digestible. Atlantic species of *Acanthurus* may form feeding aggregations, sometimes as mixed schools of more than 1 species. By virtue of their numbers, they overwhelm the territorial damselfishes of the genus *Stegastes* trying to protect their private pastures of algae. The folding spine on the side of the caudal peduncle is 'hinged' at the back; the sharp anterior tip and inner surface face forward when the tail is bent to the opposite side. Surgeonfishes are able to slash other fishes with this spine, and they use it to attain dominance over a rival or competitor. A side movement of the tail toward an intruding fish is generally all that is necessary for it to withdraw. Anyone handling these fishes when they are alive soon learns the threat of this spine. Even careless handling of dead specimens can result in cuts. The late postlarval stage of species of *Acanthurus* (termed the acronurus) is orbicular and transparent except for silvery over the abdomen. This larval form is often found in tuna stomachs and can at times be attracted to a night light and dipnetted at the surface. The family is not of great commercial importance, but surgeonfishes are abundant on reefs and form a major component of the catch of trap fishermen. They are also caught by gill nets and by spearing.

Remarks: The surgeonfish family consists of 6 genera, but only the genus *Acanthurus* occurs in the Atlantic. The diagnosis given above is based on the 3 western Atlantic species.

Similar families occurring in the area

None. Fishes of other families may be high-bodied and have small mouths, such as the Chaetodontidae, but none have a folding spine on the side of the caudal pedunde.

Key to the species of Acanthuridae occurring in the area

1a. Anal-fin soft rays 24 to 26; dorsal-fin soft rays 26 to 28; body very deep, the depth about 1.7 in standard length; colour of adults in life blue to purplish grey with grey longitudinal lines on body; base of caudal fin not pale; colour of juveniles in life bright yellow . . . . ***Acanthurus coeruleus***

1b. Anal-fin soft rays 21 to 23; dorsal-fin soft rays 23 to 26; body not very deep, the depth about 2.0 in standard length; ground colour of adults in life light yellowish brown to dark greyish brown; base of caudal fin usually pale (often white); colour of juveniles in life not yellow . . . . . → ***2***

2a. About 10 narrow dark bars on side of body; caudal fin without a distinct pale posterior margin (either absent or the width of a pencil line); caudal fin slightly emarginate, the caudal concavity 17 to 38 in standard length (in specimens greater than 10 cm standard length); gill rakers 16 to 19 . . . . . ***Acanthurus chirurgus***

2b. No narrow dark bars on side of body; caudal fin with a distinct pale posterior margin, broader centrally, about 1/4 to 1/3 width of pupil in adults (wider in young); cuadal fin deeply emarginate, the caudal concavity 4.5 to 15.5 in standard length (in specimens greater than 10 cm standard length); gill rakers 18 to 24 . . . . . ***Acanthurus bahianus***

List of species occurring in the area

The symbol is given when species accounts are included.

Acanthurus bahianus Castelnau, 1855.

Acanthurus chirurgus (Bloch, 1787).

Acanthurus coeruleus Bloch and Schneider, 1801.

References

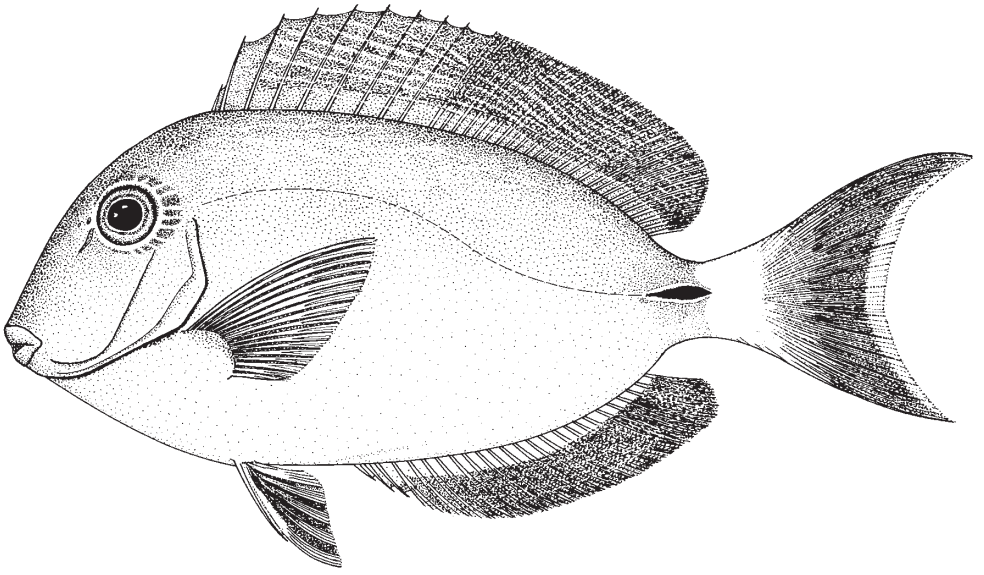
Briggs, J.C. and D.K. Caldwell. 1957. *Acanthurus randalli*, a new surgeon fish from the Gulf of Mexico. *Bull. Fla. St. Mus.* (*Biol. Sci.*), 2(4):43-51.

Randall, J.E. 1956. A revision of the surgeon fish genus *Acanthurus. Pac. Sci*., 10(2):159-235.

Smith-Vaniz, W.F., H.L. Jelks, and J.E. Randall. In press. The gulf surgeon, *Acanthurus randalli,* a junior synonym of the ocean surgeon, *Acanthurus bahianus* (Teleostei: Acanturidae). *Gulf Mex. Sci.*

Acanthurus bahianus Castelnau, 1855 AQB

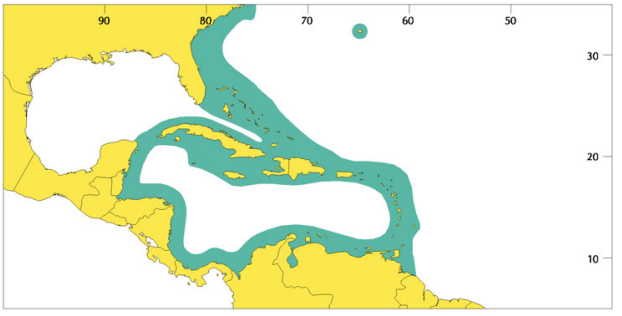
Frequent synonyms / misidentifications: *Acanthurus randalli* Briggs and Caldwell, 1957 / None.
FAO names: En - Ocean surgeon; **Fr** - Chirurgien marron; **Sp** - Navajón pardo.



Diagnostic characters: Body moderately deep, the depth contained about 2 times in standard length, and compressed. A sharp scalpel-like spine on side of caudal peduncle that fits into a horizontal groove. Mouth small, low on head; teeth close-set, spatulate, with denticulate edges, 14 in upper jaw and 16 in lower of a specimen 170 mm in standard length. **Gill rakers on first gill arch 18 to 24 (usually 20 to 22). A continuous unnotched dorsal fin with 9 spines and 23 to 26 soft rays. Anal fin with 3 spines and 21 to 23 soft rays. Caudal fin moderately to deeply emarginate, the caudal concavity (horizontal distance between tips of longest and shortest rays) 4.5 to 15.5 in standard length** (more concave with growth). **Pectoral-fin rays 15 to 17, pectoral-fin length 3.4 to 3.7 in standard length**. Scales very small and ctenoid (rough edges). Stomach gizzard-like. **Colour:** yellowish to greyish brown with pale greenish grey to pale blue longitudinal lines on body; short yellow lines radiating from posterior margin of eye within a narrow blue zone; dorsal fin with a blue margin and alternating bands of dull orange and bluish green; anal fin similar but with fewer less conspicuous bands; caudal fin olivaceous to brown, the base often abruptly white or at least paler than body, the posterior margin bluish white (broader near centre of fin); a narrow violet or blue area around socket of caudal spine.

Size: Maximum reported, 35 cm; common to 18 cm.

Habitat, biology, and fisheries: Inhabits coral reefs and inshore rocky areas, generally where mixed with sandy substrata. Grazes on many species of benthic algae, occasionally on seagrass; also feeds on the film of algae on the surface of sand undisturbed by surge. Contents of the digestive tract contain from 5% to as much as 80% inorganic material. Caught mainly in traps and gill nets, occasionally by spearing. Important only in subsistence fisheries.

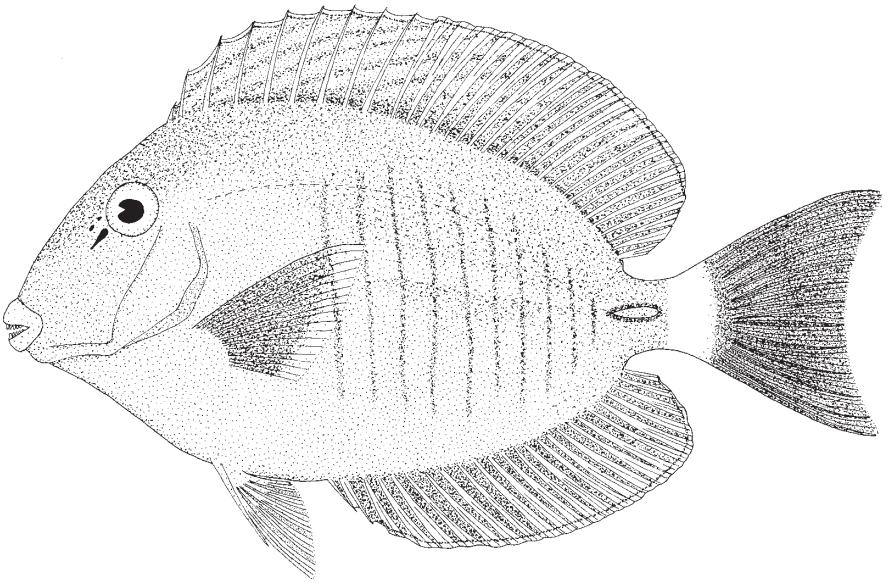


Distribution: Bermuda and Massachusetts south to Brazil. Rare north of Florida; northern USA records based on juveniles carried as larvae by the Gulf Stream. Apparently replaced in the northeastern Gulf of Mexico by *Acanthurus randalli*. Also occurs at Ascension and St. Helena.

Acanthurus chirurgus (Bloch, 1787) AQH

Frequent synonyms / misidentifications: None / None.

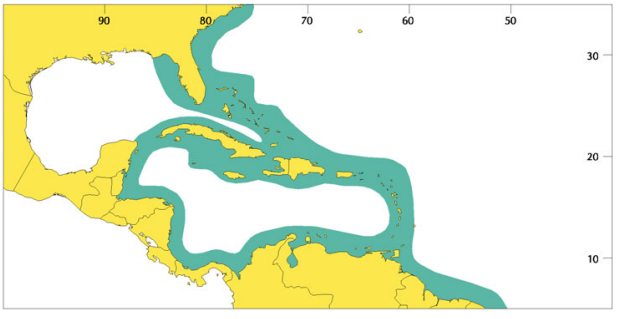
FAO names: En - Doctorfish; **Fr** - Chirurgien docteur; **Sp** - Navajón cirujano.



Diagnostic characters: Body deep, the depth contained about 2 times in standard length, and compressed. A sharp scalpel-like spine on side of caudal peduncle that fits into a horizontal groove. Mouth small, low on head; teeth close-set, spatulate, with denticulate edges, as many as 18 in upper jaw and 20 in lower. **Gill rakers on first gill arch 16 to 19**. A continuous unnotched **dorsal fin with 9 spines and 24 or 25 soft rays. Anal fin with 3 spines and 22 to 23 soft rays. Caudal fin slightly emarginate (nearly truncate in juveniles), the caudal concavity (horizontal distance between tips of longest and shortest rays) 17 to 38 in standard length**. Pectoral-fin rays 16 or 17. Scales very small and ctenoid (rough edges). Stomach gizzard-like. **Colour:** grey to brown with 8 to 12 narrow dark bars on side of body (may be difficult to see on dark-phase fish); dorsal and anal fins with faint longitudinal banding, the margins blue (more evident on anal fin); base of caudal fin usually abruptly paler than rest of body; pectoral-fin rays dark brown, becoming pale on outer 1/4 of fin; edge of caudal-spine socket black with an outer light bluish border; sheath of caudal spine dark brown.

Size: Maximum to 34 cm; common to 25 cm.

Habitat, biology, and fisheries: Inhabits coral reefs and inshore rocky areas, generally where mixed with sandy substrata. Grazes on many species of benthic algae, occasionally on seagrass; also feeds on the film of algae on the surface of sand undisturbed by surge. Contents of the digestive tract contain from 25% to 75% inorganic material (sand, gravel up to 5 mm, *Halimeda* fragments, sponge spicules, etc.). Although normally herbivorous, this species has been kept in aquaria on a diet of clam and fish, occasionally mixed with algae. Caught mainly in traps and by gill nets, occasionally by spearing. Important only in subsistence fisheries.

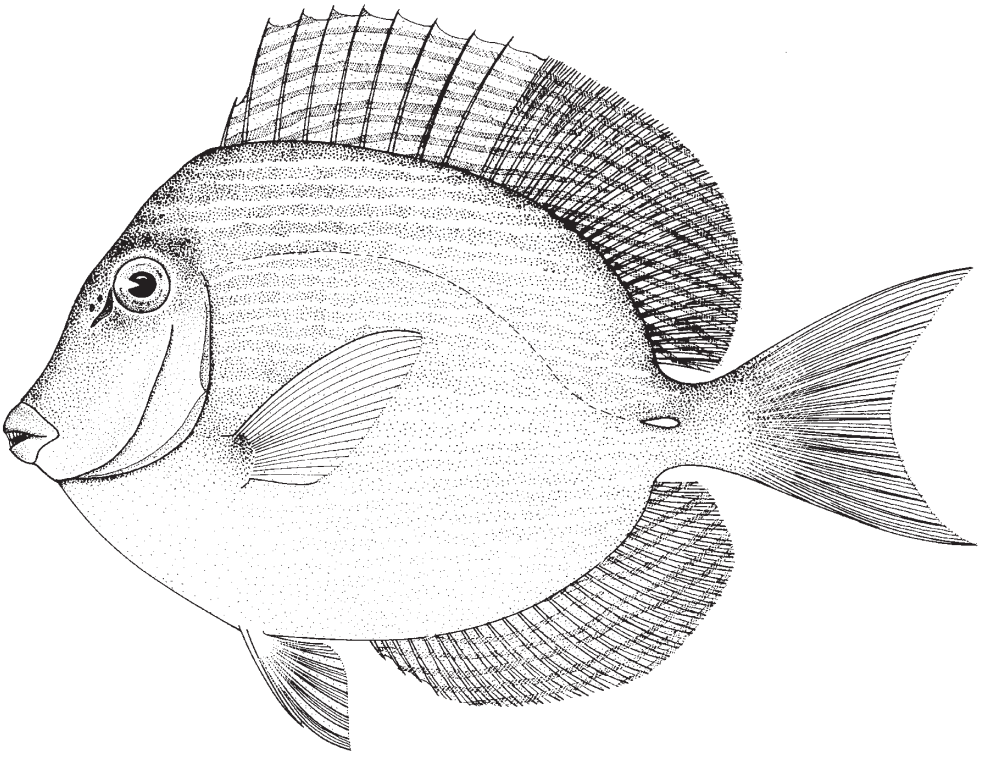


Distribution: Bermuda and Massachusetts south to Rio de Janeiro, including the Gulf of Mexico. Also occurs on the tropical and subtropical coast of West Africa.

Acanthurus coeruleus Bloch and Schneider, 1801 AQO

Frequent synonyms / misidentifications: None / None.

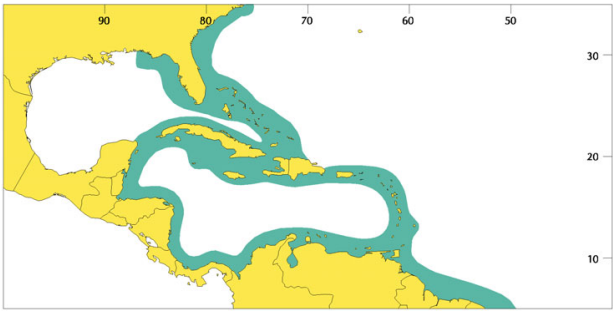
FAO names: En - Blue tang surgeonfish (AFS: Blue tang); **Fr** - Chirurgien bayolle; **Sp** - Navajón azul.



Diagnostic characters: Body very deep, the depth contained about 1.7 times in standard length, and compressed. A sharp scalpel-like spine on side of caudal peduncle that fits into a horizontal groove. Mouth small, low on head; teeth close-set, spatulate, with denticulate edges, as many as 18 in upper jaw and 20 in lower. Gill rakers on first gill arch 13 or 14. A continuous unnotched **dorsal fin with 9 spines and 26 to 28 soft rays. Anal fin with 3 spines and 24 to 26 soft rays. Caudal fin emarginate, the caudal concavity (horizontal distance between tips of longest and shortest rays) 5 to 12 in standard length** (more concave with growth). Pectoral-fin rays 16 or 17. Scales very small and ctenoid (rough edges). Stomach thin-walled. **Colour:** blue to purplish grey with longitudinal grey lines on body; dorsal and anal fins blue with narrow oblique orange-brown bands; sheath of caudal spine white; juveniles bright yellow.

Size: Maximum to 36 cm; common to 25 cm.

Habitat, biology, and fisheries: A shallow-water species of coral reefs and rocky habitats. Grazes on a wide variety of benthic algae, occasionally on seagrass. Contents of the digestive tract contain relatively little sand and other inorganic material. Sometimes seen in feeding aggregations; these may include *Acanthurus bahianus* and/or *A. chirurgus*. Caught mainly in traps and by gill nets, occasionally by spearing. Important only in subsistence fisheries.



Distribution: Bermuda and New York south to Rio de Janeiro; rare in the Gulf of Mexico, and not common north of Florida. Also reported from Ascension.

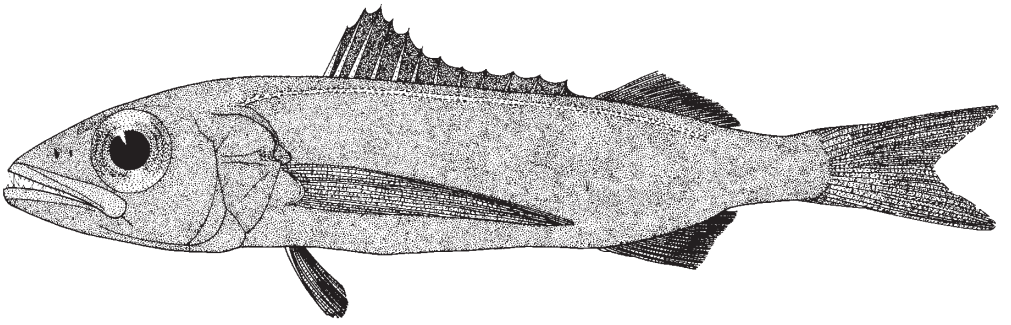
Suborder SCOMBROLABRACOIDEI

SCOMBROLABRACIDAE

Longfin escolars

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

Diagnostic characters: Body moderately elongate and compressed. Head large, with a flat interorbital region. **Eye very large, its diameter almost as long as snout**. Mouth large, a little protrusible. Lower jaw slightly projecting. Two or 3 large fangs at front of upper jaw. Both jaws with strong lateral teeth, those in upper jaw more numerous and smaller than those in lower jaw. Several small teeth on vomer and small uniserial teeth on palatines. Two nasal openings on each side of snout. Lower limb of first gill arch with 4 or 5 well-developed denticulate gill rakers, about 10 clusters of minute spines on upper limb, and a large denticulate gill raker at corner of first gill arch. Two dorsal fins, the first with 12 spines and the second with 1 spine and 14 or 15 soft rays; base of first dorsal fin about twice base of second dorsal fin; origin of first dorsal fin slightly posterior to pectoral-fin base. Anal fin with 2 spines and 16 to 18 soft rays, similar to second dorsal fin in size and shape. Caudal fin forked and moderately small. **Pectoral fins very long, nearly reaching anal-fin origin**. Pelvic fins well developed, originating below origin of pectoral fins. **Lateral line single, running closely to dorsal contour, ending slightly before end of second dorsal fin**. No keels on caudal peduncle. Lateral-line scales about 44 to 49; scales irregular in size and shape, very deciduous. Vertebrae 30 (13 + 17). **Colour:** body uniformly dark brown without distinct markings, fins darker; buccal cavity black.

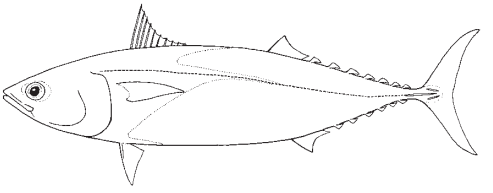


Habitat, biology, and fisheries: Inhabiting continental shelves and slopes at depths between 100 and 900 m. Found in stomachs of tunas and billfishes, but details of biology of this species unknown. Not commercially fished at present, caught only incidentally by trawls.

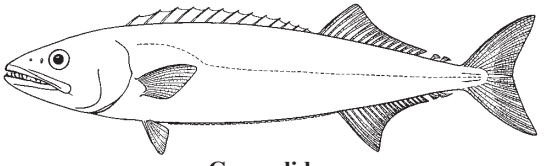
Similar families occurring in the area

Scombridae: caudal fin lunate; back blue or blue-black with bars, spots, or other dark markings; keels present on caudal peduncle; dorsal and anal finlets present.

Gempylidae: eyes smaller, their diameter not exceeding 1/2 length of snout; pectoral fins short, far anterior to anal-fin origin; if only a single lateral line present, not running close to dorsal contour.



Scombridae



Gempylidae

List of species occurring in the area

Scombrolabrax heterolepis Roule, 1922. To 30 cm SL. Tropical and subtropical Indian, Pacific, and Atlantic, except E Pacific and SE Atlantic.

Reference

Potthoff, T., W.J. Richards, and S. Ueyanagi. 1980. Development of *Scombrolabrax heterolepis* (Pisces: Scombrolabracidae) and comments on familial relationships. *Bull. Mar. Sci.*, 30(2):329-357.