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LACTARIIDAE

False trevally (milk trevally)

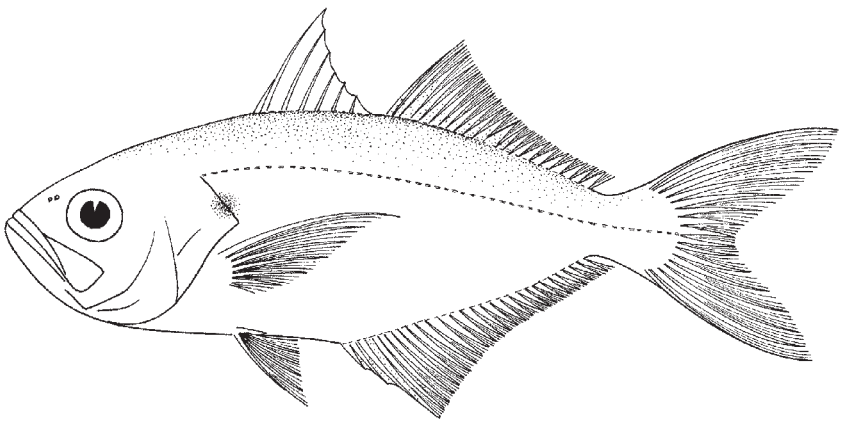
by J.M. Leis

A single species in this family.

Lactarius lactarius (Bloch and Schneider, 1801) TRF

Frequent synonyms / misidentifications: *Lactarius delicatulus* Valenciennes, 1833 / None.

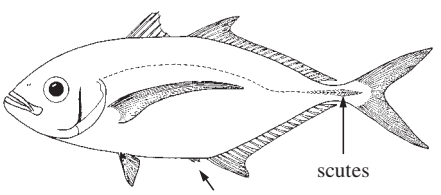
FAO names: En - False trevally; **Fr** - Péliau chanos; **Sp** - Pagapa.



Diagnostic characters: Body of moderate depth, strongly compressed. Head large, contained 2.8 to 3.2 times in standard length. **Mouth large and oblique (maxilla reaching past middle of eye), with protruding lower jaw; a pair of small, sharp canine teeth at front of each jaw.** Total gill rakers on first gill arch 16 to 21. **Two dorsal fins of about equal height, the first with VII or VIII spines, the second with I spine and 19 to 23 soft rays. Anal fin with III spines and 25 to 28 soft rays (more soft rays than in dorsal fin); no detached spines in front of anal fin**. **Caudal fin forked.** Pectoral fins long and pointed. Pelvic fins immediately below base of pectoral fins, and less than 1/2 as long. **Caudal peduncle not exceptionally narrowed**. Cycloid scales moderate in size and easily shed; **no scutes along lateral line**; 74 to 80 lateral-line scales. **Colour:** silver with blue iridescence above; silver-white below; a dusky blotch on upper edge of gill cover; fins pale yellow to colourless; dorsal, anal, and caudal fins sometimes with dusky margin; blue and yellow fade quickly following death.

Similar families occurring in the area

Carangidae: first 1 or 2 anal-fin spines separate from remainder of fin; caudal peduncle exceptionally narrowed; most species have many spiny scutes (modified scales) along hind-part of lateral line; other scales small and adherent; anal fin does not have more soft rays than dorsal fin.

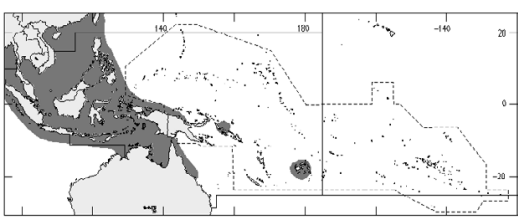


Carangidae

Size: Maximum standard length about 35 cm; commonly to 25 cm.

Habitat, biology, and fisheries: A coastal, schooling species over soft bottoms in depths of less than 100 m. Feeds on bottom-living invertebrates and fishes. Taken in seines, gill nets, trawls, and by hook-and-line. Moderately important in coastal fisheries; marketed mostly fresh, but also dried-salted. From 1990 to 1995, the FAO Yearbook of Fishery Statistics reports a range of yearly catch of around 6 420 to 9 140 t of *Lactarius lactarius* from the Western Central Pacific.

Distribution: Over continental shelves from the Persian Gulf to Taiwan Province of China, Philippines, Solomon Islands, Fiji, and Australia.



Reference

Leis, J.M. 1994. Larvae, adults and relationships of the monotypic perciform fish family Lactariidae. *Rec. Austr. Mus.*, 46(2):131-144.

POMATOMIDAE

Bluefishes

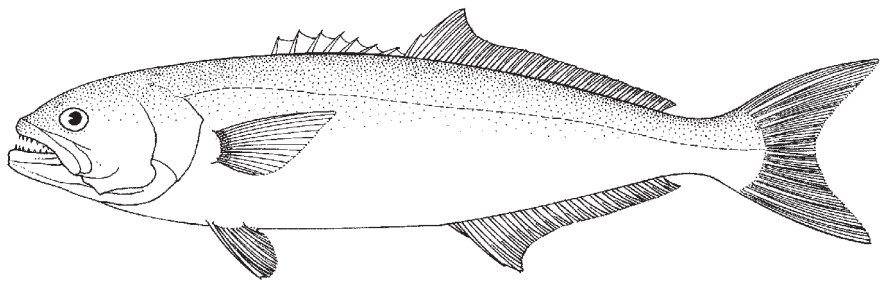
by B.B. Collette

A single species occurring in the area.

Pomatomus saltatrix (Linnaeus, 1766)

Frequent synonyms / misidentifications: *Pomatomus saltator* (Linnaeus, 1766); *Temnodon saltator* (Valenciennes, 1833) / None.

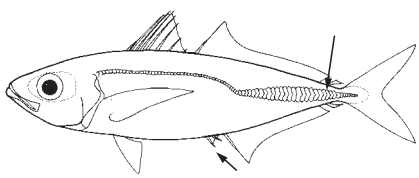
FAO names: En - Bluefish; **Fr** - Tassergal; **Sp** - Anchova de banco.



Diagnostic characters: A large species with a sturdy, compressed body and large head. Mouth large and terminal, lower jaw sometimes slightly projecting; **jaw teeth prominent, sharp, compressed, in a single series. Two dorsal fins, the first short and low, with VII or VIII feeble spines connected by a membrane**, the second long with I spine and 23 to 28 soft rays; anal fin a little shorter than soft dorsal fin, with II or III spines and 23 to 27 soft rays; caudal fin forked, but not deeply so; pectoral fins short, not reaching to origin of soft dorsal fin. Scales small, covering head and body and bases of fins; lateral line complete, almost straight. **Colour: back greenish blue, sides and belly silvery**; dorsal and anal fins pale green tinged with yellow; pectoral fins bluish at base; caudal fin dull greenish tinged with yellow.

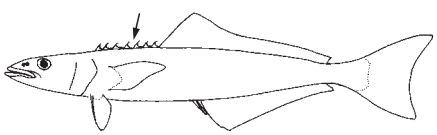
Similar families occurring in the area

Carangidae: 2 detached spines in front of anal fin; also, scutes on caudal peduncle in many species, and detached finlets behind dorsal and anal fins in *Elagatis* and *Decapterus*.



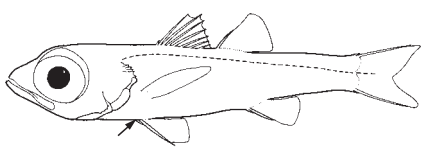
Carangidae

Rachycentridae: spines of dorsal fin shorter, isolated, not connected by a membrane; body not elongate; 2 silvery stripes on sides; teeth smaller.



Rachycentridae

Epigonidae: anal fin with II spines and 9 soft rays; jaws lacking caniniform teeth.

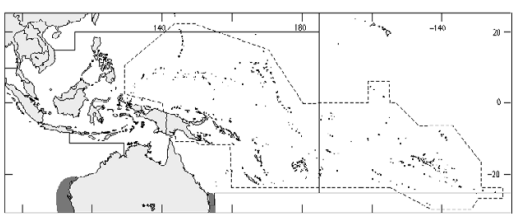


Epigonidae

Size: Maximum total length 1.1 m; commonly to 60 cm.

Habitat, biology, and fisheries: A powerful, swift fish, the young hunting in schools, the adults in loose groups, often attacking shoals of mullet or other fishes and destroying numbers apparently far in excess of feeding requirements. Caught mainly with gill nets, lines, and purse seines; commonly taken on hook-and-line by sportsfishermen; marketed mostly fresh.

Distribution: Atlantic and Indo-West Pacific, but absent from the eastern Pacific and the northwest Pacific. Barely enters the area. Found along the southern coast of Australia from Onslow, Western Australia (21°38'S) to Maryborough, Queensland (25°32'S). Records from the Northern Territory and from Indonesia appear to be erroneous.



Reference

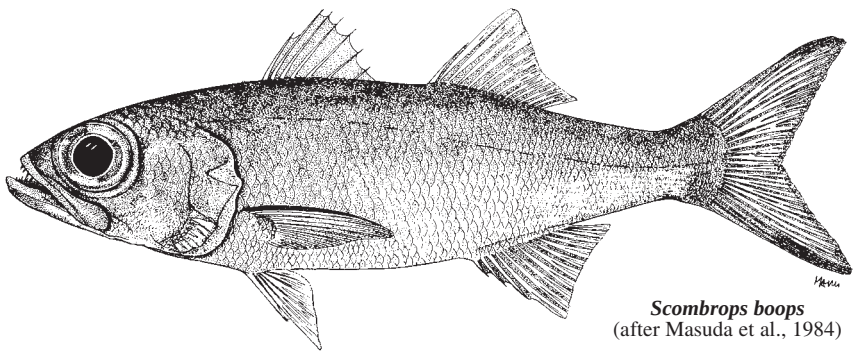
Goodbred, C.O. and J.E. Graves. 1996. Genetic relationships among geographically isolated populations of bluefish *Pomatomus saltatrix*. *Mar. Freshwater Res.*, 47:347-355.

SCOMBROPIDAE

Gnomefishes

by P.C. Heemstra

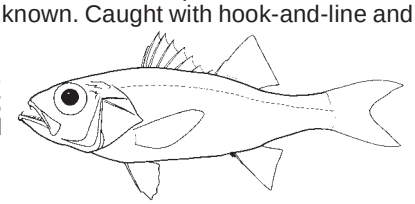
Diagnostic characters (largely based on *Scombrops boops*)**: Body elongate** (to 1.5 m total length), **slightly compressed, body length less than head length, contained 3.2 to 3.8 times in standard length**. Head (including maxilla) and body covered with cycloid scales. **Eyes large, their diameter more than snout length, 27 to 30% head length.** Preopercle finely serrate, with ventral lobe. No spines on opercle. Mouth large, maxilla (with large supramaxilla) reaching to below rear half of eye. Lower jaw with 2 or 3 canines at front, followed by a row of 8 or 9 large, knife-like spaced teeth; upper jaw with 12 or 13 large canines and 2 or 3 fang-like teeth just in front of vomer tooth patch; 1 or 2 rows of compressed canines on palatines and a patch of smaller teeth on vomer; 2 elongate patches of small slender teeth on tongue. Branchiostegal membranes separate, free of isthmus, with 7 rays. First gill arch with 2 or 3 gill rakers on upper limb and 12 to 15 on lower limb. **Two dorsal fins, the first with VIII or IX spines, the second with I spine and 13 or 14 soft rays. Anal fin with III spines (first minute) and 12 or 13 soft rays**. Caudal fin forked. Pectoral fins about 2/3 head length, with 15 rays, not reaching past vertical at origin of second dorsal fin. Origin of pelvic fins below base of pectoral fins; pelvic fins with I spine and 5 soft rays. Soft dorsal, anal, and caudal fins scaly. Lateral line complete, with 51 to 55 pored scales to base of caudal fin. Swimbladder present. Vertebrae 10+16. **Colour:** adults golden purplish brown; body of juveniles reddish brown or yellowish dorsally, paler ventrally.



Scombrops boops
(after Masuda et al., 1984)

Habitat, biology, and fisheries: Adults occur in rocky areas near the bottom at depths of 200 to 700 m; juveniles found in tidepools and shallow coastal water. Biology little known. Caught with hook-and-line and in trawls.

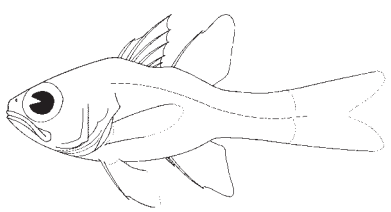
Remarks: This family contains a single genus with about 4 species. It has not yet been recorded from the Western Central Pacific; *Scombrops boops*, is known from Japan to the East China Sea and probably occurs in the area.



Acropomatidae

Similar families occurring in the area

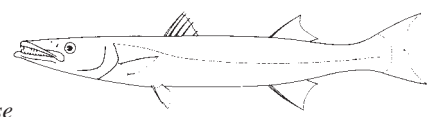
Acropomatidae: anal fin with II or III spines and 6 to 9 soft rays; scales large, less than 50 in lateral line; pectoral fins about equal to head length; vertebrae 10+15.



Apogonidae

Apogonidae: anal fin with II spines; second dorsal fin with 8 or 9 soft rays.

Sphyraenidae: snout much longer than eye diameter; dorsal fins widely separated; body more elongate, its depth 6 to 10 times in standard length.



Sphyraenidae

List of species occurring in the area

? *Scombrops boops* (Houttuyn, 1782)

Reference

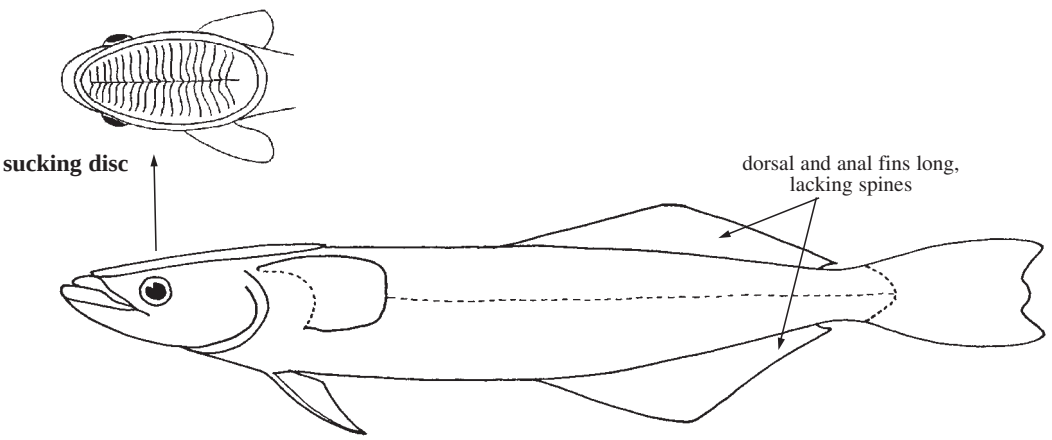
Mochizuki, K. 1988. Family Scombropidae. In *The fishes of the Japanese Archipelago*, edited by H. Masuda, K. Amaoka, C. Araga, T. Uyeno, and T. Yoshino. Tokyo, Tokai University Press, p. 152.

ECHENEIDAE

Remoras (sharksuckers, discfishes)

by B.B. Collette

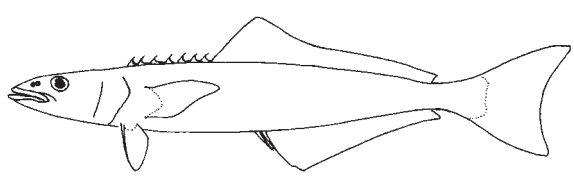
Diagnostic characters: Perciform fishes with fusiform, elongate body (size to about 90 cm), characterized by **a transversely laminated, oval-shaped cephalic disc**, this structure homologous with spinous dorsal fin; **skull wide, depressed to support disc**. Opercle without spines, premaxillae not protractile, gill membranes free from isthmus. Jaws broad, the lower projecting beyond the upper; villiform teeth present in jaws and vomer (i.e. centrally on roof of mouth), usually on tongue and in certain species on palatines (i.e. laterally on roof of mouth). **Dorsal and anal fins long, lacking spines**; dorsal-fin rays range from 18 to 45, anal-fin rays from 18 to 41; pectoral fins set high on body, pointed or rounded, with 18 to 32 rays; pelvic fins far forward, close together, narrowly or broadly attached to underside of body, with I spine and 5 soft rays; caudal fin slightly forked, emarginate, or slightly rounded (in large specimens of some species), juveniles of some species with an elongate median caudal-fin filament. Scales small, cycloid (smooth), usually embedded in the skin. No swimbladder. **Colour:** in life colours subdued, pale brown, greyish to black, sometimes light to whitish or with light and dark horizontal stripes on trunk.



Habitat, biology, and fisheries: Remoras attach themselves to many different marine vertebrates including sharks, rays, tarpons, barracudas, sailfishes, marlins, swordfishes, jacks, basses, groupers, ocean sunfish, sea turtles, whales, and dolphins; they may also attach to ships and various floating objects. Some remoras have a great preference or specificity toward certain hosts. *Remora australis*, the whalesucker, is only known from marine mammals. *R. osteochir*, the marlinsucker, is almost always found attached to spearfishes, particularly the sailfish and white marlin. The preferred host of *R. albescens*, the white sucker, is the manta ray. Species of the genus *Echeneis* are often free-swimming and occur in shallow, inshore waters. *Remora* and *Remorina* are almost always captured on their host where they may be found attached to the body, in the mouth, or in the gill cavity. Remoras feed on parasitic copepods attached to their host and food scraps dropped by the host. Although remoras are not considered to be of any commercial importance, at least *Echeneis naucrates* is taken in coastal fisheries along with other species and sold in local markets.

Similar families occurring in the area

No other family of fishes has a cephalic sucking disc. The cobia (*Rachycentron canadum*, family Rachycentridae) bears some resemblance to the remoras. It has been postulated that a cobia-like ancestor may have given rise to the echeneid fishes.



Rachycentridae

Key to the species of Echeneidae occuring in the area

Note: the Echeneidae is divisible into 2 subfamilies, 4 genera, and 8 species, 7 of which occur in the Western Central Pacific.

1a. Body very elongate, its depth contained 8 to 14 times in standard length; pectoral fins pointed; usually a dark longitudinal band on sides, bordered with white; anal-fin base long, anal-fin rays 29 to 41; caudal fin lanceolate in young, the middle rays filamentous, almost truncate in adults, the lobes pronounced (Fig. 1). . . . . **(subfamily Echeneinae)** → ***2***

1b. Body not elongate, its depth contained 5 to 8 times in standard length; pectoral fins rounded; colour nearly uniform, without bands; anal-fin base short, anal-fin rays 18 to 28; caudal fin forked in young, becoming emarginate or truncate in adults (Fig. 2) . . . . . **(subfamily Remorinae)** → ***3***

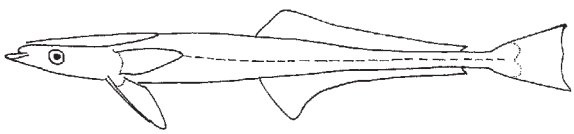


Fig. 1 ***Echeneis***

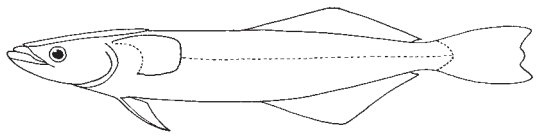


Fig. 2 ***Remora***

2a. Sucking disc large, with 18 to 28 laminae; vertebrae 30 . . . . . ***Echeneis naucrates***

2b. Sucking disc small, with 9 to 11 laminae; vertebrae 39 to 41 . . . . . ***Phtheirichthys lineatus***

3a. Pelvic fins broadly attached to abdomen; disc laminae 15 to 28; vertebrae 27; colour light to dark brown; hosts include sharks, billfishes, or cetaceans, depending on the species . . . . . **(*Remora*)** → ***4***

3b. Pelvic fins narrowly attached to abdomen; disc laminae 13 or 14; vertebrae 26; colour whitish; usual host, manta rays . . . . . ***Remorina albescens***

4a. Disc laminae 25 to 28; total gill rakers on first gill arch 17 to 20 . . . . . ***Remora australis***

4b. Disc laminae 15 to 20; total gill rakers on first gill arch 11 to 17 . . . . . → ***5***

5a. Posterior border of disc located far posterior to tips of adpressed pectoral fins . . . ***Remora osteochir***

5b. Posterior border of disc located anterior to tips of adpressed pectoral fins . . . . . → ***6***

6a. Disc laminae 15 to 18; dorsal-fin rays 27 to 34; total gill rakers on first gill arch less than 21 . . . . . ***Remora brachyptera***

6b. Disc laminae 16 to 20; dorsal-fin rays 21 to 27; total gill rakers on first gill arch 28 to 37 . . . . . ***Remora remora***

List of species occurring in the area

The symbol ◄ is given when species accounts are included.

◄ *Echeneis naucrates* Linnaeus, 1758

Phtheirichthys lineatus (Menzies, 1791)

Remora australis (Bennett, 1840)
Remora brachyptera (Lowe, 1839)
Remora osteochir (Cuvier, 1829)
Remora remora (Linnaeus, 1758)

Remorina albescens (Temminck and Schlegel, 1845)

References

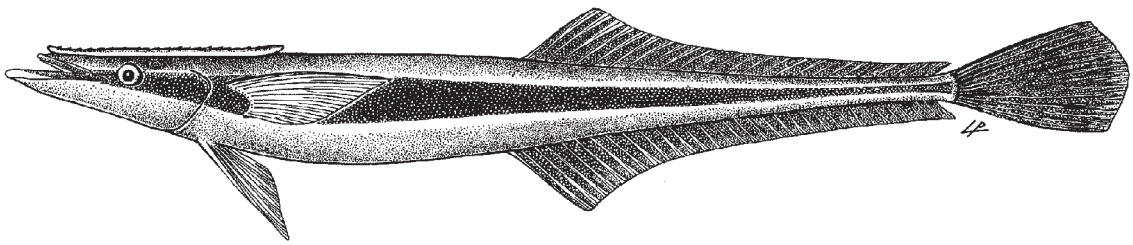
Cressey, R.F. and E.A. Lachner. 1970. The parasitic copepod diet and life history of diskfishes (Echeneidae). *Copeia*, 1970:310-318.

Lachner, E.A. 1986. Echeneididae. In *Fishes of the North-eastern Atlantic and the Mediterranean 3*, edited by P.J.P. Whitehead et al. UNESCO, pp.1329-1334.

Echeneis naucrates Linnaeus, 1758

Frequent synonyms / misidentifications: None / None.

FAO names: En - Sharksucker; **Fr** - Rémora commun; **Sp** - Pegatimón.

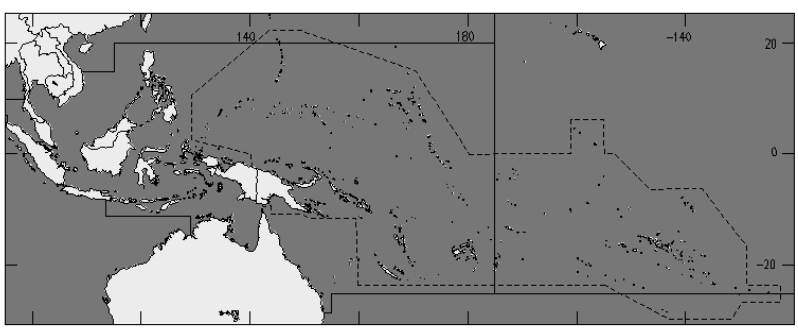


Diagnostic characters: An elongate fish, **depth of body contained 8 to 14 times in standard length**. Jaws broad, the lower projecting beyond the upper. First dorsal fin replaced by a transversal, laminated, oval cephalic disc with 21 to 28 laminae; second dorsal fin and anal fin long, lacking spines, **the anal fin with 31 to 41 soft rays**; pectoral fins short, high on body, pointed; caudal fin lanceolate in young, the middle rays elongate and filamentous; caudal fin almost truncate in adults, with the **upper and lower lobes longer than the middle rays**. **Colour:** dark longitudinal band on sides bordered with white; juveniles with upper and lower margins of fins white.

Size: Maximum standard length about 1 m.

Habitat, biology, and fisheries: Unlike most other remoras, *Echeneis naucrates* is often found free-swimming and occurs in shallow inshore waters. It will attach temporarily to a wide variety of hosts such as sharks and sea turtles and also to ships. Sometimes used by natives as an aid to fishing. A line is tied to the caudal peduncle of the remora and then it is released; upon attaching to another fish, the remora and its host are hauled in by the fishermen. Taken with drift nets and trawls. Occasionally marketed fresh.

Distribution: Worldwide in tropical and temperate seas, except for Pacific American coast.



RACHYCENTRIDAE

Cobia

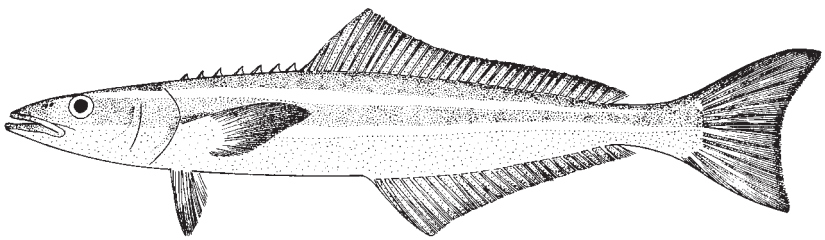
by B.B. Collette

A single species in this family.

Rachycentron canadum (Linnaeus, 1766) CBA

Frequent synonyms / misidentifications: None / None.

FAO names: En - Cobia; **Fr** - Mafou; **Sp** - Cobie.

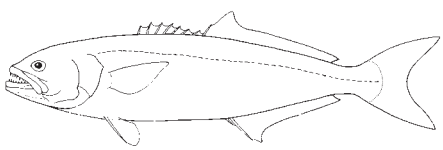


Diagnostic characters: Body elongate, subcylindrical; **head broad and depressed**. Mouth large, terminal, with projecting lower jaw; villiform teeth in jaws and on roof of mouth and tongue. **First dorsal fin consisting of VII to IX (usually VIII) short but strong isolated spines, not connected by a membrane;** second dorsal fin long, with 26 to 33 soft rays, the anterior rays somewhat elevated in adults; anal fin similar to dorsal fin, but shorter, with II or III spines and 22 to 28 soft rays; **caudal fin lunate in adults, upper lobe longer than lower** (caudal fin rounded in young, the central rays much prolonged); pectoral fins pointed, becoming more falcate with age. Scales small, embedded in thick skin; lateral line slightly wavy anteriorly. **Colour: back and sides dark brown, with 2 sharply defined narrow silvery bands**; belly yellowish.

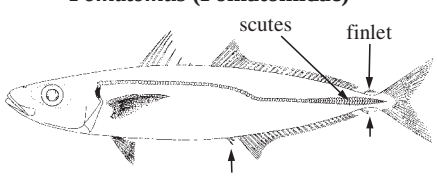
Similar families occurring in the area

Pomatomidae: spines of dorsal fin connected by a membrane; also, body and head deeper and no stripes on sides; teeth large and very sharp.

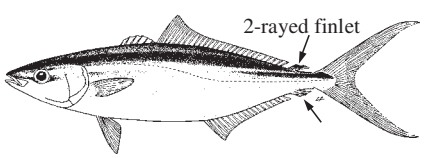
Carangidae (jacks): usually, II detached spines visible in front of anal fin; also, distinctly elongate carangid species have either scutes on lateral line (*Decapterus, Trachurus*) or detached finlets behind dorsal and anal fins (*Decapterus, Elagatis*).



Pomatomus **(Pomatomidae)**



Decapterus **(Carangidae)**

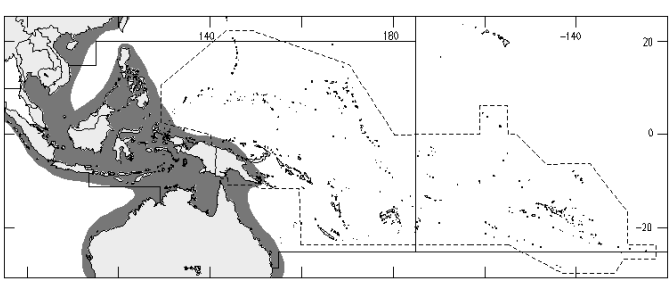


Elagatis **(Carangidae)**

Size: Maximum total length 2 m, commonly to 1.1 m; maximum weight 50 kg.

Habitat, biology, and fisheries: Pelagic, but also found over shallow coral reefs and off rock shores, occasionally in estuaries. Feeds on crabs, squids, and fishes. Caught mainly with handlines, and by trolling pelagically offshore over the continental shelf. Excellent food and game fish but does not occur in large enough numbers to support a commercial fishery. Marketed mostly fresh. From 1990 to 1995, the FAO Yearbook of Fishery Statistics reports a range of yearly catch of around 1 290 to 1 750 t of *Rachycentron canadum* from the Western Central Pacific.

Distribution: Widespread in the Indo-West Pacific, but absent from the eastern Pacific and from the Pacific Plate, except marginally. Within the western Pacific, found around the northern coast of Australia, north to New Guinea, Indonesia, Borneo, the Philippines, and Japan.



Reference

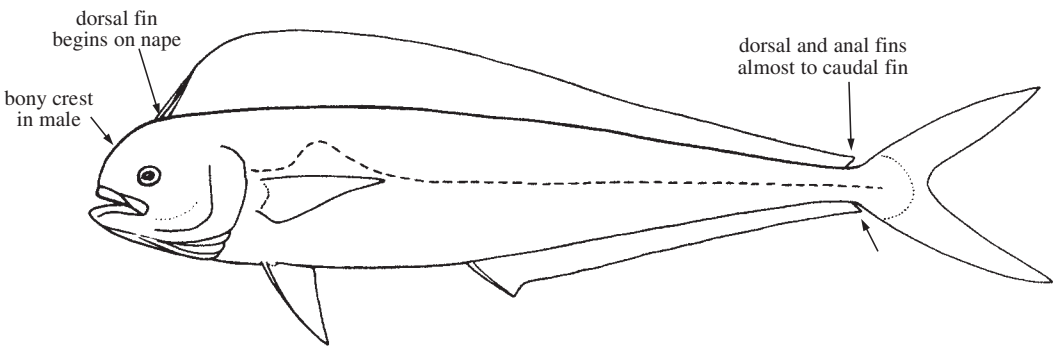
Smith, J.W. 1975. Life history of cobia, *Rachycentron canadum* (Osteichthyes: Rachycentridae), in North Carolina waters. *Brimleyana*, 23:1-23.

CORYPHAENIDAE

Dolphinfishes ("dolphins")

by B.B. Collette

Diagnostic characters: Elongate, compressed fishes (size to 2.1 m). Mouth large, with many fine teeth in bands; **adult males develop a bony crest on front of head**. Lateral line curved upward above pectoral fins. **Dorsal and anal fins very long, continuing almost to caudal fin, without sharp spines, or finlets; dorsal-fin origin on nape**; anal-fin origin at or before midpoint of body; caudal fin deeply forked, without any keels on fin or caudal peduncle; pelvic fins fitting into a groove on body. Scales small and cycloid. **Colour:** in life very variable, **sides with golden hues** and back brilliant metallic greens and blues; many small, black spots on head and body; specimens less than 15 cm have dark vertical bars.



Habitat, biology, and fisheries: Both species are open ocean pelagic species. They feed on flyingfishes and small fishes and crustaceans associated with floating *Sargassum* weed. Taken by both commercial and recreational fisheries wherever they occur. The flesh is highly esteemed.

Similar families occurring in the area

None. No other fishes have a combination of characters such as dorsal fin from nape almost to caudal fin; anal fin from about midpoint of body almost to caudal fin; no sharp spines in dorsal and anal fins; caudal fin deeply forked; and pelvic fins well developed.

Key to the species of Coryphaenidae

1a. Greatest body depth in adults less than 25% of standard length; tooth patch on tongue small and oval (Fig. 1a); dorsal-fin rays 58 to 66; lateral-line scales 200 or more; vertebrae 31**. . . . . *Coryphaena hippurus***

1b. Greatest body depth in adults more than 25% of standard length; tooth patch on tongue broad and trapezoidal (Fig. 1b); dorsal-fin rays 52 to 59; lateral-line scales 200 or fewer; vertebrae 33 **. . . *Coryphaena equiselis***

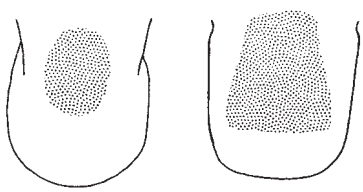


Fig. 1 tooth patch on tongue

List of species occurring in the area

The symbol ◄ is given when species accounts are included.

◄ *Coryphaena equiselis* Linnaeus, 1758
◄ *Coryphaena hippurus* Linnaeus, 1758

References

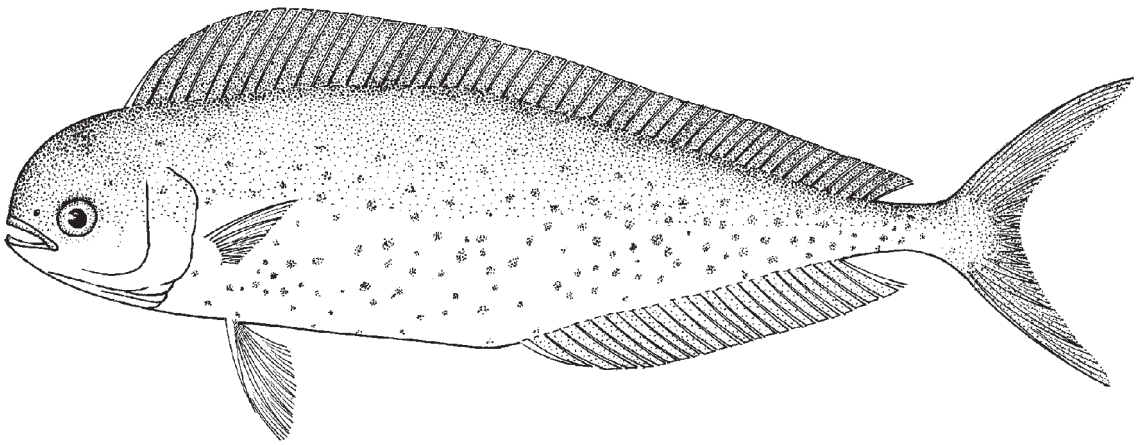
Gibbs, R.H., Jr. and B.B. Collette. 1959. On the identification, distribution, and biology of the dolphins, *Coryphaena hippurus* and *C. equiselis*. *Bull. Mar. Sci. Gulf, Carib.*, 9(2):117-152.

Palko, B.J., G.L. Beardsley, and W.J. Richards. 1982. Synopsis of the biological data on dolphin fishes, *Coryphaena hippurus* Linnaeus and *Coryphaena equiselis* Linnaeus. *NOAA Tech. Rep. NMFS Circ.*, (443):28 p.

Coryphaena equiselis Linnaeus, 1758

Frequent synonyms / misidentifications: *Coryphaena equisetis* Osbeck, 1765 / *Coryphaena hippurus* Linnaeus, 1758.

FAO names: En - Pompano dolphinfish; **Fr** - Coryphène dauphin; **Sp** - Dorado.

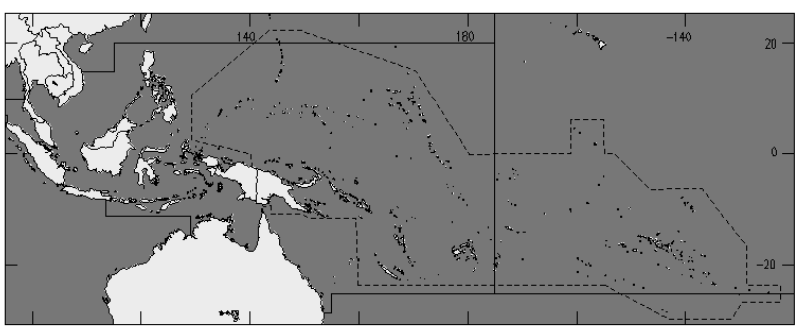


Diagnostic characters: Body elongate and compressed, **greatest body depth in adults more than 25% of standard length**; young fish (up to 30 cm) have head profile slightly convex. **Tooth patch on tongue broad and trapezoidal; bands of teeth on jaws and roof of mouth (vomer and palatines). A single dorsal fin extending from just behind eyes almost to caudal fin, with 52 to 59 soft rays; a convex anal fin extending from anus almost to caudal fin; pectoral fins about 1/2 of head length**; caudal fin deeply forked. **Lateral-line scales 200 or fewer.** Vertebrae 33. **Colour:** back brilliant metallic blue-green in life; fading rapidly after death to green tinge; sides silvery with a golden sheen and numerous black spots; dorsal fin dark; in juveniles, entire margin of caudal fin white, pelvic fins not pigmented.

Size: Maximum total length 75 cm; commonly to 50 cm.

Habitat, biology, and fisheries: Pelagic, inhabiting open waters, but also approaching the coast. Probably resembles *Coryphaena hippurus* in following ships and concentrating below floating objects. Feeds on small fishes and squids. Caught mainly by trolling and with floating lines. Marketed fresh.

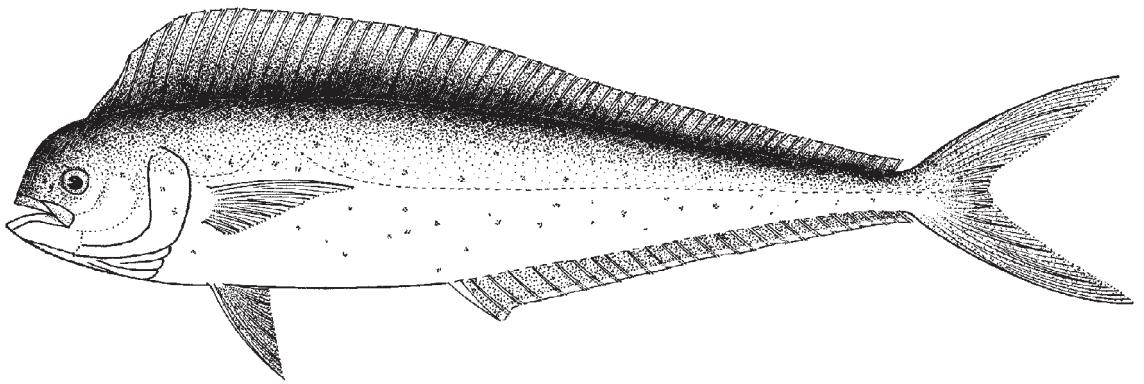
Distribution: Worldwide in most tropical and subtropical seas but frequently misidentified as juvenile or female *C. hippurus.*



Coryphaena hippurus Linnaeus, 1758

Frequent synonyms / misidentifications: None / None.

FAO names: En - Common dolphinfish; **Fr** - Coryphène commune; **Sp** - Dorado común.



Diagnostic characters: Body elongate and compressed, **greatest body depth in adults less than 25% of standard length**; young fish (up to 30 cm) have a slender, elongate body with head profile slightly convex; in larger males (30 to 200 cm) the head profile becomes vertical with development of a bony crest; **tooth patch on tongue small and oval**; bands of teeth on jaws and roof of mouth (vomer and palatines). **A single dorsal fin extending from above eyes almost to caudal fin, with 58 to 66 soft rays; a concave anal fin extending from anus almost to caudal fin; pectoral fins more than 1/2 of head length**; caudal fin deeply forked. **Lateral-line scales 200 or more.** Vertebrae 31. **Colour:** back brilliant metallic blue-green in life, after death fading to grey with a green tinge; sides silvery with a golden sheen, and 1 row of dark spots or golden blotches running below dorsal fin and 1, 2, or more rows on and below lateral line, some scattered irregularly; dorsal and anal fins black, the latter with a white edge; pectoral fins pale; caudal fin silvery with a golden sheen; in juveniles, only tips of caudal-fin lobes white, pelvic fins black.

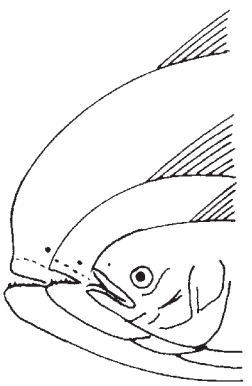
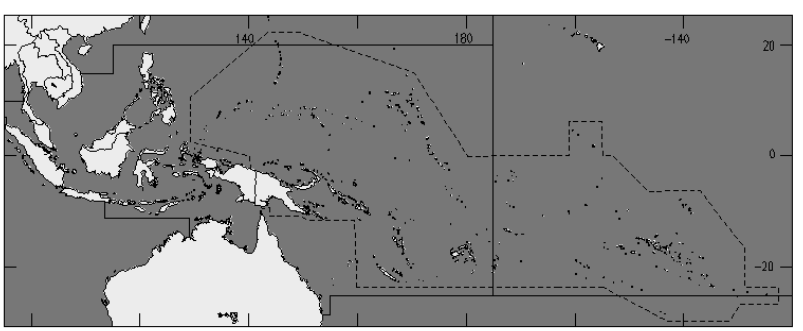


diagram showing development of bony crest in males

Size: Maximum total length 2.1 m; commonly to 1 m.

Habitat, biology, and fisheries: Pelagic, inhabiting open waters, but also approaching the coast; follows ships and forms small concentrations below floating objects. Feeds mainly on fishes, but also on crustaceans and squids. Breeds in the open sea, probably approaching the coast as water temperatures rise. Caught by trolling and on tuna longlines; also occasionally with drift nets. Marketed fresh; a very highly appreciated food fish. For 1995, the FAO Yearbook of Fishery Statistics reports a total catch of 4 847 t of *Coryphaena hippurus* from the area.

Distribution: Worldwide in tropical and subtropical seas.



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