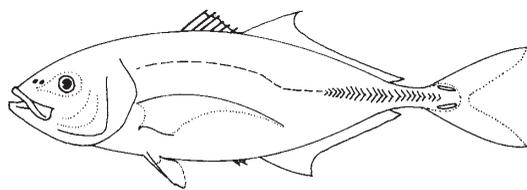


CARANGIDAE

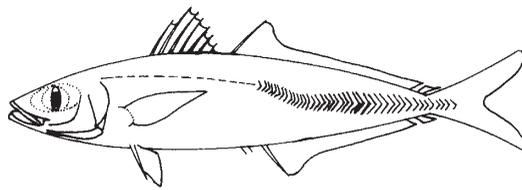
Jacks and scads (bumpers, pompanos, leatherjacks, amberjacks, pilotfishes, rudderfishes)

by W.F. Smith-Vaniz, U.S. Geological Survey, Florida, USA

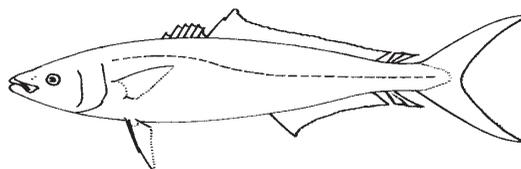
D **Diagnostic characters:** Small to large (up to 150 cm); body shape extremely variable, ranging from elongate and fusiform to deep and strongly compressed. Head varying from long and rounded to short, deep, and very compressed. Eye small to large, with adipose eyelid negligible to strongly developed. Snout pointed to blunt. Teeth in jaws in rows or bands, either small to minute or an enlarged row of recurved canines present; teeth on roof of mouth (vomer, palatine) or tongue present or absent depending on species or developmental stage. Gill openings large, branchiostegal membranes not united, free from isthmus. Branchiostegal rays 6 to 10 (usually 7). Gill rakers moderate in length and number to long and numerous, number of gill rakers decreasing with growth in some species. Opercular bones smooth (but with spines in larvae and small juveniles). **Two dorsal fins that are separated in small juveniles, the first of moderate height or very low, with 4 to 8 spines** (embedded in adults of some species), **second dorsal fin with 1 spine and 18 to 39 soft rays** and the anterior lobe scarcely produced to extremely long; **anal fin with 2 anterior spines** (but 1 spine in *Elagatis*) **that separate from rest of fin at small sizes** (embedded in adults of some species) **followed by 1 spine and 15 to 28 soft rays**, with the anterior lobe low to elongate; **caudal fin forked, with equal lobes in most species**; pectoral fins with 14 to 24 rays, either long and falcate or short and pointed or rounded; pelvic fins with 1 spine and 5 rays, moderately long in some species to becoming rudimentary in others. Scales small, sometimes difficult to see, and cycloid (smooth to touch), but ctenoid (rough) in 2 species and needle-like in *Oligoplites*, usually absent from some areas of head and covering body (but absent on certain areas in some species) and sometimes extending onto fins; **scutes** (hard, bony scales in lateral line) **present and prominent, or reduced in some species and absent in some genera**. Lateral line arched or elevated anteriorly and straight posteriorly, extending onto caudal fin. Vertebrae 10 or 11 precaudal and 14 to 17 caudal (24 to 27 total, usually 10 precaudal and 14 caudal). **Colour:** darker above (green or blue to blackish) and paler below (silvery to white or yellow-golden), some species almost entirely silvery when alive, others with dark or coloured bars or stripes on head, body, or fins, and some can change patterns; young of many species barred or spotted.



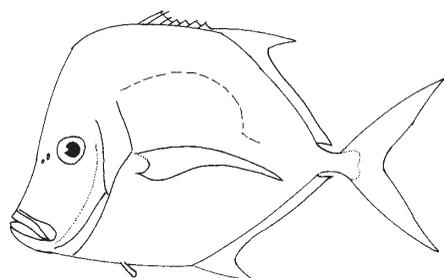
Caranx



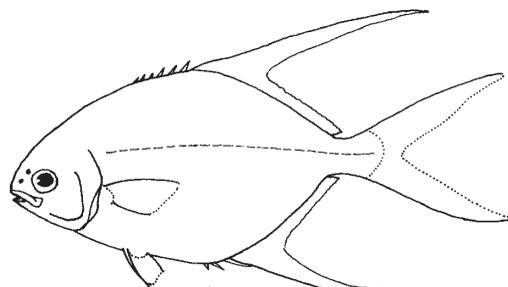
Decapterus



Elagatis



Selene



Trachinotus

examples of body shapes

Habitat, biology, and fisheries: Mostly schooling species (but *Alectis* usually solitary); some species have largely continental distributions and occur primarily in brackish environments (especially young), others (*Elagatis* and *Naucrates*) are pelagic, usually found at or near the surface in oceanic waters. Juveniles of some species frequently shelter beneath jellyfishes. Caught commercially with trawls, purse seines, traps, and hook-and-line. Larger species of *Trachinotus*, *Seriola*, and *Caranx* are highly regarded as sportfish. FAO statistics report landings ranging from 15 456 to 20 659 t per year from 1995 to 1999. Edibility fair to excellent. Large individuals of some species that often occur in the vicinity of reefs (e.g. *Seriola dumerili*, *Caranx latus*, and *Caranx lugubris*) have been implicated in ciguatera poisoning at some West Indian localities.

Similar families occurring in the area

Distinguished from all similar families in the area by having **first 2 anal-fin spines separated from rest of fin** (caution: these spines are sometimes partially or completely embedded in adults). Presence of scutes in the posterior part of lateral line in some genera easily differentiates them from other families in the area. Additional distinguishing characters of similar families (especially those carangids lacking lateral-line scutes) are as follows:

Scombridae: dorsal-fin spines 9 to 27 (4 to 9 in Carangidae); posterior rays of dorsal and anal fins forming a series of free finlets (only in carangid genus *Oligoplites*, which differs in having only 5 or 6 [rarely 7] dorsal-fin spines); also, dorsal fins widely separated in *Auxis* and *Scomber* species.

Gempylidae (especially *Lepidocybium* and *Ruvettus* species): first dorsal-fin base longer than second excluding finlets (shorter than the second in carangids); a series of dorsal and anal finlets present in *Lepidocybium* and *Ruvettus*.

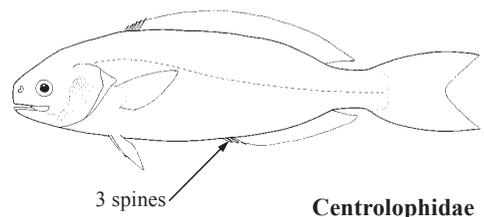
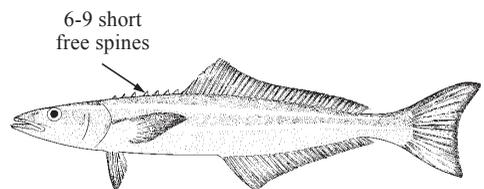
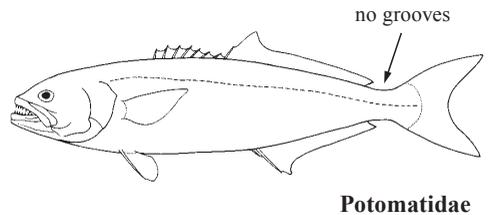
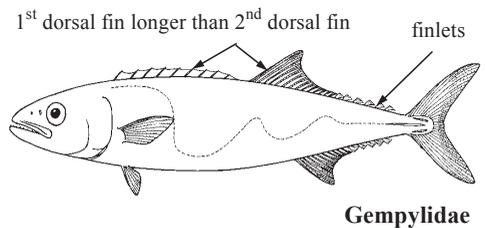
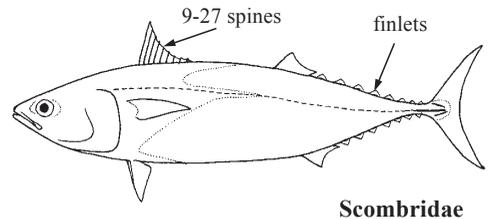
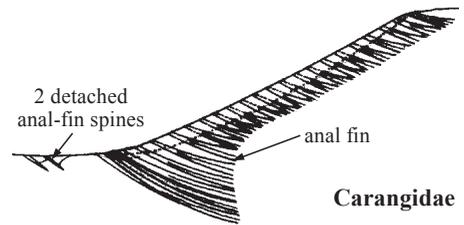
Pomatomidae: both jaws with a series of strong compressed teeth; no grooves on caudal peduncle (present in *Seriola* which is superficially similar).

Rachycentridae: head broad and depressed, lower jaw projecting; first dorsal fin with 6 to 9 short, free spines, each depressible in a groove; a single weak anal-fin spine.

Centrolophidae (particularly *Hyperoglyphe*): 3 anal-fin spines not detached from fin; preopercle margin usually moderately denticulate (smooth in Carangidae); jaw teeth all conical; simple caudal fin not deeply forked.

Identification Note

Dentition: Dentition has traditionally been used by past workers to recognize a number of presumably monophyletic species groups related to *Caranx* under different generic or subgeneric designations. One such group is the "catch-basket" category *Carangoides*. Although this generic name has been widely used for a number of Indo-Pacific species, *Carangoides* (sensu lato) exhibits a wide range of dentition types and has not been defined by any shared derived characters. At least 2 western Atlantic species, *Caranx bartholomaei* and *C. ruber*, appear to be most closely related to Indo-Pacific species of *Carangoides*. These 2 species have traditionally been recognized in the literature as species



of *Caranx*, and in the interest of nomenclatural stability current usage should be maintained until carangid generic limits and phylogenetic relationships are better resolved.

Fin-spines: The detached anterior anal-fin spines and the spines of the first dorsal fin (especially the first 1 or 2) frequently become completely embedded in the skin in large individuals of many carangids (all spines of the first dorsal fin become embedded in *Alectis* at a relatively small size). Even in those genera with a relatively high spinous dorsal fin, the first spine is usually small and closely appressed to the second spine and thus can easily be overlooked.

Gill raker counts: Counts are of rakers on the first (outermost) gill arch. In species with relatively numerous gill rakers (e.g., *Decapterus* and *Trachurus*) great care must be taken not to overlook rakers at either end of the gill arch. It is suggested that a small knife be used to free the upper limb of the first gill arch where it joins the skull. With a little practice this can be done without leaving any stub with rakers attached. Once this has been accomplished, the gill rakers are much easier to see. In some genera (e.g., *Caranx* and *Seriola*) the number of developed rakers decreases with growth with a concomitant increase in the number of rudiments (tubercles or short rakers with the diameter of their bases greater than their height). When rudimentary rakers are included in the gill raker counts, and large specimens are being examined, it is very important that all of the tubercles are counted. In all cases the raker in the angle of the gill arch is included in the count of lower limb rakers.

Lateral-line scutes: In many carangids, size and configuration of the scales and scutes on the lateral line is variable and there may be a gradual transition from one type to another. Scutes are here defined as modified scales that either have their posterior margin with a small to moderate projecting spine or the scale has a raised horizontal ridge and ends in an apex not exceeding a 90° angle. All scutes should be counted, including those extending onto the caudal-fin base. In order to observe and accurately count the lateral-line scales and scutes, good lighting and some magnification is recommended. In some species it may also be necessary to remove small body scales that tend to overgrow or otherwise obscure the lateral line.

Measurements: The curved part of the lateral line is measured as a chord (straight-line distance) of the arch extending from the upper edge of the opercle to its junction with the straight part. The straight part of the lateral line is measured from its junction with the curved part to its termination on the caudal-fin base (end of the last scute). In cases where the junction of the curved and straight parts is very gradual, the curved part is considered to begin with the scale or scute that has 3/4 of its height above the central axis of the straight part. **Fork length**, measured from the tip of the snout to the end of the middle caudal-fin rays, is the standard body length measurement used for carangids because the caudal-fin lobes are frequently broken off, especially in trawled specimens.

Skeleton: Some carangid species have certain bones that become progressively expansive or swollen in adults. In fishes this condition is generally called hyperostosis. Although the ontogenetic onset of hyperostosis is variable in some species, the pattern of hyperostotic bones is remarkably consistent in large adults and is a useful identification aid. Smith-Vaniz et al. (1995) give an overview of hyperostosis in marine teleosts with emphasis on the Carangidae.

Adipose eyelid: A thick, mostly transparent tissue that partly or wholly covers the eye. The relative development of the adipose eyelid in adults is a useful distinguishing character of some species.

Key to the species of Carangidae occurring in the area

- 1a. Posterior straight part of lateral line with enlarged hardened scutes (Fig. 1) (scutes very small in *Chloroscombrus* and *Selene* spp.); adults of most species with pectoral fins long and falcate, longer than head (but equal to head length in *Selar* and *Trachurus* (Fig. 2), and shorter than head in *Decapterus* spp.(Fig. 3) → 2
- 1b. Posterior straight part of lateral line without scutes (Fig. 4, 5); pectoral fins shorter than head length → 20

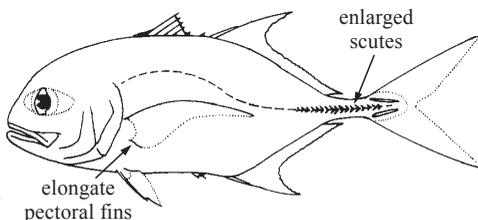


Fig. 1 *Caranx*

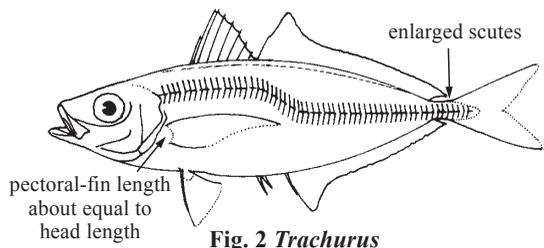


Fig. 2 *Trachurus*

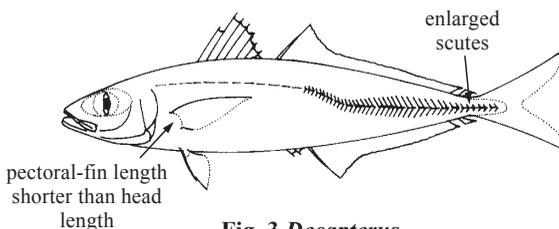


Fig. 3 *Decapterus*

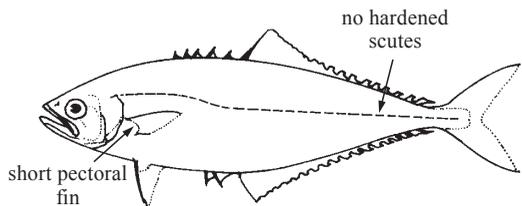


Fig. 4 *Oligoplites*

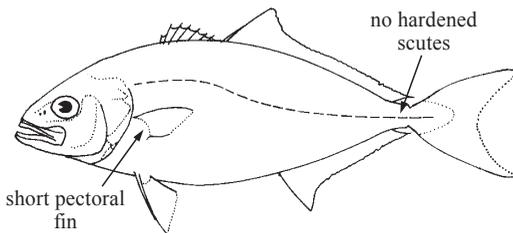


Fig. 5 *Seriola*

- 2a. Body superficially naked, scales minute and embedded where present (except some scales in posterior part of straight lateral line consisting of weak to moderate scutes) → 3
- 2b. Scales obvious over most or all of body → 6
- 3a. Adults with pelvic fins relatively long, longer than upper jaw length (Fig. 6); dorsal profile of head in front of eyes broadly rounded; in juveniles, anterior dorsal-fin spines not elongate *Alectis ciliaris*
- 3b. Adults with pelvic fins short, about 1/4 to 1/2 upper jaw length (Fig. 7); dorsal profile of head in front of eyes straight to slightly concave; in juveniles, anterior dorsal-fin spines distinctly elongate → 4

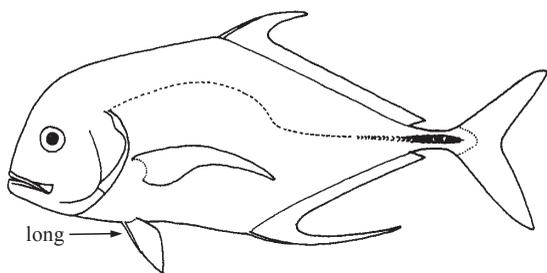


Fig. 6 *Alectis*

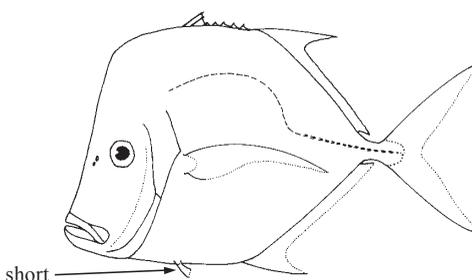


Fig. 7 *Selene*

- 4a. Dorsal- and anal-fin lobes both greatly elongate in specimens greater than 20 mm fork length; anterior profile of head nearly straight (Fig. 8a), without a slight concavity in front of eyes; small juveniles with 4 or 5 faint, interrupted bands on sides. *Selene vomer*
- 4b. Dorsal- and anal-fin lobes only slightly or not elongate; anterior profile of head curved with a slight concavity in front of eyes (Fig. 8b); small juveniles with an oval black spot over straight part of lateral line. → 5
- 5a. Total gill rakers usually 36 to 42; body depth (second dorsal-fin origin to second anal-fin origin) 46.0 to 51.5% fork length in fish greater than 10 cm fork length. *Selene setapinnis*
- 5b. Total gill rakers usually 31 to 34; body depth (second dorsal-fin origin to second anal-fin origin) 61.0 to 65.7% fork length in fish greater than 10 cm fork length. *Selene brownii*

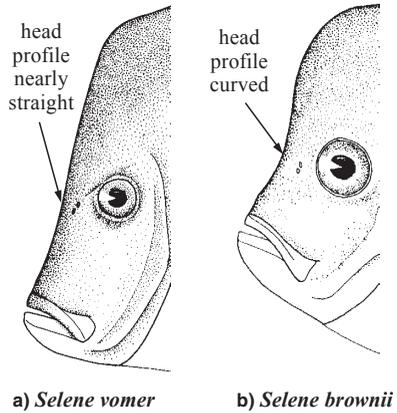


Fig. 8 profile of head

- 6a. Adults with pectoral fins relatively short, equal to or shorter than head length (Figs 2,3) → 7
- 6b. Adults with pectoral fins relatively long and falcate, distinctly longer than head length (Fig. 1) → 11
- 7a. Pored scales in curved lateral line scute-like, expanded dorsoventrally (Fig. 2) (caution: in large fish may be obscured by overgrowth of smaller scales); dorsal accessory lateral line extends posteriorly below dorsal fin to between eighth spine and fourth soft ray (Fig. 9a) *Trachurus lathami*
- 7b. No enlarged scute-like scales in curved lateral line; dorsal accessory lateral line terminating before origin of dorsal fin (Fig. 9b) → 8

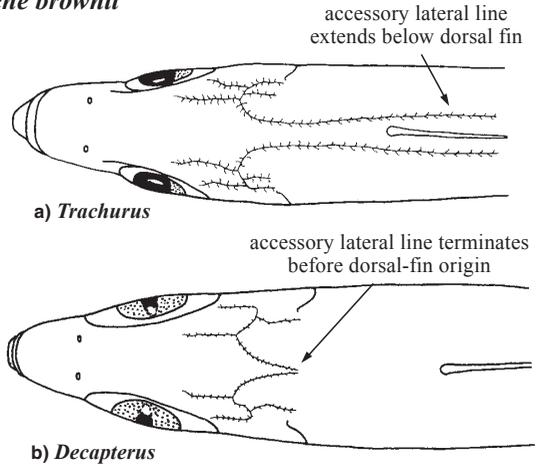


Fig. 9 dorsal view of head

- 8a. Terminal ray of dorsal and anal fins close to penultimate ray and completely attached by fin membrane; shoulder girdle (cleithrum) margin with a deep furrow, a large papilla immediately above it and a smaller papilla near upper edge (Fig. 10a) *Selar crumenophthalmus*
- 8b. Terminal ray of dorsal and anal fins consisting of a detached finlet not connected to penultimate ray by fin membrane (Fig. 3); shoulder girdle margin with a shallow groove, a low moderate papilla above it, and a smaller papilla near upper edge (Fig. 10b) → 9

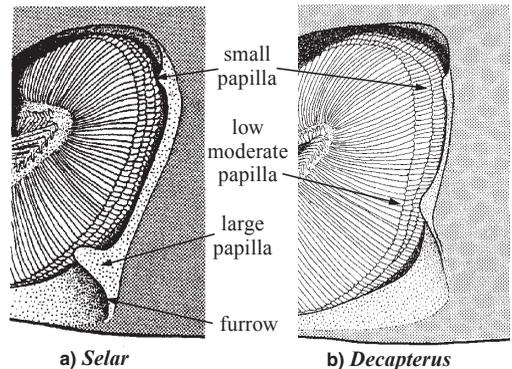


Fig. 10 gill chamber

- 9a. In individuals larger than 10 cm fork length, row of dark spots (centred on scales) along curved lateral line; posterior end of maxilla concave above, noticeably rounded and produced below (Fig. 11a); straight part of lateral line usually with 0 (rarely 1 or 2) anterior scales and curved lateral line with 37 to 56 scales (Fig. 12a) ***Decapterus punctatus***
- 9b. No row of dark spots along curved lateral line; posterior end of maxilla straight above, moderately rounded only at lower corner, otherwise posterior margin straight (Fig. 4b, c); straight part of lateral line with 0 to 33 anterior scales and curved lateral line with 62 to 79 scales → 10

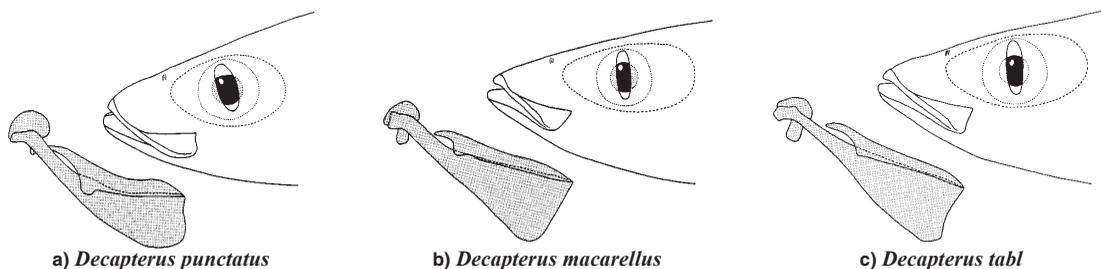


Fig. 11

- 10a. Caudal fin yellow-green in life; straight part of lateral line with 19 to 33 anterior scales followed by 23 to 32 scutes (Fig. 12b); posterior end of maxilla strongly slanted anteroventrally (Fig. 11b); oral valve (membranous flap) at symphysis of upper jaw conspicuously white in adults (Fig. 13) ***Decapterus macarellus***
- 10b. Caudal fin red in life; straight part of lateral line with 0 to 8 anterior scales followed by 34 to 44 scutes (Fig. 12c); posterior end of maxilla only slightly slanted anteroventrally (Fig. 11c); oral valve (membranous flap) at symphysis of upper jaw dusky or hyaline ***Decapterus tabl***

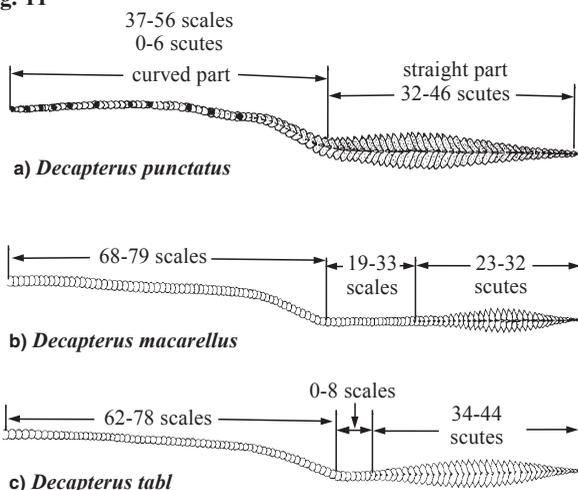


Fig. 12 lateral line

- 11a. Black saddle on upper part of caudal peduncle; scutes on straight part of lateral line 5 to 15, and relatively small (maximum height about half pupil diameter); body very compressed and ventral profile more convex than dorsal profile (Fig. 14) ***Chloroscombrus chrysurus***
- 11b. No black saddle on upper part of caudal peduncle; scutes on straight part of lateral line 23 to 56, and relatively large (maximum height at least equal to pupil diameter); body slightly to moderately compressed and ventral profile not more convex than dorsal profile → 12

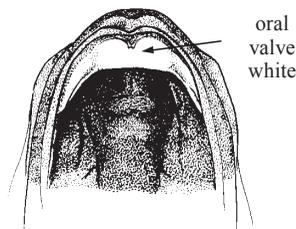


Fig. 13 ventral view of upper jaw

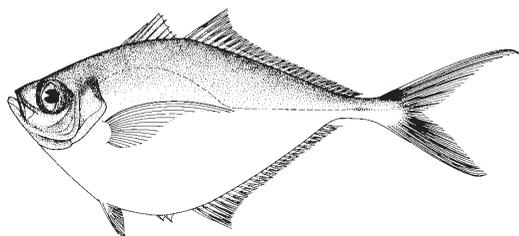


Fig. 14 *Chloroscombrus chrysurus*

12a. Tongue, roof, and floor of mouth white, the rest dark (Fig. 15); anal-fin spines reduced or absent; some scutes in posterior part of lateral line typically point forward *Uraspis secunda*

12b. Lining of mouth not distinctly white and dark as above; anal-fin spines distinct and movable; no scutes in posterior part of lateral line point forward → 13

13a. Lobe of second dorsal fin shorter than height of longest dorsal-fin spine (Fig. 16); upper jaw teeth mostly blunt, conical; lips of adults noticeably papillose . . . *Pseudocaranx dentex*

13b. Lobe of second dorsal fin distinctly longer than height of longest dorsal-fin spine (Fig. 17); upper jaw teeth not as above; lips of adults not papillose → 14

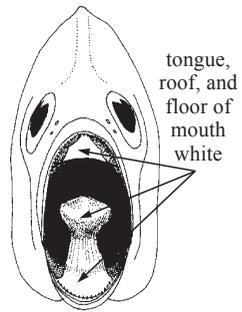


Fig. 15 *Uraspis*

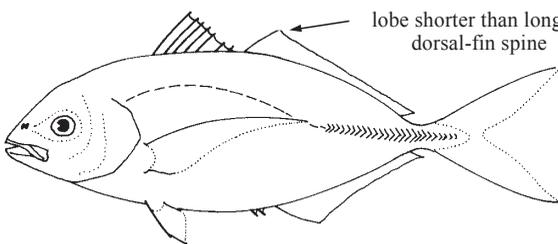


Fig. 16 *Pseudocaranx*

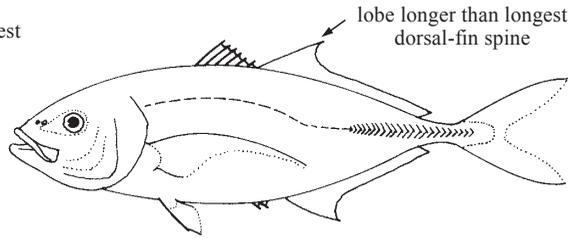
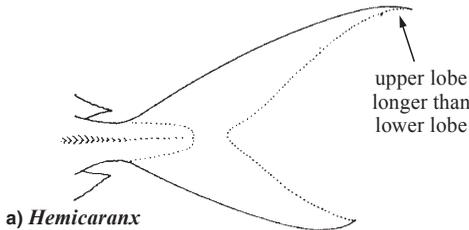


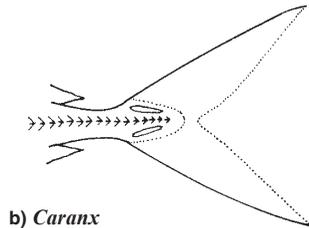
Fig. 17 *Caranx*

14a. Upper jaw with a single row of minute teeth; upper caudal-fin lobe of adults longer than lower lobe (Fig. 18a); caudal fin without paired keels *Hemicaranx amblyrhynchus*

14b. Upper jaw with several rows or a band of teeth; both caudal-fin lobes about equal in length (Fig. 18b); caudal fin with paired keels → 15



a) *Hemicaranx*



b) *Caranx*

Fig. 18 caudal fin

15a. Chest naked except for a small patch of prepelvic scales (Fig. 19); adults with oval black spot on pectoral fin . . . *Caranx hippos*

15b. Chest completely scaly; no oval black spot on pectoral fin → 16

16a. Lower gill rakers 31 to 38; adults with a dark blue stripe extending along back and through lower caudal-fin lobe . . . *Caranx ruber*

16b. Lower gill rakers 16 to 28; no dark blue stripe extending along back and through lower caudal-fin lobe → 17

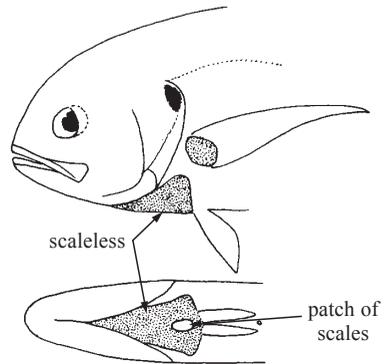


Fig. 19

- 17a. Lower gill rakers 25 to 28; lateral-line scutes 46 to 56 *Caranx crysos*
- 17b. Lower gill rakers 16 to 21; lateral-line scutes 22 to 39 → 18

- 18a. Dorsal- and anal-fin rays 25 to 28 and 21 to 24, respectively *Caranx bartholomeai*
- 18b. Dorsal- and anal-fin rays 19 to 23 and 16 to 19, respectively → 19

- 19a. In life, body dark blue to bluish grey above, silvery white to golden below; adults with upper jaw extending to vertical at rear margin of eye; dorsal-fin lobe shorter than head, about 5.6 to 6.0 times in fork length *Caranx latus*
- 19b. In life, head, body, and fins grey to dark brown; adults with upper jaw extending to below vertical from anterior half to middle of eye; dorsal-fin lobe longer than head, about 2.3 to 5.3 times in fork length *Caranx lugubris*

- 20a. Body scales needle-like; upper jaw not protractile; posterior 11 to 15 dorsal- and anal-fin rays consisting of semi-detached finlets (Fig. 20). → 21
- 20b. Body scales oval-shaped; upper jaw protractile; no semi-detached finlets. → 23

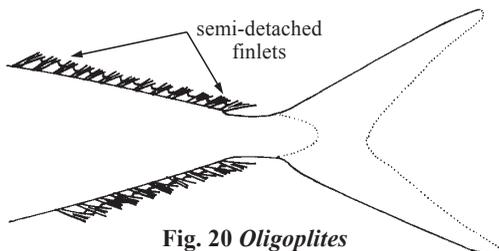


Fig. 20 *Oligoplites*

- 21a. Lower jaw expanded with strongly convex ventral profile; premaxilla with 1 row of teeth (somewhat irregular in juveniles); lower gill rakers 17 to 20; first dorsal fin with 4 spines *Oligoplites saliens*
- 21b. Lower jaw not noticeably expanded, ventral profile moderately convex; premaxilla essentially with 2 distinct rows of teeth or a band of villiform teeth; lower gill rakers 11 to 18; first dorsal fin with 4 to 6 spines → 22
- 22a. Premaxilla with 2 distinct rows of teeth; total gill rakers 17 to 21; upper-jaw length 52 to 57% of head length; first dorsal fin typically with 5 spines *Oligoplites saurus*
- 22b. Premaxilla with a band of villiform teeth; total gill rakers 23 to 26; upper-jaw length 58 to 64% of head length; first dorsal fin typically with 4 spines *Oligoplites palometa*

- 23a. Bases of soft dorsal and anal fins unequal in length, anal-fin base about 45 to 70% of dorsal-fin base (Fig. 21); caudal peduncle grooves present, dorsally and ventrally (Fig. 22). → 24
- 23b. Bases of soft dorsal and anal fins about equal in length (Fig. 23); no caudal peduncle grooves → 29

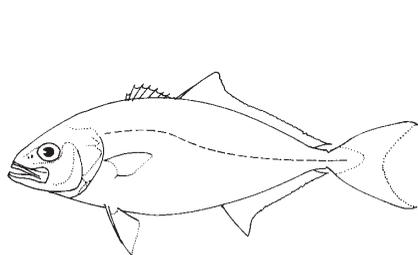


Fig. 21 *Seriola*

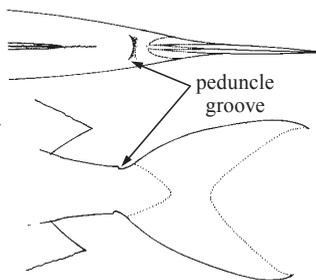


Fig. 22 caudal fin

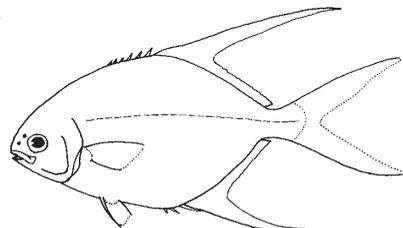


Fig. 23 *Trachinotus*

- 24a. Dorsal and anal fins with terminal 2-rayed finlet (Fig. 24); upper jaw ending distinctly before vertical at front margin of eye (to below front margin of eye in young) *Elagatis bipinnulata*
- 24b. No finlets in dorsal and anal fins; upper jaw ending between vertical through front and rear margins of eye → 25

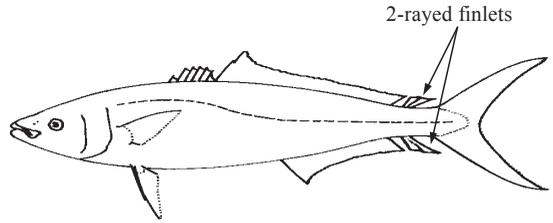
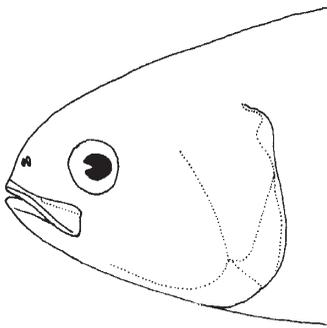
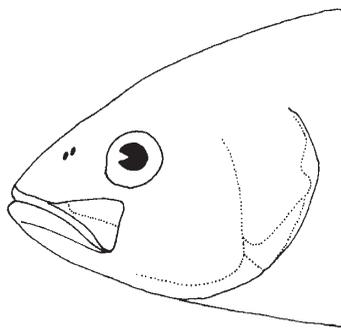


Fig. 24 *Elagatis*

- 25a. First dorsal fin with 4 or 5 spines; caudal-fin lobes with prominent white tips; upper jaw extending to vertical from about front margin of eye (Fig. 25a); adults with well-developed median fleshy keel on side of caudal peduncle (Fig. 26) *Naucrates ductor*
- 25b. First dorsal fin with 7 or 8 spines (caution: anterior spines may become embedded in very large fish); caudal-fin lobes without prominent white tips (Fig. 25b); upper jaw extending to vertical at front margin to middle of pupil; adults with median fleshy keel on side of caudal peduncle absent to moderately developed → 26



a) *Naucrates*



b) *Seriola*

Fig. 25 lateral view of head

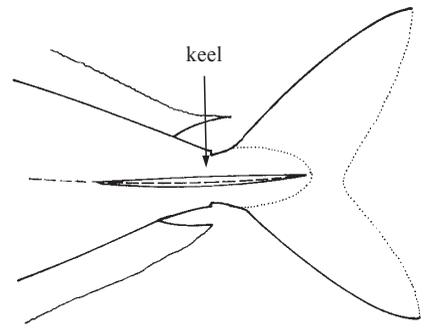


Fig. 26 lateral view of tail

- 26a. Total developed gill rakers 14 to 20 in fish 10 to 20 cm fork length, and 11 to 16 in fish greater than 20 cm fork length; nuchal band, if present, extending from eye to origin of first dorsal fin → 27
- 26b. Total developed gill rakers 24 to 27 in fish 10 to 20 cm fork length, and 21 to 28 in fish greater than 20 cm fork length; nuchal band position variable → 28
- 27a. First dorsal-fin spines usually 8; dorsal-fin rays 33 to 39; body bands (present to about 25 cm fork length) solid and regular, extending onto dorsal and anal fins; anal-fin base short, contained 1.6 to 2.1 times in second dorsal-fin base; supramaxilla of adults moderately slender; vertebrae 11 precaudal and 13 caudal *Seriola zonata*
- 27b. First dorsal-fin spines usually 7; dorsal-fin rays 29 to 34; body bands (present to about 20 cm fork length) irregular and divided vertically, terminating on body and not extending onto dorsal and anal fins; anal-fin base moderately short, contained 1.4 to 1.7 times in second dorsal-fin base; supramaxilla of adults broad, with posterodorsal angle rounded; vertebrae 10 precaudal and 14 caudal *Seriola dumerili*

- 28a. Supramaxilla of adults broad, with posterodorsal angle acute (Fig. 27a); dorsal-fin lobe 4.0 to 6.3 times in fork length; nuchal band, when present, extending from eye to origin of first dorsal fin; body bands (present to about 20 cm fork length) not extending onto dorsal and anal fins; first pterygiophore of anal fin straight in specimens larger than about 10 cm fork length (Fig. 28a) *Seriola rivoliana*
- 28b. Supramaxilla of adults relatively slender (Fig. 27b); dorsal-fin lobe 6.4 to 8.6 times in fork length; nuchal band, when present, extending from eye to nape, well in advance of dorsal-fin origin; body bands (present to about 20 cm fork length) extending onto dorsal and anal fins (Fig. 28b) *Seriola fasciata*

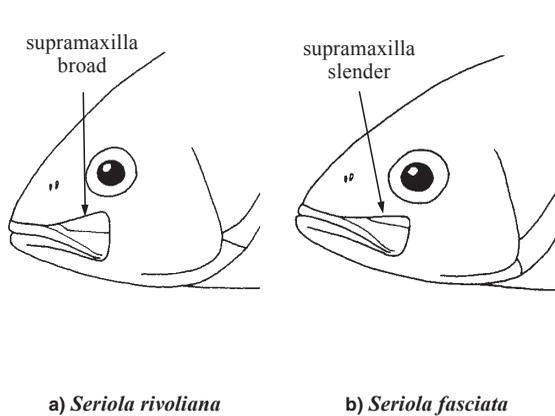


Fig. 27 lateral view of head

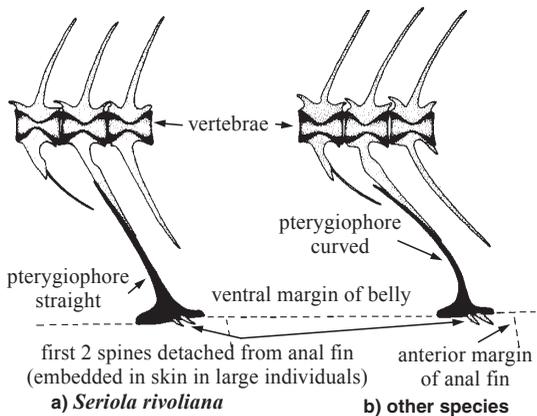


Fig. 28

- 29a. Anal-fin rays 23 to 27 (usually 26 or 27); first dorsal-fin spines 5 (first spine minute in some individuals) *Trachinotus cayennensis*
- 29b. Anal-fin rays 16 to 22 (rarely 23 or 24); first dorsal-fin spines 6 (first spine may be partially skin-covered or absent in fish larger than 30 cm fork length) → 30
- 30a. Adults with 2 to 5 narrow bars (silvery in life) on sides; dorsal- and anal-fin lobes noticeably elongate in adults, both extending to or behind caudal-fin base *Trachinotus goodei*
- 30b. No narrow bars on sides; only dorsal fin elongate in adults, and neither dorsal or anal fins extending to caudal-fin base → 31
- 31a. Dorsal-fin rays 17 to 21 (usually 18 to 20); anal-fin rays 16 to 19 (usually 17 or 18); in specimens >30 cm fork length, ribs 2 to 4 hyperostotic, greatly expanded (expansion beginning at about 20 cm fork length) with their diameters distinctly larger than adjacent ribs *Trachinotus falcatus*
- 31b. Dorsal-fin rays 22 to 27 (usually 23 to 25); anal-fin rays 20 to 24 (usually 21 or 22); ribs 2 to 4 never becoming hyperostotic, their diameters not distinctly larger than adjacent ribs *Trachinotus carolinus*

List of species occurring in the area

Note: Two other species of Carangidae occur in the western Atlantic (both in Area 41): *Parona signata* Jenyns, 1842 and *Trachinotus marginatus* Cuvier in Cuvier and Valenciennes, 1832.

The symbol  is given when species accounts are included.

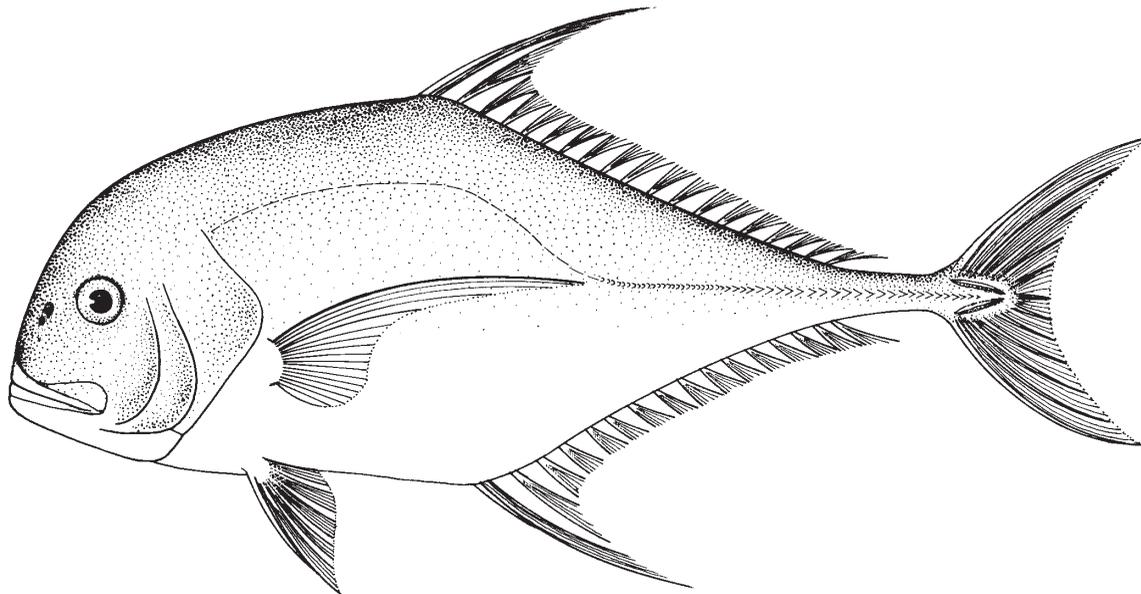
-  *Alectis ciliaris* (Bloch, 1788).
-  *Caranx bartholomaei* Cuvier in Cuvier and Valenciennes, 1833.
-  *Caranx crysos* (Mitchill, 1815).
-  *Caranx hippos* (Linnaeus, 1766).
-  *Caranx latus* Agassiz in Spix and Agassiz, 1831.
-  *Caranx lugubris* Poey, 1860.
-  *Caranx ruber* (Bloch, 1793).
-  *Chloroscombrus chrysurus* (Linnaeus, 1766).
-  *Decapterus macarellus* (Cuvier in Cuvier and Valenciennes, 1832).
-  *Decapterus punctatus* (Cuvier, 1829).
-  *Decapterus tabl* Berry, 1968.
-  *Elagatis bipinnulata* (Quoy and Gaimard, 1825).
-  *Hemicaranx amblyrhynchus* (Cuvier in Cuvier and Valenciennes, 1833).
-  *Naucrates ductor* (Linnaeus, 1758).
-  *Oligoplites palometa* (Cuvier in Cuvier and Valenciennes, 1833).
-  *Oligoplites saliens* (Bloch, 1793).
-  *Oligoplites saurus* (Bloch and Schneider, 1801).
-  *Pseudocaranx dentex* (Bloch and Schneider, 1801).
-  *Selar crumenophthalmus* (Bloch, 1793).
-  *Selene brownii* (Cuvier, 1816).
-  *Selene setapinnis* (Mitchill, 1815).
-  *Selene vomer* (Linnaeus, 1758).
-  *Seriola dumerili* (Risso, 1810).
-  *Seriola fasciata* (Bloch, 1793).
-  *Seriola rivoliana* Valenciennes in Cuvier and Valenciennes, 1833.
-  *Seriola zonata* (Mitchill, 1815).
-  *Trachinotus carolinus* (Linnaeus, 1766).
-  *Trachinotus cayennensis* Cuvier in Cuvier and Valenciennes, 1832.
-  *Trachinotus falcatus* (Linnaeus, 1758).
-  *Trachinotus goodei* Jordan and Evermann, 1896.
-  *Trachurus lathami* Nichols, 1920.
-  *Uraspis secunda* (Poey, 1860).

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Alectis ciliaris (Bloch, 1788)

LIJ

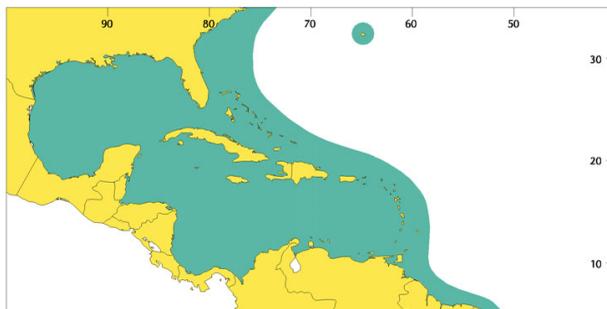
Frequent synonyms / misidentifications: *Alectis crinitus* (Mitchell, 1826) / None.**FAO names:** En - African pompano; Fr - Cordonnier fil; Sp - Pámpano de hebra.

Diagnostic characters: **Body deep**, becoming more elongate with growth, **and compressed; profile of nape and head broadly rounded.** Eye moderately large (diameter contained about 4 to 4.7 times in head length) with weak adipose eyelid. Upper jaw extending to under posterior part of eye. Both jaws with bands of villiform teeth, becoming obsolete with age. Gill rakers 4 to 6 upper, 12 to 17 lower, 18 to 22 total. **Dorsal fin with 7 short spines (embedded and not apparent at about 17 cm fork length)** followed by 1 spine and 18 or 19 soft rays; anal fin with 2 spines (embedded and not apparent with growth) followed by 1 spine and 15 to 17 soft rays; **dorsal- and anal-fin lobes extremely long and filamentous in young**, resorbed and less produced in adults (dorsal lobe about 7 times in fork length at 80 cm fork length); pectoral fins falcate, longer than head; pelvic fins elongate in young. Lateral line anteriorly with a strong curved arch, its posterior (straight) part with 12 to 30 scutes; **body superficially naked, scales minute and embedded where present.** Bilateral caudal keels present. Vertebrae 10 precaudal and 14 caudal; no hyperostosis. **Colour:** mostly silvery with a pale bluish tinge on upper 1/3 of body and head; juveniles with 3 chevron-shaped dark bars on body, and a black blotch at base of third to sixth soft dorsal-fin rays, filaments black distally.

Size: Maximum possibly to 130 or 150 cm fork length; common to 100 cm fork length. All-tackle IGFA world angling record 22.9 kg.

Habitat, biology, and fisheries: Generally solitary. Young usually pelagic and drifting; adults usually near bottom (to at least 60 m) and strong swimmers. Feed mainly on fish and squid. Caught primarily on hook-and-line, also with purse seines and 'mandinga' (Venezuela), but no specific fishery. Edibility good to excellent.

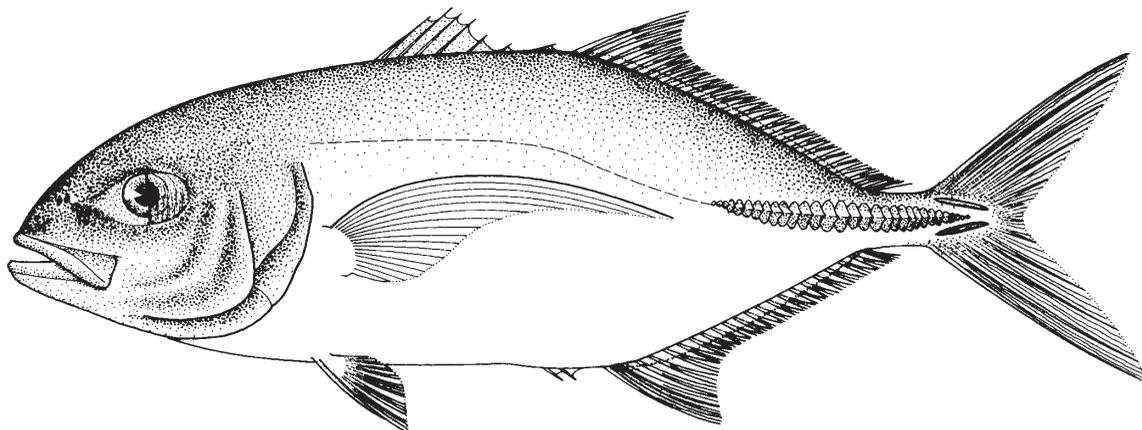
Distribution: Worldwide in tropical waters. In the western Atlantic from Massachusetts and Bermuda southward throughout the area to Santos, Brazil.



Caranx bartholomaei Cuvier in Cuvier and Valenciennes, 1833

Frequent synonyms / misidentifications: None / None.

FAO names: **En** - Yellow jack; **Fr** - Carangue grasse; **Sp** - Cojinua amarilla.

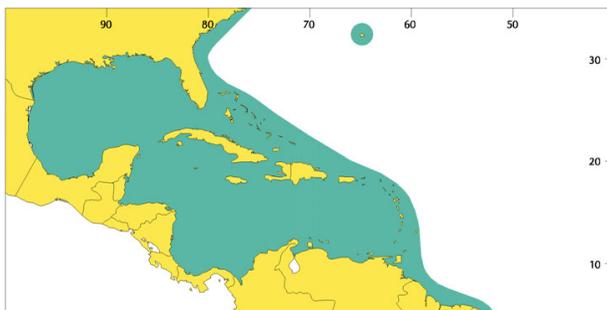


Diagnostic characters: Body elongate, moderately deep, and compressed. Eye moderate (diameter contained about 6 to 6.8 times in head length) with moderate adipose eyelid. **Upper jaw not reaching to anterior margin of eye. Both jaws with a narrow band of villiform teeth**, the bands widest anteriorly. Gill rakers 6 to 9 upper, 18 to 21 lower. **Dorsal fin with 7 spines followed by 1 spine and 25 to 28 soft rays; anal fin with 2 spines followed by 1 spine and 21 to 24 soft rays**; dorsal- and anal-fin lobes slightly elongate (dorsal lobe contained about 6.9 to 7.2 times in fork length); pectoral fins falcate, longer than head. Lateral line with a moderate and extended anterior arch, straight part with 22 to 28 scutes; scales small and cycloid (smooth to touch); chest completely scaly. Bilateral paired caudal keels present. Vertebrae 10 precaudal and 14 caudal; no hyperostosis. **Colour: pale greenish blue above, silvery below.** Small juveniles with about 5 vertical bands on body; larger juveniles with blotches.

Size: Maximum of 90 cm fork length not documented. One record from Puerto Rico of 89.5 cm total length and 7.6 kg. Common to 45 cm fork length. All-tackle IGFA world angling record 10.65 kg.

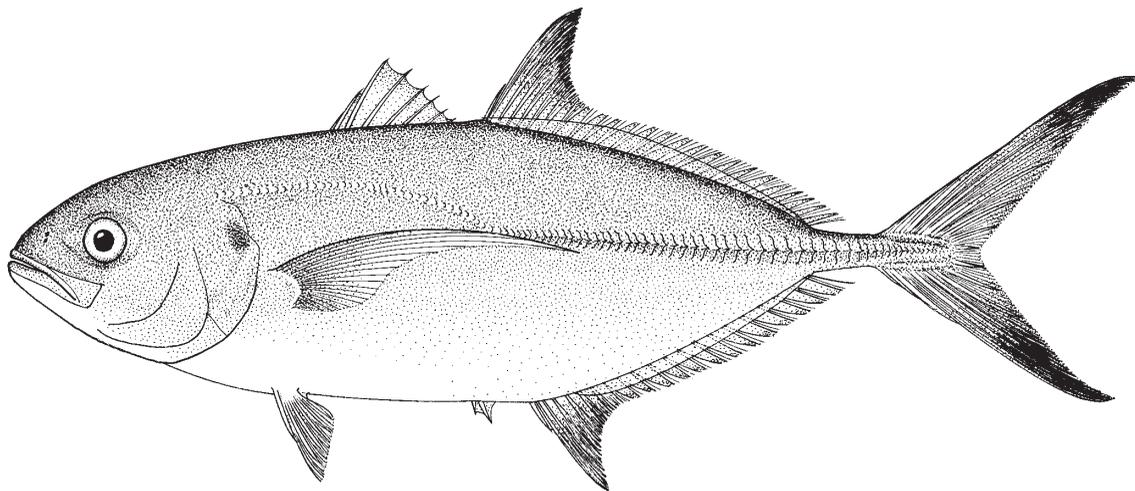
Habitat, biology, and fisheries: Usually solitary or in small groups, often around outer reefs (not common inshore). Spawning probably in off-shore waters; young often found in association with jellyfishes and sargassum; young may also inhabit mangrove-lined lagoons. Adults feed primarily on bottom-dwelling fishes. Often taken trolling, occasionally while still-fishing; also caught in seines and trawls; marketed fresh or salted; edibility fair to good.

Distribution: Bermuda (rare), Atlantic coast from Massachusetts to Maceio, Brazil; throughout Bahamas, Gulf of Mexico, and Caribbean including West Indies.



Caranx crysos (Mitchill, 1815)

RUB

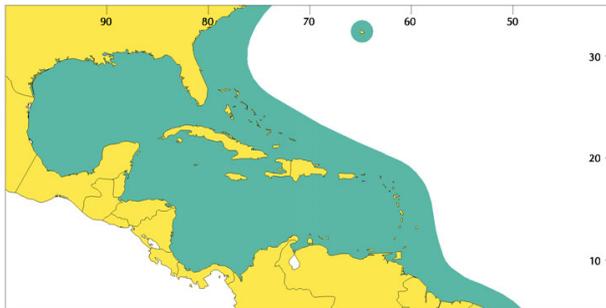
Frequent synonyms / misidentifications: *Caranx fusus* Geoffroy St. Hilaire, 1817 / None.**FAO names:** En - Blue runner; Fr - Carangue coubali; Sp - Cojinua negra.

Diagnostic characters: Body elongate, moderately deep, and compressed. Eye moderate (diameter contained about 4 to 5 times in head length) with moderate adipose eyelid. **Upper jaw reaching to under mid-eye.** Upper jaw with an irregular outer row of small canines flanked by an inner band; lower jaw teeth in a single row. **Gill rakers 10 to 14 upper, 25 to 28 lower.** Dorsal fin with 8 spines followed by 1 spine and 22 to 25 soft rays; anal fin with 2 spines followed by 1 spine and 19 to 21 soft rays; dorsal- and anal-fin lobes slightly elongate (dorsal lobe contained about 6.4 to 7.6 times in fork length); pectoral fins falcate, longer than head. **Lateral line with a strong, short anterior arch, straight portion with 46 to 56 scutes;** scales small and cycloid (smooth to touch); chest completely scaly. Bilateral paired caudal keels present. Vertebrae 10 precaudal and 15 caudal; post-temporal bones hyperostotic (greatly enlarged) in adults. **Colour:** body light olive to dark bluish green above, silvery grey to golden below; juveniles with about 7 dark body bands.

Size: Maximum to about 62 cm fork length reported, but not documented; common to 35 cm fork length. All-tackle IGFA world angling record 5.05 kg.

Habitat, biology, and fisheries: A schooling species, primarily inshore, not common around reefs. Probably spawns offshore off the southeastern USA; young often found with sargassum; feeds primarily on fish (usually silvery species), shrimps, crabs, and other invertebrates. Caught with haul seines, lampara nets, purse seines, gill nets, and handlines; also caught sport fishing with rod-and-reel. Much of Florida catch used for bait; marketed fresh or salted in other localities; edibility poor to satisfactory.

Distribution: Both sides of the Atlantic Ocean, in western Atlantic from Bermuda, Nova Scotia to São Paulo, Brazil, throughout the Bahamas, Gulf of Mexico, and Caribbean including West Indies; possibly conspecific with the eastern Pacific *Caranx caballus* Günther, 1868.

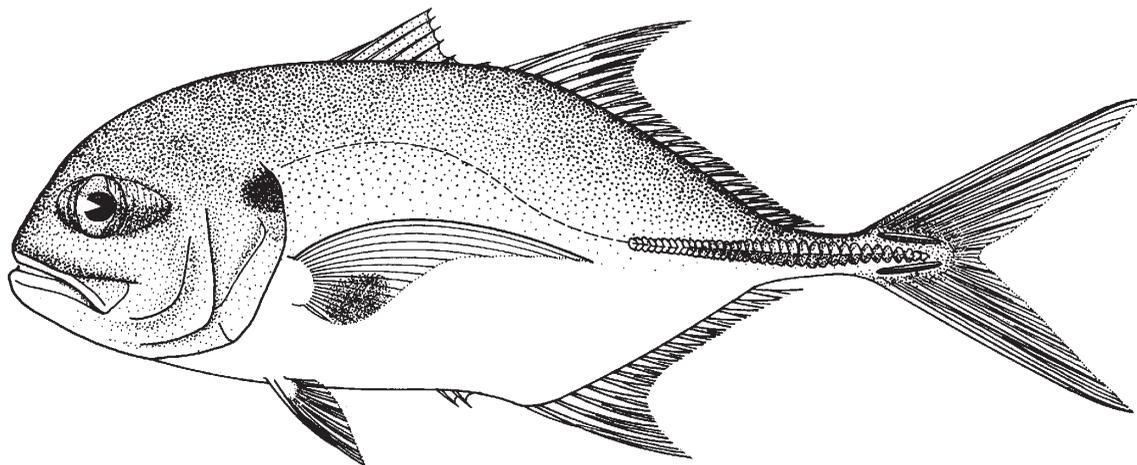


Caranx hippos (Linnaeus, 1766)

CVJ

Frequent synonyms / misidentifications: None / *Caranx latus* Agassiz, 1831.

FAO names: En - Crevalle jack; Fr - Carangue crevalle; Sp - Jurel común.



Diagnostic characters: Body elongate, deep, and moderately compressed. Eye large (diameter contained about 3.8 to 4.2 times in head length) with strong adipose eyelid. **Upper jaw extending to below or past posterior eye margin.** Upper jaw with an outer row of strong canines flanked by an inner band; lower-jaw teeth in a single row. Gill rakers 6 to 9 upper, 16 to 19 lower. Dorsal fin with 8 spines followed by 1 spine and 19 to 21 soft rays; anal fin with 2 spines followed by 1 spine and 16 or 17 soft rays; dorsal- and anal-fin lobes elongate (dorsal lobe contained about 4.4 to 5.7 times in fork length); pectoral fins falcate, longer than head. Lateral line with strong, moderately long anterior arch, straight part with 23 to 35 scutes; scales small and cycloid (smooth to touch); **chest without scales except for a small median patch of scales in front of pelvic fins.** Bilateral paired caudal keels present. Vertebrae 10 precaudal and 14 caudal; hyperostosis present in enlarged first dorsal-fin pterygiophore, neural spines, and other bones. **Colour:** body greenish to bluish or bluish black above and silvery white to yellowish or golden below; an **oval black spot on pectoral fins**; juveniles with about 5 dark bars on body.

Size: Maximum size uncertain. Total lengths of 101 cm and weights of 25 kg (from different fish) are recorded. Reports of jacks exceeding 150 cm total length and 32 kg, though not verified, may have been this species. Common to 60 cm fork length. All-tackle IGFA world angling record 26.25 kg.

Habitat, biology, and fisheries: Occurs in moderate to large cruising schools, although larger fish may be solitary; common on shallow flats, but larger fish may be found in deeper offshore water; common in brackish water and may enter rivers; may grunt when caught. Feeds primarily on fish, shrimp, and other invertebrates. In Florida, most commercial catches made by haul seines and gill nets; also caught with purse seines, handlines, and trolling lines; often caught by anglers. Edibility reported as poor to good; bleeding upon landing may improve taste.

Distribution: Both sides of Atlantic Ocean. In western Atlantic from Nova Scotia and throughout Gulf of Mexico, and Caribbean to Uruguay; patchy and rare in the West Indies and the Bahamas (absent in Bermuda). A geminate species, *Caranx caninus* Günther, 1867, occurs in the eastern Pacific Ocean.

