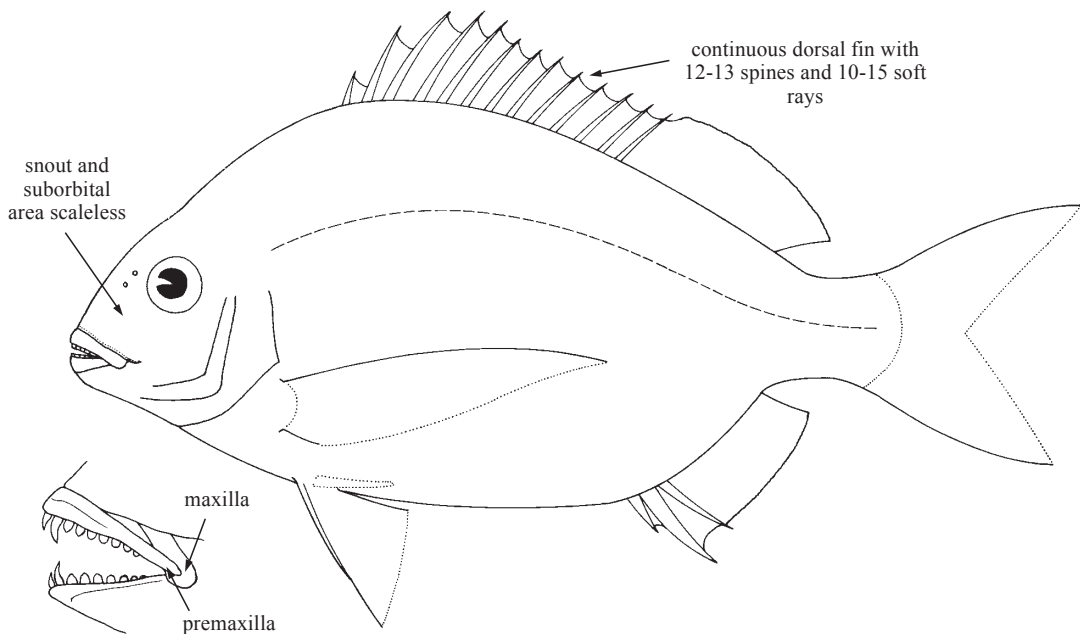


## SPARIDAE

## Porgies

by K.E. Carpenter, Old Dominion University, Virginia, USA (after Randall and Vergara, 1978)

**Diagnostic characters:** Small to medium-sized (to 75 cm) with oblong body, usually deep and more or less compressed. Head large, often with a steep upper profile. **Snout and suborbital area scaleless, preopercles scaled, without spines or serrations on margin.** Mouth small, horizontal and slightly protrac-tile, **upper jaw never reaching beyond eye centre; premaxilla overlaps maxilla at distal tip; preorbital bone largely overlapping maxilla. Jaw teeth well developed, usually differentiated into conical (ca-nine-like) or flat (incisor-like) teeth in front, and rounded, molar-like teeth laterally; palate usually toothless. Dorsal fin single, with 12 or 13 spines and 10 to 15 soft rays,** last spines and first soft rays usu-ally about equal in length, anterior spines sometimes elongate or filamentous. Pectoral fins long and pointed. Pelvic fins below or just behind pectoral-fin bases, with 1 spine and 5 soft rays, axillary scales present. Anal fin with 3 spines and 8 to 12 soft rays, the spines, especially the second, often stout. Caudal fin emarginate or forked. Scales cycloid (smooth) or weakly ctenoid; a single, continuous lateral line. **Colour:** overall colour highly variable, from pinkish or reddish to yellowish or bluish, often with silvery reflections; often with dark or coloured spots, stripes or bars.

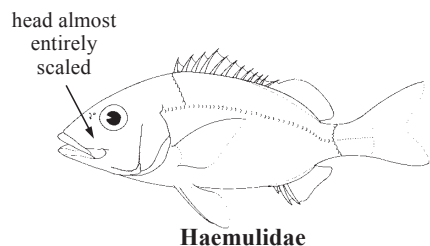


**Habitat, biology, and fisheries:** Porgies inhabit tropical and temperate coastal waters. Smaller species and the young of larger species may form aggregations, while large adult individuals (i.e. *Calamus bajonado*) are less gregarious and occur in deeper waters. Occasionally they are found in estuaries. Hermaphroditism is widespread in this family. Most porgies are excellent foodfish and are of considerable commercial importance. The total catch of Sparidae recorded in the Western Central Atlantic between 1995 and 1999 ranged from 2 545 to 3 748 t annually.

#### Similar families occurring in the area

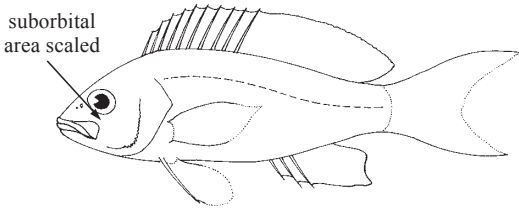
None of the similar families occurring in the area have lateral molar-like teeth. Further distinguishing characters of these families are the following:

**Haemulidae:** head almost entirely scaled, except for snout, lips, and chin; preopercle serrated, at least 2 conspicuous pores beneath chin.

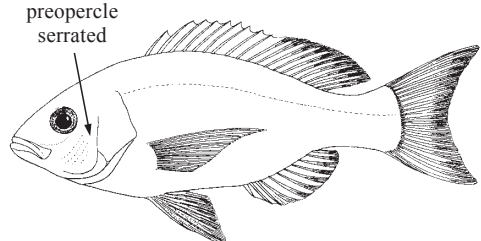


Serranidae: body usually less deep; maxilla free, not concealed under suborbital bone (partly concealed in Sparidae); suborbital space scaled (scaleless in Sparidae).

Lutjanidae: preopercle serrated; palate usually toothed (usually toothless in Sparidae); fin spines never as stout as in Sparidae.

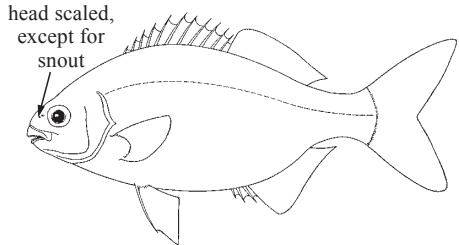


Serranidae



Lutjanidae

Kyphosidae: head small, entirely scaled, except for snout; pectoral fins very short (long in Sparidae); teeth in jaws incisor-like, close-set, and of a peculiar hockey-stick shape with their bases set horizontally, resembling a radially striated bone inside mouth.



Kyphosidae

**Key to the species of Sparidae occurring in the area**

- 1a. Front teeth in jaws incisors, strongly flattened, not conical (Figs 1, 2, 3) . . . . . → 2
- 1b. Front teeth in jaws slender, close-set, and canine-like (Fig. 4) . . . . . → 9



Fig. 1 *Stenotomus*

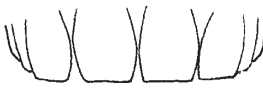


Fig. 2 *Archosargus*



Fig. 3 *Lagodon*



Fig. 4 *Calamus*

- 2a. Front teeth in jaws narrow, in close-set bands, teeth in outer band a little enlarged, compressed and lanceolate (narrower at base) (Fig. 1); no dark spots, stripes, or bars on body (except dark bars in *Stenotomus chrysops*) . . . . . → 3
- 2b. Front teeth in jaws very broad incisors (Fig. 2); body with dark spots, stripes, or bars . . . . . → 4

- 3a. Third and fourth dorsal-fin spines markedly elongate, filamentous (Fig. 5) . . . . . *Stenotomus caprinus*
- 3b. Dorsal-fin spines not filamentous (Fig. 6). . . . . *Stenotomus chrysops*

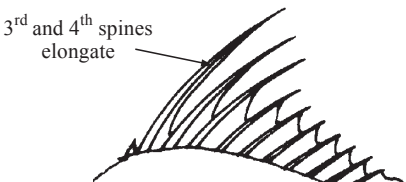


Fig. 5 *Stenotomus caprinus*



Fig. 6 *Stenotomus chrysops*

- 4a. A large dark blotch on caudal peduncle (Fig. 7); no forward-projecting spine in front of dorsal fin (this spine is a part of the fin-spine support bone) . . . . . → 5
- 4b. No dark blotch on caudal peduncle; a forward-projecting spine at base of front of dorsal fin, sometimes covered with skin (Fig. 8) . . . . . → 7

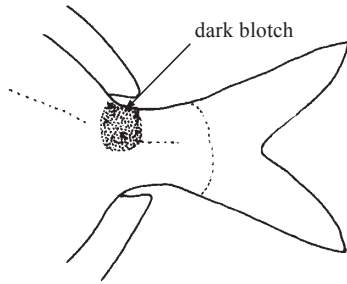


Fig. 7 lateral view of caudal region

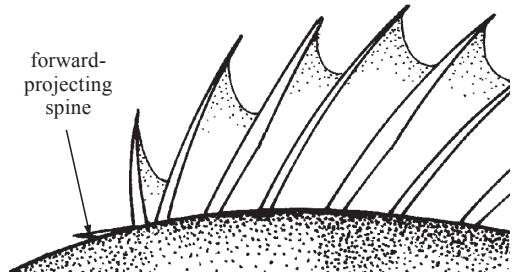


Fig. 8 lateral view of dorsal fin

- 5a. Dark blotch on caudal peduncle extends only to or slightly below lateral line (Fig. 7); 56 to 67 lateral-line scales; longest dorsal-fin spine about 2.1 times in head *Diplodus argenteus caudimacula*
- 5b. Dark blotch on caudal peduncle extends well below lateral line nearly to lower margin of caudal peduncle (Fig. 9); 50 to 61 lateral-line scales; longest dorsal-fin spine about 2.5 times in head . . . . . → 6

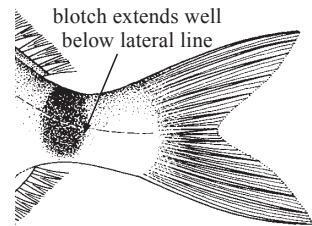


Fig. 9 lateral view of caudal region

- 6a. Lateral line with 62 to 67 scales (Bermuda) . . . . . *Diplodus bermudensis*
- 6b. Lateral line with 50 to 61 scales (Chesapeake Bay to Florida and northeastern Gulf of Mexico) . . . . . *Diplodus holbrookii*

- 7a. Incisors in front of jaws deeply notched (Fig. 3); molars in sides of jaws mostly in 2 rows, partially in 3 rows (Fig. 10) . . . . . *Lagodon rhomboides*
- 7b. Incisors in front of jaws not notched, or only a shallow notch in large adults (Fig. 2); molars in sides of jaws mostly in 3 rows in upper jaw (Fig. 11) . . . . . → 8

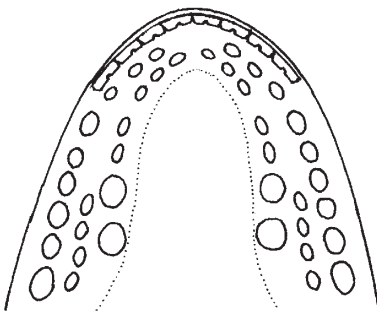


Fig. 10 Lagodon

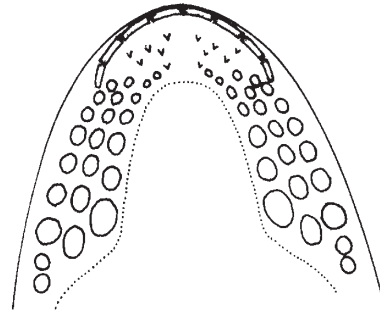
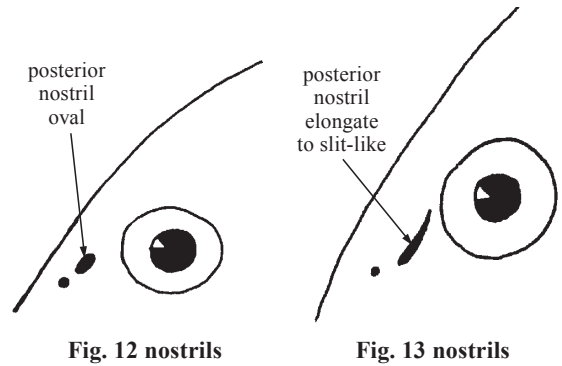


Fig. 11 Archosargus

- 8a. Dorsal fin usually with 12 spines; 4 to 7 dark bars on body (no dark spot near origin of lateral line, no yellow stripes on sides) . . . . . *Archosargus probatocephalus*
- 8b. Dorsal fin usually with 13 spines; a dark spot near origin of lateral line, yellow stripes on side (no dark bars on body) . . . . . *Archosargus rhomboidalis*

**9a.** Anal fin with 8 soft rays; posterior nostril oval (Fig. 12); suborbital space relatively narrow, its distance about equal to eye diameter; colour mostly pinkish or reddish . . . . . *Pagrus pagrus*

**9b.** Anal fin with 10 or 11 soft rays; posterior nostril elongate to slit-like (Fig. 13); suborbital space deep, its distance much greater than eye diameter; colour mostly silvery bluish, copper, or yellowish . . . . . (*Calamus*) → 10



**10a.** Lateral-line scales 43 to 49; pectoral-fin rays usually 15 or 16; no enlarged canine teeth at front of jaws . . . . . → 11

**10b.** Lateral-line scales 50 to 57; pectoral-fin rays usually 14 or 15; 1 or 2 canine teeth on each side at front of upper jaw of adults notably enlarged (except in *C. nodosus*) . . . . . → 15

**11a.** A large black blotch on dorsal fin between tenth spine and second soft ray; dorsal fin with 11 soft rays . . . . . *Calamus cervigoni*

**11b.** No large black blotch on dorsal fin; dorsal fin almost always with 12 soft rays . . . . . → 12

**12a.** Pectoral fins short, their length 3 to 3.6 times in standard length; a blackish blotch covering anterior part of lateral line, noticeably darker than other blackish markings on body . . . . . → 13

**12b.** Pectoral fins relatively long, their length 2.4 to 3.4 times in standard length; if a blackish blotch is present covering anterior portion of lateral line, it is not noticeably darker than other blackish markings on body . . . . . → 14

**13a.** Pectoral-fin rays usually 16 (less frequently 15); dorsal profile of head below eye moderately steep, forming an angle of about 50 to 57° with the horizontal from tip of snout to midbase of caudal fin; gill rakers modally 10 . . . . . *Calamus arcifrons*

**13b.** Pectoral-fin rays usually 15 (less frequently 14 or 16); dorsal profile of head below eye steep, forming an angle of about 60 to 68° with the horizontal from tip of snout to midbase of caudal fin; gill rakers modally 12 . . . . . *Calamus campechanus*

**14a.** Pectoral-fin rays usually 16; no prominent small dark spot at base of pectoral fin . . . . . *Calamus leucosteus*

**14b.** Pectoral-fin rays usually 15; a prominent small dark spot at base of pectoral fin . . . . . *Calamus penna*

**15a.** Pectoral-fin rays usually 15 (less frequently 14 or 16); no out-curved canine teeth in adults; snout of adults not steep, forming an angle of 43 to 55° with the horizontal from tip of snout to midbase of caudal fin . . . . . *Calamus bajonado*


**15a.** Pectoral-fin rays usually 14 (less frequently 13 or 15); third or fourth canine tooth from symphysis on each side of upper jaw enlarged and outcurved in adults; snout of adults steep, forming an angle of 57 to 65° with the horizontal from tip of snout to midbase of caudal fin . . . . . → 16



















**16a.** Anal fin usually with 10 soft rays (rarely 9 or 11); a broad pale blue horizontal band at top of gill opening . . . . . → 17

**16b.** Anal fin usually with 11 soft rays (rarely 10); no blue horizontal band at top of gill opening . . . . . → 18

- 17a.** Dorsal profile of upper part of head not very steep, the first third above level of upper edge of eye forming an angle of 32 to 40° with the horizontal from tip of snout to midbase of caudal fin . . . . . *Calamus pennatula*
- 17b.** Dorsal profile of upper part of head steep, the first third above level of upper edge of eye forming an angle of 43 to 69° with the horizontal from tip of snout to midbase of caudal fin . . . . . *Calamus proridens*
- 18a.** Third upper canine tooth from symphysis enlarged in adults and strongly outcurved in large adults; depth of body 2.0 to 2.25 in standard length. . . . . *Calamus calamus*
- 18a.** Anterior teeth in upper jaw about equal in size; depth of body 1.8 to 2.15 in standard length . . . . . *Calamus nodosus*

### List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Archosargus probatocephalus* (Walbaum, 1792).
-  *Archosargus rhomboidalis* (Linnaeus, 1758).
-  *Calamus arctifrons* Goode and Bean, 1882.
-  *Calamus bajonado* (Bloch and Schneider, 1801).
-  *Calamus calamus* (Valenciennes, 1830).
-  *Calamus campechanus* Randall and Caldwell, 1966.
-  *Calamus cervigoni* Randall and Caldwell, 1966.
-  *Calamus leucosteus* Jordan and Gilbert, 1885.
-  *Calamus nodosus* Randall and Caldwell, 1966.
-  *Calamus penna* (Valenciennes, 1830).
-  *Calamus pennatula* Guichenot, 1868.
-  *Calamus proridens* Jordan and Gilbert, 1884.
-  *Diplodus argenteus caudimacula* (Poey, 1860).
-  *Diplodus bermudensis* Caldwell, 1965.
-  *Diplodus holbrookii* (Bean, 1878).
-  *Lagodon rhomboides* (Linnaeus, 1766).
-  *Pagrus pagrus* Linnaeus, 1758.
-  *Stenotomus caprinus* Jordan and Gilbert, 1882.
-  *Stenotomus chrysops* (Linnaeus, 1766).

### References

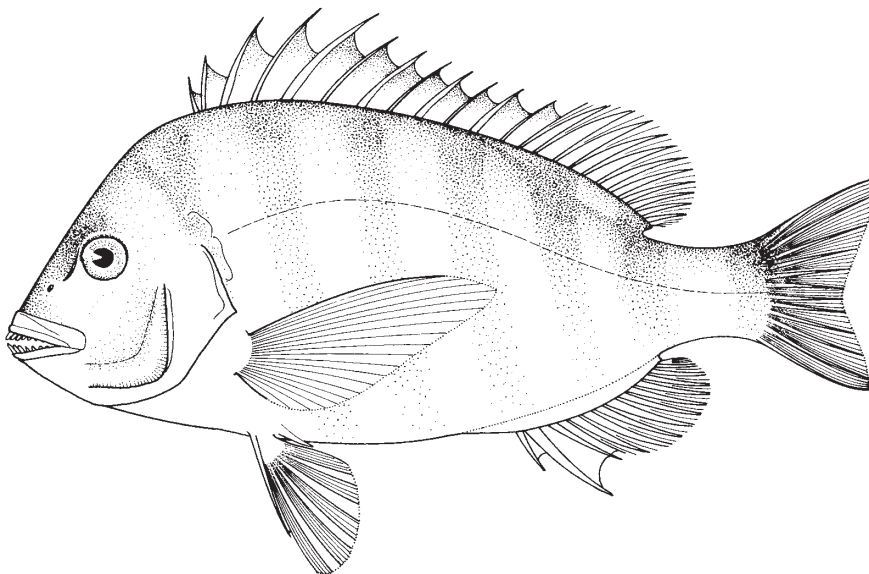
- Caldwell, D.K. 1957. The biology and systematics of the pinfish, *Lagodon rhomboides* (Linnaeus). *Bull. Florida State Mus.*, 2:77-173.
- Caldwell, D.K. 1965. Systematics and variation in the sparid fish *Archosargus probatocephalus*. *Bull. So. Calif. Academy Sci.*, 64(2):89-100
- Randall, J.E. and D.K. Caldwell. 1966. A review of the sparid fish genus *Calamus*, with descriptions of four new species. *Nat. Hist. Mus. Los Ang. Cty. Sci. Bull.*, No.2:1-47.

***Archosargus probatocephalus*** (Walbaum, 1792)

SPH

**Frequent synonyms / misidentifications:** *Archosargus aries* (Valenciennes, 1830) / None.

**FAO names:** **En** - Sheepshead; **Fr** - Rondeau mouton; **Sp** - Sargo chopa.



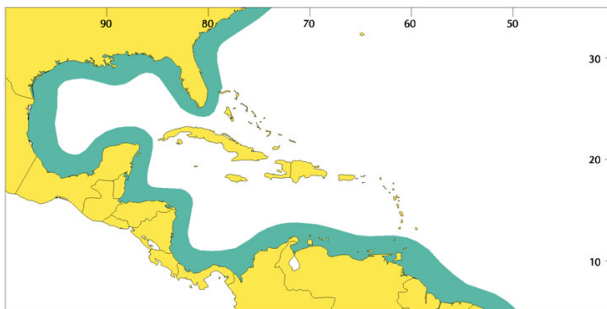
**Diagnostic characters:** Body oval, compressed and moderately deep (the depth about twice in standard length). Snout moderately blunt; posterior nostril slit-like; mouth comparatively small, the maxilla not reaching to below anterior eye margin. **Jaws anteriorly with a series of 8 (4 on each side) broad incisor-like teeth, their edges straight or only slightly notched** (in large adults); laterally with several series of molar-like teeth (3 in upper, 2 in lower jaw). **Dorsal fin usually with 12 spines** and 11 soft rays, preceded by a small forward-directed spine embedded in the skin. **Anal fin with 3 spines, the second spine very strong**; usually 10 anal-fin soft rays. Pectoral fins long, extending beyond the anal opening when appressed. Caudal fin slightly forked. Scales in lateral line 45 to 49. **Colour:** grey with 5 or 6 (rarely 4 or 7) **dark vertical bars on body and one on nape**, generally slightly narrower than pale interspaces (bars more evident on young); no dark spot near origin of lateral line.

**Size:** Maximum to 91 cm, commonly to 35 cm; world game record 9.63 kg.

**Habitat, biology, and fisheries:** Inhabits inshore, rocky, and hard-substrate areas; freely enters brackish water. Feeds primarily on sessile invertebrates such as bryozoans, molluscs, barnacles, and crustaceans. Caught mainly with bottom longlines and trawls; prominent in the catch of anglers. An excellent foodfish; usually marketed fresh. The catch reported from Area 31 totaled 1 501 t in 2000 and has remained fairly stable over the last 10 years.

**Distribution:** Nova Scotia to Florida and the Gulf of Mexico; absent from the West Indies; a few scattered reports from Honduras to Rio de Janeiro.

**Note:** *Archosargus probatocephalus* is subdivided into 3 subspecies by some authors: *A. p. probatocephalus* for the northern form from Nova Scotia to Cedar Key on the west coast of Florida, *A. p. oviceps* Ginsburg (which is associated with mud bottoms) in the Gulf of Mexico from St. Harks, Florida to the Campeche Bank, and *A. p. aries* from Belize to Bahia de Sepetiba (just south of Rio de Janeiro).

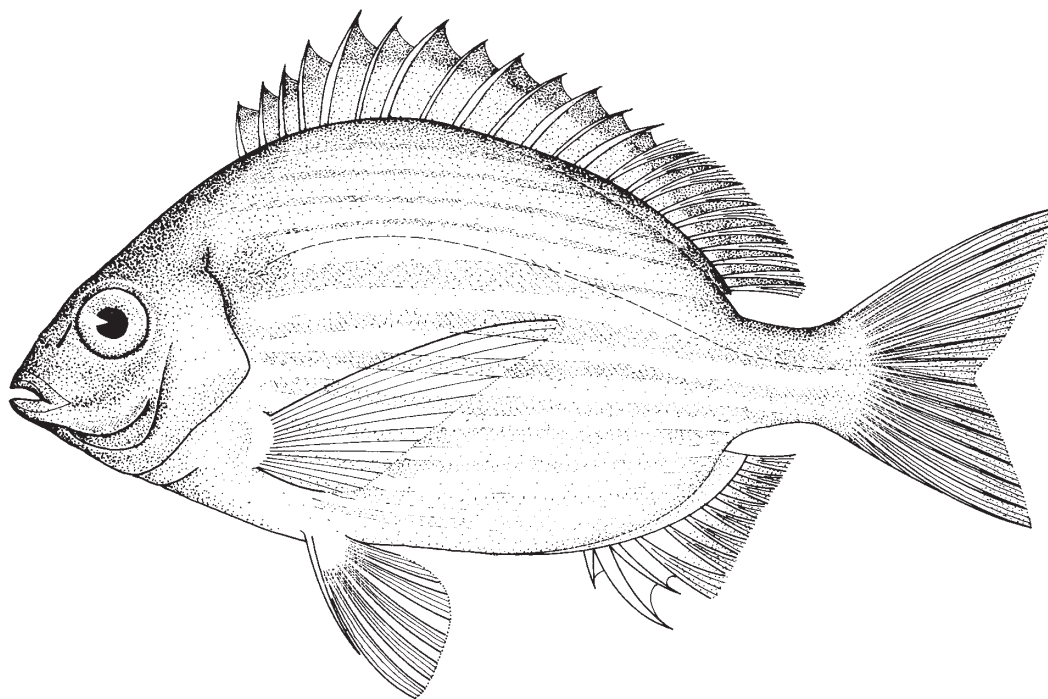




*Archosargus rhomboidalis* (Linnaeus, 1758)

**Frequent synonyms / misidentifications:** *Archosargus unimaculatus* (Bloch, 1792) / None.

**FAO names:** **En** - Western Atlantic seabream (AFS: Sea bream); **Fr** - Rondeau brème; **Sp** - Sarge amarillo.

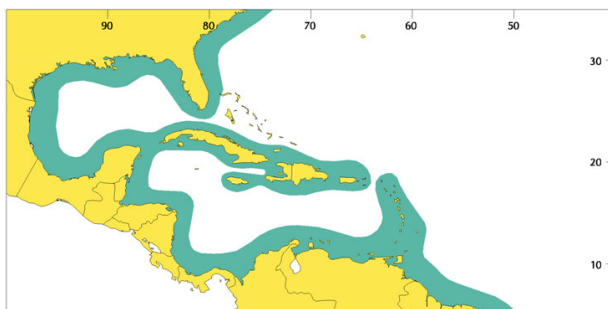


**Diagnostic characters:** Body oval, compressed, and rather deep (the depth contained 1.8 to 2.2 times in standard length). Snout rather blunt; posterior nostril slit-like; mouth comparatively small, the maxilla not reaching to below anterior eye margin. **Jaws anteriorly with a series of broad, incisor-like teeth, their edge entire or only slightly notched** (in large adults); **laterally, several series of molar-like teeth (3 in upper jaw, 2 in lower)**. **Dorsal fin with 13 strong spines** and usually 11 soft rays; preceded by a small forward-directed spine embedded in the skin; anal fin with 3 spines, the second remarkably strong, and usually 10 soft rays; pectoral fins long extending beyond anal opening when appressed; caudal fin forked, upper lobe slightly longer than lower. Scales in lateral line 46 to 49. **Colour:** body silvery olivaceous, **with golden-yellow longitudinal stripes and a blackish spot about as large as eye near origin of lateral line**; dorsal fin edged with black.

**Size:** Maximum to 33 cm, commonly to 20 cm.

**Habitat, biology, and fisheries:** A shallow-water species most commonly found over mud bottoms in mangrove swamps and on vegetated sand bottoms, sometimes in brackish water; occasionally also in coral reef areas near mangroves. Feeds on bottom-dwelling invertebrates (small bivalves, crustaceans), as well as on plant material. Caught mainly with bottom trawls, gill nets, trammel nets, castnets and traps. Marketed mostly fresh; its flesh is not of very high quality, but due to its abundance, this species may have some potential value as a source of fish meal.

**Distribution:** Found in the eastern part of the Gulf of Mexico, along the Caribbean coast of America and around the Antilles; northward extending to New Jersey (rare) and southward to Rio de Janeiro; apparently absent from the Bahamas and Bermuda.

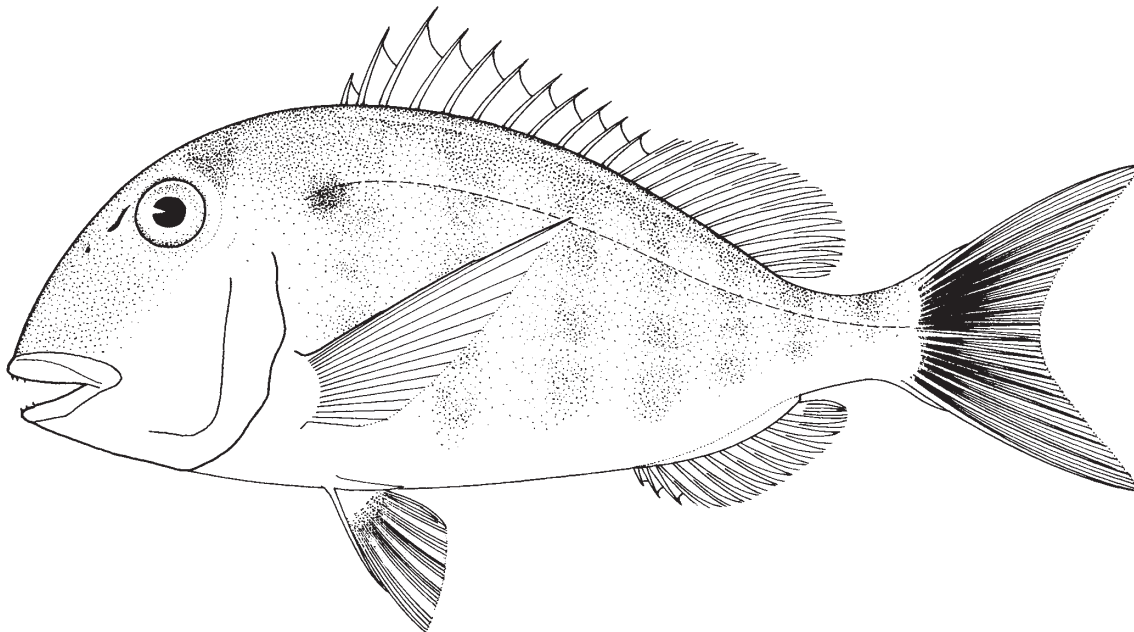


*Calamus arctifrons* Goode and Bean, 1882

CFN

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** **En** - Grass porgy; **Fr** - Daubenet cendre; **Sp** - Pluma negra.

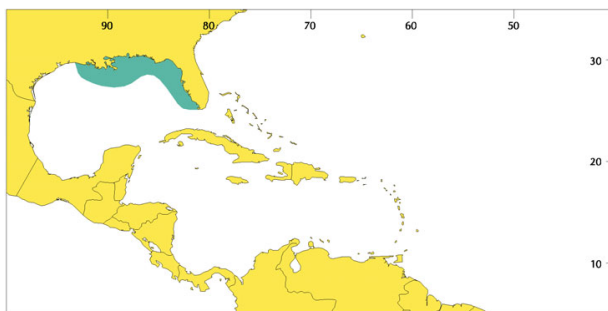


**Diagnostic characters:** Body oval, compressed, and deep (the depth contained 2 to 2.5 times in standard length). Upper head-profile usually smoothly convex and moderately steep; suborbital space moderately deep, 6.6 to 7.8 times in standard length. **Jaws anteriorly with canine-like teeth of about equal size;** laterally with 2 rows of molar-like teeth in lower jaw and 3 rows in upper jaw, without an irregular series inside and toward the front. **Pectoral fins** relatively short, not reaching to anal-fin origin when appressed, **usually with 16 rays. Scales on lateral line 43 to 49. Colour:** light olive, back and sides with 7 or 8 obscure dark vertical bars, narrower than interspaces; centres of many of the scales pearly; a **conspicuous black blotch, larger than pupil, on lateral line near upper end of gill opening;** a very indistinct pearly blue streak below, and 2 or 3 similar streaks before eyes; snout olive, mottled with bluish and may be streaked with yellow; interorbital region may have a yellow band.

**Size:** Maximum to 25 cm, commonly to 20 cm.

**Habitat, biology, and fisheries:** Occurs in sea-grass beds from near shore to at least 22 m. Caught with bottom longlines (Cuba), with bottom trawls and on hook-and-line. Marketed mostly fresh and frozen.

**Distribution:** Florida Keys and Gulf coast from Florida to Louisiana.



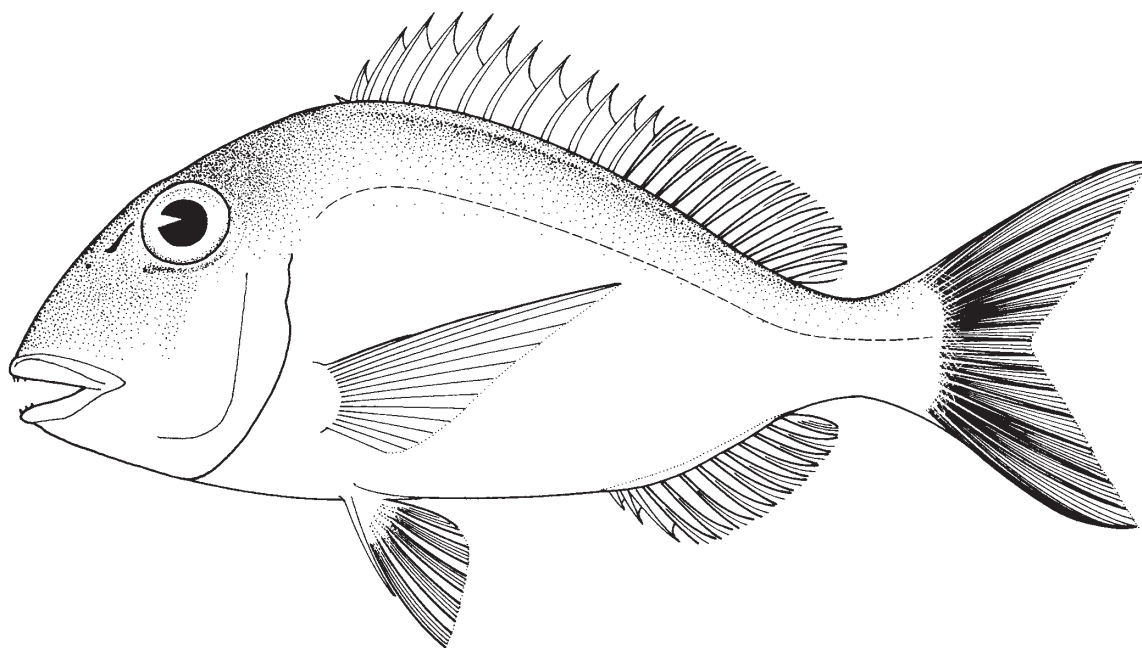


*Calamus bajonado* (Bloch and Schneider, 1801)

CBD

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** **En** - Jolthead porgy; **Fr** - Daubenet trembleur; **Sp** - Pluma bajonado.

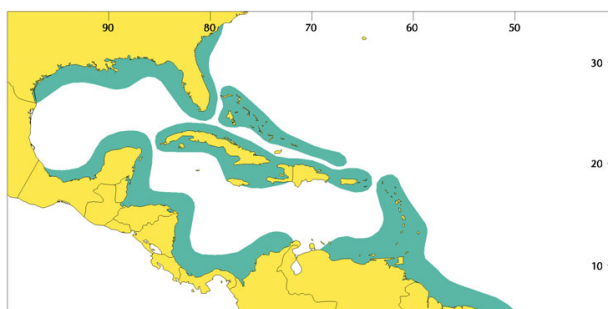


**Diagnostic characters:** The largest of the *Calamus* species in the area. Body oval, compressed, and deep, but not as deep as in other *Calamus* species (the depth contained 2.1 to 2.5 times in standard length). Snout comparatively long and pointed, upper head profile not very steep; suborbital space moderately deep, contained 5 to 8.8 times in standard length. Mouth of moderate size, the maxilla not reaching to below anterior eye margin. **Both jaws anteriorly with canine-like teeth; second and third teeth from centre of upper jaw of adults enlarged but not outcurved;** laterally 2 rows of molar-like teeth in lower jaw and 2 rows plus an irregular series inside and toward the front in upper jaw. **Pectoral fins** long, extending beyond anal-fin origin when appressed and **usually with 15 rays. Scales in lateral line 50 to 57. Colour:** silvery, with scales bluish and lavender centrally, brassy on edges; cheeks brassy, without blue markings, but a blue line under lower eye margin; lips and throat purplish; no horizontal blue band above gill opening; corner of mouth and isthmus (junction of gill covers on underside of head) orange. Seen underwater, adults show 2 conspicuous white horizontal stripes on cheek.

**Size:** Maximum to 68 cm, commonly to 54 cm; world game record 10.61 kg.

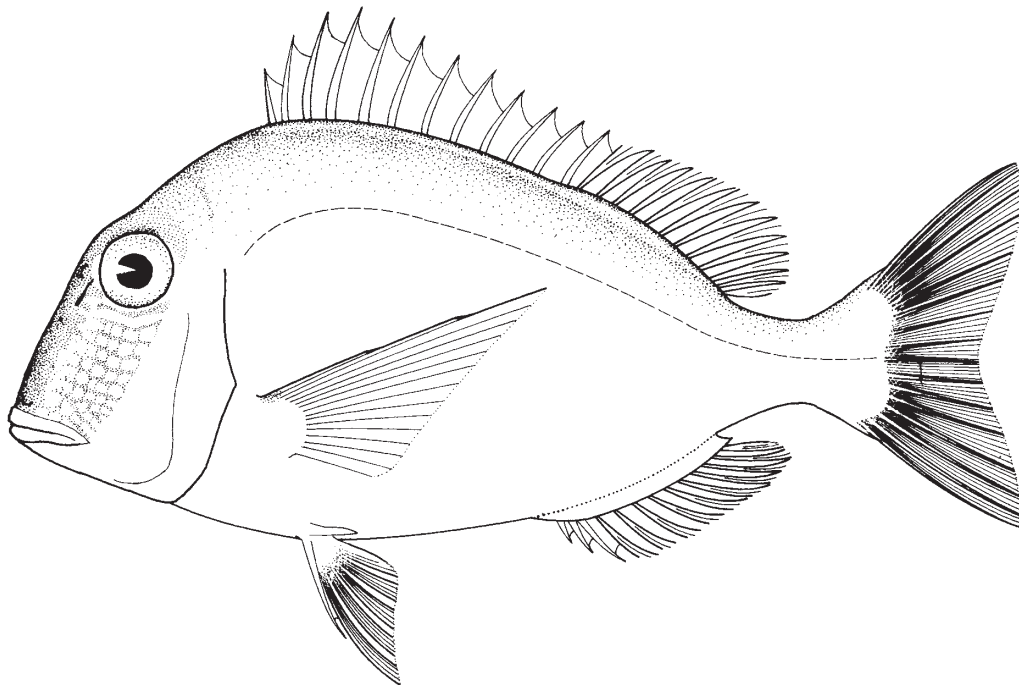
**Habitat, biology, and fisheries:** A coastal species found on vegetated sand grounds and more frequently, on coral bottoms at depths between 3 and 45 m, but also recorded to 180 m. Large adults are usually solitary. Feeds mainly on sea urchins, crabs, and molluscs. Caught with bottom longlines (Cuba), with bottom trawls, and on hook-and-line.

**Distribution:** Throughout the area, except for the western part of the Gulf of Mexico; northward extending to Rhode Island (rare) and southward to Puerto Seguro (Brazil); most common in the Antilles, the Florida Keys and on the Campeche Bank.



*Calamus calamus* (Valenciennes, 1830)

CMV

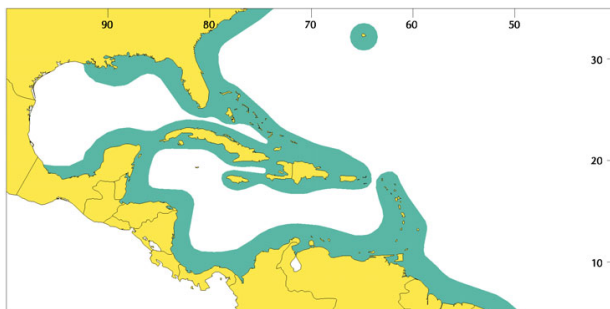
**Frequent synonyms / misidentifications:** None / None.**FAO names:** En - Saucereye porgy; Fr - Daubenet loto; Sp - Pluma cálamo.

**Diagnostic characters:** Body oval, compressed, and very deep (the depth contained 2 to 2.25 times in standard length). Snout steep, upper head-profile slightly convex, with an angle in front of eyes; prefrontal bony tubercle (above posterior nostril) well developed; suborbital space deep, contained 6.2 to 7.7 times in standard length; mouth comparatively small, the maxilla not reaching to below anterior eye margin; eyes large. **Both jaws anteriorly with canine-like teeth, the third and sometimes fourth tooth from centre of upper jaw enlarged (outcurving in adults);** laterally 2 rows of molar-like teeth in lower jaw and 3 rows, plus an additional irregular series inside and toward front in upper jaw. **Usually 11 soft rays in anal fin; pectoral fins long, extending to anal-fin origin when appressed, with 14 rays. Scales on lateral line 51 to 55. Colour:** iridescent silvery, with scales bluish centrally, brassy on edges; however, this fish may undergo rapid changes in pattern, including a blotched phase; a bright blue streak running along lower eye margin; **unscaled portion of cheeks mostly blue with dense rounded, yellow spots which may be partly joined to fore lines; lips and isthmus (junction of gill covers on underside of head) orangish,** sometimes a small diffuse bluish spot on upper end of gill slit and a small blue spot at upper pectoral-fin base.

**Size:** Maximum to 56 cm, commonly to 30 cm.

**Habitat, biology, and fisheries:** Adults are frequently found in coral areas, while the young prefer vegetated (*Thalassia*) sand bottoms; moderately common in the Antilles. Depth range from 1 to 75 m. Feeds mainly on molluscs, worms, brittle stars, hermit crabs, crabs, and sea urchins. Marketed mostly fresh and frozen.

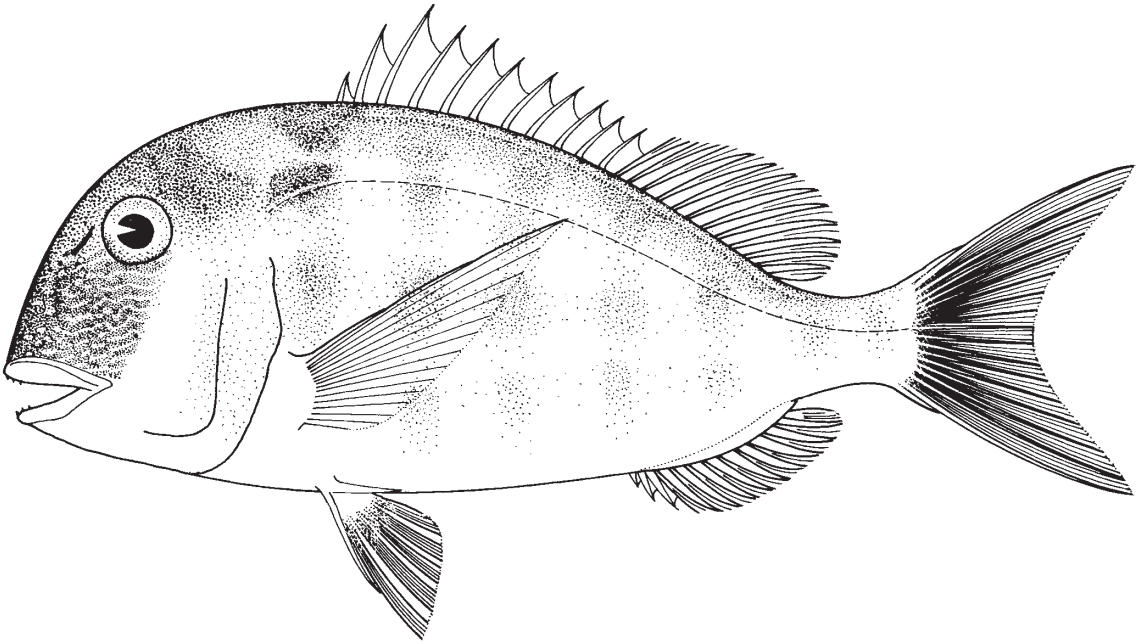
**Distribution:** Positively known only from the West Indies, Florida Keys, Bermuda, and Glover Reef (off Belize) but has been recorded north to North Carolina, in the Gulf of Mexico except western part, and south to Bahia (Brazil).



*Calamus campechanus* Randall and Caldwell, 1966

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** **En** - Campeche porgy; **Fr** - Daubenet campêche; **Sp** - Pluma campeche.

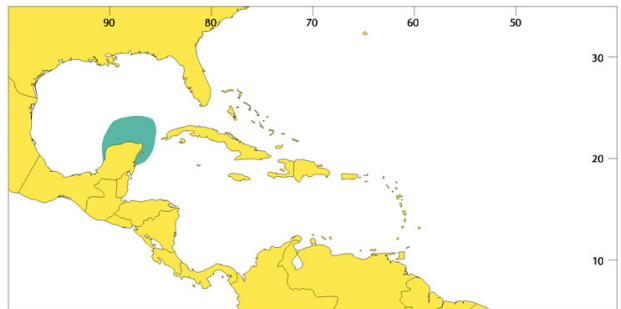


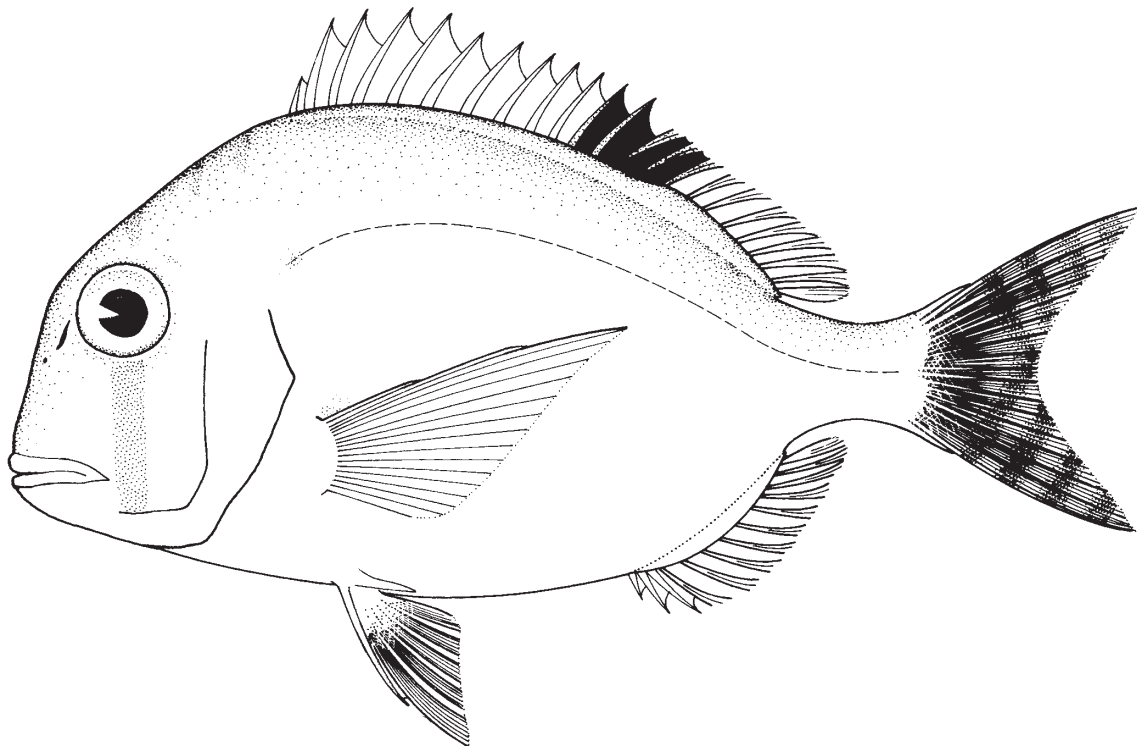
**Diagnostic characters:** Body oval, compressed, and deep (the depth contained 2.2 to 2.5 times in standard length). Upper profile of head usually smoothly convex and moderately steep; suborbital space rather deep, 5.7 to 8.2 times in standard length. **Jaws anteriorly with canine-like teeth of about equal size;** laterally with 2 rows of molar-like teeth in lower jaw and 3 rows in upper jaw without an irregular series inside and toward the front. Soft rays in dorsal fin usually 12; **pectoral fins usually with 15 rays** reaching, when appressed, a vertical about midway between tips of pelvic fins and anus. **Scales in lateral line 45 to 59.** **Colour:** life colour not recorded in the literature; probably similar to *C. arctifrons*: 5 very indistinct vertical bars, consisting of darker brown blotches on sides of body, and 2 on sides of caudal peduncle; **a conspicuous black blotch, larger than pupil, on lateral line near gill opening; suborbital region with a pattern of alternating dark (probably bluish) and light (probably yellowish) wavy lines**, the latter breaking into spots anteriorly.

**Size:** Maximum to 21 cm, commonly to 18 cm.

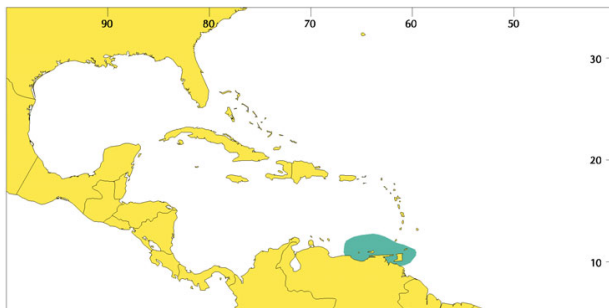
**Habitat, biology, and fisheries:** Found in shallow waters and recorded thus far from depths of 11 to 18 m. An important foodfish.

**Distribution:** Campeche Bank off Yucatán.



***Calamus cervigoni*** Randall and Caldwell, 1966**Frequent synonyms / misidentifications:** None / None.**FAO names:** En - Spotfin porgy; Fr - Daubenet grostache; Sp - Pluma aleta negra.

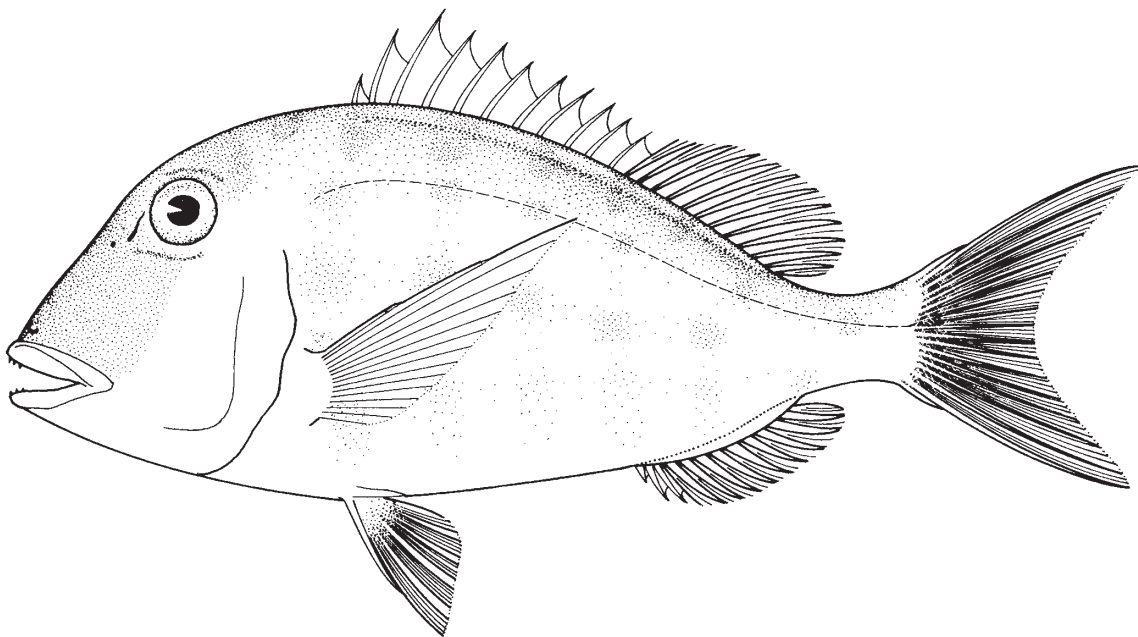
**Diagnostic characters:** Body oval, compressed, and very deep (the depth contained 1.8 to 2 times in standard length). Snout short, blunt, and nearly vertical, upper head profile with a distinct angle in front of eyes; eyes large, suborbital space moderately deep, contained 7.3 to 9.5 times in standard length; maxilla reaching beyond anterior eye margin. **Both jaws anteriorly with canine-like teeth of about equal size;** laterally with 2 rows of molar-like teeth in lower jaw and 3 rows in upper jaw without an irregular series inside and toward the front. Dorsal fin with 12 strong spines (preceded by a forward-directed spine which is more prominent than in most species of *Calamus*) and 11 soft rays; anal fin usually with 10 soft rays; **pectoral fins** long, extending to anal-fin origin when appressed and **usually with 15 soft rays.** **Scales on lateral line 44 to 48.** **Colour:** silvery, with yellow-brown tinges on back and upper sides and faint dark crossbars on nape. **A dark vertical bar extending from eye to behind maxilla and a very conspicuous large black area at the junction of spinous and soft portions of dorsal fin,** rest of dorsal fin as well as anal and pectoral fins transparent, and caudal fin with greyish oblique bars equal in width to interspaces.

**Size:** Maximum to 20 cm, commonly to 18 cm.**Habitat, biology, and fisheries:** Inhabits mud bottoms, usually at depths ranging from 25 to 70 m; rather abundant in same localities, such as Margarita Island and north of the Paria and Araya Peninsulas. Caught mainly with trawls.**Distribution:** So far only known from the eastern part of the Venezuelan coast.

*Calamus leucosteus* Jordan and Gilbert, 1885

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** En - Whitebone porgy; Fr - Daubenet du Golfe; Sp - Pluma golfina.

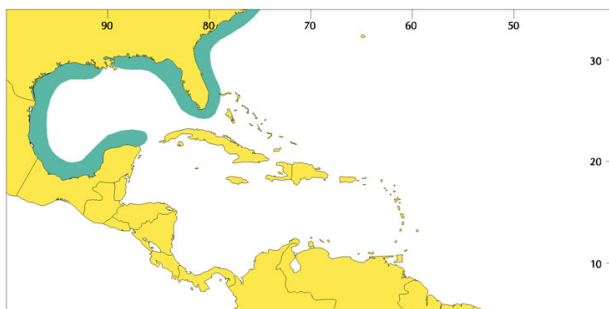


**Diagnostic characters:** Body oval, compressed, and moderately deep (the depth contained 1.85 to 2.3 times in standard length). Suborbital space moderately deep, 6.6 to 10.4 times in standard length; prefrontal tubercle (above posterior nostril) not well developed; maxillary tubercle well developed, with a semicircular free margin. **Both jaws anteriorly with canine-like teeth of about equal size;** laterally with 2 rows of molar-like teeth in lower jaw and 3 rows in upper jaw without an irregular series inside and toward the front. **Pectoral fins** long, reaching beyond anal-fin origin when appressed, **usually with 16 rays. Scales along lateral line 44 to 49.** **Colour:** generally silvery with a bluish iridescence; irregular purplish grey blotches on sides; **snout dark purplish grey;** an iridescent dark blue line under eye and a similar less intense line, above eye; dorsal and anal fins dusky with yellow tinges; **no prominent small dark spot at upper base of pectoral fins.**

**Size:** Maximum to 46 cm, commonly to 30 cm.

**Habitat, biology, and fisheries:** Found mainly on sedimentary bottoms in the depth range of 10 to 100 m. Caught throughout its range; noted as a common foodfish in South Carolina.

**Distribution:** Known from the Carolinas south to the Florida Keys and throughout the Gulf of Mexico.

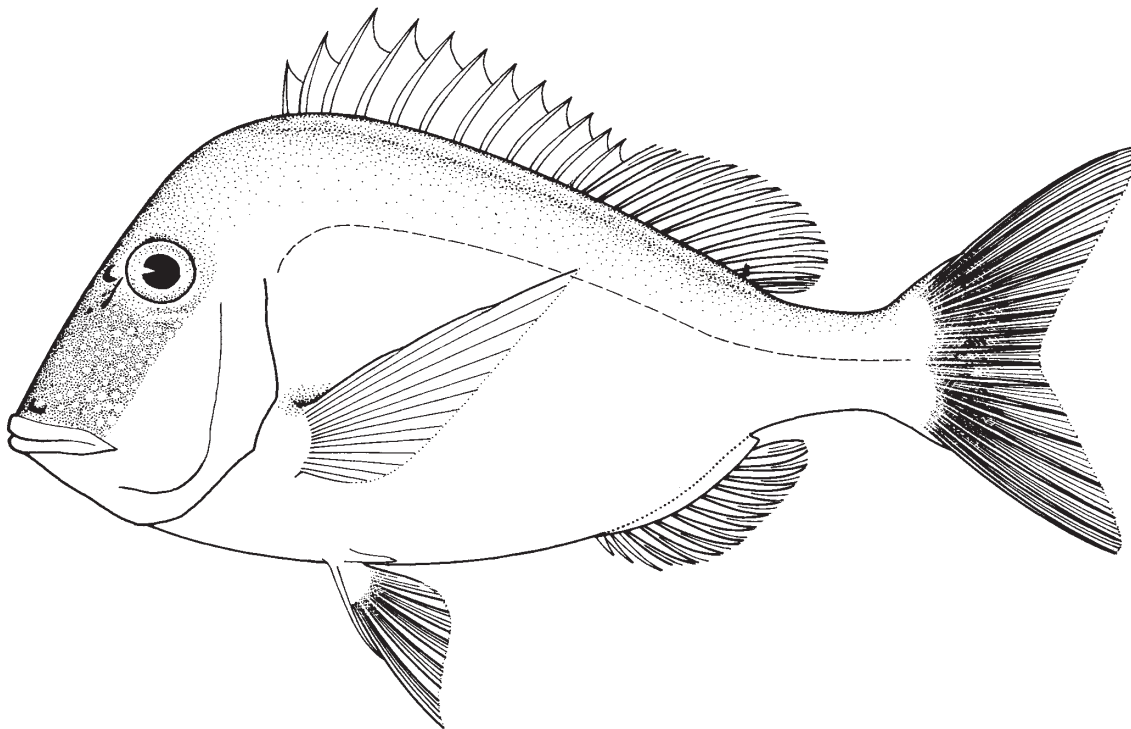




***Calamus nodosus*** Randall and Caldwell, 1966

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** **En** - Knobbed porgy; **Fr** - Daubenet bouton; **Sp** - Pluma botón.

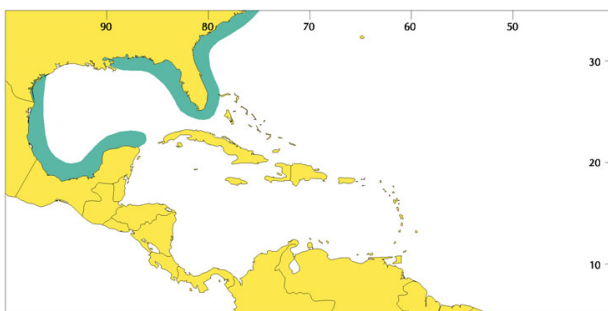


**Diagnostic characters:** Body oval, compressed, and very deep (the depth contained 1.8 to 2.15 times in standard length). Upper head profile very steep; suborbital space deep, 5.4 to 7.1 times in standard length; **prefrontal bony tubercle (above posterior nostril) well developed** (especially in large adults); maxillary tubercle prominent, its free edge distinct. **Both jaws anteriorly with canine-like teeth of about equal size** (none strongly curved); laterally with 2 rows of molar-like teeth in lower jaw and 3 in upper jaw, with an irregular medial (inner) series. **Pectoral fins** long, reaching to or beyond anterior third of anal-fin base when appressed, **usually with 14 rays**. **Scales along lateral line 55 to 57**. **Colour:** rosy silver, the centre of each scale light iridescent bluish; **snout purplish with bronze spots**; an iridescent blue stripe below eye; dorsal and anal fins dusky with bluish reflections on spines; a diffuse dark spot often present on upper base of pectoral fins; no blue marking above gill opening.

**Size:** Maximum to 54 cm, commonly to 35 cm.

**Habitat, biology, and fisheries:** The known depth of capture is from 9 to 89 m, over hard bottoms. Caught mainly on hook-and-line, but occasionally with trawls over smooth bottoms.

**Distribution:** Recorded from North Carolina to the Florida Keys and in the Gulf of Mexico from southern Florida to Pensacola, Florida and from Port Aransas, Texas to the Campeche Bank off Yucatán.



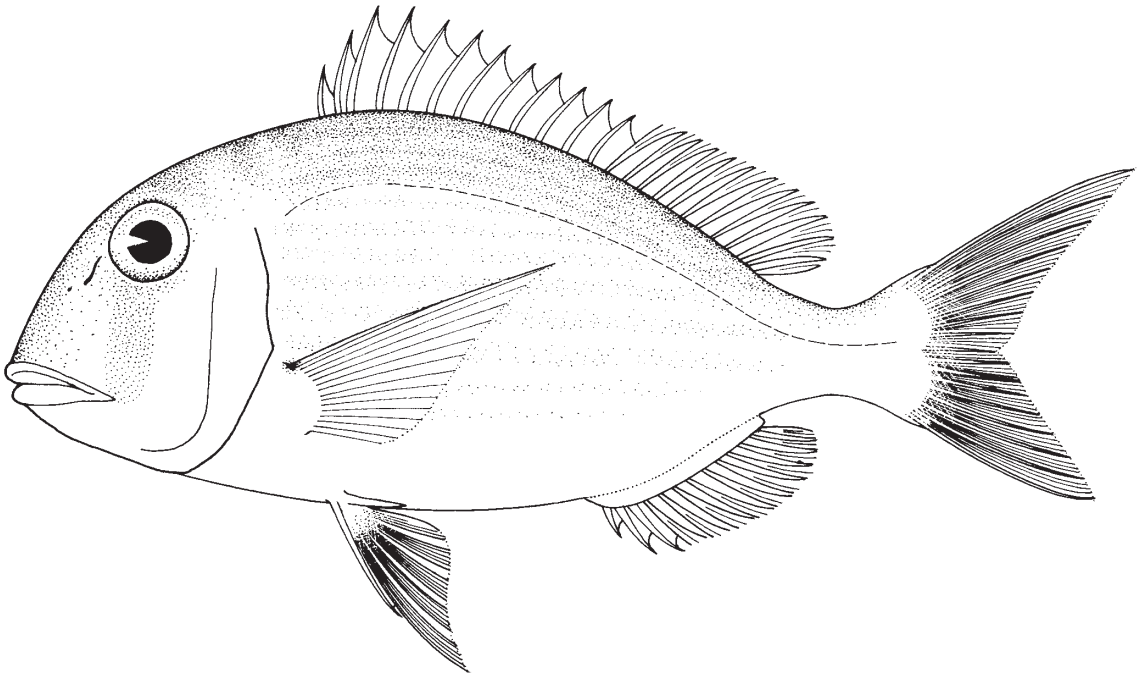


*Calamus penna* (Valenciennes, 1830)

CFE

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** **En** - Sheepshead porgy; **Fr** - Daubenet bélier; **Sp** - Pluma cachicato.



**Diagnostic characters:** Body oval, compressed, and rather deep (the depth contained 2 to 2.6 times in standard length). Upper profile of head evenly convex, not very steep; snout blunt and moderately steep; suborbital space not as deep as in other *Calamus* species on the average, 7 to 12 times in standard length; mouth moderately large, the maxilla reaching to below anterior eye margin; upper lip in adults divided almost in half by a lengthwise groove (in other *Calamus* species this groove divides lip into a small upper and a large lower portion. **Both jaws anteriorly with canine-like teeth of about equal size**; laterally with 3 rows of molar-like teeth without an accessory inner row in upper, and 2 rows in lower jaw. **Pectoral fins** not very long, 1 extending to anal-fin origin when appressed, and **usually with 15 rays**. **Scales on lateral line 45 to 49**. **Colour:** silvery, the scales with iridescent lavender, blue, and yellow reflections; usually a faint longitudinal banding on body; cheek silvery with a wash of yellow-brown; sometimes a blue-grey line present below eye but **never other blue or orange markings on head or body**; **a dark brown bar running from eye to hind part of mouth**; **a small black spot at upper base of pectoral fin**. When close to the bottom, the fish may show about 7 dark cross bars on body (which sometimes persist faintly in preserved specimens).

**Size:** Maximum to 46 cm, commonly to 28 cm.

**Habitat, biology, and fisheries:** Recorded from 3 to 87 m depth. Limited data indicate principal feeding on crustaceans and molluscs. Caught mainly with trawls and handlines.

**Distribution:** From the Florida Keys north to Cedar Key, Florida, throughout the West Indies and southern Caribbean to Brazil. The Panama-Colombia population appears slightly differentiated.

