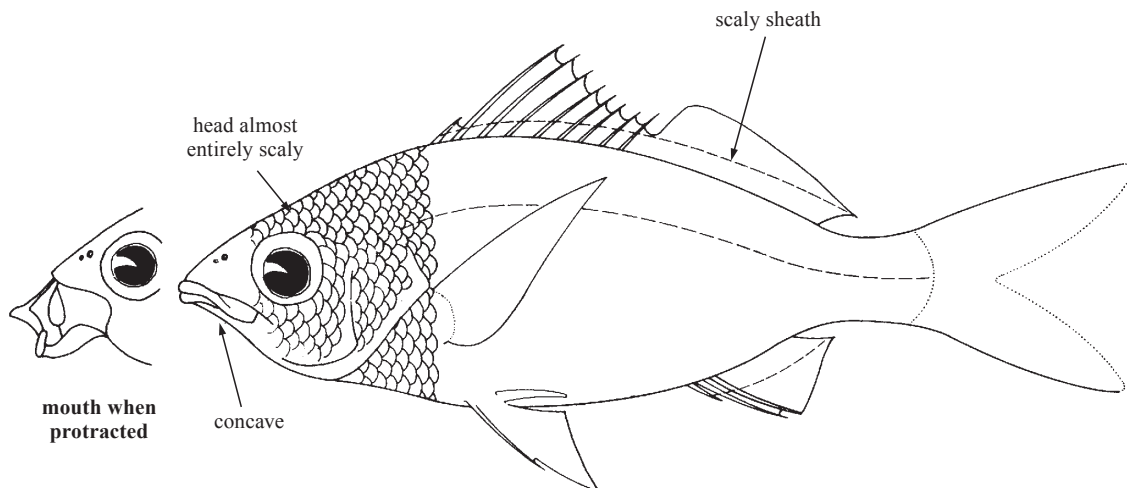


GERREIDAE

Mojarras

by R.G. Gilmore, Jr., Vero Beach, Florida, USA and D.W. Greenfield, University of Hawaii, USA

Diagnostic characters: Small to medium-sized fishes (to 41 cm standard length in western Atlantic); body compressed, varying from narrow to deep. Snout pointed, anterior part of lower head profile concave; **mouth strongly protrusible**, pointing downward when protracted; **jaws appear toothless** with small villiform teeth, none on roof of mouth. **Dorsal and anal-fin bases with a high scaly sheath** into which the fins can be folded; caudal fin deeply forked; pectoral fin long and pointed; pelvic-fin origin below or somewhat behind pectoral-fin base and bearing a long, scale-like axillary process. Most of head and body covered with conspicuous silver scales. **Colour: head and body usually silver**; most species revealing diagnostic pigment patterns, dark lateral spots, stripes, and bars.



Habitat, biology, and fisheries: Mojarras live in coastal waters of all warm seas, some species enter brackish or fresh water. They are found predominantly over sand and mud bottoms, in seagrass beds, fringing mangrove forests, along ocean beaches, and adjacent to reef formations where they feed on benthic invertebrates and plants.

Similar families occurring in the area

No other family has the following combination of characters that characterizes the mojarras: mouth strongly protrusible; teeth minute and villiform, present only in jaws; dorsal- and anal-fin bases with a scaly sheath; background colour predominantly silvery.

Key to the species of Gerreidae occurring in the area

- 1a. Margin of preopercle serrated (Fig. 1a, b); second dorsal-fin spine longer than distance between tip of snout and posterior margin of orbit → 9
- 1b. Margin of preopercle smooth (Fig. 1c); second dorsal-fin spine equal to or shorter than distance between tip of snout and posterior margin of orbit → 2

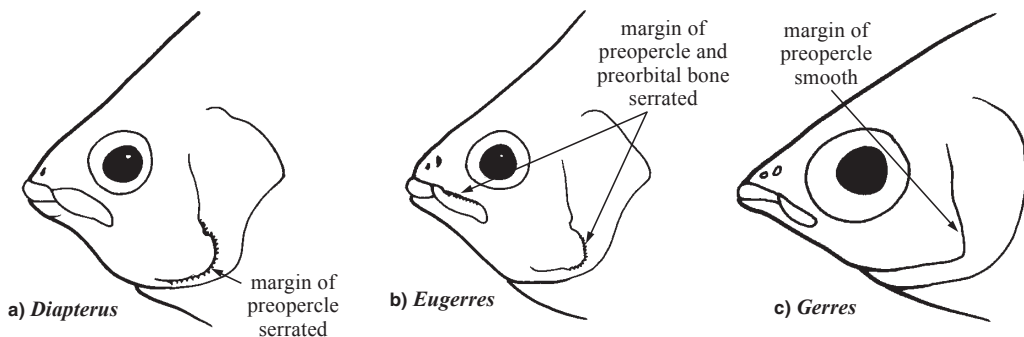


Fig. 1 lateral view of head

- 2a. Body deep, the depth 2.2 to 2.6 in standard length (= 39 to 45% standard length); scales on each side of depressed, naked area over premaxillary process do not extend forward of vertical line from anterior margin of orbit (Fig. 2a); pelvic fins yellow, sides of body in adults with 6 or 7 obscure bars, young less than 50 mm standard length, heavily pigmented with 6 enlarged, square black lateral spots, 7 dorsal bars connecting to lateral squares *Gerres cinereus*

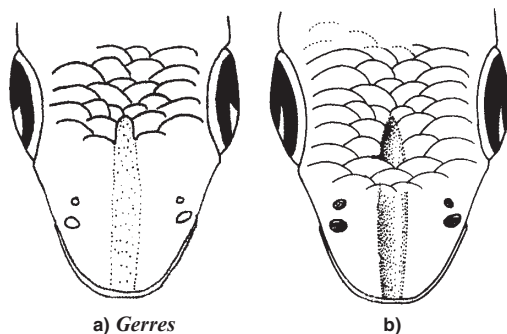


Fig. 2 dorsal view of head

- 2b. Body oblong to moderately deep, the depth 2.4 to 3.3 in standard length (= 30 to 42% standard length, most less than 37% standard length); scales on each side of depressed, naked area over premaxillary process extend forward of vertical line from anterior margin of orbit; pelvic fins colourless (Fig. 2b) → 3

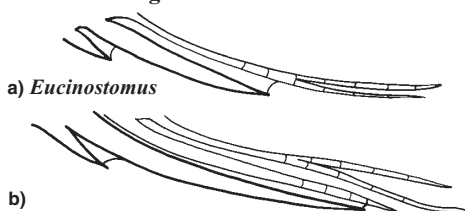


Fig. 3 anal-fin rays

- 3a. Anal fin with 2 spines, first anal ray branched (Fig. 3a); unique dorsal-lateral pigment pattern, 6 wavy dorsal bars variously connected to 8 lateral spots *Eucinostomus lefroyi*

- 3b. Anal fin with three spines in specimens over 40 mm standard length (third anal spine not ossified and unbranched in specimens under 40 mm standard length, (Fig. 3b); except in *E. melanopterus*, body pigment based on 7 dorsal bars (B1 through B7, Fig. 4) and 6 primary lateral spots (S1 through S6, Fig. 4), 3 secondary spots (S7 through S9, Fig. 4) → 4

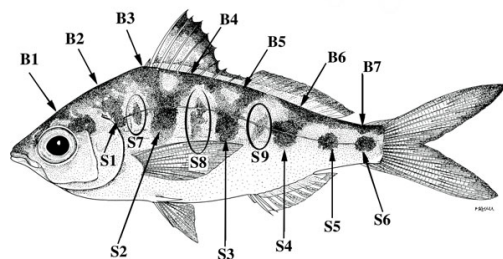


Fig. 4

- 4a. Pectoral fins completely scaled in adults (only basal portions scaled in young) . *Eucinostomus havana*
- 4b. Pectoral fins lacking scales → 5

- 5a. Spinous dorsal fin with prominent solid jet-black pigment above a white pigmented area with dusky area below; body typically without pigment; 9 gill rakers on lower limb of first gill arch *Eucinostomus melanopterus*
- 5b. Spinous dorsal fin without a white pigmented area bordered above and below by black pigment; outer part of dorsal fin may be dusky; body variously pigmented (Fig. 4); 8 gill rakers on lower limb of first gill arch → 6

- 6a. Scaleless pit at posterior end of premaxillary groove with a row of scales usually (in larger individuals) crossing anteriorly in front of the pit (Fig. 5a), or pit at least constricted by scales (Fig. 5b); length of anal-fin base 15.6 to 19.2% standard length. → 7
- 6b. Scaleless premaxillary groove not crossed anteriorly by scales or constricted (Fig. 5c, d); length of anal-fin base 13.4 to 15.2% standard length → 8

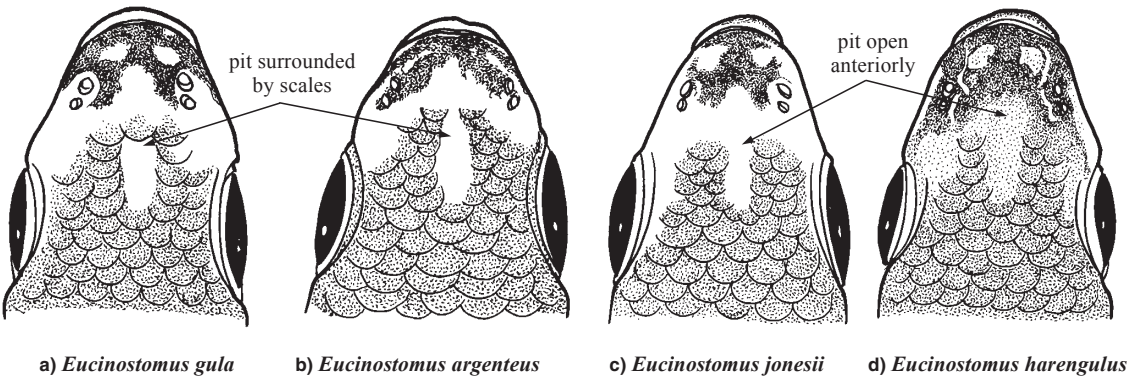


Fig. 5 dorsal view of head

- 7a. Body deep, 2.4 to 2.6 in standard length (38.1 to 41.2% standard length); last dorsal-fin spine 7.2 to 9.9% standard length; scaleless pit of premaxillary groove crossed anteriorly by row of scales (Fig. 5a) *Eucinostomus gula*
- 7b. Body more slender, 2.7 to 3.1 in standard length (32.7 to 36.5% standard length); last dorsal-fin spine 5.8 to 7.1% standard length; scaleless pit of premaxillary groove constricted anteriorly by scales (Fig. 5b) *Eucinostomus argenteus*

- 8a. Lateral-line scales 47 to 48; body depth 3.1 to 3.3 in standard length (= 30.2 to 32.1% standard length); least depth of caudal peduncle 8.9 to 10.1% standard length; pigment on snout between nares often with a distinct, dark V-shaped mark separated from premaxillary groove by unpigmented band anterior to orbits (Fig. 5c) *Eucinostomus jonesii*
- 8b. Lateral-line scales 43 to 46, usually 45; body deeper 2.8 to 3.0 in standard length (= 33.2 to 35.9% standard length); least depth of caudal peduncle 10.4 to 11.1% standard length; no distinct, dark, V-shaped mark on snout, area between nares usually with fairly uniform pigment (Fig. 5d) *Eucinostomus harengulus*

- 9a. Preorbital bone smooth (Fig. 1a); sides of body without black longitudinal stripes; second anal-fin spine shorter than anal-fin base, fin spines not greatly thickened; all pharyngeal teeth pointed (*Diapterus*) → 10
- 9b. Preorbital bone serrated except in very young (Fig. 1b); sides of body with black longitudinal stripes; second anal-fin spine longer than anal-fin base, fin spines thickened; pharyngeal teeth large and molar-like posteriorly (*Eugerres*) → 11













- 10a. Gill rakers on lower limb of first gill arch 12 to 15, usually 12 or 13; anal-fin rays typically with 3 spines and 8 soft rays or with 2 spines, 1 unbranched ray, and 8 branched soft rays in small specimens (less than 50 mm standard length) *Diapterus auratus*
- 10b. Gill rakers on lower limb of first gill arch 16 to 18, usually 17; anal-fin rays typically with 2 spines and 9 soft rays *Diapterus rhombeus*

- 11a. Anal-fin elements typically with 3 spines and 7 soft rays or occasionally with 2 spines, 1 unbranched ray, and 7 branched soft rays in small specimens; gill rakers on lower limb of first gill arch 10 to 12, usually 11 or 12. *Eugerres brasilianus*
- 11b. Anal-fin elements typically with 3 spines and 8 soft rays or occasionally with 2 spines, 1 unbranched ray, and 8 branched soft rays in small specimens; gill rakers on lower limb of first gill arch 13 to 17, usually 14 to 16. → 12

- 12a. Lips greatly enlarged, flap-like ventrally; pored lateral-line scales 40 to 46, usually 43 or 44; body elongate, depth in standard length 2.4 to 2.9 *Eugerres mexicanus*
- 12b. Lips not noticeably enlarged or flap-like ventrally; pored lateral-line scales 32 to 38, usually 34 to 36; body relatively short and deep, depth in standard length 1.9 to 2.3 *Eugerres plumieri*

List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Diapterus auratus* Ranzani, 1842.
-  *Diapterus rhombeus* (Cuvier, 1829).
-  *Eucinostomus argenteus* Baird and Girard, 1855.
-  *Eucinostomus gula* (Quoy and Gaimard, 1824).
-  *Eucinostomus harengulus* Goode and Bean (1879).
-  *Eucinostomus havana* (Nichols, 1912).
-  *Eucinostomus jonesii* (Günther, 1879).
-  *Eucinostomus lefroyi* (Goode, 1874).
-  *Eucinostomus melanopterus* (Bleeker, 1863).
-  *Eugerres brasilianus* (Cuvier, 1830).
- Eugerres mexicanus* (Steindachner, 1863). Restricted to fresh water on the Atlantic slope of S Mexico and N Guatemala.
-  *Eugerres plumieri* (Cuvier, 1830).
-  *Gerres cinereus* (Walbaum, 1792).

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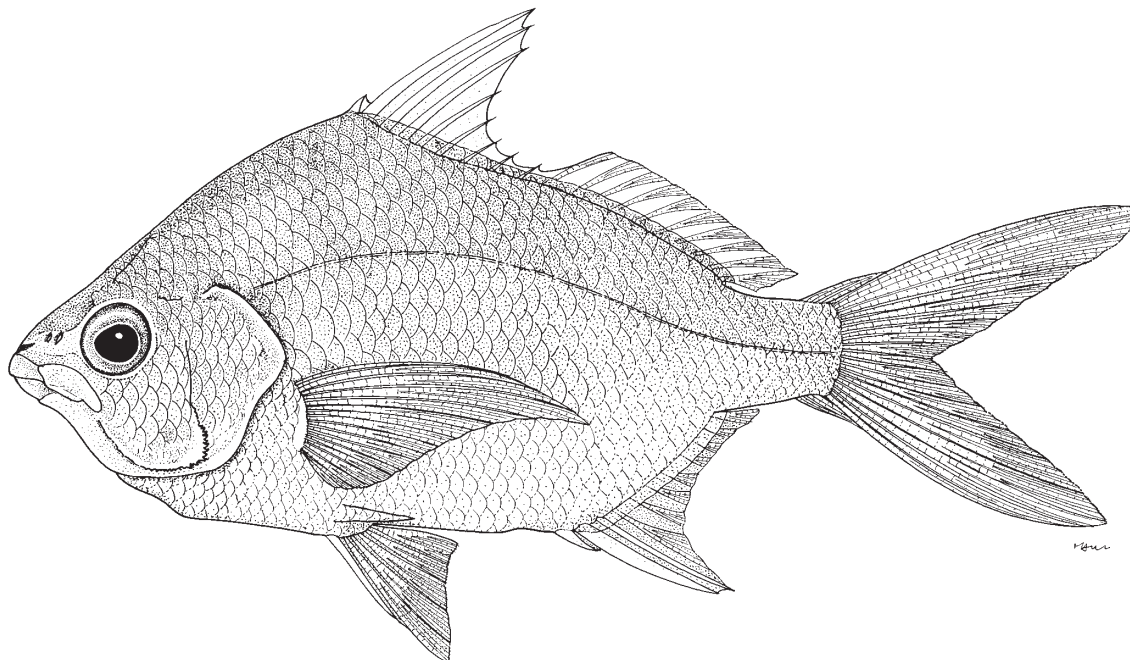
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Diapterus auratus Ranzani, 1842

DUT

Frequent synonyms / misidentifications: *Gerres olisthostomus* Goode and Bean, 1882; *Diapterus olisthostomus* (Goode and Bean, 1882); *Diapterus evermanni* Meek and Hildebrand, 1925 / *Diapterus rhombeus* (Cuvier, 1829); *Gerres cinereus* (Walbaum, 1792).

FAO names: **En** - Irish mojarra (AFS: Irish pompano); **Fr** - Blanche cabuche; **Sp** - Mojarra cagüicha.

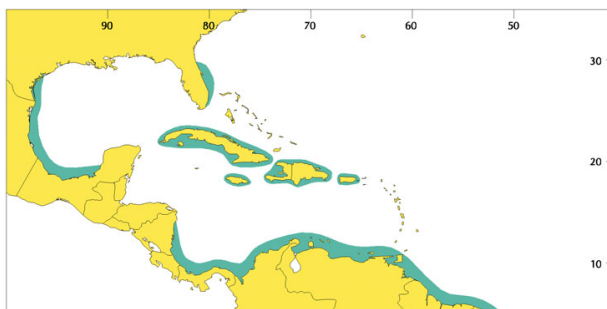


Diagnostic characters: Body rhomboidal, compressed, moderately deep (depth 1.7 to 2.4 in standard length). Mouth strongly protrusible, maxilla usually reaching past anterior margin of pupil; **edge of preopercle serrated; preorbital bone smooth; 12 to 15 (usually 12 or 13) gill rakers on lower limb of anterior gill arch.** Dorsal fin deeply notched with a notably high spinous portion; **anal fin with 3 spines and 8 soft rays,** specimens less than 50 to 75 mm standard length may have 2 spines and 9 soft rays. **Colour:** body silver, somewhat darker above, specimens less than 150 mm standard length often with 3 thin vertical dark bars on side; pelvic fins and anal fin with yellow pigment; other fins translucent or dusky.

Size: Maximum to about 34 cm; common to 27 cm.

Habitat, biology, and fisheries: One of the most abundant mojarras in east Florida estuaries, inhabiting shallow coastal waters, especially in seagrass meadows, mangrove-lined creeks, and lagoons, commonly entering fresh water. Young individuals (to 11.6 cm) feed mostly on plant material with some nematodes, copepods, and ostracods. Supports fisheries throughout its breeding range contributing to landings of 13 600 to 136 000 kg in the Florida mojarra fisheries. Caught mainly with cast nets, beach and boat seines, gill nets, trammel nets, beam trawls, and traps. Marketed mostly fresh.

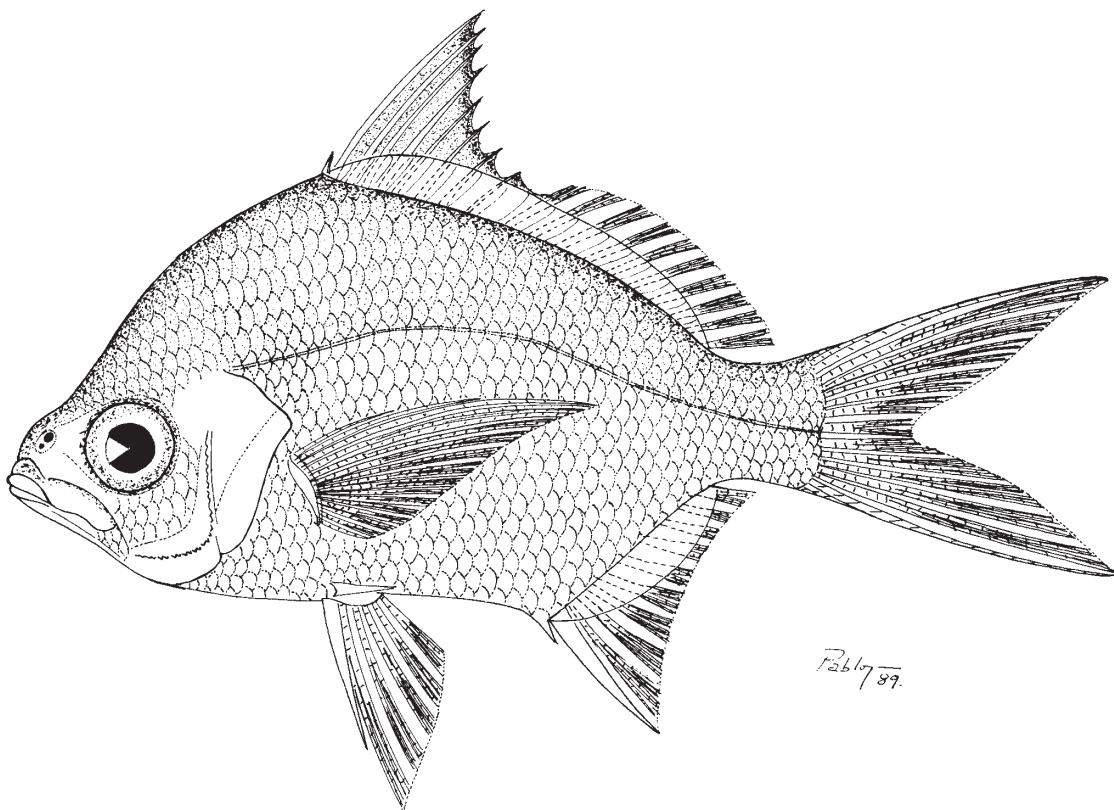
Distribution: Permanent breeding populations from southern Indian River Lagoon, east Florida to Bahia, Brazil including Greater Antilles, largely absent from eastern and northern Gulf of Mexico, present along Mexican and Central American coasts, recorded from as far north as New Jersey.



Diapterus rhombeus (Cuvier, 1829)

Frequent synonyms / misidentifications: *Diapterus limnaeus* Schultz (1949) / juvenile *Diapterus auratus* (Ranzani, 1842).

FAO names: **En** - Caitipa mojarra (AFS: Silver mojarra); **Fr** - Blanche gros yaya; **Sp** - Mojarra caitipia.

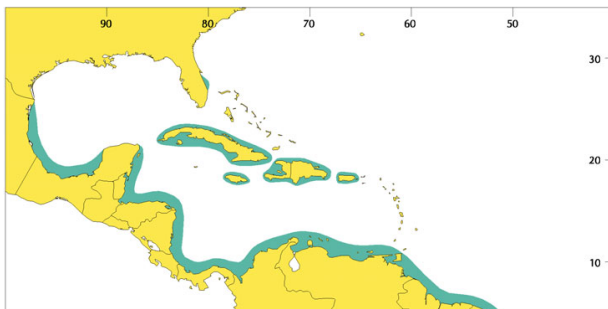


Diagnostic characters: Body rhomboidal, compressed, moderately deep (depth 1.8 to 2.5 in standard length). Mouth strongly protrusible, maxilla usually extending past anterior margin of pupil; **edge of preopercle serrated; preorbital bone smooth; 16 to 18 (usually 17) gill rakers on lower limb of anterior gill arch.** Dorsal fin deeply notched with a notably high spinous portion; **anal fin with 2 spines and 9 soft rays.** **Colour:** body silvery, somewhat darker above, with bluish reflections. Spinous portion of dorsal fin edged with dusky pigment, pectoral fins transparent, pelvic fins and anal fin yellow.

Size: Maximum to 40 cm; common to 30 cm.

Habitat, biology, and fisheries: Abundant in mangrove-lined lagoons, particularly in the Greater Antilles; also found over shallow mud and sand bottoms in marine areas. May enter fresh water. Small fish feed mainly on plants and microbenthic crustaceans, larger fish include crustaceans, pelecypods, and polychaete worms in addition to plants. Caught mainly with beach and boat seines, gill nets, trammel nets, beam trawls, traps, and cast nets. Marketed mostly fresh; its flesh is not highly esteemed. Separate statistics are not reported for this species.

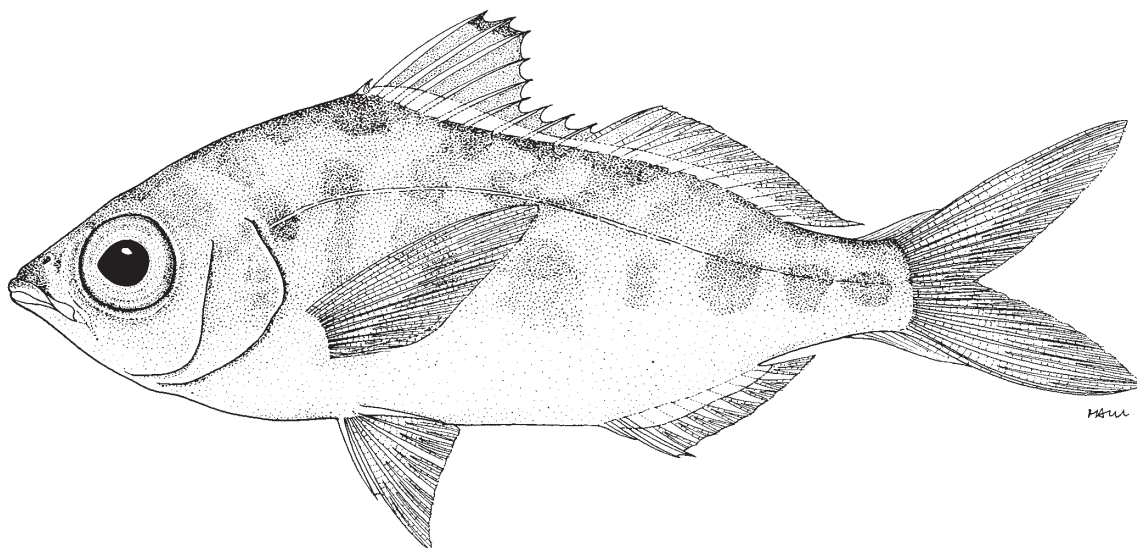
Distribution: Greater Antilles, Laguna Madre, Mexico south along the Central American coast; northern South America to Bahia, Brazil, recorded from as far north as Indian River Lagoon, Florida.



Eucinostomus argenteus Baird and Girard, 1855

Frequent synonyms / misidentifications: *Eucinostomus harengulus* Goode and Bean, 1879 / None.

FAO names: **En** - Spotfin mojarra; **Fr** - Blanche argentée; **Sp** - Mojarrita plateada.

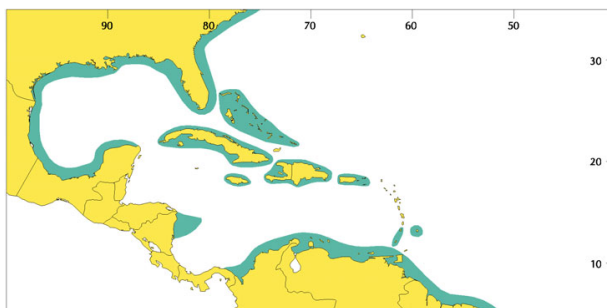


Diagnostic characters: Body fusiform and compressed, moderately slender (**depth 32.7 to 36.5% standard length**). Mouth strongly protrusible, maxilla usually not reaching anterior margin of pupil; **edge of preopercle smooth**; preorbital bone smooth; **scaleless pit at end of premaxillary groove** (an unscaled median depression running on top of snout into interorbital space) **constricted anteriorly in front of pit by scales**, scales extend forward of vertical line from anterior margin of orbit; 7 or 8 gill rakers (including 1 at angle but excluding rudiments at anterior end) on lower limb of anterior gill arch. Dorsal fin moderately notched, last dorsal-fin spine 5.8 to 7.1% standard length; 3 weak spines in anal fin; anal-fin base length 16.7 to 19.2% standard length. **Colour:** body silver with 6 to 9 faint dark midlateral spots associated with 7 dorsal bars extending to midline; outer part of spinous portion of dorsal fin light dusky.

Size: Maximum to 20 cm; common to 15 cm.

Habitat, biology, and fisheries: A continental shelf species occurring over sand or shell bottoms, occasionally in ocean inlets to estuaries. Feeds predominantly on benthic invertebrates. Usually caught with beach and boat seines, shrimp trawls, and cast nets. Marketed fresh in many localities, although its flesh is not highly esteemed; also made into fishmeal (Cuba) and used as live bait in the snapper fishery. Separate statistics are not reported for this species.

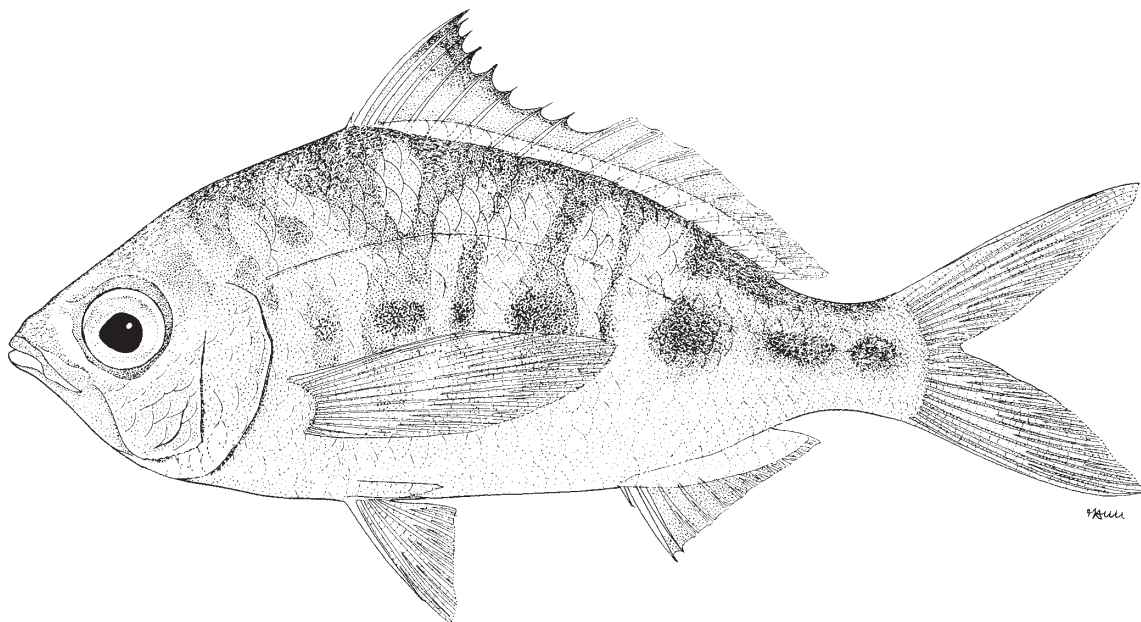
Distribution: Due to the confusion with *Eucinostomus harengulus*, the distribution of this species is not totally known, known to be typically limited to continental shelves and marine to polyhaline ocean inlets. Recorded from Bermuda, strays to New Jersey, rare north of Cape Hatteras, most abundant from Cape Hatteras south to southeast Brazil, including the Bahamas, Greater and Lesser Antilles, the Gulf of Mexico, and the Central American and northern South American coasts. Also occurs in the eastern Pacific Ocean from Anaheim Bay, California to Seymour Island, Peru, including the Galapagos Islands.



Eucinostomus gula (Quoy and Gaimard, 1824)

Frequent synonyms / misidentifications: *Gerres gula* (Quoy and Gaimard, 1824) / None.

FAO names: **En** - Jenny mojarra (AFS: Silver jenny); **Fr** - Blanche espagnole; **Sp** - Mojarrita española.



Diagnostic characters: Body fusiform and compressed, relatively deep (**depth 38.1 to 41.2% standard length**). Mouth strongly protrusible, maxilla usually not reaching anterior margin of pupil; edge of preopercle smooth; preorbital bone smooth; **scaleless pit at end of premaxillary groove** (an unscaled median depression running on top of snout into interorbital space) **crossed anteriorly in front of pit by row of scales**; 7 or 8 gill rakers (including 1 at angle but excluding rudiments at anterior end) on lower limb of anterior gill arch. Dorsal fin moderately notched; 3 spines in anal fin; anal-fin base length 15.6 to 18.0% standard length. **Colour:** body silvery, with bluish reflections above; dorsal, anal, and caudal fins dusky; spinous part of dorsal fin edged with dusky pigment; body with 7 oblique bars connecting to 9 lateral spots.

Size: Maximum to 11.9 cm.

Habitat, biology, and fisheries: One of the most abundant estuarine mojarra in the region, associating primarily with vegetated seagrass meadows, but also foraging over adjacent open sand bottoms. Does not typically enter fresh water. Feeds predominantly on benthic invertebrates. Caught mainly with boat seines, gill nets, trammel nets, beam trawls, traps, and cast nets. Marketed fresh in many localities, although its flesh is not highly esteemed; often used as bait. Separate statistics are not reported for this species.

Distribution: Bermuda, strays to Massachusetts, rare north of Cape Hatteras, most abundant from North Carolina south to Argentina, including the Bahamas, the entire Gulf of Mexico, the Antilles, and the coasts of Central America and northern South America.

