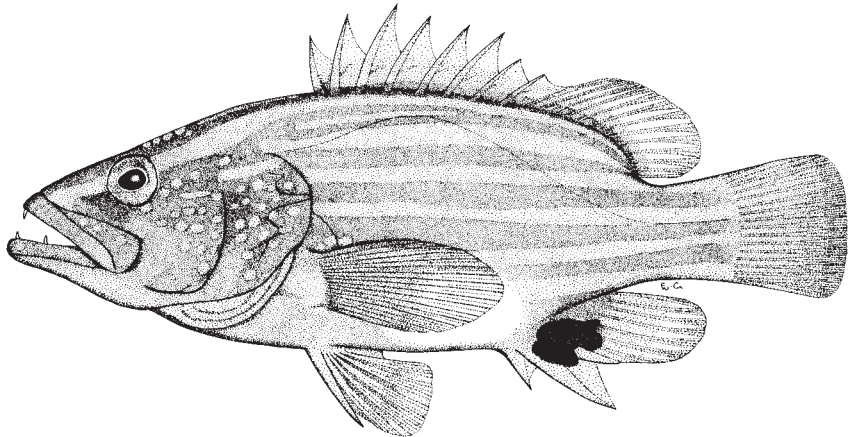


***Gonioplectrus hispanus*** (Cuvier, 1828)

GOH

**Frequent synonyms / misidentifications:** None / None.**FAO Names:** **En** - Spanish flag; **Fr** - Pavillon espagnol; **Sp** - Bandera español.**Diagnostic characters:**

Body depth subequal to head length, contained 2.3 to 2.5 times in standard length (for fish 13 to 20 cm standard length), the body width 2.3 to 2.4 times in body depth; head length 2.2 to 2.4 times in standard length. Nostrils small, subequal. Jaws with a band of minute, slender, depressible teeth, the inner teeth near symphysis enlarged; a short, curved, fixed canine tooth on each side of symphysis of both jaws and 1 to 3 similar fixed canines at midside of lower jaw; 2 rows of minute teeth on vomer and palatines; maxilla with a



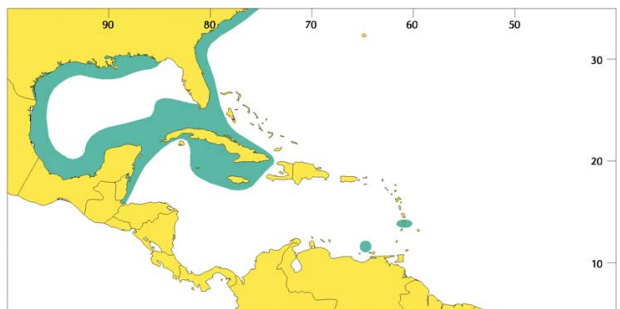
well-developed supramaxilla and prominent bony knob (hidden by upper lip) on lower rear corner. Interorbital area convex, the dorsal head profile convex; top of head rugose; preorbital depth about 12 times in head length. Preopercle rounded, with a large, curved (antrorse) spine at the angle, the lower edge fleshy; middle opercle spine very large, extending to or beyond rear edge of opercular membrane; subopercle and interopercle with a few minute serrae. Gill rakers on first arch 5 to 7 on upper limb, 14 to 16 on lower limb, the longest slightly longer than longest gill filaments. **Dorsal fin with 8 spines and 13 soft rays, the fin origin over upper end of pectoral-fin base, third or fourth spine longest; interspinous membranes deeply incised, their proximal part fleshy, covered with scales; base of spinous part of fin longer than soft-rayed part;** anal fin with 3 well-developed spines and 7 soft rays; caudal fin truncate or rounded, with 8+7 branched rays and 7+7 procurrent rays; pectoral fins symmetrically rounded, with 16 or 17 rays, the middle rays longest; pelvic fins reach anus. Scales on body large, distinctly ctenoid, and without auxiliary scales; lateral line curved distinctly upward below spinous dorsal fin; lateral-line scales 47 to 49; 5 rows of scales between lateral line and base of sixth dorsal-fin spine; lateral-scales series 78 to 83; no scales on top of head, preorbital, snout, maxilla, or lower jaw. **Colour:** head, body, dorsal, and caudal fins yellow; 6 or 7 salmon-coloured stripes from head to soft dorsal and caudal fins; blood red blotch on front half of anal fin; white blotch on side of belly; pelvic fins pinkish purple.

**Size:** Attains at least 27 cm.

**Habitat, biology, and fisheries:** Reported from rocky bottoms in depths of 60 to 365 m. A 170 mm standard length fish was reported as a mature male; no other information is available on the biology of this species. Not important as a foodfish because of its rarity and small size. With its beautiful colours, the Spanish flag could be a valuable fish in the aquarium trade, but its deep habitat would make it difficult to keep alive after capture.

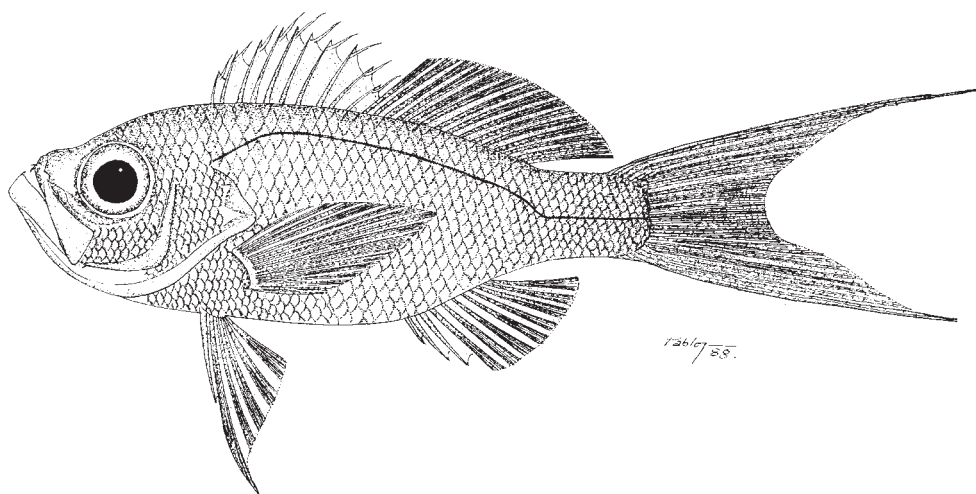
**Distribution:** Off North Carolina (pelagic postlarva, possibly drifted north from Florida or the Bahamas) to Gulf of Mexico, Caribbean (Cuba, Martinique, Isla Blanca, Venezuela), and south to Vitoria, Brazil.

**Remarks:** In Mexico, this species is known as 'biajaiba'.



***Hemanthias aureorubens*** (Longley, 1935)

HNE

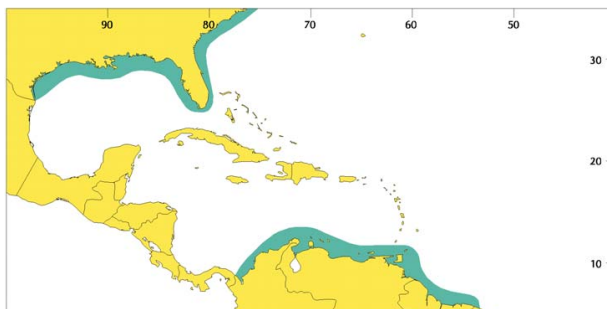
**Frequent synonyms / misidentifications:** None / None.**FAO names:** En - Streamer bass; Fr - Coné doré; Sp - Cachucho.

**Diagnostic characters:** Depth of body at first dorsal-fin spine 31 to 40% standard length. Head length 31 to 41% standard length. Orbit longer than snout, horizontal diameter of bony orbit 11 to 19% standard length, 11 to 15% standard length in specimens greater than about 13 cm standard length. Upper and lower jaws each with a series of conical teeth; canine or canine-like teeth present anteriorly in both jaws; vomer and palatines with teeth; **vomerine tooth patch chevron-shaped to triangular, almost always without posterior prolongation**; endopterygoids and tongue toothless. The 2 nostrils on each side of head close together; internarial distance 7 to 17, usually 9 to 12, times in snout length; posterior border of anterior nostril never produced into a long slender filament. **Much of head covered with scales, but snout, lachrymal region, maxilla, anterior portion of interorbital, anterior 1/2 or more of lower jaw, gular, branchiostegals, and branchiostegal membranes without scales. Preopercle serrate, but without spines or spine-like processes at angle. Gill rakers on first arch 10 to 13 on upper limb and 26 to 31 on lower limb, total 36 to 43, usually 37 to 41.** Dorsal fin single, not divided to base at junction of spinous and soft portions; **dorsal spines without long filaments, but usually with tabs or short filaments.** Anal-fin length 26 to 36% standard length. **Caudal fin deeply forked; upper lobe 40 to 126% standard length; lower 37 to 116% standard length. Pelvic-fin length 24 to 36% standard length. Dorsal fin with 10 spines and 15 (occasionally 13, 14, or 16) soft rays. Anal fin with 3 spines and 8, occasionally 7 or 9, soft rays. Pectoral fin with 15 to 19 rays.** Lateral line continuous, not interrupted; **tubed scales in lateral line 42 to 50, usually 44 to 47. Circum-caudal-peduncular scales 22 to 27, usually 23 to 26. Colour:** body and head reddish orange dorsally, silvery laterally and ventrally; iris mostly yellow, but with considerable red; dorsal fin and caudal-fin lobes yellowish; anal, midcaudal, and pelvic fins pallid; pectoral fins pink.

**Size:** Maximum standard length to about 22 cm, commonly to 17 cm standard length.

**Habitat, biology, and fisheries:** Specimens examined from depths of 145 to 440 m (the literature reports 91 to 610 m). Females (116 to 151 mm standard length) with vitellogenic oocytes have been collected off the east coast of Florida in May.

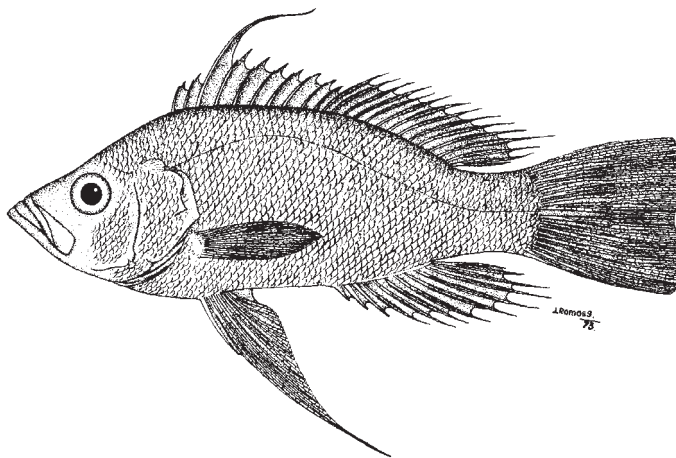
**Distribution:** New Jersey to the Straits of Florida, Gulf of Mexico, southern Caribbean off Colombia and Venezuela, and off the Atlantic coast of South America from Venezuela to Suriname. A juvenile has been taken well off the coast of Massachusetts. Reported to be moderately common south of Dry Tortugas, Florida, and off Guyana and Suriname. Probably more widespread.



***Hemanthias leptus*** (Ginsburg, 1952)

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

**FAO names:** **En** - Longtail bass; **Fr** - Coné grand veil; **Sp** - Cachucho ojón.

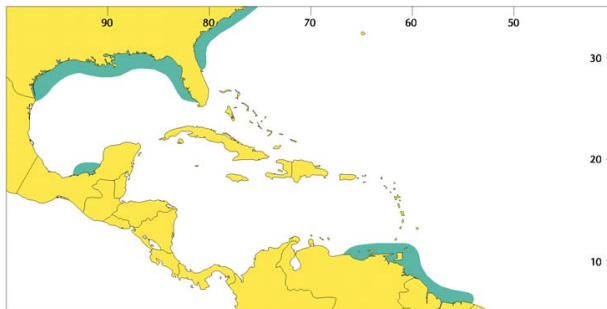


**Diagnostic characters:** Depth of body at first dorsal-fin spine 27 to 38% standard length, 31 to 38% standard length in specimens greater than about 8 cm standard length. Head length 30 to 36% standard length. Horizontal diameter of bony orbit 6 to 13% standard length, 6 to 9% standard length in specimens greater than about 26 cm standard length. Canine or canine-like teeth present anteriorly in both jaws; vomer and palatines with teeth; vomerine tooth patch chevron-shaped; endopterygoids and tongue toothless. The 2 nostrils on each side of head fairly close together; internarial distance 7 to 13 times in snout length; posterior border of anterior nostril never produced into long slender filament. **Snout, lachrymal region, maxilla, most of interorbital, lower jaw, gular, branchiostegals, and branchiostegal membranes without scales.** Upper limb of preopercle finely serrate; lower limb more coarsely serrate, roughened, or largely smooth; angle roughened, with enlarged serrae, spinous processes, or one or more spines. **Gill rakers on first arch 9 to 12 on upper limb and 24 to 28 on lower limb, total 34 to 39.** Dorsal fin single; filament of third dorsal-fin spine elongated in larger individuals; longest dorsal spine the third in specimens greater than about 15 cm standard length, third dorsal spine plus its filament 14 to 46% standard length, in specimens 15 to 45 cm standard length. Anal-fin length 32 to 45% standard length. In specimens less than about 20 cm standard length caudal fin deeply forked; in those greater than about 31 cm standard length caudal fin truncate (or nearly so) with a median notch. Upper caudal-fin lobe 23 to greater than 55% standard length, 23 to 33% standard length in specimens greater than about 31 cm standard length. Lower caudal-fin lobe 24 to 62% standard length, 24 to 34% standard length in specimens greater than about 31 cm standard length. Pelvic-fin length 24 to 76% standard length, 40 to 76% standard length in specimens greater than about 19 cm standard length. Dorsal fin with 10 spines and 14, rarely 13, soft rays. Anal fin with 3 spines and 8, rarely 7, soft rays. Pectoral fin with 17 to 20 rays. Lateral line continuous; tubed scales in lateral line 54 to 62. **Circum-caudal-peduncular scales 40 to 46.** **Color:** body and head reddish dorsally, pink to silvery laterally and ventrally; yellow or golden stripe from tip of snout to level of pectoral-fin base; fins predominantly yellow and red.

**Size:** Maximum standard length to about 46 cm, commonly to 35 cm standard length.

**Habitat, biology, and fisheries:** Known from depths of 35 to 640 m. Ripe females collected in August, spent ones in May and August, ripe males in January, February, and April through July; larvae obtained off Louisiana in January. This species may be protogynous with both primary and secondary males.

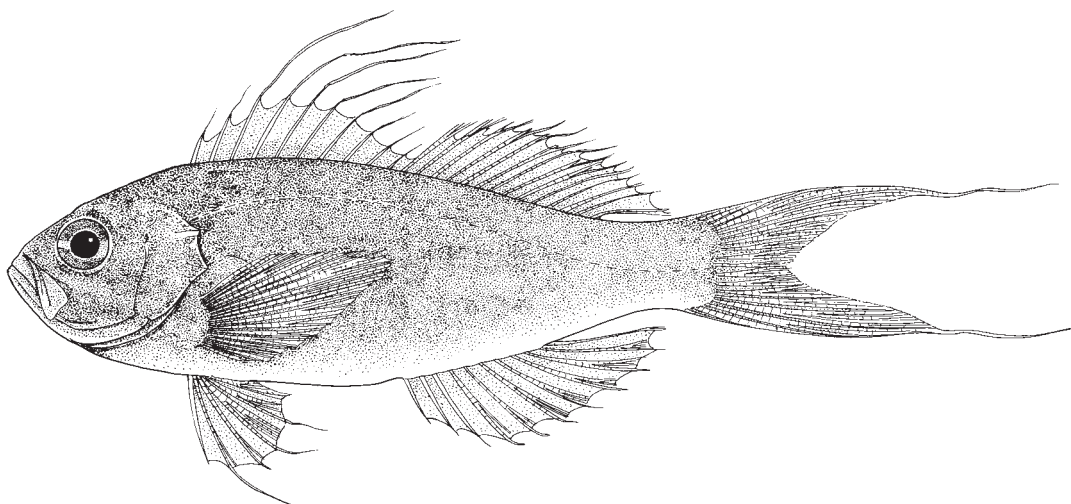
**Distribution:** North Carolina to central east coast of Florida, Gulf of Mexico, and Venezuela to Suriname. Probably more widespread.



***Hemanthias vivanus*** (Jordan and Swain, 1885)

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

**FAO names:** En - Red barbier.

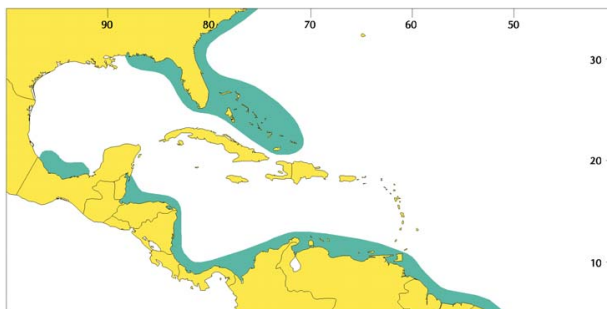


**Diagnostic characters:** Body comparatively slender, depth of body at first dorsal-fin spine 26 to 35% standard length, usually 28 to 32% standard length. Head relatively short, 28 to 32% standard length. Orbit usually longer than snout, horizontal diameter of bony orbit 7 to 11% standard length. Upper and lower jaws each with a series of conical teeth; canine or canine-like teeth present anteriorly in both jaws; vomer and palatines with teeth; vomerine tooth patch chevron-shaped to triangular, without posterior prolongation; endopterygoids and tongue toothless. The 2 nostrils on each side of head fairly close together; internarial distance 5 to 9 times in snout length; posterior border of anterior nostril produced into short flap, but never produced into a long slender filament. Much of head covered with scales, but snout, lachrymal region, maxilla, interorbital (all to almost all), lower jaw, gular, branchiostegals, and branchiostegal membranes without scales. Preopercle serrate, 1 to several serrae usually enlarged into spines or spine-like processes at angle. Gill rakers on first arch 10 to 13 on upper limb and 27 to 31 on lower limb, total 38 to 43. Dorsal fin single, not divided to base at junction of spinous and soft portions; fin membrane extending into filament at distal tip of each dorsal spine, filaments often quite elongated; filament of fourth dorsal-fin spine up to 65% standard length; filaments of dorsal fin relatively short in females, becoming elongated in males. Anal-fin length 35 to 45% standard length. Caudal fin deeply forked; upper caudal-fin lobe 40 to greater than 70% standard length; lower caudal-fin lobe 31 to 68% standard length. Pelvic-fin length 28 to 38% standard length. Dorsal fin with 10 spines and 14, occasionally 13, soft rays. Anal fin with 3 spines and 8, occasionally 9, soft rays. Pectoral fin with 16 to 21, usually 18 or 19, rays. Lateral line continuous, not interrupted; tubed scales in lateral line 44 to 53, usually 46 to 51. Circum-caudal-peduncular scales 24 to 29, rarely 24 or 25. **Colour:** body and head reddish dorsally, lighter ventrally; anal fin mottled with blue and olive in females, bright yellow in males; pelvic fins pink in females, blood red in males.

**Size:** Maximum standard length to about 15 cm, commonly to 11 cm standard length.

**Habitat, biology, and fisheries:** Known from depths of 20 to 430 m. Observed from submersibles off North Carolina, usually in large fast-moving schools. Consumes copepods, amphipods, and ostracods. This species is a protogynous hermaphrodite.

**Distribution:** New Jersey to the Straits of Florida, Bahamas, Gulf of Mexico, western and southern Caribbean Sea, and Atlantic coast of South America from Venezuela to southern Brazil.

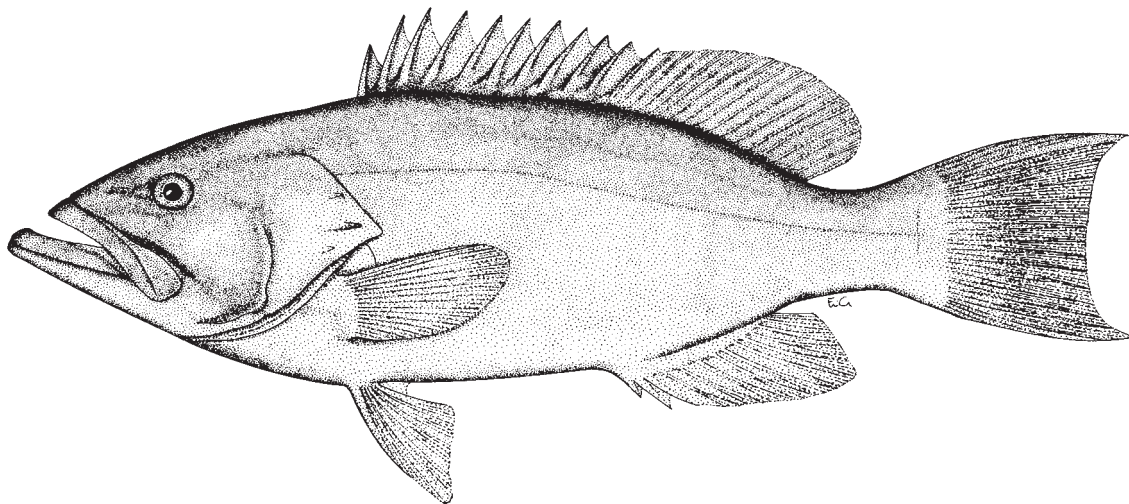


***Mycteroperca acutirostris*** (Valenciennes, 1828)

MTI

**Frequent synonyms / misidentifications:** None / *Mycteroperca rubra* (Bloch, 1793).

**FAO names:** En - Comb grouper (AFS: Western comb grouper); Fr - Badèche peigne; Sp - Cuna negra.



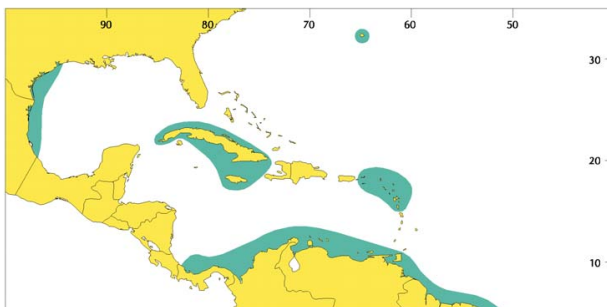
**Diagnostic characters:** Body oblong, compressed, the depth contained 2.7 to 3.2 times, head length 2.5 to 2.7 times in standard length (for 13 fish 10 to 34 cm standard length); maxilla width 4.4 to 5.8% standard length. Interorbital area convex; preopercle angular, with serrae at the angle enlarged, forming a weak lobe; nostrils subequal. Gill rakers on first arch 16 to 20 on upper limb, 32 to 36 on lower limb, total 48 to 55. **Dorsal fin with 11 spines and 15 to 17 soft rays, interspinous membranes indented, the fin margin rounded posteriorly; anal fin with 3 spines and 10 to 12 soft rays, fin margin distinctly pointed in adults;** pectoral-fin rays 15 to 17. Lateral-line scales 67 to 77; lateral-scale series 85 to 106. **Colour:** head and body greyish brown, covered with irregular white spots and blotches; 3 or 4 dark brown stripes radiating posteriorly from eye and continuing along ventral half of body as wavy dark stripes; another dark brown stripe continuing backwards from maxillary streak to edge of preopercle; median fins darker than body and also with white spots and streaks; juveniles less than 15 cm with a small black saddle on caudal peduncle; large adults mostly uniform greyish.

**Size:** Maximum total length 80 cm; maximum weight probably around 4 kg.

**Habitat, biology, and fisheries:** Juveniles occur in turtle grass beds, mangrove areas, and in shallow water amongst soft corals and coral reefs; adults are found on rocky bottoms with high relief. Probably feeds on zooplankton, but no information is available on the food of *M. acutirostris*. Of considerable commercial importance in the Venezuelan fishery where it is the most abundant species of *Mycteroperca*. Caught mainly with traps. Flesh excellent.

**Distribution:** Northwestern Gulf of Mexico (where it is rare), Cuba, Jamaica, Virgin Islands, Leeward Islands, Panama, Colombia, Venezuela (abundant at Isla Margarita and adjacent islands), Curaçao, and Brazil (common along south coast). Reports of *Mycteroperca acutirostris* (as '*Mycteroperca rubra*') from Bermuda are unsubstantiated. Valenciennes' (1837: 11; 1843: Pl. 3, Fig. 1) reference to '*Serranus acutirostris*' at the Canary Islands is probably a misidentification of *Mycteroperca fusca* (Lowe, 1836).

**Note:** The Venezuelan name for *Mycteroperca acutirostris* is 'cuna negra'. *Mycteroperca rubra* is confined to the eastern Atlantic and Mediterranean.

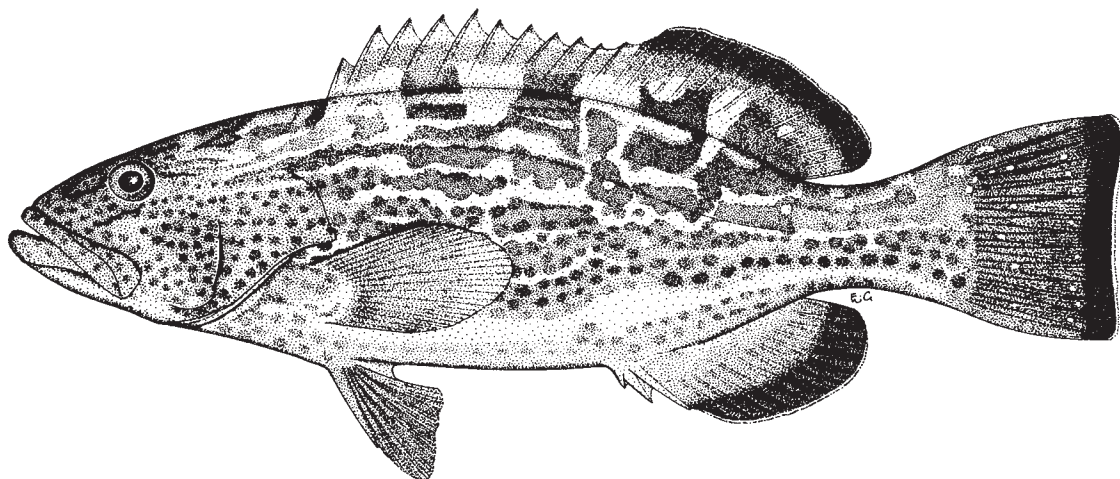


*Mycteroperca bonaci* (Poey, 1860)

MAB

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

**FAO names:** **En** - Black grouper; **Fr** - Badèche bonaci; **Sp** - Cuna bonaci.

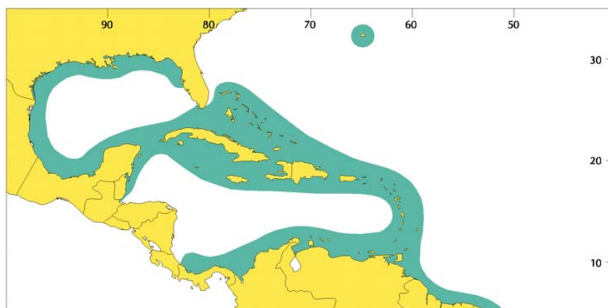


**Diagnostic characters:** Body depth distinctly less than head length, contained 3.3 to 3.5 times in standard length (for fish 15 to 59 cm standard length); head length contained 2.5 to 2.8 times in standard length. **Nostriils subequal. Preopercle evenly rounded, without distinct notch or projecting bony lobe at angle.** Developed gill rakers on first arch 2 to 5 on upper limb, 8 to 12 on lower limb, total (including 2 or 3 rudiments on each limb) 19 to 27. **Dorsal fin with 11 spines and 15 to 17 soft rays, interspinous membranes distinctly incised; anal fin with 3 spines and 11 to 13 soft rays; caudal fin truncate (convex if widely spread) to slightly emarginate; no median fin rays exerted; margin of dorsal and anal fins rounded; pectoral-fin rays 16 or 17.** Lateral-line scales 78 to 83; lateral scale series 119 to 126. **Colour:** head and body greyish or dark brown, with close-set, irregular, bronze, or brassy spots separated by a bluish white reticulum (some brassy spots join to form chain-like horizontal streaks); dorsolateral part of body sometimes with 7 or 8 columns of rectangular dark blotches, the first above opercle and the last on caudal peduncle. Pectoral fins dusky brown, gradually becoming orange at the margin; soft dorsal and anal fins and leading edges of pelvic fins with dark margin.

**Size:** Attains at least 133 cm and a weight of 65 kg; an 81 kg black grouper was reported from Bermuda in the 1940's, but this record is unsubstantiated.

**Habitat, biology, and fishery:** Occurs on rocky bottom and coral reefs in depths of 10 to 100 m, but in the eastern Gulf of Mexico usually found deeper than 30 m. Juveniles are found in mangrove areas. Adults feed primarily on fishes, and juveniles prey mainly on crustaceans. A protogynous hermaphrodite, with ripe females of 50 to 100 cm and ripe males of 96 to 116 cm. Specimens in spawning condition were caught on the Campeche Bank in July and August. The weight/length relationship is  $W = 5.548 \times 10^{-6} L^{3.141}$ , where weight is in grams and total length in millimetres. The von Bertalanffy growth equation is  $L_t = 1.325(1 - e^{-0.1156(t + .927)})$ , where  $L_t$  is total length in millimetres at age  $t$ . Average total lengths at ages 1, 5, 10, and 14 are 26, 66, 98, and 111 cm, respectively; and maximum age was estimated to be 17 to 19 years. Important in fisheries of the southern Gulf of Mexico, West Indies, and east coast of Venezuela. Caught with hook-and-line and in traps. In the 1950's *M. bonaci* was one of the most important species in the fishery at Bermuda, but now all groupers are scarce in Bermuda.

**Distribution:** Bermuda, Florida Keys, Gulf of Mexico, Bahamas, and throughout the Caribbean; small juveniles occasionally found as far north as Massachusetts, but adults are not known from the east coast of the USA.

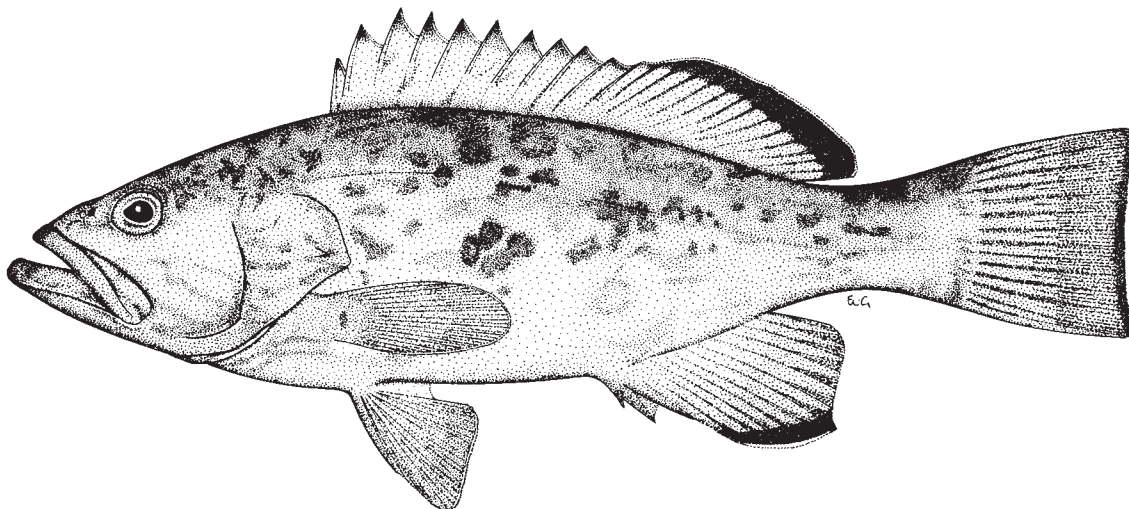


*Mycteroperca cidi* Cervigón, 1966

MKC

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

**FAO names:** En - Venezuelan grouper; Fr - Badèche blanche; Sp - Cuna blanca.



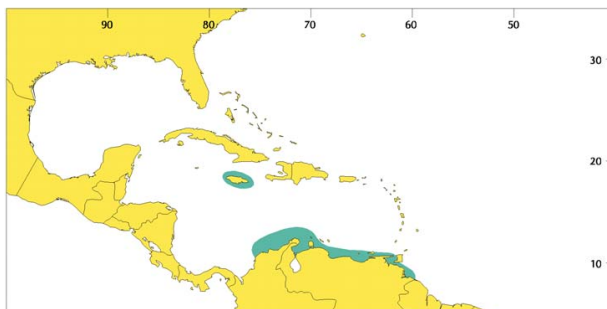
**Diagnostic characters:** Body depth less than head length, 3.1 to 3.3 times in standard length (for fish 14 to 93 cm standard length). **Nostrils subequal in fish less than 25 cm, but rear nostril much larger than front one in adults (larger than 40 cm total length).** Interorbital convex. **Preopercle with distinct lobe bearing enlarged serrae at angle.** Gill rakers on first arch well developed, the longest longer than eye diameter, 9 to 13 on upper limb, 18 to 23 on lower limb, including 2 or 3 rudiments on each limb. **Dorsal fin with 11 spines and 15 to 17 soft rays, posterior fin margin angular in adults, with ninth to eleventh rays elongated; anal fin with 3 spines and 10 to 12 soft rays, the fin margin pointed in adults, with fourth to sixth rays elongated; caudal fin truncate to slightly emarginate, with greatly exerted rays in adults; pectoral-fin rays 15 to 17.** Lateral body scales smooth; lateral scale series 120 to 126; lateral-line scales 75. **Colour:** dark brownish grey, darker dorsally with greenish iridescent colours in live fish; body scattered with irregular dusky brown spots of similar size to the pupil; head usually with dark longitudinal bands including one on cheek at upper edge of maxilla; front of snout dark brown. Spinous dorsal fin dark translucent grey, soft dorsal fin darker, with white edge and submarginal black band; anal fin similar to soft dorsal fin, with conspicuous white edge. Pectoral fins translucent greyish yellow, with narrow terminal border colourless and a dusky submarginal area in the upper part; pelvic fins dusky becoming blackish distally, with narrow white edge. Dark spots and bands on head less distinct on fish larger than 40 cm, and large adults (greater than 80 cm) are pale greyish brown, with lower part of head white.

**Size:** Maximum total length at least 114 cm; maximum weight about 14.5 kg.

**Habitat, biology, and fisheries:** Juveniles (10 to 15 cm) are common on soft coral reefs in 5 to 8 m; subadults (20 to 40 cm) occur on reefs in 18 to 36 m, and adults (over 50 cm) are usually caught in 80 to 160 m. This species is of commercial importance on the east coast of Venezuela, where it is one of the 3 most abundant groupers in shallow water. It is usually caught in fish traps, and the largest specimens are caught with hook-and-line.

**Distribution:** Coast of Colombia and Venezuela. Three specimens reported from the Port Royal reefs off Jamaica.

**Remarks:** The local names for *M. cidi* are 'cuna rabo rajao' for large adults, and 'cuna blanca' for juveniles.

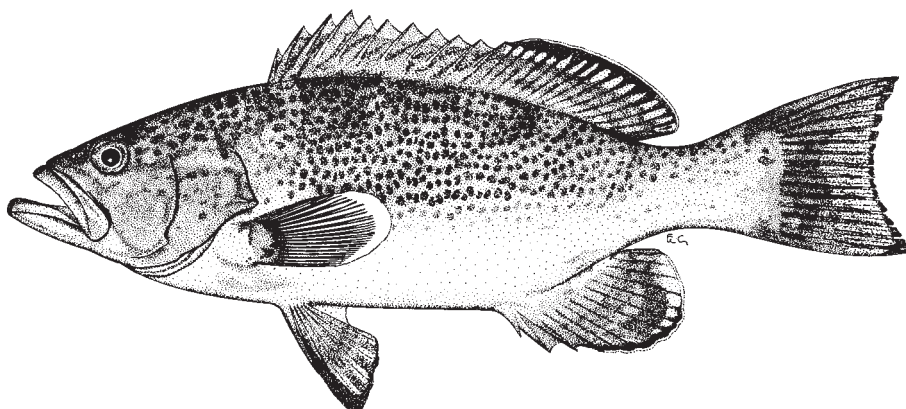


***Mycteroperca interstitialis*** (Poey, 1860)

MKN

**Frequent synonyms / misidentifications:** *Mycteroperca roquensis* Martin, 1956 / None.

**FAO names:** En - Yellowmouth grouper; Fr - Badèche gueule jaune; Sp - Cuna amarilla.



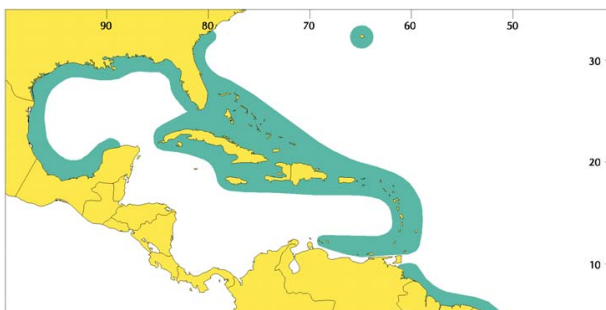
**Diagnostic characters:** Body depth less than head length, 3.0 to 3.4 times in standard length (for fish 22 to 65 cm standard length). **Posterior nostrils greatly enlarged in adults; preopercle with prominent lobe bearing enlarged serrae at angle.** Gill rakers on first arch 4 to 6 on upper limb, 11 to 15 on lower limb, plus 3 to 5 rudiments on each limb, total 23 to 27. **Dorsal fin with 11 spines and 16 to 18 soft rays, posterior fin margin pointed in adults, with ninth to eleventh rays elongated; anal fin with 3 spines and 11 or 12 soft rays, fin margin pointed in adults, with sixth to eighth rays elongated; caudal fin emarginate, with exserted rays in adults;** pectoral-fin rays 16 or 17. Lateral body scales ctenoid (weakly so in large adults); lateral-scale series 112 to 119; lateral-line scales 70 to 74. **Colour:** pale brownish grey, with **close-set small brown spots on dorsal part of head and body; spinous dorsal-fin margin and mouth yellowish; pectoral-fin membrane clear, rays dark, edge of fin white;** dark moustache streak above maxilla. Some fish uniform brown dorsally, and others may have faint, irregular vertical bars. **Juveniles bicoloured:** head and body dark brown dorsally (dark dorsal colour may be broken into broad dark bars or saddle blotches) and abruptly white below; black spot at base of upper caudal-fin rays.

**Size:** Maximum total length 74 cm, maximum weight 7 kg.

**Habitat, biology, and fisheries:** Usually found on coral reefs and rocky bottoms in 20 to 150 m. Spawning occurs on the Florida Middle Grounds in December, March to July, and September; and in Jamaica in April. Batch fecundity estimates ranged from  $351 \times 10^3$  to  $2\,459 \times 10^3$  oocytes/ovary for Gulf of Mexico fish of 37 and 46 cm standard length respectively. Adults almost exclusively piscivorous. *M. interstitialis* and its continental 'replacement' *M. phenax* are common in the algal-sponge zone of the Flower Garden Banks in the northwestern Gulf of Mexico. *M. interstitialis* is important in grouper fisheries of the Gulf of Mexico and Caribbean. Caught with traps, hook-and-line, and spears.

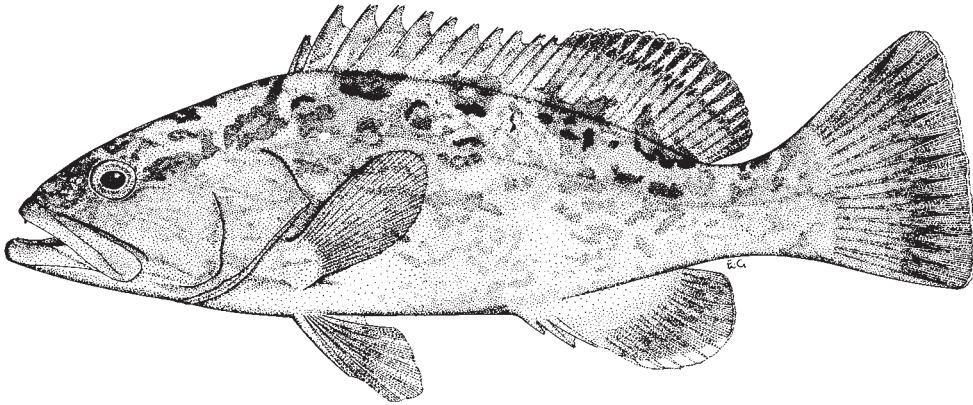
**Distribution:** Bermuda, Gulf of Mexico, West Indies, Venezuela (offshore islands) and southern Brazil.

**Remarks:** *M. interstitialis* is very similar to *M. phenax*; adults of both species have a projecting lobe at corner of preopercle, similar colour pattern, similar numbers of fin rays, enlarged posterior nostrils, and exserted median fin rays. *M. interstitialis* of 20 to 57 cm standard length usually has shorter pelvic fins and a shorter head (15 to 17% and 30 to 36% of standard length, versus 18 to 20% and 36 to 38% respectively in *M. phenax*). *M. interstitialis* lacks dark spots on the dorsal and anal fins, and the exserted caudal-fin rays are of similar length; whereas *M. phenax* has small brown spots on these fins and the exserted caudal rays are more uneven. Juveniles of *M. interstitialis* are distinctly bicoloured, but juveniles of *M. phenax* are coloured much like adults. In Venezuela the yellowmouth grouper is known as 'cuna chulinga' or 'cuna amarilla', and large yellowmouth are called 'cuna raba rajao'; the Cuban name is 'abadejo'.



***Mycteroperca microlepis*** (Goode and Bean, 1879)

MKM

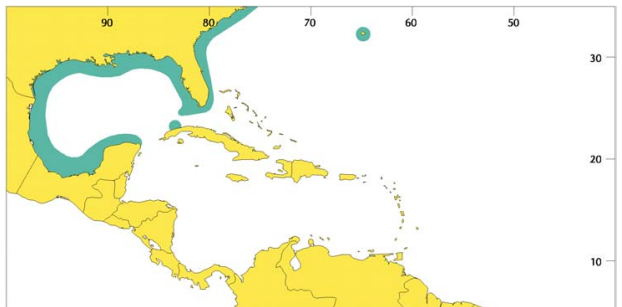
**Frequent synonyms / misidentifications:** None / *Mycteroperca bonaci*.**FAO names:** En - Gag grouper (AFS: Gag); Fr - Badèche baillou; Sp - Cuna aguaji.

**Diagnostic characters:** Body depth distinctly less than head length, 3.0 to 3.5 times in standard length (for fish 12 to 26 cm standard length). Interorbital convex. **Adults (larger than 60 cm) with posterior nostrils much larger than anterior ones; preopercle corner of adults with rounded lobe bearing enlarged serrae. Dorsal fin with 11 spines and 16 to 18 soft rays, third or fourth spines longest, interspinous membranes distinctly incised. Anal fin with 3 spines and 10 to 12 soft rays; dorsal and anal fins rounded at all sizes; no exerted fin rays. Caudal fin truncate in juveniles, emarginate in large adults. Pectoral-fin rays 16 to 18.** Lateral body scales smooth, except those covered by pectoral fin; lateral-scale series 128 to 146; lateral-line scales 88 to 96. **Colour:** variable, adult females and juveniles generally brownish grey with darker vermiculations; a resting or 'camouflage phase' shows 5 dark brown saddles separated by short white bars below the dorsal fin; this pattern is characteristic of fish that are sitting on the bottom. Unlike the camouflage phase, the 'black-belly' and 'black-back' phases are not ephemeral and are displayed only by large adults (males). The black-belly phase is mostly pale grey, with faint dark reticulations below soft dorsal fin; the belly and ventral part of body above anal fin are black, as are the margin of the soft dorsal fin, central rear part of caudal fin, and rear margins of pectoral and pelvic fins. The black-back phase is similar to the black-belly phase but with more black pigment on rear part of body, dorsal half of peduncle, all of soft dorsal and anal fins, and also over snout and front of jaws; the caudal fin is white with a black margin posteriorly.

**Size:** Maximum length about 120 cm; maximum weight 39 kg.

**Habitat, biology, and fisheries:** Juveniles occur in estuaries and seagrass beds; adults usually offshore on rocky bottoms in 40 to 80 m, and inshore (away from heavily fished areas) on rocky or grassy bottoms. Females mature at 5 or 6 years (67 to 75 cm total length) and most change sex between 10 and 11 years (95 to 100 cm). Transient spawning aggregations are formed in 50 to 120 m in the eastern Gulf of Mexico from late December to April. Fecundity of a 95 cm female was estimated at 1.5 million eggs. Artificial spawning was accomplished with males produced by induced sex inversion of females. Adults are solitary or in groups of 5 to 50 fish, 5 to 15 m above the bottom; they feed mainly on fishes and also take some crabs, shrimps, and cephalopods; juveniles (less than 20 cm) feed mainly on crustaceans (primarily shrimps) that live in shallow grass beds. The weight/length relationship for gag from the eastern Gulf of Mexico is  $W = 2.68 \times 10^{-8} \text{ standard length}^{2.958}$  where W is in kilograms and standard length is in millimetres. One of the most important groupers in the sport and commercial fisheries of the southeast coast of the USA and in the Gulf of Mexico. Caught with hook-and-line, longlines, and occasionally in trawls.

**Distribution:** Mainly continental, from North Carolina to Yucatán Peninsula; juveniles occur as far north as Massachusetts; rare in Bermuda; not known in the Caribbean except for one record from Cuba; also reported from southern Brazil.

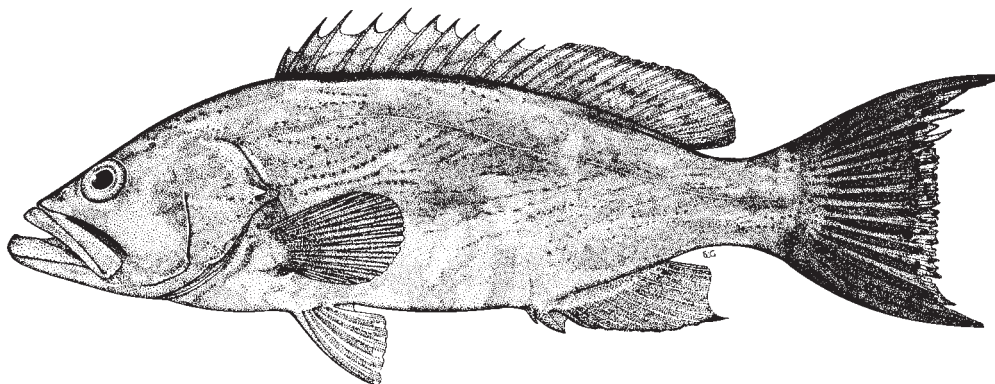


*Mycteroperca phenax* Jordan and Swain, 1884

MKH

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

**FAO names:** En - Scamp; Fr - Badèche galopin; Sp - Cuna garopa.



**Diagnostic characters:** Body depth contained 3.0 to 3.4 times, head length 2.6 to 3.0 times in standard length (for fish 20 to 57 cm standard length). **Posterior nostrils of adults 2 to 4 times larger than anterior nostrils. Preopercle of adults (larger than 40 cm standard length) with projecting bony lobe at angle.** Gill rakers on first arch 8 to 10 on upper limb, 17 to 21 on lower limb, 26 to 31 total (including 3 or 4 rudiments on each limb); longest raker is longer than the longest gill filament. Adults with unevenly exerted rays in dorsal, anal, and caudal fins; **dorsal fin with 11 spines, 16 to 18 soft rays; anal fin with 3 spines, 10 to 12 soft rays; caudal fin concave;** pectoral-fin rays 15 to 17. Lateral body scales ctenoid; lateral-line scales 76 to 82; lateral-scale series about 124. **Colour:** Gilmore and Jones (1992) described 4 colour patterns: the usual pattern is the brown phase, with head and body pale brownish grey, covered (except ventrally) with **closely-set, small dark spots (1 on each scale) which extend onto the median fins; angle of mouth yellowish.** The 'cat's paw' phase is pale brown, the dorsolateral parts of body with several clusters of dark brown spots resembling the paw print of a cat. Large adults (50 to 70 cm standard length) displayed a grey-head phase, with rear 2/3 of body dark, the head and body anterior to sixth dorsal-fin spine silvery grey with dark reticulations, belly and ventral part of body above anal fin with several white spots; fins white except for black margin of pectoral fins. A bicolour phase (seen once) was pale brown anteriorly and abruptly dark brown posterior to origin of soft dorsal fin.

**Size:** Maximum total length (not including exerted caudal rays) is 90 cm, maximum weight about 15 kg.

**Habitat, biology, and fisheries:** In the eastern Gulf of Mexico, usually found over ledges and high-relief rocky bottoms; but the preferred habitat from North Carolina to Georgia is low-profile bottoms in depths of 30 to 100 m. Off the east coast of Florida, the most abundant grouper in areas of living *Octolina* coral formations at depths of 70 to 100 m. Because of their relatively small size, they may be restricted to areas of topographic complexity where they can find shelter from predators such as sharks and large *Seriola dumerili*. Juvenile scamp have been found at jetties and in mangrove areas. Off the Carolinas, scamp grow slowly and attain an age of 21 years (89 cm fork length); maturity is attained at 3 years (40 cm). The weight/length relationship for scamp in the eastern Gulf of Mexico is  $W = 1.10 \times 10^{-7} \text{ standard length}^{2.74}$  where W is in kilograms and standard length is in millimetres. Feed mainly on fishes, but crustaceans and octopus are also occasionally eaten. The most highly prized grouper in fisheries of the Gulf of Mexico, southeastern USA, and Venezuela.

**Distribution:** Mainly continental: North Carolina to Key West, Gulf of Mexico and along southern shore of Caribbean; juveniles occasionally found as far north as Massachusetts.

**Remarks:** Although adult *M. phenax* and *M. interstitialis* are very similar (see Remarks in account of *M. interstitialis* above), the juveniles of *M. phenax* are not bicoloured like those of *M. interstitialis*.

