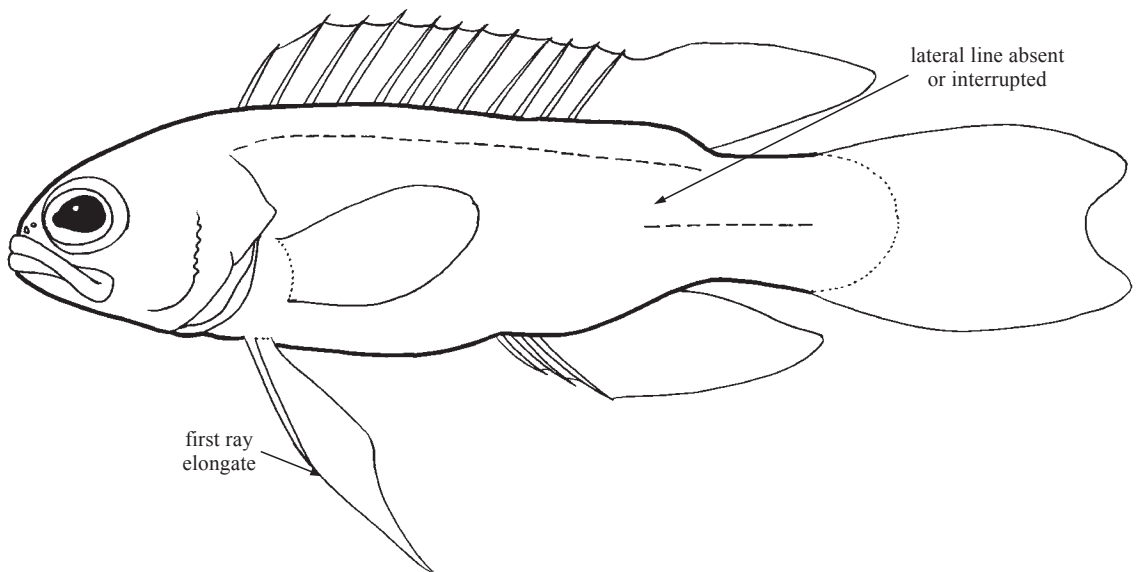


GRAMMATIDAE

Basslets

by R.D. Mooi, Milwaukee Public Museum, Wisconsin, USA and A.C. Gill, British Museum, London, UK

Diagnostic characters: Small (up to 100 mm total length), body elongate to stout, compressed. Eye large and relatively far forward. Snout short. Mouth terminal, small to large. Teeth on jaws, vomer, and palatines mostly villiform with lateral or symphyseal canines on premaxilla and dentary. Preopercle serrated or smooth. **Opercle with 2 or fewer flattened, short spines.** Gill rakers on first arch long, 12 to 35. Branchiostegal rays 6. **Single dorsal fin with 11 to 14 spines** and 6 to 10 soft rays. Anal fin long with 3 spines and 6 to 10 soft rays. Caudal fin rounded to strongly emarginate or lunulate, sometimes with lower lobe longer. Pectoral fins rounded with 14 to 19 soft rays. **Pelvic fins with first ray slightly to very elongate, sometimes reaching to end of anal fin or beyond,** with 1 spine and 5 soft, branched rays. Scales mostly ctenoid. **Lateral line absent or lateral line interrupted with a dorsal line ending at about the last dorsal-fin ray and a midlateral line on the caudal peduncle.** Lateral-scale rows 20 to 48. **Adductor mandibulae muscle with separate, medial A1beta section that originates from the lateral surface of the metapterygoid, quadrate, and levator arcus palatini and inserts on to the medial surface of the maxilla via a tendon.** **Colour:** usually with bright and/or very contrasting colour combinations, sometimes with ocellus on dorsal fin.



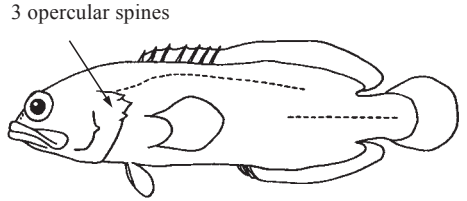
Habitat, biology, and fisheries: Primarily on coral reefs and on deep rocky ledges and drop-offs where plankton is abundant. From shallow reef crest to at least 350 m depth. Common species (in *Gramma*) usually associated with small caves and coral ledges, often in small groups with belly oriented to substrate, hence often upside down under ledges. Pick plankton from the water column but also recorded as cleaning ectoparasites off larger fishes. Being small and colourful, members of the family are ideally suited for the aquarium trade. Some shallow-water species are very popular and important (e.g., *Gramma loreto*, *G. brasiliensis*), but others occur too deep for conventional capture and will likely remain rare in the aquarium trade unless breeding programs are developed.

Remarks: The family originally included several taxa, but has been redefined to include only *Gramma* Poey and *Lipogramma* Böhlke. Distribution is restricted to the western Atlantic. Of 12 species recognized, all but 1 has been recorded from our area (*Gramma brasiliensis* Sazima, Gasparini, and Mourra, 1998). *Gramma* and *Lipogramma* have been collected throughout Area 31 excluding Bermuda. Most species are known from very few specimens (collected by submersibles) so appear to have restricted distributions, but are likely to have much wider ranges.

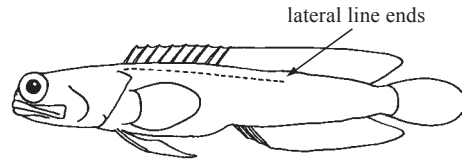
Similar families occurring in the area

Serranidae: 3 opercular spines; lateral line complete, except some members of the tribe Grammistini (*Pseudogramma*). The latter differ in having 8 or fewer dorsal-fin spines (excluding a small rudimentary spine anteriorly visible only in x-radiographs or following dissection), 18 to 25 dorsal-fin segmented rays, short pelvic fin, 3 opercular spines, 1 preopercular spine, 7 branchiostegal rays.

Opistognathidae: lateral line high on body, close to dorsal-fin base but ending below middle of fin; otherwise easily distinguished from grammatids by absence of ctenoid scales, head and mouth large, with maxilla extending well beyond eye, dorsal fin with 10 to 12 weak spines (usually 11 spines), pelvic fin with 1 spine and 5 segmented rays with the first 2 being stout and unbranched.



Serranidae



Opistognathidae

Key to the species of Grammatidae occurring in the area

1a. Lateral line in 2 parts, the anterior part high on body and ending at the last soft ray of the dorsal fin, the posterior part midlateral on caudal peduncle; preopercular margin serrated; outer procurrent caudal-fin rays not thickened or spinous → 2

1b. Lateral line absent; preopercular margin smooth; outer procurrent caudal-fin rays thick and spinous → 4

2a. Head bluish grey with yellow stripes from snout over cheek and opercle; body bluish grey, each scale with a dull yellow spot; no black in dorsal-fin or black cap on head (Fig. 1)
 *Gramma linki*

2b. Head magenta or purplish; anterior dorsal fin black or with a black spot; with or without a black cap on head → 3

3a. Head magenta with a black cap from tip of snout through eye and over nape, with black continuing onto first half of dorsal fin; caudal fin lunate with black upper and lower lobes; pelvic-fin rays relatively short, reaching to origin of anal fin; dorsal-fin spines 13 or 14, almost always 13; dorsal-fin soft rays 8 or 9, almost always 9; pectoral-fin soft rays 16 to 18, almost always 17 (Fig. 2) *Gramma melacara*

3b. Head, pelvic fins, and anterior half of body and dorsal fin violet, posterior half of body and median fins yellow; 2 narrow yellow stripes on head, 1 through and the other below the eye to opercular margin; caudal fin emarginate to forked, solid yellow; pelvic-fin rays elongate reaching well beyond origin of anal fin; dorsal-fin spines 11 to 13, usually 12; dorsal soft rays 9 to 11, usually 10; pectoral-fin soft rays 14 to 17, usually 16 (Fig. 3) *Gramma loreto*

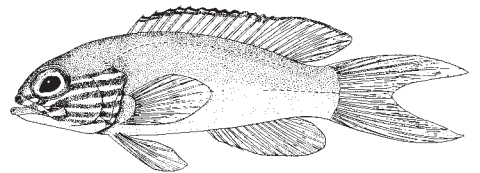


Fig. 1

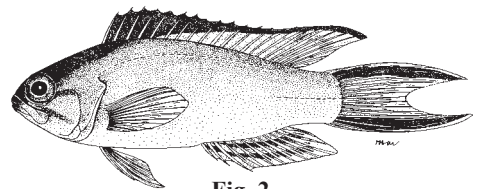


Fig. 2

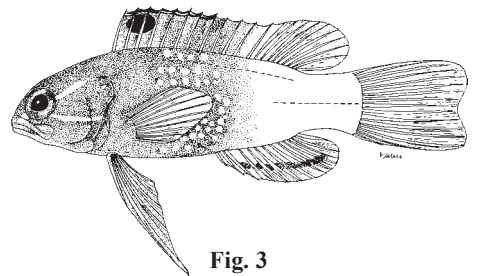


Fig. 3

- 4a. Base of the soft dorsal fin with prominent dark spot, ocellus, or band → 5
- 4b. Soft dorsal fin without prominent markings → 9

- 5a. Without orbital bar → 6
- 5b. With orbital bar → 8

- 6b. Body without bars or bands; dorsal-fin spines 12 to 14, usually 13 (Fig. 4)
 *Lipogramma anabantoides*
- 6a. Body banded or barred, dorsal-fin spines 12. → 7

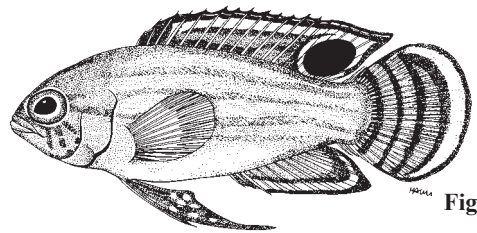


Fig. 4

- 7a. Body with 6 bars, fourth and fifth extending onto dorsal-fin soft rays and curving around dorsal-fin ocellus; dorsal and anal fin with yellow stripes; no yellow cap on head and nape (Fig. 5) *Lipogramma regium*
- 7b. Body with 10 to 12 bars, none curving around dorsal-fin ocellus; median fins dotted with small yellow spots; yellow cap on head and nape to dorsal-fin origin (Fig. 6) *Lipogramma robinsi*

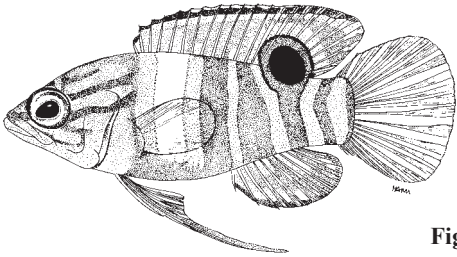


Fig. 5

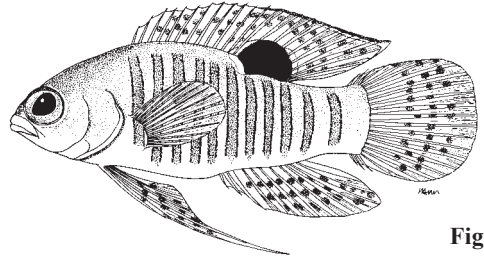


Fig. 6

- 8a. Body without bars, bright yellow in life (Fig. 7) *Lipogramma flavescens*
- 8b. Body with 2 dark bars, 1 from anterior dorsal-fin spines, the other from posterior dorsal-fin rays and merging with dorsal-fin ocellus, bars pronounced and extending far ventrally in small specimens (<20 mm standard length), but narrow, faint, and not extending far ventrally in larger specimens (>30 mm standard length) (Fig. 8) *Lipogramma evides*

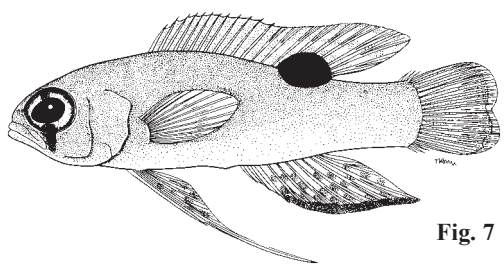


Fig. 7

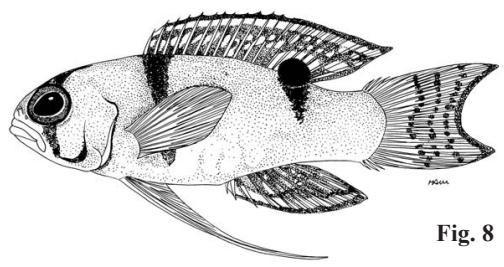


Fig. 8

- 9a. Dorsal-fin spines 11, dorsal-fin soft rays 6 or 7; circumpeduncular scales 16; head and body uniformly yellow to rose coloured, caudal fin yellow with dark spots (Fig. 9) *Lipogramma roseum*
- 9b. Dorsal-fin spines 12 or 13, dorsal-fin soft rays 8 to 10; circumpeduncular scales 18 to 21; not coloured as above → 10

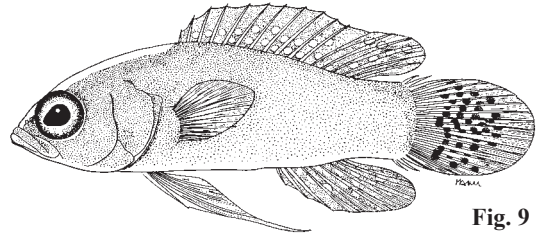


Fig. 9

- 10a. Bicoloured, purplish red anteriorly, yellow posteriorly; no stripes on head; scales in lateral series 29 to 35; gill rakers on first arch 20 to 21; anal-fin soft rays 8; upper caudal-fin spines 4 or 5 (Fig. 10) *Lipogramma klayi*
- 10b. Body generally yellowish, median dorsal stripe from snout to dorsal-fin origin, a second stripe from posterior eye onto fore part of body; scales in lateral series 25 to 29; gill rakers on first arch 13 to 18; anal-fin soft rays 7; upper caudal-fin spines 3 (Fig. 11) *Lipogramma trilineatum*

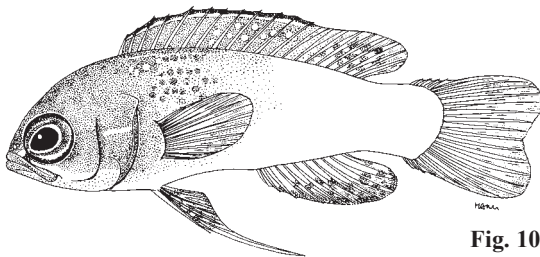


Fig. 10

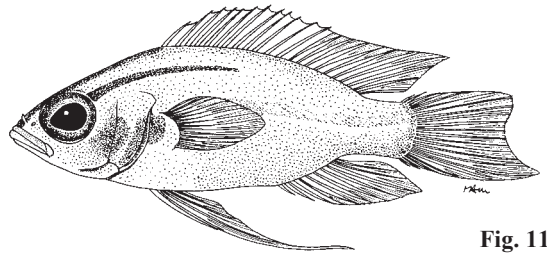


Fig. 11

List of species occurring in the area

- Gramma linki* Starck and Colin, 1978. To 60 mm SL (80 mm TL). Tropical, 20 to 130 m; Bahamas, Mexico (Quintana Roo), Belize, Jamaica, Puerto Rico (likely more widely distributed).
- Gramma loreto* Poey, 1868. To 65 mm SL (about 80 mm TL). Tropical to 65 m; Bahamas, Florida. Keys (apparently introduced), Mexico (Quintana Roo), Belize, Honduras, Colombia, Venezuela, Greater Antilles (and Grand Cayman), Lesser Antilles, Tobago.
- Gramma melacara* Böhlke and Randall, 1963. To 80 mm SL (about 100 mm TL). Tropical, 35 to 100 m; Bahamas, Belize, Honduras, Colombia, Grand Cayman, Jamaica, Hispaniola (likely more widely distributed).
- Lipogramma anabantoides* Böhlke, 1960. To 20 mm SL (27 mm TL). Tropical 10 to 80 m; Bahamas, SW Florida, Mexico (Quintana Roo), Belize, Honduras, Hispaniola (likely more widely distributed).
- Lipogramma evides* Robins and Colin, 1979. To 45 mm SL (60 mm TL). Tropical, 50 to 350 m; Bahamas, Mexico (Quintana Roo), Belize, Nicaragua, Jamaica, Barbuda (likely more widely distributed).
- Lipogramma flavescens* Gilmore and Jones, 1988. To 25 mm SL (about 30 mm TL). Tropical, 200 to 300 m; Bahamas, Belize (likely more widely distributed).
- Lipogramma klayi* Randall, 1963. To 25 mm SL (about 32 mm TL). Tropical, 40 to 150 m; Bahamas, Belize, Jamaica, Puerto Rico, Lesser Antilles (likely more widely distributed).
- Lipogramma regium* Robins and Colin, 1979. To 17 mm SL (about 23 mm TL). Tropical, 70 to 90 m; Bahamas, Honduras, Puerto Rico (likely more widely distributed).
- Lipogramma robinsi* Gilmore, 1997. To 22 mm SL (about 29 mm TL). Tropical 200 to 300 m; Bahamas, Belize (likely more widely distributed).
- Lipogramma roseum* Gilbert in Robins and Colin, 1979. To 10 mm SL (about 13 mm TL). Tropical 33 m; Bahamas, Colombia (Isla de Providencia) (likely more widely distributed).
- Lipogramma trilineatum* Randall, 1963. To 28 mm SL (about 35 mm TL). Tropical, to 100 m; Bahamas, SE Florida, Mexico (Quintana Roo), Belize, Honduras, Colombia (Isla de Providencia), Grand Cayman, Jamaica, Puerto Rico, Curaçao (likely more widely distributed).