

## THREE NEW GRAMMID FISHES FROM THE CARIBBEAN SEA

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## ABSTRACT

The grammid fish genus *Lipogramma* Böhlke has consisted until now of three little known species, *L. anabantoides* Böhlke, *L. klayi* Randall, and *L. trilineata* Randall all restricted to parts of the tropical western Atlantic. Descriptions of three new species are given in this paper: *L. evides* Robins and Colin, *L. regia* Robins and Colin, and *L. rosea* Gilbert. A color plate is included showing *L. regia* and *L. klayi* in life. New distributional data and other notes are provided for the previously known species and a key to the identification of all species is given.

One of the least sampled ichthyofaunas is that living on rough, generally untrawlable bottoms below diving depths, and small fishes in such areas are not obtainable with weighted fishing lines and electric reels. The 3-m (10-foot) try net, used almost like a dredge, has been successfully employed in such environments and although gear loss is high, the successful efforts well reward the trouble and expense. Marine scientists from the University of Miami first visited Arrowsmith Bank in the western Caribbean Sea in September 1967, aboard the research vessel PILLSBURY. Try nets were used with great success on the hard rubble bottom on the top of this bank and most fishes collected represented new species, including a distinctly banded species of the grammid genus *Lipogramma*. Most of these new species were small forms that apparently prefer the hard bottom of the deep shelf and upper slope waters and thus occur below the operating depths of divers using SCUBA. Subsequent trips, both by R/V GERDA and R/V PILLSBURY, to Arrowsmith Bank yielded additional new species but only one additional specimen of the basslet. This species was also observed on three occasions during work with the submersible vessel NEKTON (Colin, 1974: 31, 35) at Jamaica and Belize and one specimen was collected at Jamaica. Recently Colin collected a second undescribed species of this genus at western Puerto Rico. After our manuscript was nearly complete we learned that Dr. Carter

R. Gilbert, Florida State Museum, was describing what proved to be a third new species of *Lipogramma*. We are grateful to Dr. Gilbert for permitting us to include his description and to incorporate his information elsewhere in our paper.

The following abbreviations are used in the lists of material examined: ANSP = Academy of Natural Sciences, Philadelphia; FMNH = Field Museum of Natural History, Chicago; UF = Florida State Museum; UMML = Rosenstiel School of Marine and Atmospheric Science, University of Miami.

*Lipogramma evides* Robins and Colin,  
new species

Figures 1-2, 6, Table 1

*Lipogramma* sp., Colin, 1974: 31, 34 (observations at Jamaica and Belize, specimen from Jamaica), Thresher, 1975: 37 (report of observations at Jamaica and Belize, characters).

**Diagnosis.**—Dorsal rays XII, 9 (the last composite), principal caudal rays 17, anal rays III, 7-8 (the last composite), pectoral rays 15-16, pelvic rays I, 5 (the outer two segmented rays elongate, extending well beyond anus), vertebrae 25 (10 + 15), total gill rakers 20-21, branchiostegals 6 (4 + 2), no later line canal on body, maxilla naked. Head and body crossed vertically by three violet-brown bands.

**Description.**—Counts and measurements of the six type specimens are given in Table 1. The caudal fin is rounded and in addition to

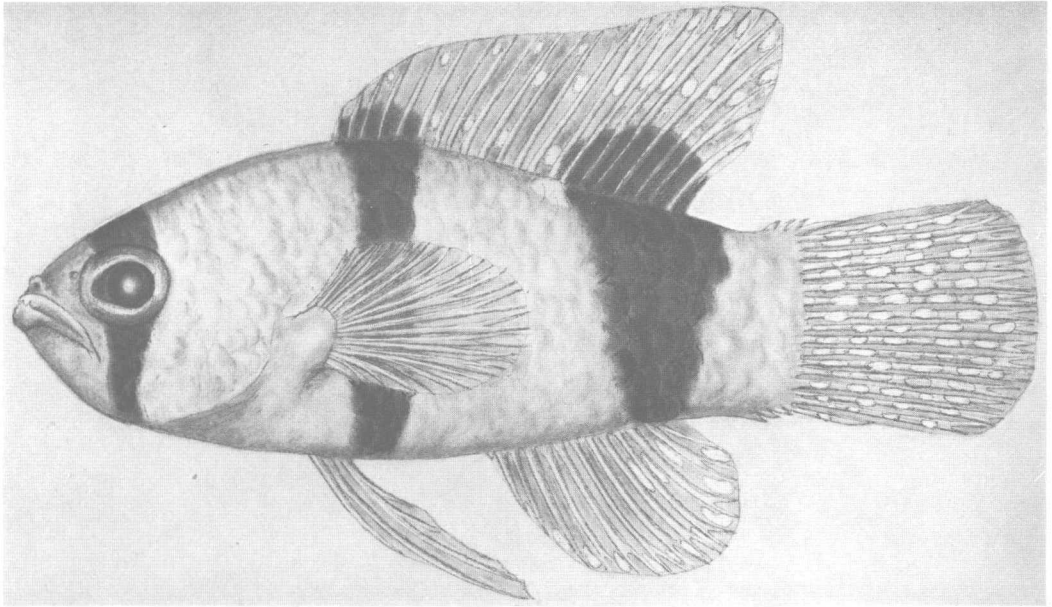


Figure 1. Lateral view of holotype of *Lipogramma evides* Robins and Colin, ANSP 134329, standard length 34.4 mm. Drawing by Dr. Catherine H. Robins.

the 17 principal caudal rays there are four additional elements above and below that are not attached to the hypurals. The anterior three both above and below are short, broad, unsegmented and spinous, the last is slender and at least distally segmented in juveniles, becoming spinous in adults. The soft dorsal and anal rays are branched as are most if not all pectoral rays. In the holotype, all pelvic soft rays are branched although the longest ray is only branched at its tip. Most specimens have the pelvic and pectoral rays broken.

The general body proportions are best seen in Figures 1–2. The caudal fin is slightly rounded, and the longest pelvic rays extend well back along the anal-fin base. The dorsal profile from snout to dorsal fin is evenly convex. The diameter of the large eye is contained about 2.66 times in the head length. The pupil is tear-drop shaped so that there is a pronounced aphakic space anteriorly.

In life, *L. evides* is pale buff or cream-colored, crossed by three dark violet brown

to brownish black cross bars. The pale area is nearly unmarked in the smallest specimen whereas in the holotype there is a dusky outline to most of the scales, especially posteriorly. The distal edge of the anal fin (especially anteriorly) is bright yellow and there are yellow spots arranged in 2 to 3 rows in the dorsal-fin membrane. The row at the base and the one distally are best developed. A large black spot occupies most of the base of the soft dorsal fin encroaching slightly onto the adjacent body. In juveniles it blends rather evenly into the posterior body band and is no more intense than the lower part of that band, but in adults it stands in sharp contrast to the grayer band. A second black spot occurs basally from dorsal spines 2 to 6. Three dark bands cross the body. One occupies most of the interorbital areas and crosses the eye and cheek and even the branchiostegal membrane; it narrows ventrally. The second extends from the spot in the spinous dorsal across the body under the basal half of the depressed pectoral fin and circles the

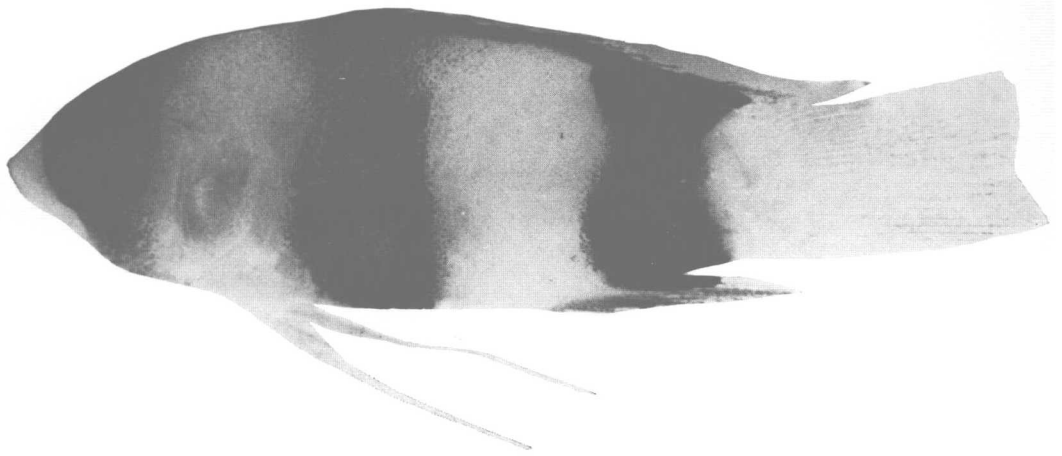


Figure 2. Lateral view of juvenile paratype of *Lipogramma evides* Robins and Colin, ANSP 134332, standard length 12.6 mm. From a Kodachrome by Dr. Patrick L. Colin.

belly between the pelvic-fin base and the anus. The third and broadest band extends from the base of the soft dorsal fin and the anterior half of the caudal peduncle to the base of the posterior anal ray. In some specimens this band circles the peduncle below. In extreme individuals all three bands

completely ring the body. The bands are broadest and most intense on the smallest specimen.

Scales extend forward on the head to the coronal pore above. The cheeks, preopercle, opercle, interopercle and isthmus are scaled. Only the snout, chin, jaws and branchioste-

Table 1. Morphometric and meristic data for the type specimens of *Lipogramma evides* and *L. regia*

Catalog Number	<i>evides</i>					<i>regis</i>		
	ANSP 134332	ANSP 134331	ANSP 134330	ANSP 134330	ANSP 134329	FMNH 82583	ANSP 138115	ANSP 134333
Standard length (mm)	12.6	17.2	28	32.0	34.4*	34.5	16.6*	16.6
Head length†	36	40	—	35	35	39	38	37
Eye diameter	15	16	—	15	13	14	13	14
Depth of caudal peduncle	21	17	—	21	20	19	20	22
Depth at pelvic-fin origin	36	36	—	38	36	33	36	36
Pectoral-fin length	27	25	—	28	27	29	22	25
Pelvic-fin length	49	—	—	29+	35	38	45	41
Length 12th dorsal spine	16	15	—	20	20	—	20	20
Dorsal rays	XII, 9	XII, 9	XII, 9	XII, 9	XII, 9	XII, 9	XII, 9	XII, 9
Anal rays	III, 7	III, 8	III,—	III, 8	III, 7	III, 9	III, 8	III, 8
Caudal rays‡	17	17	17	17	17	17	17	17
Pectoral rays	15–15	16–16	—	16–15	16–15	16–16	17–17	17–17
Pelvic rays§	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5
Lateral scale rows	23	—	—	26	26	26±	26	26
Caudal peduncle scales	16	—	—	—	—	17	16	16
Transverse scale rows	—	—	—	14±	14±	13±	13	13
Gill rakers	19	19	—	21	20	20	14	14

\* Holotype.

† All measurements are in percent of standard length.

‡ Principal rays. Each specimen has one slender, usually flexible element and three broad procurent spines both above and below in addition to the principal rays.

§ In each fin.

gals are scaleless. There may be some scales on the opercle for what seems to be scale pockets can be seen on the opercle of the holotype. The scales are large and deciduous and so many are lost in the type specimens that counts are difficult. Those on the predorsal area, the isthmus and the head lack ctenii. Those on the body have ctenii and the ctenii seem strongest on the scales around the peduncle. There are 11 rows across the body above the anal-fin origin and 23 to 26 rows from the shoulder to the caudal-fin base. The fins are naked except at the very base of the soft dorsal and anal fins. There appear to be four rows of scales across the cheek.

The opercle is unarmed and nearly smooth edged. There is one flat point about midway on its posterior edge. The preopercular border is smooth.

Teeth in the outer row in both jaws are fixed and somewhat enlarged especially anteriorly. The inner two rows are depressible and some inside teeth are slightly enlarged. There is a single row of small fixed teeth on the vomer and palatines. The tongue is rounded anteriorly.

Head pores are arranged as shown in Figure 3A (from which the nostrils have been omitted for clarity). The supratemporal and infraorbital canals are incomplete with one and two pores respectively. There are 9 preopercular pores, 6 supraorbital pores (including the median coronal pore). The remaining 3 pores are in the lateral canal proper. The lateral-line canal is absent from the body. The nostrils are widely separated, the anterior opening through a short tube with an anterior flap, the posterior a single opening with the lower half of the rim somewhat elevated. The anterior nostril is immediately behind the snout edge, the posterior immediately in front of the border of the eye just ventral to the supraorbital pore.

*Etymology.*—From the Greek word for comely. The proposed common name is banded basslet.

*Distribution.*—*Lipogramma evides* is known

from Arrowsmith Bank, east of Cozumel Island, Mexico; Belize (sight record only; Colin 1974); Nicaragua; Jamaica and Barbuda (Lesser Antilles). The known depth range is 14.5 to 265 m. It probably occurs widely in the tropical western Atlantic within this depth range.

*Material Examined.*—Holotype, ANSP 134329, 34.4 mm standard length, Arrowsmith Bank, 21°05'N, 86°23'W in 146 to 265 m, 22 May 1967, R/V PILLSBURY, Sta. 581. Paratypes, ANSP 134330 (2, 28–32 mm S.L.) collected with the holotype, ANSP 134331 (1, 17.2 mm S.L.) 17°27.8'N, 61°41.1'W (southeast of Barbuda) in 68–216 m, 20 July 1969, R/V PILLSBURY Sta. 969. ANSP 134332 (1, 12.6 mm S.L.) Jamaica, Discovery Bay, 15 August 1972, NEKTON GAMMA dive 151, collection 1:1-2, in 145 m in reef rock brought to surface, L. Land and S. Hastings. FMNH 82583 (1, 34 mm S.L.) Nicaragua, 12°32'N, 82°25'W, in 155 m, 23 May 1962.

*Lipogramma regia* Robins and Colin,  
new species

Figures 3–4, 6, Table 1

*Diagnosis.*—Dorsal rays XII, 9 (the last composite), principal caudal rays 17, anal rays III, 8 (the last composite), pectoral rays 17, pelvic rays I, 5 (outer segmented ray extending well beyond origin of anal fin), vertebrae 25 (10 + 15), gill rakers 14, branchiostegals 6, no lateral-line canal on body, maxilla naked, head with 4 broad lines, body crossed by 6 broad bands with pale centers, area between bands 1 and 2 often pale, ocellus on body and dorsal fin at soft portion of fin.

*Description.*—Counts and measurements of the holotype and single paratype are given in Table 1. The origin of the dorsal fin is between the posterior edge of the opercular membrane and the base of the pectoral fin with the origin of the pelvic fin slightly anterior to the opercular margin. The spines of the dorsal and anal fins progressively are longer posteriorly. The last soft ray of the dorsal and anal are divided to their base (composite) and all soft rays have bifurcate tips except for the posterior division of the last ray of both fins. The 4th or 5th dorsal ray of the holotype is

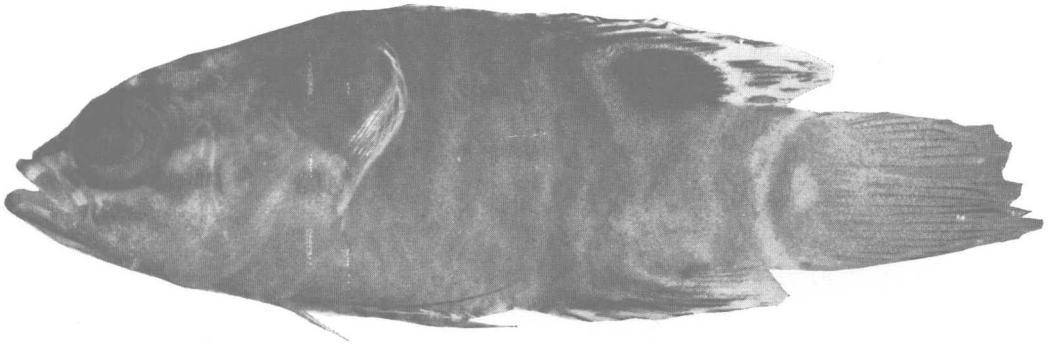


Figure 3. Lateral view of paratype of *Lipogramma regia* Robins and Colin, ANSP 134333, standard length 16.6 mm. Photograph by Dr. Patrick L. Colin.

longest; the 7th dorsal ray of the paratype appears longest. The 4th (holotype) or 3rd (paratype) anal ray is longest. There is no notch between the spinous and soft portions of the dorsal fin.

The caudal fin has 3 stout procurent spines both dorsally and ventrally. All 17 principal caudal rays are bifurcate at their tips and the fin is slightly emarginate with the lower portion longer. The 5th caudal ray is the longest in the dorsal lobe and the 13th or 14th is longest in the ventral lobe. A procurent soft ray occurs both dorsally and ventrally between the principal rays and the procurent spines and is intermediate in length to the spines and principal rays. The pectoral fin does not reach to the anal fin base; its 7th ray is longest. In the holotype the first pelvic ray reaches to the base of the 3rd anal ray. This ray is damaged on both fins in the paratype but the left fin reaches to the base of the 2nd anal ray. Anal rays 2-5 are of decreasing length.

The snout is pointed, similar to that of *L. trilineata*; the interorbital region is flattened. The eye is large, about one third of the head length. The pupil is ovoid and oriented for increased forward vision. The mouth is terminal and oblique, the gape reaching to the anterior edge of the eye with the posterior end of the maxilla a short distance behind the anterior edge of the eye. A portion of the maxilla rests beneath the sub-

orbital when the mouth is closed. The nostrils are paired, the posterior on a line anterior to the eye adjacent to a pore of the supraorbital canal. The anterior nostril is slightly raised, almost tubular, and opens laterally above and slightly posterior to the terminal pore of the supraorbital canal.

Pigmentation is as shown in Figures 3 and 4. In alcohol 4 dark lines occur on each side of the head with the uppermost terminating posteriorly in a darkened area centered around the posterior pore of the lateral canal. The snout and interorbital area have scattered melanophores with two darker bands, one slightly behind the center of the eye and the second just ahead of the posterior edge of the eye.

The body has approximately five darkened cross bands with pale centers which become less distinct posteriorly. The first cross band occurs from behind the origin of the dorsal fin to the axil of the pectoral fin. The central pale area is about equal in width to either of the adjacent dark bands. The center of the second band occurs between spines 6 and 7 of the dorsal fin and reaches ventrally to midway between the pelvic- and anal-fin origins. The third band is less distinct and reaches from dorsal spine 10 to the origin of the anal fin. The more posterior bands are less distinct as dark-light-dark units and approximately five dark bands with intervening pale areas are found from the origin



of the anal fin to the hypural plate. These posterior dark bands also continue onto the soft portions of the dorsal and anal fins.

An ocellus, equal to the eye in size, occurs one third on the soft portion of the dorsal and two thirds on adjacent areas of the body. The center of the ocellus is very dark and about one half the total diameter; the remaining ring is heavily pigmented, as dark as or darker than bands on the body.

The basal half of the spinous dorsal fin is dark. The soft portion has a pale band around the dorsal surface of the ocellus. The dark portion of the spinous part reaches posterior to the rest of the basal two thirds of the fin. The margin of the fin is dark with a pale stripe running the entire length of the fin beneath it.

The basal one half to two-thirds of the anal fin is dark except where pale bands continue onto its soft portion from the body. Its margin is dark with a pale band inside.

The caudal fin has scattered melanophores on both its rays and membranes. A dark band, the last of the series on the body, occurs on the basal portion of the fin. The pelvic rays are dark-banded. The pectoral-fin base has its upper third pale and its lower two-thirds dark and the basal portions of the rays are darkened. Scattered melanophores occur on the basal half of the fin, becoming rarer distally.

Life colors of the holotype are shown in Figure 4. The darkened cross bands which appear in alcohol are a very light blue and their paler central area is not very apparent in life. The areas between the dark bands of preserved specimens are yellow and in life are much more distinctive with the body having six yellow bands which are narrower than the height of the pupil. One significant difference exists between the coloration of the holotype and the paratype. In the holotype the area between the first two yellow

bars is white, the white band running from the belly onto the lower portion of the spinous dorsal. In the paratype this area is not white but is colored very pale blue as are the other areas between the yellow bands. A third individual of *L. regia*, collected with the holotype, possessed the white bar like the holotype. This specimen, however, was lost while being brought to the surface. As both the holotype and paratype were collected alive and lived for some time after capture, this major difference in coloration is not an artifact and, since the two specimens are nearly identical in size it may represent a sexual difference.

The black ocellus on the soft dorsal and body has an outer ring of bluish white. The first yellow band continues dorsally, then posteriorly to form a stripe near the margin of that fin. A stripe of iridescent blue covers the area between the yellow stripe and the actual margin of the dorsal fin. The third yellow band continues in a similar manner onto the anal fin. The fourth yellow band loops around the bluish-white ring of the ocellus to join a similar loop or bar number 5 and both touch the yellow stripe near the dorsal fin margin.

The dark lines on the head of preserved specimens are bluish in life with the intervening areas, again more apparent in life, yellow. The iris has golden areas and a faint ring of blue encircles the eye.

Scales occur on the body and chest. The opercle, preopercle, cheek and head to the posterior limit of the orbit (occiput) are scaled, but the snout, maxilla and mandible lack scales. Scales laterally on the body possess ctenii while those on the chest as far anteriorly as the pectoral-fin base have weak ctenii and those of the opercle, preopercle, cheek, and occiput lack ctenii. A few irregular rows of scales lacking ctenii occur at the bases of the dorsal and anal fins. The

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Figure 4. Upper. Lateral view of holotype, ANSP 138115, 16.5 mm standard length, of *Lipogramma regia* Robins and Colin. Lower. Lateral view of *Lipogramma klayi* Randall, ca 20 mm standard length from Puerto Rico. Both Kodachromes of live fishes taken in an aquarium by Dr. Patrick L. Colin.

basal fourth of the caudal fin is covered by several rows of cycloid scales. There are 26 transverse scale rows on the body and 13 lateral rows above the anal-fin origin which bear ctenii.

The margin of the preopercle is entire. The opercle has no spine and bears no serrations on its margin.

Both jaws have an outer fixed row of teeth and an inner row in which the teeth are depressible and somewhat enlarged. A single row of fixed teeth occurs on the vomer and palatine. The tongue is rounded anteriorly.

No lateral line occurs on the body. Pores of the lateralis system are well developed on the head and are shown in Figure 6b. The anterior pores of the supraorbital canal are adjacent to the nostrils and a single interocular pore exists between the eyes. Only one pore occurs on the supraocular canal between its junction with the preopercular canal and the infraorbital connection. *Lipogramma evides* possesses two pores in this area (Figure 6a). There is only a single supratemporal pore, unlike *L. trilineata* which possesses two pores (Figure 6c). The suborbital canal is short with only two pores and does not connect with the other canals.

*Etymology*.—From the Greek word for royal. The proposed common name is royal basslet.

*Remarks*.—The holotype was maintained for more than 3 weeks in a laboratory aquarium and was in excellent condition when sacrificed. During this time it fed readily on zooplankton added to the aquarium and may have grown slightly.

*Distribution*.—Specimens of *Lipogramma regia* are known only from the type locality off southwestern Puerto Rico at 70–75 m depth. It was collected from beneath small rocks on a steeply sloping (approximately 45°) reef face. Walter A. Starck, II reports (pers. comm.) having collected what he believed to be this species at Andros Island, Bahamas at 90 m depth. Although the specimen is presently lost, a Kodachrome from Starck is unquestionably of *regia*. The

species should prove to be widely distributed in the Caribbean region and the Bahamas.

*Material Examined*.—Holotype, ANSP 138115, 16.5 mm standard length, Puerto Rico, 6 miles south of La Parguera at the edge of the island shelf, in 75 m, 23 August 1976, collected with quinaldine-alcohol solution by P. L. Colin (one additional specimen collected from same crevice as the holotype, lost while being brought to the surface).

Paratype, ANSP 134333, 16.6 mm SL, same locality as holotype, in 70 m, 29 January 1976, collected with quinaldine-alcohol solution, P. L. Colin from R/V CORALLINA.

The Kodachrome referred to above is also deposited at the Academy of Natural Sciences of Philadelphia.

*Lipogramma regia* Gilbert, new species  
 Figures 5, 6d

*Diagnosis*.—Dorsal rays XI, 6 (last ray composite); anal rays III, 6 (last ray composite); pectoral rays 16; pelvic rays I, 5; caudal rays III, 19, III (including 17 principal and two procurrent soft rays); vertebrae 10 + 15 = 25; branchiostegals 6; lateral scales approximately 26; no lateral-line canal on body; maxilla naked; a dorsal notch appears to be present between spinous and soft parts of dorsal fin (actually over spine XI) (additional specimens are necessary to confirm this); caudal fin evenly rounded; both dorsal and anal fins have large light spots, these occupying lower half of anal fin, nearly all of soft dorsal fin, and lower half of spinous dorsal fin; small rectangular dark spots present in central area of caudal fin.

*Description*.—Measurements of body parts expressed in hundredths of standard length are: head length—38, length dorsal base—48, length of anal base—18, greatest body depth—32, caudal peduncle depth—20, caudal peduncle length—14, length of pectoral fin—18, length of caudal fin—32, orbit diameter—11, snout length—69, upper jaw length—13. The dorsal-fin origin is above the pectoral-fin base. The pelvic fins are inserted slightly anterior to the posterior margin of the opercle. Dorsal- and anal-fin spines are progressively longer posteriorly, except possibly dorsal spine XI. The caudal

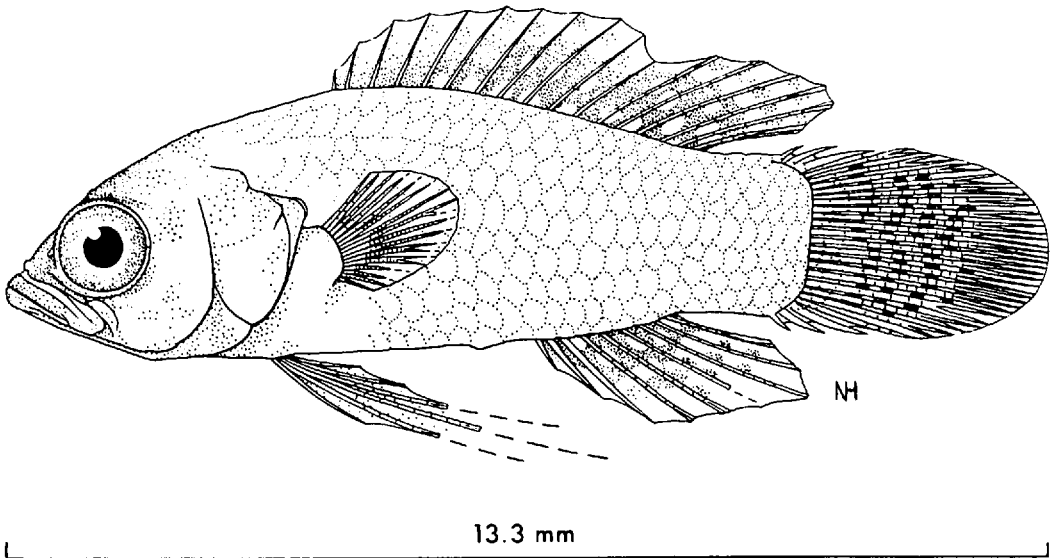


Figure 5. Lateral view of the holotype of *Lipogramma rosea* Gilbert, UF 19636, standard length 9.5 mm. Drawing by Miss Nancy Halliday.

fin has three stout procurent spines both dorsally and ventrally; all 17 principal caudal rays are bifurcate at their tips; a procurent soft ray occurs both dorsally and ventrally to the principal rays; these are longer than the procurent spines but shorter than any principal rays. The caudal fin is evenly rounded posteriorly, with no ray notably longer than adjacent rays. The pectoral fin does not extend posteriorly to the anal-fin base. Because the outer parts of the pelvic fins are damaged in the unique holotype, the lengths of their rays cannot be determined. The snout is pointed, as in *L. trilineata*, and the interorbital region is flattened. The eye is moderately large, slightly less than one-third of head length. The mouth is terminal and moderately oblique, the gape reaching to below the anterior margin of the eye, and the posterior end of the maxilla extends to below the middle of the eye. Part of the maxilla is below the suborbital bone when the mouth is closed. The anterior nostril is slightly raised, almost tubular, and opens laterally above and slightly posterior to the terminal pore of the supraorbital canal.

Scales are present on body and belly, except that the chest appears to be naked. No scales are evident on the opercle, preopercle, cheek, top of head, snout, maxilla, or mandible. Lateral body scales possess ctenii, but the nature of scales elsewhere cannot be determined. There are 26 scales in the lateral series from the shoulder to the caudal-fin base and there are 11 rows of scales diagonally upward and forward from anal-fin origin. The fins are naked.

The opercle is unarmed and nearly smooth edged, with a flat point present posteriorly; the preopercular border is smooth.

Head pores are arranged as in Figure 6d. The supratemporal and infraorbital canals are incomplete, with one and two pores respectively. There are seven preoperculo-mandibular, five supraorbital pores (including median coronal pore); three lateral pores. The nostrils are widely separated, the anterior one opening through a short tube with an anterior flap.

*L. rosea* possesses no noticeable markings on the body itself, but does have distinct markings on the dorsal, anal, and caudal fins

(mentioned previously). Color (recorded immediately after preservation) is as follows: body rose colored overall, with a bright yellowish-white line on the back extending forward between eyes to tip of snout; dorsal and anal fins a deeper red (color of light spots in these fins not recorded); caudal fin yellowish, with numerous dark spots in central area.

*Etymology.*—The species name *rosea* refers to the rosy coloration of the body. The proposed common name is rosy basslet.

*Distribution.*—*Lipogramma rosea* at present is known only from Isla Providencia, which is located in the western Caribbean Sea at 13°19'–23'N, 81°21'–24'W.

*Material Examined.*—Holotype (and only known specimen), UF 19636, 9.5 mm standard length, Caribbean Sea, off northwest coast of Isla Providencia, Colombia, depth 32–33 m (105–110 ft), collected with rotenone (Noxfish), 28 August 1971, Carter R. Gilbert et al. (field no. G 71-65).

The descriptions of *L. evides*, *L. regia* and *L. rosea* bring to six the known species of the genus. The following key will assist their identification.

- |   |   |
|---|---|
| 1a. Base of the soft dorsal fin with prominent dark spot or band .....  | 2 |
| 1b. Soft dorsal fin without prominent markings .....  | 4 |
| 2a. Body banded or barred .....   | 3 |
| 2b. Body rather uniformly pigmented, pelvic fins dark, pectoral rays 17 .....   |   |
| ..... <i>anabantoides</i> (spotfin basslet) (Bahama Islands, Haiti)   |   |
| 3a. Body with broad dark band from base of soft dorsal across body to region of posterior anal rays, a second, narrower, dark band across most of body immediately behind pectoral-fin base, and a third through the eye; pelvic fins pale, pectoral-fin rays 15–16 ..... |   |
| ..... <i>evides</i> (banded basslet) (Barbuda, Jamaica, Belize, Arrowsmith Bank)  |   |
| 3b. Body with 4–5 dark cross bars, each pale-centered and thus appearing double; head horizontally striped; pelvic fins dusky, with darker cross bars; pectoral rays 17 .....   |   |

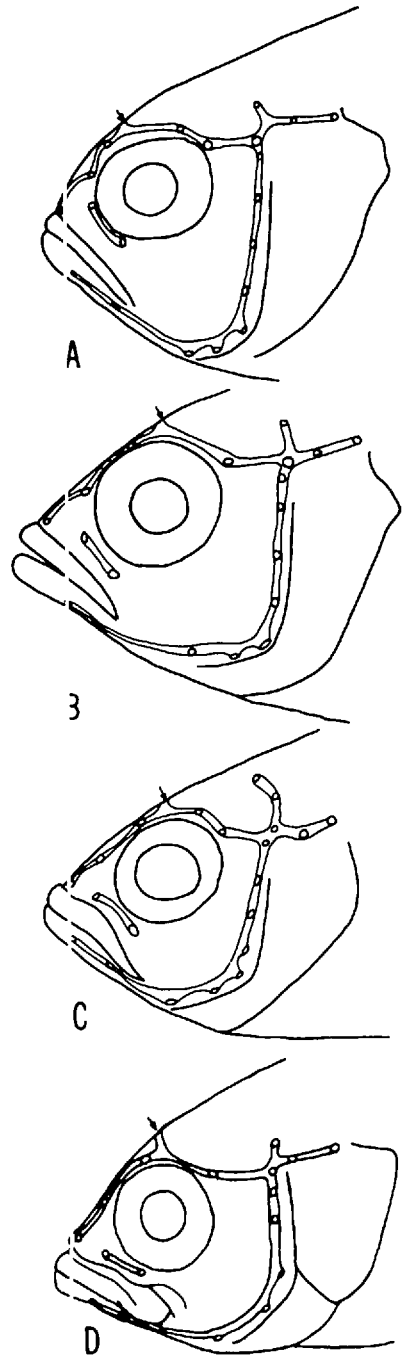


Figure 6. Diagram of the lateralis system on the head: A) *Lipogramma evides* Robins and Colin, holotype, ANSP 134329; B) *Lipogramma regia*

Robins and Colin, paratype ANSP 134333; C) *Lipogramma trilineata* Randall, UMML 31145; D) *Lipogramma rosea* Gilbert, holotype UF 19636. Drawings A–C by P. L. Colin, D by N. Halliday.

- regia* (royal basslet) (southwestern Puerto Rico, Bahamas)
- 4a. Head and body with median dark dorsal stripe, second stripe on each side from upper part of eye to fore part of body; pelvic fins pale; pectoral rays 15 .....  
*trilineata* (threeline basslet) (Bahamas, south-eastern Florida, eastern Mexico to Curaçao)
- 4b. Head and body purplish or rosy anteriorly, yellowish posteriorly, at least on the caudal fin ..... 5
- 5a. Body nearly bicolored, purplish anteriorly, yellowish posteriorly; no median dorsal yellow line on snout; dorsal spines 12–13, dorsal soft rays 8–10, anal soft rays 7–9, pectoral rays 15–16, lateral scale rows 28–38<sup>1</sup> .....  
*klayi* (bicolor basslet) (Bahamas, Jamaica, Belize, Curaçao)
- 5b. Body rosy throughout, caudal fin yellow with dark spots; a bright yellowish-white line from snout tip toward dorsal-fin origin; dorsal spines 11, dorsal soft rays 6, anal soft rays 6, pectoral rays 16, lateral scale rows 26 .....  
*rosea* (rosy basslet) (Isla de Providencia in the western Caribbean Sea)

#### DISCUSSION

The species of *Lipogramma* remain little known. *Lipogramma anabantoides* Böhlke, previously known only from the Bahamas, is now known from Haiti. Presumably this species also will prove to be fairly widely distributed within its preferred habitats. Haitian material: ANSP 121521 (10 specimens), Gulf of Gonave, St. Marc Channel off Mt. Rouis, 35 to 40 m, 15 September 1967, TFD-9, Tyler, Feddern, Devany; 111405 (15) and 121522 (2), St. Marc Channel, off Mt. Rouis in 37–41 m, 16 Sept. 1967, TFD-11, 12, Tyler, Feddern, Devany; 114419 (5) south of St. Marc Pt., 1 mi east of Mt. Rouis in 26–30 m, TFD-5, 14 Sept. 1967, Tyler, Feddern, Devany. Böhlke and Chaplin (1968: 299–300) summarized data on *L. anabantoides* in the Bahamas, and they recorded *L. trilineata* from the Bahamas. Thresher (1975) also commented on *anabantoides*.

Randall (1963) described *L. klayi* from Curaçao and *L. trilineata* from Curaçao and Puerto Rico. Colin (1974: 31, 35) recorded *L. klayi* from Jamaica and the Bahamas

(specimens) and from Belize (sight record) and he recorded *trilineata* from Jamaica (specimens). Subsequent work by the junior author in Puerto Rico indicates that *L. klayi* is a common element of the reef fauna there below 60 m and occurs in the same habitat as *L. regia*. Individuals of *L. klayi* are easily observed in the field, hovering a short distance above the bottom near a crevice or hole, while *L. regia* has never been observed before capture and seems much more cryptic. For a color photograph of *L. klayi* see Figure 4. A color photograph by John Randall of a newly preserved specimen was published in *Tropical Fish Hobbyist* along with some general notes (Anonymous, 1971). Although not so indicated this photograph is of the holotype. Although Randall gave the lateral scale count as 38 in the holotype and 36 in the paratypes, our counts and those provided by Dr. Heemstra (pers. comm.) range from 26–29 in the Bahamas and about 32 in the Greater Antilles and Curaçao. One paratype (UPR 1129) is recorded by Heemstra as having 32. Although *klayi* has somewhat smaller scales on the average than the species described in this paper, the difference is not nearly so great as suggested by Randall's data. Insufficient data are available to determine if the latitudinal differences in this count in *klayi* are significant. Gilbert (1972) extended the known range of *L. trilineata* to Florida. It would appear that this single occurrence of *L. trilineata* there represents a stray or waif and that there is no established population this far north. Such strays were discussed by Robins (1971: 252). However, Ronald E. Thresher (pers. comm.) has stated that it is common in shallow water on the front reef area from Fowey Light (southeast of Miami) to Triumph Reef and that he has also seen it at Molasses Reef. Thresher (1975) commented on the distribution and habits of *L. trilineata*.

Other unreported specimens of *trilineata* include UMML 29791, 30246, 30725, 30728—all from Jamaica, and 28558 (2 specimens 21.3–30.4 mm S.L.) from San Miguel, Cozumel Island, 22 October 1968,

<sup>1</sup> Randall (1963) recorded this count as 36–38; our counts are 28–32 (see text below).

TORITO Sta. 9, in 69 m, W. A. Starck, II and W. J. Schroeder. The last apparently is the first Mexican record of *trilineata*.

All species of *Lipogramma* are small and colorful and are ideally suited for marine aquaria. Although Thresher (1975) stated that species of *Lipogramma* are not as hardy as those of *Gramma*, the junior author has experienced no particular difficulty with them. Generally, most occur too deep for conventional capture, however, and it is likely that they will remain rare in the aquarium trade.

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*klayi*. N. Halliday provided the drawings of *Lipogramma rovea* (Figs. 5-6). C. H. Robins executed the drawings of the holotype of *L. evides* (Fig. 1). This research was conducted at the senior author's home laboratory in Miami, Florida.

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