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ZOOLOGICAL SERIES

VOLUME X



61334

CHICAGO, U. S. A.

1909 - 1923

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71

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NEW SPECIES OF FISHES FROM PANAMA.*

BY SETH E. MEEK AND SAMUEL F. HILDEBRAND.

The fishes described in the following pages were collected by the authors in the fresh waters of Panama, while engaged in field work on the Biological Survey of the Canal Zone; the ichthyological work of which is being conducted coöperatively by the Smithsonian Institution, the Field Museum of Natural History and the Bureau of Fisheries. A complete account of all the fishes collected during the past two years on this survey is in the course of preparation.

Family SILURIDÆ.

***Felichthys amblops* sp. nov.**

Type No. 7576, F. M. N. H.; length 111 mm.; Rio Tuyra, Marriganti, Panama.

Head 3.8 to 4.2; depth 4.4 to 4.8; D. I, 5; A. 15 to 17.

Body elongate, rather robust anteriorly; head short, bluntish; jaws sub-equal; width of head 1.0 to 1.2 in its length, its depth 1.2 to 1.5; width of mouth 1.7 to 2.0 in head; eye 4.0 to 4.3; interorbital 1.4 to 1.6; dorsal fin nearer tip of snout than adipose fin, its distance from tip of snout 2.8 to 3.0 in body; last dorsal ray to adipose fin 2.7 to 3.1; dorsal spine rugose on anterior margin, smooth behind, its length 1.3 to 1.6 in head; pectoral spine strong, rough on outer margin, the inner with strong retrorse teeth, its tip nearly reaching ventrals, its length .9 to 1.2 in head; ventrals 1.7 to 2.0 in head; caudal fin forked.

Color dark above, lighter below, top of head marbled with black; a dark blotch on shoulder extending a short distance on side.

Tuyra River basin.

***Megalonema punctatum* sp. nov.**

Type No. 7577, F. M. N. H.; length 142 mm.; Rio Tuyra, Boca de Cupe, Panama.

Head 3.80; depth 5.35; D. I, 6; A. 10.

Body elongate, the dorsal region elevated; profile slightly convex; mouth sub-inferior, $\frac{2}{3}$ of band of premaxillary teeth exposed; band of teeth in lower jaw about $\frac{1}{2}$ width of the premaxillary band; maxillary barbels reaching end of shortest caudal rays; eye 4.15 in head; snout 2.30; interorbital 3.86; dorsal rather high, its spine 1.20 in head; first dorsal ray 1.04; last dorsal ray 2.82; longest dorsal ray not reaching adipose fin; depth at origin of adipose fin 2.04 in head; depth of caudal peduncle 5.50; base of adipose fin 1.41 in head; pectoral spine slightly roughened on outer margin, its inner margin with 24 rather strong retrorse teeth, its length 1.28 in head; humeral process scarcely reaching middle of pectoral spine, its length 2.47 in head; caudal fin deeply forked.

Color light silvery below, darker above; sides and top of head with many small black spots.

Tuyra River basin.

Megalonema robustum sp. nov.

Type No. 7578, F. M. N. H.; length 290 mm.; Rio Tuyra, Marriganti, Panama.

Head 3.8; depth 4.4; D. I, 6; A. 10.

Body elongate, robust, profile nearly straight; dorsal region elevated; mouth sub-inferior, about half of band of premaxillary teeth exposed; band of teeth of lower jaw nearly as wide as premaxillary band; maxillary barbels reaching to or slightly past middle of adipose fin; eye 5.0 to 5.6 in head; snout 2.3; interorbital 3.0 to 3.4; dorsal fin rather high, its spine 1.1 to 1.2 in head; first dorsal ray .9 to 1.1; last dorsal ray 2.8; longest dorsal ray not reaching adipose fin; base of adipose fin 1.2 in head; depth at origin of adipose fin 1.5 in head; depth of caudal peduncle 3.1 to 3.2; pectoral spine roughened on outer margin, the inner with 32 rather small retrorse teeth, its length 1.1 in head; humeral process 2.3 in head, not reaching middle of pectoral spine.

Color dark olivaceous above, silvery below; sides and head without spots.

Tuyra River basin.

Family PYGIDIIDÆ.

Pygidium striatum sp. nov.

Type No. 7579, F. M. N. H.; length 84 mm.; Rio Cana, Cana, Panama.

Head 5.3 to 6.3; depth 7.4 to 8.2; D. 8; A. 6.

Body elongate, compressed; top of head flat; width of head 1.2 to 1.7 in its length; interorbital 3.6 to 4.5 in head; eye 7.5 to 9.3; snout 2.2 to 2.5; gill openings extending forward nearly to opposite eye; pectorals short, the first ray slightly produced, its length 1.0 to 1.3 in head; maxillary barbels reaching to base of pectorals; origin of dorsal over or slightly behind tips of ventrals; origin of ventrals midway between tip of snout and tip of caudal; origin of dorsal in advance of anal, its last ray over middle of anal; length of caudal peduncle 1.1 to 1.4 in head, its depth 1.6 to 1.7; caudal fin truncate to slightly rounded.

Color light olive, a dark band from upper angle of opercle to middle of base of caudal, above this a second similar band; back with black spots, each about twice diameter of eye; similar spots sometimes on lower part of sides, these most numerous on the largest specimens; occasionally portions of the lateral bands are more or less broken up into spots and blotches.

Tuyra River basin.

Family LORICARIIDÆ.

Ancistrus planiceps sp. nov.

Type No. 7580, F. M. N. H.; length 198 mm.; Rio Tuyra, Boca de Cupe, Panama.

Head 2.7 to 2.8; depth 6.2 to 6.6; D. I, 8; A. I, 3; lateral scutes 24 to 26.

Body depressed anteriorly, rounded to compressed posteriorly; width of head 1.2 to 1.3 in its length; depth of head 2.4; eye 7.4 to 8.5; interorbital 2.3 to 2.4; mandibular ramus 6.5 to 8.0; snout 1.6 to 1.8 in head; head without ridges, the median portion of the snout elevated; sides of snout margined with bristles; interoperculum movable, armed with about 28 spines, capable of being everted and nearly concealed under edge of operculum, the longest spine 3.5 to 4.2 in head; scutes spinulose, not carinated; 6 scutes between dorsal and adipose fins, 11 between anal and caudal; supraoccipital scute bordered by median scute and 2 lateral ones; lower surface of head and abdomen naked; first dorsal ray 1.1 to 1.4 in head; base of dorsal 1.7 to 1.8, equalling its distance from adipose fin; pectoral spine extending to distal fourth of ventral, its length .9 to 1.0 in head; caudal obliquely truncate; depth of caudal peduncle 3.6 to 4.0 in head, its depth in its length 3.1.

Color dark, uniform, fins all spotted with blue to bluish white; abdomen and under side of head with or without light spots.

Tuyra River basin.

Acanthicus canensis sp. nov.

Type No. 7581, F. M. N. H.; length 76 mm.; Rio Cana, Cana, Panama.

Head 2.7 to 2.8; depth 6.0 to 7.0; D. I, 8; scutes 22 or 23.

Body elongate, depressed; head evenly convex from snout to nape, its width .9 to 1.1 in head, its depth that of body, 2.3 to 2.6 in head; eye 7.0 to 8; interorbital 3.2 to 3.6; snout 1.5 to 1.7; mandibular ramus 3.4; interopercular spines present, not entirely retractile under opercle, the longest spine 1.5 to 2.1 in head, its tip nearly reaching middle of pectoral spine; 5 to 7 of spines of interopercle longest, the remainder, about 10, very short; abdomen and under side of head naked; first dorsal ray 1.5 to 1.7 in head; base of dorsal 1.4 to 1.6 in head; anal fin and adipose fin absent; pectoral spine reaching from about first fourth to first half of ventrals, its length .9 to 1.2 in head; depth of caudal peduncle 2.9 to 3.2 in head; caudal obliquely truncate; scutes spinulose, not keeled.

Color dark olivaceous, lighter below; all of the fins with dark spots on rays, these forming indistinct bars; interradial membranes plain.

Tuyra River basin.

Loricaria capetensis sp. nov.

Type No. 7582, F. M. N. H.; length 164 mm.; Rio Capeti, Panama
Head 4.7; depth 12; D. 7; A. 6; scutes 19 + 11.

Body elongate, moderately depressed, the dorsal region not elevated; width of head 1.4 in its length, its depth 2.6 to 2.7; eye 6 in head, the orbital notch present; interorbital 5.1 to 5.3 in head; snout rounded, the profile from interorbital to its tip straight, its length 1.9 in head; upper lip with a fringe of blunt tentacles; the lower lip broad, papillose, with marginal fringe; top of head strigate, a slight double occipital keel, the two portions meeting at the apex; the two nuchal plates each with a pair of keels; lateral keels moderately strong, not completely united on posterior part of the body; abdomen with 2 or, irregularly 3 rows of plates on its middle, these separated from the lateral ones by a broad naked strip; between the pectorals the median strip is wider and broken up into several smaller plates; anal plate in contact with 3 plates, the anal buckler composed of about 12 plates, first dorsal ray .9 in head; pectorals reaching to about first fourth of ventrals, 1.2 in head; ventrals 1.3; width at anal 4.8 to 5.4 in its distance from base of caudal; upper lobe of caudal greatly produced, its length in the type 115 mm.

Color brownish, back with 4 or 5 cross bands; fins spotted, the spots

confined mostly to the rays and forming cross bars, most numerous and distinct on the caudal fin; a broad dark bar under eye and a narrow one on anterior portion of interorbital.

Tuyra River basin.

Loricaria tuyrensis sp. nov.

Type No. 7583, F. M. N. H.; length 350 mm.; Rio Tuyra, Boca de Cupe, Panama.

Head 4.4 to 4.7; depth 9.5 to 11.5; D. I, 7 or 8; A. I, 5; scutes 20 or 21 + 10 to 12.

Body elongate, depressed; width of head 1.2 to 1.3 in its length; depth of head 2.5; eye 6 to 8 in head; interorbital 4.6 to 4.8; snout 1.7 to 1.8; teeth 9 or 10 in upper jaw, 13 or 14 in the lower; lips with large papillæ, the upper fringed with a few blunt tentacles, the lower broad, its surface with papillæ and with fringed margin; top of head covered with short spinules; temporal and occipital plates each with one keel; predorsal plate without keel, the other plates between dorsal and head each with a pair of keels; lateral keels separate throughout their length; under surface of head naked, the plates on abdominal area extending forward nearly to gill opening; median abdominal plates in two series; the abdominal region entirely scaled; anal plate in contact with 3 or 4 plates, anal buckler usually with 12 to 14 plates; pectoral spines reaching slightly beyond base of ventrals, length of first ray 1.2 to 1.3 in head; first dorsal ray .9 to 1.0 in head; width of body at anal 1.7 in head, 3.9 to 4.1 in distance from anal to caudal; upper caudal ray produced, its length in type 145 mm., more than half length of caudal peduncle.

Color dark brownish above, slightly lighter below; fins indistinctly spotted, caudal irregularly barred, the spots or dark markings on fins present on both the rays and the interradiial membranes.

Tuyra River basin.

Oxyloricaria dariensis sp. nov.

Type No. 7584, F. M. N. H.; length 245 mm.; Rio Tuyra, Boca de Cupe, Panama.

Head 4.5 to 5.0; depth 9.0 to 10; D. I, 7 or 8; A. I, 5; scutes 15 or 16 + 17 or 18.

Body elongate, depressed, the dorsal region somewhat elevated; width of head 1.7 to 1.9 in its length; depth of head 2.5 to 2.7; eye 7 to 9 in head, without orbital notch; interorbital 3.2 to 3.6 in head; snout depressed, somewhat attenuated, its length 1.6 to 1.7 in head; teeth

cardiform, about equal in both jaws; lower lip broad, papillose; top of head smooth; lateral keels very weak, completely united posteriorly; abdomen with 3 series of plates between the lateral ones; anal plate in contact with 3 plates; dorsal fin high and pointed, its first ray 0.7 to 0.8 in head; pectoral spines reaching from about first fourth to first half of ventral, .9 to 1.2 in head; width of body at first anal ray 5.0 to 5.8 in length of caudal peduncle; males with bristles on sides of head; both lobes of caudal produced into long filaments.

Color dark brownish, a dark band on each side from snout to caudal, wider and better defined on sides of head and body, becoming faint or disappearing on caudal portion of the body; top of head with a few irregular dark streaks; under side yellowish, with darker median line on caudal peduncle, and more or less mottled with darker laterally; first 2 or 3 rays of dorsal fin black or marbled with black, rest of dorsal, pectorals and ventrals with black spots, these usually present on anal also; a black band on each lobe of the caudal.

Pacific slope of eastern Panama.

***Oxyloricaria citurensis* sp. nov.**

Type No. 7585, F. M. N. H.; length 194 mm.; Rio Cupe, Cituro, Panama.

Head 4.5 to 5.1; depth 8 to 10.0; D. I, 7; A. I, 5; scutes 16 or 17 + 13 or 14.

Body elongate, moderately depressed; depth of head 2.3 to 2.5 in its length, width 1.4 to 1.5; eye 6.8 to 8.3; interorbital 3.3 to 3.6; snout rounded, its length 1.7 to 1.9 in head; teeth cardiform, about equal in both jaws; lower lip broad, with papillæ; top of head smooth, lateral keels weak, completely united posteriorly; abdomen with 6 or 8 rows of plates between the lateral ones; anal plate preceded by three plates; dorsal fin high, pointed, its first ray 0.8 to 1.0 in head; pectoral spines reaching about first fourth of ventrals, 1.1 to 1.2 in head; ventrals 1.1 to 1.2; width of body at first anal ray about 4.1 to 4.6 in caudal peduncle; upper lobe of caudal produced; sides of head without bristles or with very short ones.

Color dark grayish brown, top of head and body with faint dark spots, a few dark spots on dorsal, caudal and pectoral fins; under surface light with yellowish tinge.

Tuyra River basin.

Family CYCLOPIDÆ.

Cyclopium pirrense sp. nov.

Type No. 7586, F. M. N. H.; length 130 mm.; Rio Cana, Cana, Panama.

Head 3.3 to 3.6; depth 5.0 to 6.0; D. I, 5; A. I, 5.

Body robust, compressed posteriorly; head depressed, broad, its width equaling its length; anterior teeth of upper jaw pointed, those of the lower bicuspid; snout 1.8 to 2.0 in head; interorbital 3.4 to 4.1; origin of dorsal over ventrals, its distance from tip of snout 2.2 to 2.4 in body; first dorsal ray with its tip produced, its length 1.1 to 1.4 in head, the tips of first dorsal rays reaching slightly past those of the last rays when the fin is deflexed; pectoral spines produced, their tips reaching to or past middle of ventrals, their length .7 to .9 in head; ventrals 1.0 to 1.2; adipose fin long, without trace of spine; caudal peduncle deep, 1.7 to 1.9 in head; last anal ray to caudal 1.5 to 1.7 in head; caudal emarginate, the outer rays produced.

Color brownish mottled with darker; base of anal and dorsal black; a faint black bar at base of caudal rays; base of first rays of anal usually with a black spot.

Tuyra River basin.

Family CHARACIDÆ.

Parodon dariensis sp. nov.

Type No. 7587, F. M. N. H.; length 140 mm.; Rio Cupe, Cituro, Panama.

Head 4.4 to 4.5; depth 4.3; D. I, 10; A. I, 8; scales 36.

Body elongate, robust, the dorsal region elevated; mouth inferior, transverse; the teeth of upper jaw 3-3 or 4-4, pointed or incisor, their edges nearly smooth to finely denticulated; eye 4.4 to 5.0 in head; snout 3.0; interorbital 2.6; dorsal fin with its margin convex or nearly straight, its origin about midway between tip of snout and posterior margin of adipose fin; snout to dorsal 2.1 in body; pectoral broad, of 15 rays, its length .95 in head; ventrals 1.1 in head; base of anal 2.8 to 3.1; depth of caudal peduncle 1.8 to 1.9; caudal fin forked.

Color olivaceous, the dorsal region very dark; sides with two black lateral bands, each as wide as eye, these partly broken into confluent black spots; dorsal and anal fins each with 2 black bars; caudal with

two oblique black bars on each lobe; pectorals and ventrals nearly black mesially.

Tuyra River basin.

Brycon argenteus sp. nov.

Type No. 7588, F. M. N. H.; length 230 mm., Rio Aruza, Aruza, Panama.

Head 3.7 to 4.0; depth 3.2 to 3.6; D. 10; A. 24 to 26; scales 42 to 45.

Body elongate, moderately compressed; the profile nearly straight; mouth large, the upper jaw slightly the longer, margin of lower lip between the first and second rows of premaxillary teeth; eye 3.2 to 3.5 in head; snout 3.8 to 4.2; maxillary 2.2 to 2.4; maxillary teeth 16 or 17 on each side; gill-rakers 9 + 12 or 13; origin of dorsal slightly behind that of ventrals; pectorals 1.5 in head; caudal peduncle 2.7 to 2.9.

Color silvery, darker above; sides without lines or bands; a large black spot on caudal peduncle extending on base of caudal rays.

Pacific slope of eastern Panama.

Brycon petrosus sp. nov.

Type No. 7589, F. M. N. H.; length 285 mm.; Upper Chagres, Panama.

Head 3.7 to 3.9; depth 3.5 to 3.7; D. 9 or 10; A. 30 to 32; scales 52 to 58.

Body elongate, robust, moderately compressed; profile concave; mouth large, the upper jaw the longer, the second row of teeth at margin of lower lip; eye 3.6 to 4.0 in head; snout 3.4 to 3.6; maxillary reaching nearly to middle of eye, its length 2.1 to 2.3 in head; maxillary teeth 12 or 13 on each side; gill-rakers 10 to 12 + 12 or 13; origin of dorsal slightly in advance of middle of ventrals, about midway between base of caudal and nostril; pectorals 1.4 in head; depth of caudal peduncle 2.8 to 2.9 in head.

Color uniform silvery; sides without dark lines or bands; a large caudal spot extending on base of caudal rays.

Chagres River basin.

Rœboides macrolepis sp. nov.

Type No. 7590, F. M. N. H.; length 56 mm.; Rio Cupe, Boca de Cupe, Panama.

Head 4.3 to 4.4; depth 3.4 to 3.8; D. I, 7 or 8; A. II, 49 to 54; scales 48.

Body elongate, much compressed; profile nearly straight; back not

much elevated; mouth small, maxillary short, 3.2 to 3.5 in head, its tip barely reaching past front of eye; jaws with a single series of weakly tricuspid teeth, about 9 + 9 in each jaw; maxillary with 5 pointed teeth; eye 2.6 to 2.8 in head; snout 4.8 to 5.2; dorsal fin high, its longest ray about equals head; origin of dorsal behind front of anal, nearer base of caudal than the tip of the snout; pectoral 1.1 to 1.2 in head; caudal peduncle 2.3 in head; lateral line developed on 8 or 10 scales.

Color olivaceous, a broad silvery band; no spots on sides or on base of caudal.

Tuyra River basin.

Creagrutus simus sp. nov.

Type No. 7591, F. M. N. H.; length 57 mm.; Rio Cupe, Cituro, Panama.

Head 3.6 to 3.8; depth 3.3 to 3.4; D. I, 8 or 9; A. II, 13 or 14; scales $5\frac{1}{2}$ –35– $4\frac{1}{2}$.

Body elongate, moderately robust; snout blunt, the lower jaw the shorter; eye 2.5 to 2.6 in head; snout 3.4 to 3.7; cheek about 3.1; maxillary nearly to middle of eye, its length 2.5 to 2.7 in head; gill-rakers 5 + 9; dorsal over or slightly behind ventrals, its origin nearer posterior end of adipose fin than tip of snout; anal short, its base 5.5 to 5.8 in body; pectorals 1.3 in head; ventrals 1.6; least depth of caudal peduncle 2.0 to 2.3 in head.

Color olivaceous, sides with broad silvery band; a humeral spot; no caudal spot.

This species differs from *C. notropoides* in being less robust, more compressed, and having a slightly larger eye.

Tuyra River basin.

Family GYMNOTIDÆ.

Stenarchus rostratus sp. nov.

Type No. 7592, F. M. N. H.; length 126 mm.; Rio Grande, Cana, Panama.

Close to *S. brasiliensis* Reinhardt, with snout 2.66 in head; depth 1.29; depth of head 1.63; depth of head in front of eye 3.18; eye 9.8; angle of mouth under front of eye; 14 or 15 scales between lateral line and middle of back; anal rays 172.

Color uniform brown; a yellow stripe from snout on upper part of head and back, disappearing on posterior fourth of body.

Family PÆCILIIDÆ:

Rivulus brunneus sp. nov.

Type No. 7593, F. M. N. H.; length 41 mm.; Toro Point, Canal Zone, Panama.

Head 3.4 to 3.6; depth 4.7 to 4.8; D. 8 or 9; A. 12 to 14; scales 38 to 40.

Body robust; head rather broader than deep; diameter of eye 3.2 to 3.4 in head; origin of dorsal over posterior third of anal; last ray of anal about opposite sixth ray of dorsal; origin of dorsal to base of caudal 2.5 in its distance from eye, about midway between tip of caudal and anterior margin of opercle; pectoral 1.4 to 1.5 in head, their tips not reaching ventrals.

Color brownish, sides slightly speckled with darker; tip of anal rays black; a black stripe from under side of caudal peduncle to end of lower caudal rays, in some specimens the upper caudal rays with a similar bar, these not prominent in the smaller specimens; caudal and dorsal with few faint spots. In life the upper parts of the body grayish with shades of pink; belly pale with shades of pink, fins all reddish; base of caudal and anal deep red.

Atlantic slope of central Panama.

Gambusia cascajalensis sp. nov.

Type No. 7594, F. M. N. H.; length 55 mm.; Rio Cascajal, Porto Bello, Panama.

Head 3.7 to 3.8; depth 3.7 to 3.8; D. I, 6; A. II, 7; scales 8-26.

Body elongate, compressed; the dorsal region slightly elevated; mouth small, the gape extending about $\frac{1}{3}$ distance to eye; lower jaw the longer; the teeth in both jaws in several series, the outer slightly enlarged; snout 3.1 to 3.2 in head; eye 2.9 to 3.1; origin of dorsal over last anal rays, its distance from base of caudal 1.9 to 2.1 in its distance from tip of snout, about midway between tip of caudal fin and eye; anal falciform, its anterior rays the longer, their length about 1.2 in head, their tips reaching beyond tips of last rays when the fin is deflexed; ventrals reaching nearly to anal; caudal fin rounded; gill-rakers 12; caudal peduncle 1.8 in head, 13 scales before dorsal fin.

Color olivaceous; base of anal and anterior rays black, tip of dorsal rays black; a broad dark-curved bar at base of caudal rays, rather indistinct in some specimens.

Rio Cascajal, Atlantic slope of Panama.

Gambusia latipunctata sp. nov.

Type No. 7595, F. M. N. H.; length 39 mm.; Arrijan, Panama.

Head 3.8 to 3.9; depth 3.4 to 3.6; D. I, 7 or 8; A. II, 6 or 7; scales 7-32.

Body elongate, robust; dorsal region scarcely elevated; mouth moderate, the gape about half way to eye; lower jaw the longer; teeth in jaws in several series, the outer enlarged; snout 3.4 to 3.9; eye 2.7 to 3.1; origin of dorsal over middle or anterior $\frac{1}{3}$ of anal, its distance from base of caudal 1.8 in its distance from tip of snout, about midway between tip of caudal and anterior margin of eye; anal falcate, its anterior rays 0.9 to 1.1 in head; ventrals scarcely reaching anal; gill-rakers 12; caudal peduncle 1.6 to 1.7 in head; caudal rounded, width of head 1.5 in its length.

Color olivaceous, the margin of the scales darker; sides with 10 to 15 spots along the side (specimens under 40 mm.), forming a broken lateral band in large specimens, vertical diameter of each spot about twice its horizontal diameter; anal with a black spot at base of rays extending on longest rays; dorsal with dark spots across its middle.

Streams of the Pacific slope of Panama in and near the Canal Zone.

Gambusia cana sp. nov.

Type No. 7596, F. M. N. H.; length 39 mm.; Rio Satiganti, Cana, Panama.

Head 3.9 to 4.2; depth 3.8 to 4.0; D. I, 5 or 6; A. II, 6; scales 8-30.

Body elongate, robust; dorsal region little elevated; mouth moderate, its gape nearly half way to eye; teeth in several series, the outer enlarged; snout 3.7 to 4.0 in head; eye 3.0 to 3.3; origin of dorsal over last rays of anal, its distance from base of caudal 1.8 to 1.9 in its distance from tip of snout, about midway between tip of caudal and snout; anal fin with the first rays not falcate, their tips reaching beyond tips of last rays when fin is deflexed; longest anal ray 1.0 to 1.1 in head; ventrals not reaching anal; caudal fin truncate or slightly rounded; caudal peduncle 1.4 to 1.6 in head; gill-rakers 12; 17 scales before dorsal fin.

One male (25 mm.) has head 4.25; depth 4.10; modified anal .65 in head, its tip reaching about halfway to base of caudal.

Color ♀ nearly uniform olivaceous; on some specimens faint traces of broad dark bars on posterior half of body; margin of scales dark; dorsal dark at base; a black spot on preanal region, scarcely extending on base of anal fin; males with a few faint cross bars on posterior half of sides; sides with a black spot.

In general appearance this species resembles *G. episcopa*, the dorsal fin is more posterior, the head much shorter, and the dorsal and anal fins smaller.

Pacific slope of eastern Panama.

Gambusia darienensis sp. nov.

Type No. 7597, F. M. N. H.; length 35 mm.; Rio Capeti, Panama.

Head 4.0 to 4.2; depth 3.5 to 3.6; D. I, 6 or 7; A. II, 6 or 7; scales 8-30.

Body elongate; the dorsal region little elevated; mouth small, the gape extending about $\frac{1}{3}$ distance to eye; teeth in several series, the outer enlarged; snout 3.7 to 3.8 in head; eye 3.0 to 3.2; origin of dorsal behind anal fin, its distance from base of caudal 2.3 to 2.4 in its distance from tip of snout, about midway between tip of caudal and opercle or posterior margin of eye; anal fin with margin nearly straight, the tip of first rays scarcely reaching those of last rays when the fin is deflexed; longest anal rays 1.2 to 1.3 in head; ventrals reaching anal; caudal fin rounded; caudal peduncle 1.4 to 1.5 in head; gill-rakers 13; 18 scales before dorsal fin.

One male (29 mm.) has head 3.9; depth 4.4; snout 3.6 in head; eye 3.4; modified anal .75, its tip reaching about $\frac{2}{3}$ distance to base of caudal fin.

Color ♀ olivaceous, uniform, the margin of the scales lighter; ♂ with about 20 narrow vertical dark bars on sides behind pectoral fin, sides without dark spots, otherwise like the female.

The caudal fin is more rounded on this species than in any of the others. It is especially characterized by its small dorsal fin which is well posterior of the anal fin. The tips of first rays of the anal fin do not reach tips of last rays when the fin is deflexed.

Tuyra River basin.

Family CICHLIDÆ.

Cichlasoma umbriferum sp. nov.

Type No. 7598, F. M. N. H.; length 195 mm.; Rio Cupe, Cituro, Panama.

Head 2.3 to 2.6; depth 2.4 to 2.6; D. XVII, 11; A. VI, 8; scales 33.

Body elongate, rather robust; anterior profile evenly convex to eye, straight or slightly concave on snout; lower margin of upper lip on level with lower portion of eye and upper edge of base of pectoral; jaws

subequal, upper jaw with 2 anterior canines and 2 others slightly smaller on each side; lower jaw with canine on each side, between which the upper canines bite; lips well developed, the margin of the lower one free; mouth large, terminal, the posterior end of maxillary exposed, extending slightly past anterior margin of orbit, its length 2.3 to 2.6 in head; eye 3.8 to 4.4; snout 2.7 to 3.0; preorbital 5.1 to 7.0; postorbital 2.4 to 2.6; dorsal fin rather low, its last spine 2.5 to 3.0 in head; last anal spine 2.7 to 2.9; base of anal fin 3.9 to 4.1 in length of body; ventral fins reaching slightly past origin of anal; pectoral 3.7 to 3.9 in body; ventral 3.3 to 3.7; caudal peduncle 2.6 to 2.7 in head; caudal fin rounded; 3 rows of scales between origin of soft dorsal and lateral line; gill-rakers very short, 3 + 8.

Color dark olivaceous, without conspicuous dark bars (except in young up to about 50 mm.); a black lateral band from eye to base of caudal, on posterior part of body this band above lateral line ending in a dark caudal spot; vertical fins with small light spots.

Tuyra River basin.

***Cichlasoma tuyrense* sp. nov.**

Type No. 7599, F. M. N. H.; length 220 mm.; Rio Tuyra, Boca de Cupe, Panama.

Head 2.8 to 3.2; depth 1.9 to 2.1; D. XVI or XVII, 11 or 12; A. VI, 7 or 8; scales 38.

Body deep, compressed, upper part of profile convex, slightly concave above orbit; lower margin of upper lip below orbit and above base of the pectoral; jaws subequal, none of the teeth enlarged, all pointed; lips normal, the lower with a frenum; mouth small, terminal, maxillary not reaching orbit, its length 3.6 to 3.9 in head; eye 3.3 to 4.0; snout 2.8 to 3.0; preorbital 4.1 to 4.5; postorbital 2.3 to 2.4; dorsal fin rather high, its last spine 1.9 to 2.2 in head; last anal spine 1.8 to 1.9; base of anal 3.5 to 3.7 in body; pectoral reaches front of anal, 3.1 to 3.4 in head; ventrals reaching slightly beyond front of anal, 2.7 to 3.4 in body; caudal peduncle 2.1 to 2.4 in head; caudal fin rounded; 5 rows of scales between anterior part of soft dorsal and lateral line; gill-rakers very short, 2 + 8 on first gill arch; basal portion of soft dorsal and anal with scales.

Color olivaceous, sides with seven distinct dark cross bars, the middle portion of each bar a black blotch; a small dark spot at base of caudal; sides with dark dots forming lines along the rows of scales, these becoming larger and more distinct in the larger specimens.

Bayano and Tuyra river basins.

Cichlasoma calobrense sp. nov.

Type No. 7600, F. M. N. H.; length 215 mm.; Rio Calobre, Panama.

Head 2.6 to 2.8; depth 2.2 to 2.4; D. XVI or XVII, 10 or 11; A. VI, 6 to 7; scales 33.

Body elongate, compressed; profile straight to slightly convex above, straight or slightly concave from orbit to snout; lower margin of upper lip below orbit and slightly below upper edge of pectoral; jaw subequal; a few anterior teeth in each jaw slightly enlarged; lips rather thick, the lower with free margin, the fold broad; mouth large, terminal, the maxillary reaching nearly to anterior margin of orbit, its length 2.8 to 3.1 in head; eye 3.4 to 4.2; snout 2.5 to 2.9; preorbital 3.6 to 4.2; postorbital 2.5 to 2.8; dorsal fin rather high, the longest spine 2.3 to 2.5 in head; last anal spine 2.2 to 2.5; base of anal 4.0 to 4.4 in body; ventrals reaching slightly past front of anal, 3.2 to 3.6 in body; caudal peduncle 2.6 to 2.7 in head; caudal fin rounded; 2 rows of scales between anterior part of soft dorsal and lateral line; gill-rakers very short, 3 + 11 on first gill arch; soft dorsal and anal fins with their middle rays produced.

Color olivaceous, with 6 or 7 well defined dark cross bars; a black caudal spot in upper half at base of caudal rays; vertical fins with light and dark spots; sides with or without small dark spots.

Bayano and Tuyra river basins.

Neetroplus panamensis sp. nov.

Type No. 7601, F. M. N. H.; length 104 mm.; Rio Mandingo, Bas Obispo, Canal Zone, Panama.

Head 3.0 to 3.3; depth 2.0 to 2.2; D. XVI or XVII, 9; A. VI or VII, 6 or 7; scales 29.

Body elongate, compressed, robust anteriorly; profile convex, above becoming nearly straight; margin of upper jaw below level of lower margin of eye and just above upper margin of base of the pectoral; jaws subequal; teeth compressed, incisor-like; lips normal, the lower with a frenum; mouth terminal, small, the maxillary not reaching eye, its length 3.4 to 3.7 in head; eye 3.3 to 3.4; preorbital 3.7 to 4.3; postorbital 2.4 to 2.7; snout 2.5 to 2.9; dorsal fin rather high, longest spine 2.2 to 2.6 in head; longest anal spine 2.2 to 2.5; base of anal fin 3.6 to 3.8 in body; pectoral not reaching vent, its length 3.2 to 3.5 in body; ventrals reaching past origin of anal, 2.6 to 2.9 in body; caudal peduncle 1.9 to 2.1 in head; caudal fin rounded; 2 rows of scales between first dorsal ray and lateral line; gill-rakers 2 + 6; scales on base of soft dorsal and anal.

Color olivaceous; sides with 7 or 8 indistinct, irregular, dark bars, or indistinct black blotches; a dark blotch at base of caudal; vertical fins without spots.

Chagres River basin.









