

Family 15. *Ilyophidæ*.

Dorsal and anal continuous with the reduced caudal; pectorals present; body scaly; vent remote from the head. Mouth terminal, with lateral cleft extending behind the eye; maxillary slender, articulated with ethmoid near end of snout; teeth conical, small and in narrow bands in the jaws, large and in a single series on the vomer; nostrils lateral; gill-openings separate; pharyngeal apertures of branchial clefts wide. Suspensorium probably directed somewhat obliquely backwards.

Ilyophis brunneus, Gilbert, may be related to the Anguillidæ on the one hand and the Synphobranchidæ on the other, but it seems still nearer to the Dysommidæ.

Family 16. *Dysommidæ*.

External characters, jaws, and dentition of the *Ilyophidæ*, except that the body is naked, the vent is not far behind the gill-openings, and the cleft of the mouth extends far behind the eye. Frontals ankylosed to form a single bone; suspensorium directed very obliquely backwards; palatopterygoid absent; vertebral column as in the Anguillidæ.

Two genera, *Dysomma*, with pectoral fins and the vent below the gill-openings, and *Dysommopsis*, without pectorals and with the vent further back, have been described by Alcock from the depths of the Indian Ocean.

Family 17. *Synphobranchidæ*.

External characters of the *Ilyophidæ*, except that the cleft of the mouth extends far behind the eye and the gill-openings are confluent; teeth small, conical, in narrow bands or in a single series in jaws and on vomer. Frontals united to form a single bone; suspensorium long, directed very obliquely backwards; palatopterygoid long, slender, almost vestigial. Vertebral column as in the Anguillidæ.

L.—*A Revision of the South-American Characid Fishes of the Genera Chalceus, Pyrrhulina, Copeina, and Pogonocharax.* By C. TATE REGAN, M.A.

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THE four genera here dealt with form a natural group, differing from other Characidæ in the very large mesethmoid

and showing further agreement in their oblong or elongate form, rounded abdomen, flattish upper surface of the head, large scales, short dorsal and anal fins, &c.

I give a list of the specimens in the British Museum collection, considerably augmented in the last few years by gifts of examples from the Amazon (Herr J. Paul Arnold), Obidos (Herr A. Rachow), Manaus (E. Stanley Sutton, Esq.), and Colombia (Sir Bryan Leighton), and by the acquisition of a set from Professor Eigenmann's collection made in British Guiana.

1. CHALCEUS.

Chalceus, Cuv. Mém. Mus. Paris, iv. 1818, p. 454; Günth. Cat. Fish. v. p. 333 (1864).

Plethodectes, Cope, Proc. Amer. Phil. Soc. xi. 1871, p. 563.

Pellegrinina, Fowler, Proc. Acad. Philad. 1906, p. 442.

Body oblong, compressed. Scales large, unequal; lateral line present, running low. Mouth moderate, terminal; præmaxillary teeth triserial, the outer tricuspid, the inner pentacuspis; maxillary toothed; mandibular teeth biserial, the outer tri- or pentacuspis, the inner series conical, small, except for an enlarged median pair; palate toothless. Nostils close together. Gill-membranes free. Dorsal and anal fins short; adipose fin present.

1. *Chalceus macrolepidotus*.

Chalceus macrolepidotus, Cuv. Mém. Mus. Paris, iv. 1818, p. 454, pl. xxi. fig. 1; Günth. Cat. Fish. v. p. 333 (1864).

Pellegrinina heterolepis, Fowler, Proc. Acad. Philad. 1906, p. 442, fig.

Depth of body $3\frac{1}{2}$ to 4 in the length, length of head $3\frac{1}{4}$ to $3\frac{3}{4}$. Diameter of eye 3 to 4 in length of head, interorbital width 2 to $2\frac{1}{2}$. 20 or 21 scales in a longitudinal series from upper angle of gill-cleft to base of caudal, 37 in the lateral line. Dorsal 12; origin behind base of pelvics, equidistant from tip of snout and end of middle caudal rays. Anal 12.

Guiana.

1. 150 mm.
2-3. 110 mm.
4. 65 mm.

Essequibo.
Brit. Guiana.
Surinam.

Ehrhardt.
Schomburgk.
Kappler.

2. *Chalceus erythrurus*.

Plethodectes erythrurus, Cope, Proc. Amer. Phil. Soc. xi. 1871, p. 563, fig.

Depth of body $3\frac{2}{3}$ in the length, length of head $3\frac{5}{6}$.

Diameter of eye 4 in length of head, interorbital width $2\frac{1}{5}$. 18 or 19 scales from upper angle of gill opening to base of caudal fin, 33 or 34 in the lateral line. Dorsal 12; origin above base of pelvics, equidistant from tip of snout and end of scales on caudal. Anal 11.

Upper Amazon.

1. 170 mm.

R. Cupai.

Stevens.

Cope's type was a specimen of 65 mm. with the head $\frac{1}{3}$ of the length, eye $\frac{1}{3}$ and interorbital width $\frac{2}{5}$ of the length of head, &c. He described the outer præmaxillary teeth as conical, and indeed they are less expanded than in *U. macrolepidotus*, but they have a pair of cusps.

2. PYRRHULINA.

Pyrrhulina, Cuv. & Val. Hist. Nat. Poiss. xix. 1846, p. 535; Günth. Cat. Fish. v. p. 286 (1864).

Body oblong or rather elongate, compressed. Scales large; no lateral line. Mouth moderate or small, terminal, with the lower jaw projecting; præmaxillary and mandibular teeth conical, biserial; palate toothless. Nostrils close together. Gill-membranes free. Dorsal and anal fins short; no adipose fin.

Synopsis of the Species.

I. 26 or 27 scales in a longitudinal series; diameter of eye $2\frac{2}{3}$ to $3\frac{1}{3}$ in length of head, in specimens of 35 to 80 mm... 1. *filamentosa*.

II. 20 to 25 scales in a longitudinal series; diameter of eye 3 to 4 in length of head, in specimens of 25 to 85 mm.

A. Body slender, the depth 5 in the length; caudal peduncle nearly as long as head; 22 scales in a longitudinal series.

2. *nattereri*.

B. Body deeper, the depth $3\frac{1}{2}$ to $4\frac{1}{2}$ in the length.

1. Caudal peduncle at least $\frac{2}{3}$ length of head; 22 to 25 scales in a longitudinal series 3. *semifasciata*.

2. Caudal peduncle at most $\frac{2}{3}$ length of head.

Interorbital width 2 in length of head; 20 scales in a longitudinal series; depth of body $3\frac{1}{2}$ in length .. 4. *vittata*.

Interorbital width 2 to $2\frac{1}{3}$ in length of head; 20 to 23 scales in a longitudinal series; depth of body $3\frac{3}{4}$ to $4\frac{1}{2}$ in length 5. *australis*.

Interorbital width $2\frac{1}{2}$ to 3 in length of head; 20 to 22 scales in a longitudinal series 6. *brevis*.

1. *Pyrrhulina filamentosa*.

Pyrrhulina filamentosa, Cuv. & Val. Hist. Nat. Poiss. xix. 1846, p. 535, pl. 589; Günth. Cat. Fish. v. p. 286 (1864).

Depth of body $4\frac{1}{4}$ to $5\frac{1}{2}$ in the length, length of head 4 to $4\frac{1}{4}$. Caudal peduncle $\frac{2}{3}$ to $\frac{4}{5}$ length of head. Snout shorter than the diameter of eye, which is $2\frac{2}{3}$ to $3\frac{1}{3}$ in the length of head; interorbital width $2\frac{1}{3}$ to $2\frac{1}{2}$. 26 or 27 scales in a longitudinal series. Dorsal 10; origin equidistant from middle or posterior part of operculum and base of caudal. Anal 11–12. Olivaceous; a blackish stripe round lower jaw to eye, continued as a more or less distinct brownish stripe from eye to operculum; a large black spot on dorsal fin.

Guiana.

1–2. 65–80 mm.	Essequibo.	Ehrhardt.
3. 50 mm.	Issorora, Brit. Guiana.	Eigenmann.
4–5. 35–40 mm.	Lama, " "	"

2. *Pyrrhulina nattereri*.

? *Holotaxis melanostomus*, Cope, Proc. Amer. Phil. Soc. xi. 1871, p. 563.

Pyrrhulina nattereri, Steind. Sitzungs. Akad. Wien, lxxii. 1876, p. 13, pl. ii. fig. 5.

Depth of body 5 in the length, length of head $4\frac{1}{2}$. Caudal peduncle nearly as long as head. Snout somewhat shorter than diameter of eye, which is $3\frac{1}{3}$ in the length of head; interorbital width $2\frac{1}{3}$. 22 scales in a longitudinal series. Dorsal 9–10, elevated in the male, nearly reaching caudal when laid back; origin equidistant from middle of operculum and base of caudal. Anal 10–11. Olivaceous; scales of back and sides dark-edged; a small pale blue spot with dark margin at the posterior end of each scale on the side; a dark stripe from upper part of eye round end of snout, another from eye round lower jaw, continued on body as a faint dusky band; a large blackish spot on middle of dorsal fin, with red band below it.

Amazon.

1. 40 mm.	Amazon.	Arnold.
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This specimen is undoubtedly *P. nattereri*; it agrees with the description of *H. melanostomus* in every way, except that the latter is said to have 25 scales, a number perhaps obtained by counting forward above the opercle or by including the scales on the caudal fin.

3. *Pyrrhulina semifasciata*.

? *Holotaxis lata*, Cope, Proc. Acad. Philad. 1871, p. 257.

Pyrrhulina semifasciata, Steind. Sitzungs. Akad. Wien, lxxii. 1876, p. 7, pl. i. figs. 1, 2; Eigenm. & Eigenm. Proc. Calif. Acad. (2) ii. 1890, p. 110.

? *Pyrrhulina maxima*, Eigenm. & Eigenm. t. c. p. 111.

? *Pyrrhulina lata*, Fowler, Proc. Acad. Philad. 1906, p. 294, fig. 1.

Depth of body $3\frac{1}{2}$ to $4\frac{1}{2}$ in the length, length of head $3\frac{3}{4}$ to $4\frac{1}{2}$. Caudal peduncle $\frac{2}{3}$ to $\frac{5}{6}$ the length of head. Snout as long as or shorter than diameter of eye, which is 3 to $3\frac{3}{4}$ in the length of head; interorbital width $2\frac{1}{4}$ to $2\frac{2}{3}$. 22 to 25 scales in a longitudinal series. Dorsal 10; origin equidistant from eye or postorbital part of head and base of caudal. Anal 10-12. Scales sometimes with pale bases and dark margins. A dark stripe from lower jaw through eye, ending on anterior part of body; sometimes a long dark median spot on back between head and dorsal fin and a smaller one just in front of dorsal fin; a blackish spot on dorsal fin.

Amazon; Guiana; Colombia.

1-4. 35-70 mm.	Nickafaroo, Brit. Guiana.	Eigenmann.
5-9. 45-55 mm.	Christiansburg, Brit. Guiana.	"
10-14. 40-85 mm.	Holmia, Brit. Guiana.	"
15-16. 45-55 mm.	Honda, Colombia.	Leighton.
17. 50 mm.	Bogota, "	Cutter.

In these specimens the dark stripe usually runs on only 2 to 4 scales of the body; in the larger ones it is continued backwards, as shown in Steindachner's figures; in the smaller fish the mid-dorsal spots are absent.

P. lata is evidently closely related to *P. semifasciata*, even if it be distinct. The saddle-shaped spot on the back would easily be formed by the increase in size of the two spots seen in *P. semifasciata*.

P. maxima is based on a single specimen, and as described seems to differ from *P. semifasciata* only in the fewer scales; but "the scales are partly lost, so an exact count is impossible."

4. *Pyrrhulina vittata*, sp. n.

Depth of body $3\frac{1}{2}$ in the length, length of head $3\frac{4}{5}$. Caudal peduncle $\frac{2}{3}$ length of head. Diameter of eye 3 in the length of head, interorbital width 2. 20 scales in a longitudinal series. Dorsal 11; origin equidistant from præoperculum and base of caudal. Anal 11. A dark stripe from lower jaw through eye, ending in a spot just behind head; 3 blackish bars on body, the first above end of pectoral, the second running upwards from base of anal, the third in front of the caudal; a blackish spot on dorsal fin.

Amazon.

1. 28 mm. (type).	Obidos.	Rachow,
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5. *Pyrrhulina australis*.

Pyrrhulina australe, Eigenm. & Kennedy, Proc. Acad. Philad. 1903, p. 508.

Depth of body $3\frac{3}{4}$ to $4\frac{1}{2}$ in the length, length of head $3\frac{3}{4}$ to $4\frac{1}{4}$. Caudal peduncle $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Snout shorter than diameter of eye, which is 3 in the length of head; interorbital width 2 to $2\frac{1}{3}$. 20 to 23 scales in a longitudinal series. Dorsal 10–11; origin equidistant from head and base of caudal or a little nearer to head. Anal 11–12. Olivaceous; a blackish stripe from lower jaw to eye, usually continued as a brownish stripe on postorbital part of head; a black spot on dorsal fin.

La Plata; Rio Grande do Sul.

1–3. 30–40 mm.	Colonia Risso, Upper Paraguay.	Borelli.
4–5. 30 mm.	Carandasinho, Matto Grosso.	"
6–11. 25–45 mm.	Corumba, " "	Moore.
12–14. 30–35 mm.	Descalvados, " "	Ternetz.
15–16. 25–30 mm.	Monte Sociedad, Chaco.	"
17. 25 mm.	R. Grande do Sul.	Von Ihering.

6. *Pyrrhulina brevis*.

Pyrrhulina brevis, Steind. Sitzungsab. Akad. Wien, lxxii. 1876, p. 11, pl. i. figs. 3–4; Eigenm. & Eigenm. Proc. Calif. Acad. (2) ii. 1890, p. 111.

Depth of body nearly equal to length of head, $3\frac{1}{2}$ to 4 in the length of the fish. Caudal peduncle $\frac{1}{2}$ or $\frac{2}{3}$ length of head. Snout nearly as long as or even a little longer than diameter of eye, which is $3\frac{1}{2}$ to 4 in the length of head; interorbital width $2\frac{1}{2}$ to 3. 20 to 22 scales in a longitudinal series. Dorsal 9–10, moderately elevated; origin equidistant from operculum and base of caudal, or a little nearer the former. Anal 11–12. Olivaceous; a dark stripe from eye round lower jaw; a dark spot on dorsal fin; pelvic and anal fins with narrow blackish edge.

Amazon.

1. 85 mm.	Mañaos.	Sutton.
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3. COPEINA.

Copeina, Fowler, Proc. Acad. Philad. 1906, p. 294.

Differs from *Pyrrhulina* in the uniserial præmaxillary teeth.

Synopsis of the Species.

I. Depth of body less than $\frac{1}{4}$ of the length; caudal peduncle nearly as long as head; origin of dorsal fin well behind base of pelvics.

A. Origin of dorsal fin nearer to base of caudal than to head.

1. *arnoldi*.

B. Origin of dorsal fin equidistant from head and base of caudal, or a little nearer head.

21 scales in a longitudinal series 2. *callolepis*.

23 or 24 scales in a longitudinal series 3. *eigenmanni*.

26 scales in a longitudinal series 4. *carsevennensis*.

II. Depth of body not less than $\frac{1}{4}$ of the length; caudal peduncle considerably shorter than head.

Origin of dorsal fin a little behind base of pelvics .. 5. *guttata*.

Origin of dorsal fin above base of pelvics 6. *argyrops*.

1. *Copeina arnoldi*, sp. n.

* Depth of body $4\frac{1}{2}$ to $4\frac{3}{4}$ in the length, length of head $4\frac{2}{3}$ to 5. Caudal peduncle nearly as long as head. Snout shorter than diameter of eye, which is $3\frac{1}{3}$ in the length of head; interorbital width $2\frac{1}{3}$. 23 or 24 scales in a longitudinal series. Dorsal 10; origin nearer to base of caudal than to head. Anal 11. Olivaceous; a dark stripe from eye round lower jaw; a blackish spot on dorsal fin.

Amazon.

1-2. 30-40 mm. (types).

Amazon.

Arnold.

2. *Copeina callolepis*, sp. n.

Pyrrhulina nattereri (non Steind.), Eigenm. & Eigenm. Proc. Calif. Acad. (2) ii. 1890, p. 112.

Depth of body $4\frac{1}{2}$ to 5 in the length, length of head $4\frac{1}{2}$. Caudal peduncle nearly as long as head. Snout shorter than diameter of eye, which is 3 in length of head; interorbital width $2\frac{1}{3}$ to $2\frac{1}{2}$. 21 scales in a longitudinal series. Dorsal 10; origin equidistant from head and base of caudal, or slightly nearer the former. Anal 11. Olivaceous; a dark stripe from lower jaw to eye continued as a dusky band on lower part of body; a pale spot on each scale, except below the band; a black spot on the dorsal fin.

Amazon.

1-2. 35-40 mm. (types).

Amazon.

Arnold.

3. *Copeina eigenmanni*, sp. n.

Depth of body $4\frac{1}{4}$ to 5 in the length, length of head 4 to $4\frac{1}{2}$.
Ann. & Mag. N. Hist. Ser. 8. Vol. x. 27

Caudal peduncle nearly as long as head. Snout shorter than eye, the diameter of which is 3 to 4 in the length of head; interorbital width $2\frac{1}{2}$. 23 or 24 scales in a longitudinal series. Dorsal 10; origin equidistant from head and base of caudal, or nearer head. Anal 11-12, originating a little behind end of dorsal. Olivaceous; a dark stripe from lower jaw through eye to operculum; a blackish spot on dorsal fin.

Amazon; Guiana; Colombia.

1-2. 25 mm. (types).	Para.	Eigenmann.
3-9. 25 mm. „	R. Aruka, Brit. Guiana.	„
10. 27 mm. „	Lama, „ „	„
11-12. 35-45 mm. „	Bogota.	Cutter.

In the smaller examples there is sometimes an indistinct dusky band on the anterior part of the body and an indication of a pale stripe above the dark one on the head. In the larger ones, from Bogota, a silvery stripe from eye to caudal fin separates a broad dark band below from the dark colour of the back.

4. *Copeina carsevennensis*, sp. n.

Depth of body nearly equal to length of head, $4\frac{1}{4}$ to $4\frac{1}{2}$ in the length of the fish. Caudal peduncle nearly as long as head. Snout shorter than eye, the diameter of which is $2\frac{1}{2}$ to $2\frac{3}{4}$ in the length of head; interorbital width $2\frac{1}{3}$. 26 scales in a longitudinal series. Dorsal 10; origin equidistant from head and base of caudal, or a little nearer head. Anal 11-12, commencing scarcely behind end of dorsal. Olivaceous; a dark stripe from lower jaw through eye to operculum; a black spot on dorsal fin.

French Guiana.

1-5. 25-33 mm. (types).	Carsevenne.	Paris Mus. (Coll. Geay).
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5. *Copeina guttata*.

Pyrrhulina guttata, Steind. Sitzungsab. Akad. Wien, lxxii. 1876, p. 15, pl. ii. fig. 6; Eigenm. & Eigenm. Proc. Calif. Acad. (2) ii. 1890, p. 112.

Depth of body $3\frac{3}{4}$ to 4 in the length, length of head 4 to $4\frac{1}{4}$. Caudal peduncle much shorter than head. Diameter of eye $3\frac{1}{2}$ in the length of head, interorbital width $2\frac{1}{3}$ to $2\frac{2}{5}$. 23 or 24 scales in a longitudinal series. Dorsal 10; origin a little behind base of pelvics. Anal 12. A silvery spot at the base of each scale; a dark spot on dorsal fin.

R. Amazon.

Total length 70 mm.

6. *Copeina argyrops*.

Pyrrhulina argyrops, Cope, Proc. Amer. Phil. Soc. xvii. 1878, p. 694.
Copeina argyrops, Fowler, Proc. Acad. Philad. 1906, p. 295, fig. 2.

Very similar to *C. guttata* in form, coloration, &c., but with the dorsal fin a little further forward, originating above base of pelvics.

R. Maranon, Peruvian Amazon.

4. POGONCHARAX.

Pogoncharax, Regan, Ann. & Mag. Nat. Hist. (7) xix. 1907, p. 261.

Differs from *Pyrrhulina* in the toothless mouth and the presence of two pairs of barbels, præmaxillary and maxillary.

1. *Pogoncharax rehi*.

Regan, *l. c.* fig.

Dorsal 8, above the anal. Anal 8. 25 scales in a longitudinal series. Maxillary barbel $\frac{2}{5}$ as long as the fish.

Argentina.

1. 45 mm. (type).

Argentina.

Reh.

LI.—On a Collection of Small Mammals from the Tsin-ling Mountains, Central China, presented by Mr. G. Fenwick Owen to the National Museum. By OLDFIELD THOMAS.

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DURING the late summer of 1911 Mr. G. Fenwick Owen, to whom the National Museum already owed some valuable collections of mammals from French Gambia, made an exploring and collecting expedition into Central China, into Southern Shen-si and Kan-su, with the intention of exploring the mountain-ranges between those provinces and Eastern Tibet. Owing, however, to the breaking out of the recent revolution in China, Mr. Owen's party had to shorten their work and to come home through Tibet and Russia in Asia, by which route they were fortunately enabled to transport in safety such collections as they had made before the revolution broke out.

The small mammals, which Mr. Fenwick Owen has now presented to the British Museum, were all prepared by his



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