

This article was downloaded by: [University of Illinois at Urbana-Champaign]
On: 11 March 2015, At: 06:43
Publisher: Taylor & Francis
Informa Ltd Registered in England and Wales Registered Number: 1072954
Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH,
UK



Annals and Magazine of Natural History: Series 7

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/tnah13>

XLII.—A Revision of the Fishes of the South-American Cichlid Genera Acara, Nannacara, Acaropsis, and Astronotus

C. Tate Regan B.A.

Published online: 01 Dec 2009.

To cite this article: C. Tate Regan B.A. (1905) XLII.—A Revision of the Fishes of the South-American Cichlid Genera Acara, Nannacara, Acaropsis, and Astronotus, *Annals and Magazine of Natural History: Series 7*, 15:88, 329-347, DOI: [10.1080/03745480509443057](https://doi.org/10.1080/03745480509443057)

To link to this article: <http://dx.doi.org/10.1080/03745480509443057>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

THE ANNALS

AND

MAGAZINE OF NATURAL HISTORY.

[SEVENTH SERIES.]

No. 88. APRIL 1905.

XLII.—*A Revision of the Fishes of the South-American Cichlid Genera Acara, Nannacara, Acaropsis, and Astronotus.*
By C. TATE REGAN, B.A.

THE Cichlidæ have recently been monographed by Pellegrin (Mém. Soc. Zool. France, xvi. 1904), who has dealt in a most interesting manner and at considerable length with their anatomy and with the biological problems which they present. However, I have arrived at somewhat different conclusions as to the distinction and arrangement of species in certain genera, which must be my excuse for the present paper.

The genera here dealt with are distinguished from other American Cichlidæ by the following combination of characters:—Dorsal fin without notch between spinous and soft portions; gill-rakers short, in small or moderate number; anal fin with 3 spines; teeth conical; præoperculum entire; no lobe on the anterior branchial arch. Their relations to each other may be shown thus:—

- I. Soft vertical fins scaleless or scaly at the base only. D. XIII–XVI 7–12; A. III 6–11.
- A. Maxillary not exposed; præmaxillaries moderately protractile.
Upper lateral line well separated from dorsal fin *Acara*.
Upper lateral line separated from dorsal fin by only $\frac{1}{2}$ a series of scales for most of its length *Nannacara*.
- B. Maxillary exposed; præmaxillaries very protractile. *Acaropsis*.
- II. Soft vertical fins covered with small scales; D. XII–XIV 19–21; A. III 16–18 *Astronotus*.
- Ann. & Mag. N. Hist. Ser. 7. Vol. xv. 23*

I have given a list of the specimens in the British Museum on which my descriptions are based, with the total length of each in millimetres.

ACARA.

Acara (part.), Heck. Ann. Mus. Wien, ii. 1840, p. 333; Günth. Cat. Fish. iv. p. 276 (1862); Steind. Sitzb. Ak. Wien, lxxi. 1875, p. 63. *Æquidens**, Eigenm. & Bray, Ann. Ac. N. York, vii. 1894, p. 616. *Acara*, Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 171 (1904).

Body deep or moderately elongate, compressed; scales large, usually finely ctenoid. Two lateral lines, the upper well separated from the spinous dorsal. Mouth small or moderate; præmaxillaries moderately protractile; maxillary not exposed distally; jaws with small conical teeth in bands, those of the outer series more or less enlarged; upper surface of head scaly to between the orbits; cheeks and opercular bones scaly; præoperculum entire. Gill-rakers few and short; no lobe on the upper part of the anterior branchial arch. A single dorsal, with XIII–XVI 7–12 rays; anal with III 6–11 rays; soft dorsal and anal scaleless or scaly at the base; caudal truncate or rounded. Pectoral asymmetrical, with 12–15 rays; ventrals below or a little behind the base of the pectoral.

Eighteen species from S. America, extending into Panama.

Skeleton.

In *A. tetramerus* the supraoccipital crest is high and extends forwards on the frontals, which are hollowed out anteriorly to form the posterior margin of the depression in which the præmaxillary processes lie. The latter are rather short, extending nearly to above the orbit; the parietal crests are moderately strong and extend to above the middle of the orbits. There are 26 vertebræ (13 + 13); parapophyses are developed on the præcaudal vertebræ from the fourth; the ribs are sessile. The fourth vertebra bears a pair of feeble inferior apophyses. The lower pharyngeals are united by a straight suture.

• Eigenmann and Bray say, "No type was indicated for *Acara* until Gill in 1858 restricted it by exclusion of species of *Astronotus* and *Cichlasoma* to Heckel's *Acara crassispinis*. But it has since been determined that the *Acara crassispinis* of Heckel is a synonym of *Lobotes ocellatus*, Agassiz, which is the type of *Astronotus*. The name *Acara* is therefore the exact synonym of *Astronotus*." This argument appears unsound. After removing from Heckel's genus the species which belong to *Astronotus*, *Cichlasoma*, and *Acaropsis*, I use *Acara* for the remainder, regarding Gill's restriction of the name *Acara* to a species which was already the type of another genus as invalid.

This genus is scarcely distinct from the African *Paratilapia*, which differs in having the maxillary more or less exposed distally and in the constantly smaller size of the scales of the thoracic region. The distinction between *Acara*, with 3 anal spines, and *Cichlosoma*, with 4 or more anal spines, is somewhat arbitrary, but convenient.

*Synopsis of the Species*¹.

I. Preoperculum scaleless.

A. Dorsal and anal fins scaleless.

1. Depth of body $2-2\frac{2}{3}$ in the length.

a. 5 or 6 gill-rakers on the lower part of anterior arch.

• 2 or $2\frac{1}{2}$ scales between lateral line and anterior rays of soft dorsal. D. XIII-XVI 9-11. A. III 8-10.

1. *tetramerus*.

** 1 or $1\frac{1}{2}$ scales between lateral line and anterior rays of soft dorsal.

† Dorsal spines subequal from about the fourth to the twelfth. D. XIII-XV 10-11. A. III 6-8.

‡ Caudal peduncle from $\frac{2}{3}$ to as long as deep.

Depth of body $2-2\frac{1}{2}$ in the length; middle dorsal spines more than $\frac{2}{3}$ the length of head

2. *vittata*.

Depth of body $2\frac{1}{2}-2\frac{2}{3}$ in the length; middle dorsal spines usually less than $\frac{2}{3}$ the length of head

3. *syphilus*.

‡‡ Caudal peduncle $\frac{1}{2}-\frac{2}{3}$ as long as deep.

4. *paraguayensis*.

†† Dorsal spines increasing in length throughout; caudal peduncle $\frac{1}{2}-\frac{2}{3}$ as long as deep.

D. XIII-XIV 9-11. A. III 7-9. Sc. 24-26 $\frac{3}{8}$

5. *pulchra*.

D. (XIV) XV 10-11. A. III 8-9. Sc. 26-28 $\frac{3}{6-9}$

6. *cæruleopunctata*.

b. 7 to 9 gill-rakers on the lower part of anterior arch.

D. XIII-XV 9-12. A. III 8-9.

Dorsal spines subequal from the fifth; cheek with 3 series of scales

7. *æquinotialis*.

Dorsal spines increasing in length throughout; cheek with 3 or 4 series of scales

8. *rivulata*.

Dorsal spines subequal from the fourth; cheek with 4 or 5 series of scales

9. *Geayi*.

2. Depth of body $2\frac{1}{2}-2\frac{2}{3}$ in the length.

D. XIII-XIV 9-10. A. III 7-9. Caudal peduncle longer than deep

10. *zamorensis*.

D. XV 10. A. III 8. Caudal peduncle deeper than long

11. *sapayensis*.

¹ *Heros centralis*, Holmberg (Rev. Argent. i. 1891, p. 183), is an insufficiently described species of doubtful position placed by Pellegrin in this genus. It may prove to be a *Geophagus* of the type of *G. Balzani*, Perugia. *Acara minuta*, Hensel (Arch. f. Nat. 1870, p. 71), appears to me to be founded on young examples of *Geophagus gymnogenys*, Hensel.

B. Soft dorsal and anal scaly at the base.

- D. XIII 10. A. III 7. Caudal peduncle $\frac{2}{3}$ as long as deep..... 12. *guianensis*.
 D. XIV-XVI 9-11. A. III 8-10. Caudal peduncle $\frac{1}{2}$ - $\frac{2}{3}$ as long as deep..... 13. *portalegrensis*.

II. Præoperculum scaly¹.

A. Two series of scales on the cheek and one series on the præoperculum.

1. 23-26 scales in a longitudinal series.

- D. XIII-XIV 7-10. A. III 8. Dorsal and anal fins scaleless..... 14. *dorsigera*.
 D. XIV-XV 9-10. A. III 7. Soft dorsal and anal scaly at the base..... 15. *Thayeri*.
 D. XVI 9-10. A. III 7..... 16. *flavilabris*.

2. 28-29 scales in a longitudinal series. D. XVI 10-11. A. III 8. 17. *frenifera*.

B. Three series of scales on the cheek and one or two series on the præoperculum. D. XV 10-11. A. III 9-11.

18. *Maronii*.

1. *Acara tetramerus*.

Acara tetramerus, Heck. Ann. Mus. Wien, ii. 1840, p. 341; Günth. Cat. Fish. iv. p. 277 (1862); Steind. Sitzb. Ak. Wien, lxxi. 1876, p. 65; Cope, Proc. Ac. Philad. 1872, p. 255, and Proc. Am. Phil. Soc. xxxiii. 1891, p. 106; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 171 (1904).

Acara viridis, Heck. t. c. p. 343; Günth. t. c. p. 280.

Acara diadema, Heck. t. c. p. 344.

Acara pallidus, Heck. t. c. p. 347; Günth. t. c. p. 280.

Chronmys punctata, Casteln. Anim. Am. Sud, Poiss. p. 13, pl. viii. fig. 1 (1855).

Chronmys uniozellata, Casteln. t. c. p. 15, pl. vi. fig. 1.

Acara vittata (non Heck.), Günth. t. c. p. 279.

Acara uniozellata, Günth. t. c. p. 281.

Astronotus tetramerus, Eigenm. & Eigenm. Proc. U.S. Nat. Mus. xiv. 1891, p. 68; Eigenm. & Bray, Ann. Ac. N. York, vii. 1894, p. 617.

Aequidens tetramerus, Eigenm. & Kennedy, Proc. Ac. Philad. 1903, p. 634.

Depth of body 2-2 $\frac{1}{2}$ in the length, length of head 2 $\frac{1}{2}$ -3. Snout shorter than postorbital part of head. Diameter of eye 2 $\frac{1}{2}$ -3 $\frac{1}{2}$ in the length of head, interorbital width 2 $\frac{2}{3}$ -2 $\frac{1}{2}$. Depth of præorbital $\frac{1}{2}$ -1 $\frac{1}{6}$ the diameter of eye. Maxillary extending about to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 3 or 4 series of scales; præoperculum scaleless; 5 or 6 gill-rakers on the lower part of anterior arch. Scales 25-27 $\frac{3-4}{8-10}$, 2 or 2 $\frac{1}{2}$ between lateral line and anterior

¹ ? *A. frenifera*.

rays of soft dorsal. Dorsal XIII-XV (XVI) 9-11, commencing above the opercular cleft, the spines subequal from the fourth or slightly increasing in length to the last, which is $\frac{2}{3}$ - $\frac{1}{2}$ the length of head. Anal III 8-10. Dorsal and anal fins scaleless. Pectoral at least as long as the head; ventral extending to origin of anal or beyond. Caudal rounded. Caudal peduncle $\frac{1}{2}$ - $\frac{3}{4}$ as long as deep. Olivaceous, with 5 dark cross-bars, the first crossing the anterior 7 or 8 scales of the lateral line, the second the 9th or 10th and 3 succeeding scales of the lateral line, below which it bears a blackish blotch; a dark spot below the posterior part of eye; a dark ocellated spot on the upper part of the base of caudal; usually a dark longitudinal band from lateral blotch to caudal spot, sometimes continued forward to the eye; vertical fins dusky, usually spotted.

R. Amazon; Guiana.

1-5. (90-181 mm.)	S. America.	Sir H. Schomburgk.
6. (112 mm.)	Essequibo River.	Mr. Ehrhardt.
7. (110 mm.)		
8-10. (71-124 mm.)	Cudajaa.	Mus. Comp. Zool.
11-13. (81-96 mm.)	Cudajaa.	Prof. A. Agassiz.

2. *Acara vittata*.

Acara vittata, Heck. Ann. Mus. Wien, ii. 1840, p. 346; Steind. Sitzb. Ak. Wien, lxxi. 1875, p. 72, pl. iii. fig. 1.

Acara vittata (part.), Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 173 (1904).

Depth of body $2\frac{1}{3}$ - $2\frac{2}{3}$ in the length, length of head $2\frac{2}{3}$ - $2\frac{3}{4}$. Snout shorter than postorbital part of head. Diameter of eye $3-3\frac{1}{4}$ in the length of head, interorbital width $2\frac{2}{3}$ -3. Depth of præorbital about equal to diameter of eye. Maxillary extending nearly to below the anterior margin of eye; jaws equal anteriorly; cheek with 3 series of scales; præoperculum scaleless; 6 gill-rakers on the lower part of anterior arch. Scales $24-26\frac{3}{5}$, 1 between lateral line and anterior rays of soft dorsal. Dorsal XIII-XIV 10-11, commencing above the opercular cleft, the spines subequal from about the fourth to the twelfth, which are more than $\frac{2}{3}$ the length of head, the last $\frac{1}{2}$ the length of head; soft fin extending nearly to middle of caudal. Anal III 7-8. Dorsal and anal fins scaleless. Pectoral as long as the head; ventral extending to origin of anal or beyond. Caudal* rounded or truncate. Caudal peduncle nearly as long as deep. Olivaceous, with obscure darker cross-bars; a dark longitudinal.

* Dr. Steindachner has very kindly informed me that in adult males the caudal is even slightly emarginate.

band from eye to end of soft dorsal; a dark vertical stripe below the posterior margin of eye; a dark spot on the upper part of the base of caudal; vertical fins with dark spots.

Guiana; R. Amazon; R. Paraguay.

The examples described by Steindachner measure up to about 130 mm. in total length.

3. *Acara sypilus*.

Acara sypilus, Cope, Proc. Ac. Philad. xxiii. 1872, p. 255, pl. xi. fig. 3.

Acara vittata (part.), Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 173 (1904).

Depth of body $2\frac{1}{3}$ – $2\frac{2}{3}$ in the length, length of head $2\frac{1}{4}$. Snout a little shorter than postorbital part of head. Diameter of eye $3\frac{1}{4}$ in the length of head and equal to the interorbital width. Depth of præorbital $\frac{3}{4}$ the diameter of eye. Maxillary extending to the vertical from anterior margin of eye; lower jaw slightly shorter than the upper; fold of the lower lip not continuous; cheek with 3 series of scales; præoperculum scaleless; 5 or 6 gill-rakers on the lower part of anterior arch. Scales 26–27 $\frac{3}{8-9}$, $1\frac{1}{2}$ between lateral line and base of anterior rays of soft dorsal. Dorsal XIV–XV 9–10, commencing above extremity of operculum, the spines subequal from the fourth or fifth to the twelfth or thirteenth, which are $\frac{1}{3}$ – $\frac{2}{5}$ the length of head; last spine from $\frac{2}{5}$ to nearly $\frac{1}{2}$ the length of head; soft fin extending nearly to middle of caudal. Anal III 7 (8). Dorsal and anal fins scaleless. Pectoral as long as the head; ventral extending to origin of anal or beyond. Caudal subtruncate. Caudal peduncle $\frac{3}{4}$ – $\frac{4}{5}$ as long as deep. Olivaceous, with about 7 darker cross-bars and with a dark longitudinal band from eye to end of base of dorsal; a dark vertical stripe below the posterior part of eye; vertical fins dusky, with darker spots, which are most distinct on the soft dorsal.

Upper Amazon.

1-3. (95-101 mm.)

Canelos.

C. Buckley, Esq.

I have little doubt that these specimens belong to the species which Cope founded on very young specimens and which appears to differ from *A. vittata* in the more slender body, longer snout, narrower interorbital space, and less elevated spinous dorsal.

4. *Acara paraguayensis*.

Acara paraguayensis, Eigenm. & Kennedy, Proc. Ac. Philad. lv. 1903, p. 534; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 175 (1904).

Depth of body $2\frac{1}{6}$ – $2\frac{1}{4}$ in the length, length of head $2\frac{3}{4}$ – $2\frac{3}{4}$. Snout shorter than postorbital part of head. Diameter of eye $2\frac{3}{4}$ – $3\frac{1}{4}$ in the length of head, interorbital width $2\frac{1}{3}$ –3. Depth of præorbital equal to diameter of eye or less. Maxillary extending to the vertical from anterior margin of eye; jaws equal anteriorly or the lower the shorter; fold of the lower lip not continuous; cheek with 3 series of scales; præoperculum scaleless; 6 gill-rakers on the lower part of anterior arch. Scales 24–26 $\frac{2\frac{1}{2}$ – $\frac{3}{8}$, 1 or $1\frac{1}{2}$ between lateral line and anterior rays of soft dorsal. Dorsal XIV (XIII–XV) 9–10, commencing above the opercular cleft, the spines subequal from the fourth to the twelfth, which are more than $\frac{2}{3}$ the length of head, thence slightly increasing to the last, which is $\frac{1}{2}$ the length of head; longest soft rays extending nearly to middle of caudal. Anal III 7 (6–8). Dorsal and anal fins scaleless. Pectoral a little longer than the head; ventral extending beyond origin of anal, sometimes to the posterior end of base of anal. Caudal rounded. Caudal peduncle $\frac{1}{2}$ – $\frac{2}{3}$ as long as deep. Body with about 7 dark cross-bars, the third bearing a large blackish blotch below the seventh to the tenth scales of the lateral line; a dark longitudinal stripe from eye to lateral blotch; a dark vertical stripe below the eye; a dark spot on the upper part of the base of caudal; soft dorsal with oblique dark stripes or series of spots posteriorly.

R. Paraguay.

- | | | |
|------------------|-----------------------------|---------------------|
| 1. (97 mm.) | Corumbo, Matto Grosso. | Spencer Moore, Esq. |
| 2. (79 mm.) | Descalvados, Matto Grosso. | Dr. Ternetz. |
| 3-5. (49-71 mm.) | Carandasiñho, Matto Grosso. | Dr. A. Borelli. |

5. *Acara pulchra*.

Cychlasoma pulchrum, Gill, Ann. Lyc. N. York, vi. 1853, p. 332.

Acara cæruleopunctata, var. *latifrons*, Steind. Denkschr. Ak. Wien, xxxix. 1879, p. 27.

Acara pulchra (part.), Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 176 (1904).

Depth of body $2\frac{1}{6}$ – $2\frac{1}{4}$ in the length, length of head $2\frac{3}{4}$ – $2\frac{5}{8}$. Snout shorter than postorbital part of head. Diameter of eye $3\frac{1}{4}$ – $3\frac{1}{2}$ in the length of head, interorbital width $2\frac{1}{2}$ – $2\frac{3}{4}$. Depth of præorbital a little less than diameter of eye. Maxillary extending to the vertical from anterior margin of eye;

jaws equal anteriorly; fold of the lower lip not continuous; cheek with 3 series of scales; præoperculum scaleless; 6 gill-rakers on the lower part of anterior arch. Scales 24-26 $\frac{3}{8}$, 1 or 1½ between lateral line and anterior rays of soft dorsal. Dorsal XIII-XIV 9-11, commencing above opercular cleft, the spines increasing in length to the last, which is ½ the length of head; fourth spine $\frac{1}{4}$ - $\frac{2}{5}$ the length of head; soft fin pointed, the longest rays extending nearly to the end of caudal. Anal III 7-9. Dorsal and anal fins scaleless. Pectoral a little longer than the head; ventral extending nearly to middle of anal; caudal rounded. Caudal peduncle $\frac{1}{2}$ - $\frac{2}{3}$ as long as deep. Olivaceous, with 7 or 8 dark cross-bars, the third crossing the 9th or 10th and succeeding scale of the lateral line and bearing a blackish blotch below the lateral line; a dark vertical bar below the posterior ½ of eye; sides of the head and anterior part of the body with blue spots, some of those on the head confluent to form stripes; fins dusky, the spinous dorsal with about 3 almost longitudinal dark stripes, the soft dorsal with narrow oblique stripes or series of spots; caudal with dark spots.

Colombia; Venezuela; Trinidad.

1-3. (114-125 mm.)	Baranquilla, Colombia.	Kay Thomson, Esq.
4-6. (105-119 mm.)	Trinidad.	L. Guppy, Esq.

This species has been confounded with *A. cæruleopunctata*, from which it is distinguished by the larger scales, fewer dorsal spines, broader interorbital space, and more produced soft dorsal and anal.

6. *Acara cæruleopunctata*.

Acara cæruleopunctata, Kner & Steind. Sitzb. Bayern Ak. 1863, p. 222, and Abhandl. Bayern Ak. x. 1864, p. 16, pl. ii. fig. 3; Günth. Trans. Zool. Soc. vi. 1869, p. 449.

Æquidens cæruleopunctatus, Jord. & Everm. Bull. U.S. Nat. Mus. xvii. 1898, p. 1614.

Acara pulchra (part.), Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 176 (1904).

Depth of body $2\frac{1}{3}$ - $2\frac{2}{3}$ in the length, length of head $2\frac{1}{3}$ -3. Snout shorter than postorbital part of head. Diameter of eye $3\frac{1}{2}$ in the length of head, interorbital width $2\frac{1}{2}$ - $2\frac{3}{4}$. Depth of præorbital equal to diameter of eye or less. Maxillary extending to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip not continuous or subcontinuous; cheek with 3 series of scales; præoperculum scaleless; 5 or 6 gill-rakers on the lower part of

anterior arch. Scales 26-28 $\frac{3}{8-9}$, 1 or $1\frac{1}{2}$ between lateral line and anterior rays of soft dorsal. Dorsal * XIV-XV 10-11, commencing above opercular cleft, the spines increasing in length to the last, which is nearly $\frac{1}{2}$ the length of head; fourth spine nearly $\frac{1}{3}$ the length of head; soft fin pointed, the longest rays extending to the middle of caudal. Anal III 8-9. Dorsal and anal fins scaleless. Pectoral nearly as long as the head; ventral extending to or a little beyond origin of anal; caudal subtruncate or rounded. Caudal peduncle $\frac{3}{5}$ - $\frac{4}{5}$ as long as deep. Olivaceous, with 5 dark cross-bars, the third bearing a blackish blotch below the lateral line; sides of head and anterior part of body with blue spots; 2 or 3 oblique blue lines from eye to maxillary; fins dusky, the posterior part of the soft dorsal with oblique series of spots, the caudal obscurely spotted.

Panama; North-western Ecuador.

1-2. (129 and 134 mm.)
3-4. (102 and 142 mm.)

Rio Chagres.
N.W. Ecuador.

O. Salvin, Esq.
Mr. Rosenberg.

7. *Acara æquinoctialis*, sp. n.

Chromis rivulata (part.), Günth. Proc. Zool. Soc. 1859, p. 418.

Acara pulchra (part.), Günth. Cat. Fish. iv. p. 280 (1862).

Acara rivulata (part.), Bouleng. Boll. Mus. Torin. xiv. 1899, no. 335, p. 6; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 177 (1904).

Depth of body $2-2\frac{1}{2}$ in the length, length of head $2\frac{3}{5}-2\frac{4}{5}$. Snout shorter than postorbital part of head. Diameter of eye $2\frac{1}{3}-3\frac{2}{3}$ in the length of head, interorbital width $2\frac{1}{2}-3$. Depth of præorbital equal to the diameter of eye or less. Maxillary extending to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 3 series of scales; præoperculum scaleless; 8 or 9 gill-rakers on the lower part of anterior arch. Scales 25-26 $\frac{2-3}{8-9}$, $1\frac{1}{2}$ between lateral line and anterior rays of soft dorsal. Dorsal XIII-XV 10-12, commencing above the opercular cleft, the spines subequal from the fifth, which is more than $\frac{2}{3}$ the length of head; soft fin pointed, extending nearly to middle of caudal. Anal III 8-9. Dorsal and anal fins scaleless. Pectoral at least as long as the head; ventral extending to origin of anal or beyond. Caudal subtruncate or rounded. Caudal peduncle $\frac{3}{5}$ - $\frac{4}{5}$ as long as deep. Olivaceous, with darker cross-bars, the first crossing the first 7 or 8 scales of the lateral line, the second the 9th or 10th and 3 succeeding scales of the lateral line, bearing a large

• Of the four specimens three have fifteen dorsal spines.

blackish blotch below the lateral line; sometimes a dark vertical stripe below the eye; 2 or 3 blue lines from eye to maxillary; sides of head and anterior part of body with blue spots; vertical fins dusky, obscurely spotted.

Western Ecuador.

1-4. (52-96 mm.) types of the species. W. Ecuador.
5-6. (55 and 76 mm.) Rio Vinces. Dr. H. Festa.

Although similar to *A. rivulata* in colour, this species is markedly different in other characters.

8. *Acara rivulata*.

Chromis rivulata (part.), Günth. Proc. Zool. Soc. 1859, p. 418.

Acara pulchra (part.), Günth. Cat. Fish. iv. p. 280 (1862).

Acara rivulata (part.), Bouleng. Boll. Mus. Turin. xiv. 1890, no. 335, p. 5; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 177 (1904).

Depth of body $2\frac{1}{2}$ - $2\frac{2}{3}$ in the length, length of head 3. Snout as long as postorbital part of head. Diameter of eye $3\frac{2}{3}$ -4 in the length of head, interorbital width 3- $3\frac{1}{4}$. Depth of præorbital 1- $1\frac{1}{4}$ the diameter of eye. Maxillary not extending to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 3 or 4 series of scales; præoperculum scaleless; 7 or 8 gill-rakers on the lower part of anterior arch. Scales 27-28 $\frac{3-4}{9-10}$, $1\frac{1}{2}$ between lateral line and anterior rays of soft dorsal. Dorsal XIV-XV 10-12, commencing above the opercular cleft, the spines increasing in length to the last, which is a little more than $\frac{2}{3}$ the length of head; fourth spine $\frac{1}{3}$ the length of head or a little less; soft fin pointed, the longest rays extending nearly to middle of caudal, sometimes beyond. Anal III 8-9. Dorsal and anal fins scaleless. Pectoral nearly as long as the head; ventral extending nearly to origin of anal; caudal rounded; caudal peduncle as long or nearly as long as deep. Brownish above, yellowish below; 4 or 5 cross-bands on the side which are much broader than the interspaces between them, the first crossing the first 7 or 8 scales of the lateral line, the second the 9th or 10th and 3 succeeding scales of the lateral line, bearing a large blackish blotch below the lateral line; a blackish vertical stripe below the eye; 3 blue lines from eye to maxillary; sides of head with blue spots; vertical fins dusky, obscurely spotted.

Western Ecuador.

1. (136 mm.) type of the species. W. Ecuador.
2-4. (113-126 mm.) Rio Peripa. Dr. H. Festa.

9. *Acara Geayi*.

? *Acara Heckelii*, Müll. & Trosch. in Schomburgk, Guiana, iii. p. 624 (1848); Günth. Cat. Fish. iv. p. 279 (1862).

Acara Geayi, Pellegr. Bull. Mus. Paris, 1902, p. 417; Mém. Soc. Zool. France, xvi. 1903, p. 178 (1904).

Depth of body $2-2\frac{1}{2}$ in the length, length of head 3. Snout longer than postorbital part of head. Diameter of eye $2\frac{2}{3}-3$ in the length of head and equal to the interorbital width. Depth of præorbital greater than diameter of eye. Maxillary not reaching the vertical from the anterior margin of eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 4 or 5 series of scales, præoperculum scaleless; 7 gill-rakers on the lower part of anterior arch. Scales $26-27\frac{4}{9}$. Dorsal XIV-XV 9-11, commencing a little in advance of the opercular cleft, the spines subequal from the fourth, the last $\frac{1}{2}-\frac{2}{3}$ the length of head. Anal III 8. Dorsal and anal fins scaleless. Pectoral as long as the head; ventral extending to middle of anal; caudal truncate. Caudal peduncle $\frac{2}{3}$ as long as deep. Brownish; a curved blackish band from the origin of dorsal through the eye to the suboperculum and another from below the middle of the spinous dorsal across the side nearly to the mid-ventral line. Soft dorsal, anal, and caudal with light spots.

Guiana.

1. (84 mm.)	Essequibo.	Mr. Ehrhardt.
2. (91 mm.)	Cayenne.	Warsaw Museum.

10. *Acara zamorensis*, sp. n.

Acara sypsius (non Cope), Bouleng. Boll. Mus. Torin. xiv. 1899, no. 335, p. 6.

Acara vittata (part.), Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 173 (1904).

Depth of body $2\frac{2}{3}$ in the length, length of head 3. Snout shorter than the postorbital part of head. Diameter of eye $3\frac{1}{2}$ in the length of head, interorbital width 3. Depth of præorbital equal to diameter of eye. Maxillary extending to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 3 series of scales; præoperculum scaleless; 5 gill-rakers on the lower part of anterior arch. Scales $27\frac{3}{8}$, 1 between lateral line and anterior rays of soft dorsal. Dorsal XIII (XIV 9) 10, commencing behind the opercular cleft, the spines increasing in length to the last, which is $\frac{2}{3}$ the length of head; fourth spine $\frac{2}{3}$ the length of head; longest

soft rays extending to anterior $\frac{1}{4}$ of caudal. Anal III (7-8) 9. Dorsal and anal fins scaleless. Pectoral $\frac{4}{5}$ the length of head; ventral extending to origin of anal; caudal subtruncate. Caudal peduncle $1\frac{1}{2}$ as long as deep. Reddish brown, with about 7 blackish cross-bars, the first three bearing longitudinally expanded blotches below the lateral line; a faint dark bar below the posterior part of eye; a dark spot at the base of caudal; sides of head and anterior part of body with blue spots; vertical fins dusky, posterior part of dorsal and the caudal obscurely spotted.

Amazons of Ecuador.

1. (101 mm.) type of the species. Rio Zamora. Dr. II. Festa.

11. *Acara sapayensis*.

Acara sapayensis, Regan, Ann. & Mag. Nat. Hist. (7) xii. 1903, p. 623.
Acara riculata (part.), Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 177 (1904).

Depth of body $2\frac{2}{3}$ in the length, length of head $2\frac{2}{3}$. Snout a little shorter than postorbital part of head. Diameter of eye $3\frac{1}{4}$ in the length of head, interorbital width $2\frac{2}{3}$. Depth of preorbital $\frac{3}{4}$ the diameter of eye. Maxillary extending to the vertical from the anterior margin of eye; lower jaw a little shorter than the upper; cheek with 3 series of scales; preoperculum scaleless; 5 gill-rakers on the lower part of anterior arch. Scales $26\frac{3}{8}$, 1 between lateral line and anterior rays of soft dorsal. Dorsal XV 10, originating behind the opercular cleft, the spines increasing in length to the last, which is $\frac{3}{4}$ the length of head; fourth spine $\frac{1}{4}$ the length of head; soft fin pointed, the longest rays extending beyond the middle of caudal. Anal III 8. Dorsal and anal fins scaleless. Pectoral nearly as long as the head; ventral extending to origin of anal; caudal subtruncate. Caudal peduncle $\frac{4}{5}$ as long as deep. Brown, with 6 or 7 blackish cross-bars on the upper half of the body, extending on to the base of the dorsal fin; some oblique blue lines from eye to maxillary and blue spots on the side of the head; vertical fins dusky.

N.W. Ecuador.

1. (114 mm.) type of the species. R. Sapayo. Mr. Rosenberg.

12. *Acara guianensis*, sp. n.

Depth of body 2 in the length, length of head 3. Snout shorter than postorbital part of head. Diameter of eye $3\frac{1}{4}$

in the length of head, interorbital width $2\frac{2}{3}$. Depth of preorbital $\frac{3}{4}$ the diameter of eye. Maxillary extending to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip continuous; cheek with 3 series of scales; preoperculum scaleless; 5 gill-rakers on the lower part of anterior arch. Scales $25\frac{3}{8}$. Dorsal XIII 10, commencing above the opercular cleft, the spines subequal from the fourth, the last nearly $\frac{1}{2}$ the length of head, the middle soft rays elongate, extending to the end of caudal. Anal III 7. Soft dorsal and anal scaly at the base. Pectoral longer than the head; ventral extending a little beyond the origin of anal; caudal rounded. Caudal peduncle $\frac{2}{3}$ as long as deep. Body with 5 or 6 dark cross-bars, the second crossing the 7th to 10th scales of the lateral line and bearing a large darker blotch below the lateral line; the third and fourth bars with smaller and fainter blotches; a dark bar below the posterior part of eye and a dark spot on the upper half of the base of caudal; soft dorsal, posterior part of anal, and base of caudal spotted.

Guiana.

1. (110 mm.) type of the species. Guiana. Berlin Museum.

13. *Acara portalegrensis*.

♀ *Acara dinerus*, Heck. Ann. Mus. Wien, ii. 1840, p. 341; Günth. Cat. Fish. iv. p. 277 (1862).

Acara portalegrensis, Hensel, Arch. f. Nat. 1870, p. 52; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 173 (1904).

Depth of body 2 in the length, length of head $2\frac{2}{3}$ -3. Snout shorter than postorbital part of head. Diameter of eye $2\frac{1}{2}$ - $3\frac{1}{2}$ in the length of head, interorbital width $2\frac{1}{4}$ - $2\frac{1}{2}$. Depth of preorbital $\frac{1}{3}$ - $\frac{2}{3}$ the diameter of eye. Maxillary extending to or beyond the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 2-3 series of scales; preoperculum scaleless; 5 or 6 gill-rakers on the lower part of anterior arch. Scales 24-26 $\frac{3}{8}$ - $\frac{5}{8}$. Dorsal XIV-XVI 9-11, commencing above the opercular cleft, the spines not or but slightly increasing in length posteriorly, the last $\frac{2}{5}$ - $\frac{1}{2}$ the length of head, the longest rays extending to middle of caudal or beyond. Anal III 8-10. Soft dorsal and anal scaly at the base. Pectoral as long as the head; ventral extending to origin of anal or beyond; caudal rounded. Caudal peduncle $\frac{1}{3}$ - $\frac{2}{3}$ as long as deep. Body with 8 or 9 dark cross-bands, the third bearing a blackish blotch below

the lateral line; a dark band from eye to lateral blotch; a dark bar or spot below the eye; a white line from eye to nostril and beyond; often a large dark ocellus on the upper part of base of caudal, this varying considerably and sometimes completely wanting; posterior part of soft dorsal and anal with oblique dark stripes; dark stripes on the caudal more or less oblique if an ocellus be present, vertical if it be absent.

Rio Paraguay; Rio Grande do Sul.

1. (76 mm.)	Descalvados, Matto Grosso.	Dr. Ternetz.
2. (119 mm.)	Paraguayan Chaco.	Dr. Ternetz.
3. (120 mm.)	Luqui, Paraguay.	Dr. A. Borelli.
4. (95 mm.)	Paraguayan Chaco.	Graham Kerr, Esq.
5-6. (88 and 96 mm.)	Bahía Negra, N. Chaco.	G. Boggianni.
7-9. (88-82 mm.)	Carandasiñho, Matto Grosso.	Dr. A. Borelli.
10. (64 mm.)	Rio Grande do Sul.	Dr. H. von Ihering.

14. *Acara dorsigera*.

Acara dorsigera, Heck. Ann. Mus. Wien, ii. 1840, p. 348; Günth. Cat. Fish. iv. p. 280 (1862); Steind. Sitzb. Ak. Wien, lxxi. 1875, p. 76; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 174 (1904).

Depth of body $2\frac{1}{5}$ in the length, length of head $2\frac{3}{4}$ - $2\frac{2}{3}$. Head very similar to that of *A. tetramerus*, but with 2 series of scales on the cheek and 1 series on the præoperculum; 6 gill-rakers on the lower part of anterior arch. Scales 23-24 $\frac{2}{3}$. Dorsal XIII-XIV 7-10. Anal III 8. Dorsal and anal fins scaleless. Pectoral as long as the head. Caudal rounded. Caudal peduncle $\frac{1}{2}$ as long as deep. Olivaceous, with 7 or 8 more or less distinct darker cross-bars; a dark blotch below the ninth to eleventh scales of the lateral line; a dark longitudinal band from eye to lateral blotch; a dark spot on the spinous dorsal between the eighth and tenth spines; soft dorsal, anal, and caudal with series of alternate light and dark spots.

R. Amazon; R. Paraguay.

The examples described by Heckel and Steindachner measure up to 53 mm. in total length.

15. *Acara Thayeri*.

Acara Thayeri, Steind. Sitzb. Ak. Wien, lxxi. 1875, p. 68, pl. i. fig. 2; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 175 (1904).

Depth of body 2 in the length, length of head 3. Snout shorter than postorbital part of head. Diameter of eye 3 in the length of head, interorbital width $2\frac{2}{3}$ - $2\frac{1}{4}$. Maxillary not extending to below the eye; jaws equal anteriorly; cheek

with 2 series of scales, præoperculum with 1 series; 6 gill-rakers on the lower part of anterior arch. Scales 23-24 $\frac{2\frac{1}{2}}{8-9}$. Dorsal XIV-XV 9-10, commencing above the opercular cleft, the spines only slightly increasing after the fifth, the last nearly $\frac{1}{2}$ the length of head; soft fin extending to middle of caudal or beyond. Anal III 7. Soft dorsal and anal scaly at the base. Pectoral as long as the head; ventral extending to origin of anal or beyond. Caudal rounded. Caudal peduncle $\frac{1}{2}$ as long as deep. Olivaceous, with obscure darker cross-bars; a dark longitudinal band from eye to below the fourth scale of the lateral line; a dark blotch on and below the sixth to the tenth scales of the lateral line, and another above it extending on to the spinous dorsal; soft dorsal, anal, and caudal sometimes with dark spots.

R. Amazon.

The examples described by Steindachner measure up to 110 mm. in total length.

16. *Acara flavilabris*.

Acara flavilabris, Cope, Proc. Am. Phil. Soc. xi. 1870, p. 572, and xvii. 1878, p. 606; Proc. Ac. Philad. 1872, p. 255, pl. xi. fig. 4.

Closely allied to *A. Thayeri*, which it resembles in having 2 series of scales on the cheek and 1 series on the præoperculum, and quite wrongly placed in the synonymy of *A. tetramerus* by Steindachner and by Pellegrin. Dorsal XVI 9-10. Anal III 7. Scales 24 $\frac{2\frac{1}{2}}{8}$. Caudal peduncle apparently more than $\frac{1}{2}$ as long as deep. A dark blotch on the lateral line before the middle of the side of the body; a dark bar at the base of caudal; lower lip yellowish.

River Ambyiacu, Upper Amazon.

Cope states that all five specimens examined by him agree in having 16 dorsal spines.

17. *Acara frenifera*.

Acara freniferus, Cope, Proc. Ac. Philad. 1872, p. 255; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 177 (1904).

Apparently allied to the preceding species, but with more numerous scales, 28-29 in a longitudinal series. Dorsal XVI 10-11. Anal III 8. Body with dark cross-bars; a blackish spot below the middle of the dorsal fin, connected with the eye by a blackish longitudinal band.

River Ambyiacu, Upper Amazon.

18. *Acara Maronii*.

Acara Maronii, Steind. Denkschr. Ak. Wien, xliii. 1882, p. 141, pl. ii. fig. 4; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 179 (1904).

Depth of body $1\frac{2}{3}$ – $1\frac{3}{4}$ in the length, length of head 3. Snout considerably shorter than postorbital part of head. Diameter of eye 3 in the length of head, interorbital width $2\frac{1}{2}$. Depth of præorbital $\frac{3}{4}$ the diameter of eye. Maxillary extending to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip slightly interrupted; cheek with 3 series of scales, præoperculum with 1 or 2 series; 5 or 6 gill-rakers on the lower part of anterior arch. Scales $2\frac{1}{2}$ $\frac{31-1}{5}$. Dorsal XV 10–11, commencing above the opercular cleft, the spines not or but slightly increasing in length posteriorly, the last $\frac{1}{2}$ the length of head, the longest soft rays produced to or beyond the end of caudal. Anal III 9–11. Soft dorsal and anal strongly scaly at the base. Pectoral as long as the head; ventral extending beyond origin of anal, sometimes nearly to the posterior end of base of anal; caudal rounded. Caudal peduncle $\frac{1}{2}$ – $\frac{1}{3}$ as long as deep. Brownish; a blackish curved band from origin of dorsal through eye to suboperculum; a blackish blotch above the lateral line below the posterior dorsal spines.

Guiana.

1–2. (83 and 87 mm.)
3. (77 mm.)

Surinam.
Demerara.

Mr. Kappler.
F. G. Beckford, Esq.

NANNACARA, gen. nov.

Closely allied to *Acara*, but the upper lateral line runs obliquely upwards to the spinous dorsal, from which it is separated by only half a series of scales for most of its length.

A single species from the Essequibo.

Nannacara anomala, sp. n.

Acara punctulata (part.), Günth. Ann. & Mag. Nat. Hist. xii. 1863, p. 441.

Depth of body $2\frac{3}{4}$ in the length, length of head 3. Snout much shorter than postorbital part of head. Diameter of eye 3 in the length of head and greater than the interorbital width. Depth of præorbital $\frac{1}{2}$ the diameter of eye. Maxillary extending to below the eye; jaws equal anteriorly; fold of the lower lip continuous; cheek with 2 series of scales, præoperculum with 1 series; 5 or 6 gill-rakers on the

lower part of anterior arch. Scales 23-24 $\frac{11}{8}$, $\frac{1}{2}$ a scale between upper lateral line and dorsal fin for most of its length. Dorsal XVI 8, commencing above the opercular cleft, the spines subequal or slightly increasing after the sixth, the last nearly $\frac{1}{2}$ the length of head; soft fin extending beyond middle of caudal. Anal III 8. Pectoral as long as the head; ventral extending to origin of anal. Caudal rounded or pointed, the middle rays being somewhat produced. Caudal peduncle $\frac{1}{2}$ as long as deep. Brownish, with a dark longitudinal stripe from eye to base of caudal and a dark oblique stripe from eye to angle of præoperculum; soft dorsal, anal, and caudal obscurely spotted.

R. Essequibo.

1-2. (55 and 57 mm.) types of the species. R. Essequibo. Mr. Ehrhardt.

This curious species was considered by Pellegrin to be probably identical with *Biotodoma Agassizii*, Stdr. However, there is no trace of a lobe on the upper part of the anterior branchial arch, and the scaly præoperculum also separates it from the known species of *Biotodoma*.

ACAROPSIS.

Acara (part.), Heck. Ann. Mus. Wien, ii. 1840, p. 333; Günth. Cat. Fish. iv. p. 276 (1862).

Acaropsis, Steind. Sitzb. Ak. Wien, lxxi. 1875, p. 60; Eigenm. & Bray, Ann. Ac. N. York, vii. 1894, p. 613; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 180 (1904).

Differs from *Acara* only in the somewhat larger mouth, very protractile præmaxillaries, and exposed maxillary.

A single species from the Amazon, Venezuela, and Guiana.

The skeleton is very similar to that of *Acara tetramerus*, but the greater length of the ascending processes of the præmaxillaries, which extend to above the middle of the orbit, is correlated with a somewhat shorter occipital crest and shorter and weaker parietal crests. There are 25 vertebrae (12+13), the third bearing a pair of feeble inferior apophyses.

Acaropsis nassa.

Acara nassa, Heck. Ann. Mus. Wien, ii. 1840, p. 353; Günth. Cat. Fish. iv. p. 281 (1862).

Acara cognatus, Heck. t. c. p. 356.

Acara unicolor, Heck. t. c. p. 357.

Acara (Acaropsis) nassa, Steind. Sitzb. Ak. Wien, lxxi. 1875, p. 81, pl. ii.

Acaropsis nassa, Eigenm. & Bray, Ann. Ac. N. York, vii. 1894, p. 613; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 180 (1904).

Ann. & Mag. N. Hist. Scr. 7. Vol. xv.

Depth of body $2-2\frac{1}{4}$ in the length, length of head $2\frac{3}{5}-2\frac{3}{4}$. Snout not longer than eye, the diameter of which is $2\frac{2}{3}-3\frac{1}{3}$ in the length of head and equal to or greater than the inter-orbital width. Depth of preorbital $\frac{1}{4}$ to a little more than $\frac{1}{3}$ the diameter of eye. Mouth oblique; lower jaw projecting; maxillary extending to below anterior part or middle of eye; præmaxillary processes extending to above posterior margin of eye; check with 2 or 3 series of scales, none on the præoperculum; 10-11 gill-rakers on the lower part of anterior arch. Scales $23-24$ $\frac{3}{5-9}$, $\frac{1}{2}$ a scale between lateral line and anterior rays of soft dorsal. Dorsal XIII-XIV 9-11, commencing above the opercular cleft, the spines increasing in length to the last, which is $\frac{1}{2}$ the length of head, the soft fin pointed, extending to middle or posterior extremity of caudal. Anal III 8-9. Dorsal and anal fins scaleless. Pectoral longer than the head, extending to above middle of anal. Caudal rounded. Caudal peduncle $\frac{1}{2}-\frac{2}{3}$ as long as deep. Brownish; a blackish spot on the middle of the side, another at the origin of the lateral line, a third below the posterior part of eye, and a fourth on the angle of the præoperculum, the last often ocellated; a dark spot on the upper $\frac{1}{2}$ of the base of caudal; soft vertical fins usually with small dark spots.

R. Amazon; R. Orinoco; Guiana.

1. (152 mm.)	R. Cupai.	
2. (140 mm.)	Demerara.	F. G. Beckford, Esq.
3. (Skeleton.)	Teffé.	Mus. Comp. Zool.
4. (195 mm.)	Tonantins.	Paris Museum.

ASTRONOTUS.

Astronotus, Swains. Nat. Hist. Fish. ii. p. 229 (1839); Pellegr. Mém.

Soc. Zool. France, xvi. 1903, p. 182 (1904).

Acara (part.), Heck. Ann. Mus. Wien, ii. 1840, p. 338.

Hygrogonus, Günth. Cat. Fish. iv. p. 303 (1862).

Astronotus (part.), Eigenm. & Bray, Ann. Ac. N. York, vii. 1894, p. 615.

Body ovate, compressed; scales rather large, ctenoid. Two lateral lines. Mouth moderate; maxillary scarcely exposed; jaws with small conical teeth in bands and with an outer series of rather strong teeth; upper surface of head scaly to between the orbits; checks and opercular bones scaly; præoperculum entire. Gill-rakers few and short. A single dorsal, with XII-XIV 19-21 rays; anal with III 15-16 rays; soft vertical fins densely covered with small

scales; caudal rounded. Pectoral asymmetrical, with 15 rays; ventrals a little behind the base of the pectoral.

A single species from South America.

The skeleton is very similar to that of *Acara tetramerus*, but there are 31 vertebrae (16+15), the third and fourth forming a very distinct inferior process for the attachment of the pharyngeal muscles.

Astronotus ocellatus.

Lobotes ocellatus, Agass. in Spix, Pisc. Bras. p. 129, pl. lxxviii. (1829).
Astronotus ocellatus, Swains. Nat. Hist. Fish. ii. p. 229 (1839); Eigenm. & Bray, Ann. Ac. N. York, vii. 1894, p. 617; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 182 (1904).
Acara crassispinis, Heck. Ann. Mus. Wien, ii. 1840, p. 350.
Cychnu rubrocellata, Schomb. Fish. Guiana, ii. p. 153, pl. x. (1843).
Hyrogonus ocellatus, Günth. Cat. Fish. iv. p. 303 (1862).
Acara compressus, Cope, Proc. Ac. Philad. 1872, p. 256.
Acara ocellata, Steind. Sitzb. Ak. Wien, lxxi. 1875, p. 77.
Acara hyposticta, Cope, Proc. Am. Phil. Soc. xvii. 1878, p. 697.
Astronotus ocellatus, var. *zebra*, Pellegr. l. c. p. 183.
Astronotus hypostictus, Pellegr. l. c.

Depth of body 2-2½ in the length, length of head 3. Snout as long as or longer than eye, the diameter of which is 4-4½ in the length of head, interorbital width 2½-2¾. Depth of præorbital ½ the diameter of eye. Mouth oblique; lower jaw slightly projecting; maxillary very slightly exposed, extending to below anterior ½ of eye; præmaxillary process extending to above anterior ¼ of eye; cheek with 7-9 series of scales, none on the præoperculum; 7-9 gill-rakers on the lower part of anterior arch. Scales 33-38 $\frac{9+7}{17-20}$, those of the thoracic region considerably smaller than on the sides of the body. Dorsal XII-XIII (XIV) 19-21, commencing above the opercular cleft, the spines slightly increasing in length to the last, which is ½ the length of head. Anal III 15-16. Pectoral nearly as long as the head. Caudal rounded. Caudal peduncle $\frac{2}{3}$ -½ as long as deep. Brownish, with a blackish ocellated spot on the upper ½ of the base of caudal and sometimes 2 or 3 more on the base of the soft dorsal; pectoral with a blackish spot on the inner side near the base.

Guiana; R. Amazon; R. Paraguay.

1. (255 mm.)	Tefé.	Mr. Salma.
2. (Skeleton.)	Tefé.	Prof. A. Agassiz.
3. (240 mm.)	Para.	Dr. E. A. Göldi.
4. (250 mm.)	Carandasiñho, Matto Grosso.	Dr. A. Borelli.
5. (225 mm.)	Maunos.	Paris Museum.