

NOTES ON A COLLECTION OF FISHES FROM ARGENTINA,
SOUTH AMERICA, WITH DESCRIPTIONS OF THREE NEW
SPECIES.

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This paper is based on a collection of fishes made in Argentina by Mr. John W. Titcomb,^a in 1903 and 1904, while engaged in inaugurating fish-cultural operations for the Argentine Government. The collection contains 52 species, of which about half are from fresh water. The marine species are from Mar del Plata or the market at Buenos Aires. The latter are mostly from Uruguayan fisheries. The freshwater species are from Rio Primero in the Province of Cordoba, and from the headwaters of the Rio Negro, chiefly Lakes Nahuel Huapi and Trafal and tributary or neighboring waters. Unfortunately when received some of the labels had become partly effaced, making some of the localities uncertain.

Mr. Titcomb has kindly furnished us the following interesting information regarding the lakes and streams of Argentina:

In general, leaving out the larger rivers, the fresh waters of Argentina may be divided into three classes:

First, the cold clear waters of the Cordilleras and rivers having their sources in the Andes from the Limay south.

Second, clear-water streams constantly flowing and not having an excessively high temperature in summer; clear-water ponds supplied with water from such streams and having a constant inflow and outflow. The streams flowing south from the Sierras in the Province of Buenos Aires are examples of the streams above described, and in the same region Lago de Bravo and Lago de los Padres are examples of the ponds coming under this head. In the northern provinces the Rio Primero and the Dique San Roque belong to the same class of waters. All of them are practically unproductive, containing only small fishes.

Third, streams which are sluggish and more or less muddy, and which have an excessively high temperature in summer; ponds and lakes which are natural basins

^aSee Boletín del Ministerio de Agricultura, No. 3, I, May, 1904, pp. 253-278.

for catching surface water, which never go dry, and which have no regular supply or discharge of water. Lake Nahuel Huapi is the largest of a chain of lakes in the Andes Mountains, which may be called the sources of the Rio Limay. These are found in latitude $38\frac{1}{2}^{\circ}$ to $41\frac{1}{2}^{\circ}$ south. Lake Nahuel Huapi is almost on the Chilean border, the dividing line being a series of steeply-shaped peaks which are snow-clad throughout the year. Its elevation is about 2,500 feet. The waters are very clear and one can see to a depth of about 20 or 30 feet. The shore line is very irregular, and only a very small part of the lake can be seen at any one time by a boatman on it. There are several islands in the lake one of which contains a small pond of about 15 or 20 acres in area. The lake is fed by innumerable small streams, and several quite large ones. Lake Trafal is about 2,300 feet elevation, and is much smaller than Lake Nahuel Huapi. It covers perhaps one-tenth of the area of the larger lake. It is probably about 10 miles long and 2 miles wide at its widest point. It is surrounded by mountains, and the shore line is precipitous, so much so that in many places it is impossible to make a landing from the lake. This lake is apparently very deep, and its waters are clear and cold, similar to those of Lake Nahuel Huapi. Various other lakes in the same district mentioned above were reported to be similar in character. Some of them are larger than Lake Trafal. Lake Nahuel Huapi reminds one very much of Lake Winnetoesaukee. It is quite as irregular, has clearer water of a lower temperature, and not nearly so many islands. It must be very deep in some parts. The shores rise abruptly several hundred feet in places.

The nature of the waters of the Limay River may be judged pretty accurately from the description of Lakes Nahuel Huapi and Trafal. These and many other lakes in the Andes flowing into the river cause it at times to overflow its banks and spread over quite a large territory. At the outlet of Nahuel Huapi, which may properly be called the source of the Limay, the lake itself rises 15 or 20 feet. When the river is at its normal height it is in places only 200 or 300 yards wide, but quite deep. In other places it is a mile wide. In many places there are rapids dangerous to navigation in small boats. Owing to the fact that the river spreads out in width so frequently, and also because it breaks up in small channels, it can not be called navigable for any but small boats.

We are indebted to Dr. Carl H. Eigenmann, of Indiana University, for assistance in the identification of the Characins.

Family GALEIDÆ.

1. *MUSTELUS CANIS* (Mitchill).

TIBURÓN; CAZÓN.

Squalus canis MITCHILL, Trans. Lit. and Philos. Soc. New York, I, 1815, p. 486, New York.

Mustelus vulgaris, GÜNTHER, Ann. Mag. Nat. Hist., 5th ser., No. 3, July, 1880, p. 7.

Galeus canis, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 7 (Bahia Blanca; Mar del Plata; Montevideo; Rio de la Plata).

Berg says that this species is rather common on the coast and ascends the Rio de la Plata almost to fresh water.

We have 4 specimens, all males, measuring from 17.25 to 22.75 inches total length.

Family SQUATINIDÆ.

2. SQUATINA SQUATINA (Linnæus),

ANGEL.

Squalus squatina LINNÆUS, Syst. Nat., 10th ed., 1858, p. 233, Europe.

Rhina squatina, PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 608 (Mar del Plata).

Squatina squatina, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 9 (Bahia Blanca; Mar del Plata; Montevideo).

Berg says this species occurs in considerable abundance at Bahia Blanca, Mar del Plata, Montevideo, and along the whole south coast.

Our collection contains one specimen 20 inches long from the market at Buenos Aires, probably from Uruguayan fisheries.

Family NARCOBATIDÆ.

3. DISCOPYGE TSCHUDII Heckel.

RAYA ELECTRICA.

Discopyge tschudii HECKEL in Tschudi, Untersuch. Fauna Peruviana, 1845, p. 33, pl. vi, Peru.—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 10 (Mar del Plata).

Two specimens 16 and 12.5 inches in total length, respectively, from the market of Buenos Aires, agree very well with Berg's description.

Family RAJIDÆ.

4. RAJA PLATANA Günther.

RAYA.

Raja platana GÜNTHER, Challenger Rept., Zool., I, 1880, p. 11, pl. iii, Rio de la Plata, in 13 fathoms.—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 13 (Mar del Plata; Montevideo; Rio de la Plata).

Berg states that this species is comparatively more abundant than the others and reaches a larger size. He has seen individuals a meter in diameter. He says that they have the antero-lateral border somewhat sinuous rather than straight, as figured by Günther.

We identify the single specimen in our collection with this species, although it differs somewhat from Günther's description and figure.

Total length 23.5 inches; length of disk about 2 in total length; eye 8.63 in snout, 2.36 in interorbital; teeth short, bluntly conic in front, nearly flat at ends of jaws, 40 rows in the upper jaw, 44 in the lower. Body smooth above, excepting a patch of scattering prickles about halfway between eye and lateral border; a group of small spines on snout; scattering prickles in front of and between eyes; a short spine before each eye and 2 behind, near inner end of each spiracle; 3 short spines and a few prickles on back near junction with head; scattering prickles along back and front of and between ventral

fins and on base of tail; an interrupted series of spines along median dorsal aspect of tail; 1 spine between dorsals; below smooth, excepting a moderately broad patch of fine prickles on antero-lateral border in region anterior to nostrils and on each side of snout; snout smooth.

Color in alcohol, above light brown with large faint dark-brown spots, giving it a coarsely mottled appearance; a large ocellus at middle base of each pectoral, the center dark brown, surrounded by gray; traces of dark brown cross-bars on tail; each side of snout with pale area, probably hyaline in life; below entirely white, excepting a long triangular dark-brown spot on the snout, its apex toward mouth; symmetrically arranged bluish pores, thick anteriorly, becoming fewer and disappearing on abdomen.

5. RAJA MICROPS Günther.

Raja microps GÜNTHER, Challenger Rept., Zool., I, 1880, p. 11, pl. iv, mouth of Rio de la Plata.—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 14 (Mar del Plata; Rio de la Plata).

Concerning this species, Berg says that it occurs with less frequency than the former species [*R. agassizi* and *R. platana*] from which it is distinguished principally by the much shorter snout; and usually there are 34 series of pavement teeth.

The only example in our collection is a female from Buenos Aires market. We have identified it with this species, although it does not agree in every way with Günther's description and figure. There is no trace of the conspicuous fan-shaped patches of muciferous tubes just posterior to the head, mentioned and figured by Günther.

The following notes are taken from our specimen: Total length 20.87 inches; length of disk about 2.31 in total length; width of disk about 1.51; snout about 3.34 in length of disk; interorbital space about 3.11 in snout. Teeth flat, 42 series in upper jaw and 30 in the lower; snout short, its angle greater than a right one; anterior margin of pectoral slightly sinuous from snout to the rounded outer margin.

Ventrals deeply emarginate, with crenate edges; tail flat, with a narrow fold on each side; series of spines along the back and tail to the first dorsal, and one spine between the fins; a spine behind each eye and opposite the spiracles; a spine in front of the upper margin of each eye and one on each side of the body opposite the spiracle and in line with the anterior margin of pectoral fin; a broad patch of prickles along anterior margin of pectoral, diminishing in width to the snout; space between the eyes prickly; a line of prickles along each side of median line of spines of the back, also along each side of base of tail for a short distance beyond base of ventrals; a narrow strip of prickles on each side of lower part of snout. Color olivaceous gray, with faint traces of darker spots.

6. PSAMMOBATIS SCOBINA (Philippi).

RAYA.

Raja scobina PHILIPPI, Weig. Archiv für Naturg., XXIII, 1857, p. 270, Chile.

Psammobatis rudis GÜNTHER, Cat., VIII, 1870, p. 470, Sandy Point, Chile.—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., 1), 1895, p. 14 (Mar. del Plata).

Raja scobina PHILIPPI, Anal. Mus. Nac. Chile, Zool., 1892, p. 2, pl. 1, fig. 1 (Chile).

Berg records *Psammobatis rudis* Günther, in the synonymy of which he doubtfully includes *Raja scobina* Philippi. Regarding it he says: "This species, which, according to Günther, is identical with *Raja scobina* Philippi of the Pacific coast of Chile, is comparatively rare. The longest of those examined was 28 cm. The number, form, and distribution of the spines and sharp tubercles, as well as the coloration and the extent of the pale spots, vary greatly in this ray."

Günther's type of his species, *Psammobatis rudis*, was an immature individual only 7 or 8 inches long, some of the characteristics of which were the perfectly circular disk; snout short, overlapped by the anterior portions of the pectoral fins; tail with no distinct terminal fin, and each ventral divided into two by a deep notch.

In the *Challenger* report he presents additional notes on the species and gives some figures, stating that a male example 11.5 inches long was still far from mature; the disk not circular, but the anterior margins more rectilinear; a thin rostral appendage present; the tail showing a distinct terminal fin. His figures show the ventral fin divided almost into two. In this report Günther doubtfully includes Philippi's *Raja scobina* in the synonymy of *Psammobatis rudis*.

In the *Anales del Museo Nacional de Chile*, 1892, in which he re-describes and figures *Raja scobina*, Philippi says of a specimen 27 cm. in length, that the disk is circular; but he italicizes the statement that the ventrals are situated wholly behind the vent, their margins rounded and not divided into two lobes. We have no way of definitely deciding whether these two forms are specifically identical; but we have one specimen which seems to be closely related to them, yet not fully agreeing with the description of either. Inasmuch as it agrees with one about as well as with the other and as *R. scobina* is the older name and regarded by Günther as probably synonymous with *P. rudis*, we adopt it as the name for our specimen which we provisionally identify as a *Psammobatis*.

Following is a brief description of our specimen: Total length 23.5 inches; width 17 inches; disk with nearly rectilinear margins forward, its width greater than its length, measured from tip of snout to posterior base of pectoral fin; a short filamentous rostral projection; eye 8.63 in snout, 2.36 in interorbital; teeth short, bluntly conic in front, nearly flat at end of jaws, 40 rows in the upper jaw and 44 in the lower; ventrals not wholly behind vent, deeply notched but not divided into two distinct lobes; on about the middle of the back 3 short bluntish

spines, behind which are traces of other spines; broad patch of prickles along anterior margin of pectoral nearly to snout where the patch becomes narrower and the prickles more scattering; scattering minute prickles between and in front of eyes, and on back arranged in 3 or 4 rows extending from spines about middle of back on tail to about opposite tip of ventral; tail depressed with fold along each side and a single row of stout spines along the median dorsal line from between ventrals to first dorsal and one spine between dorsals; no spines on side of tail; dorsal fins each with a cartilaginous support or ray similar to that in *Sympterygia*, not present in the other skates.

7. SYMPTERYGIA BONAPARTII Müller and Henle.

BAYA.

Sympterygia bonapartii MÜLLER and HENLE, Wieg. Archiv für Naturg., III, Pt. 1, p. 155, pl. XLIX.

Sympterygia bonapartei, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 15 (Mar del Plata; Montevideo; Río de la Plata).

Sympterygia acuta GARMAN, Proc. Bost. Soc. Nat. Hist., XIX, 1877, p. 206, Buenos Aires.

Recorded by Berg from Mar del Plata, Montevideo and Río de la Plata. He observes that this species of ray, which is very common in the localities mentioned and whose country was known neither to Müller and Henle, nor to Günther, is very variable in respect to the prolongation of the snout, the width of the fins, the length of the tail, and the shape of the antero-lateral border. This last in one example is rectilinear, in other instances curved, and in others, principally the males, sinuous. The males usually have various series of dorso-lateral spines.

In the identification of our specimens of this genus we follow Berg, although the characters of the type, a female in the Berlin Museum, as shown in the brief description and the figure by Müller and Henle, are widely different from those of our specimens. But Berg found much variation in the species, and includes Garman's *S. acuta* from Buenos Aires (the description of which agrees fairly well with our specimens) as being conspecific with his specimens. Besides, the type of *S. bonapartii* seems to be *sine patria*, although it is not impossible that it came from South America. Müller and Henle say that the thin teeth are flat, while Garman says: "Teeth small, subquadrangular on the base, sharp in the middle series, blunter to flat toward the angles of the mouth, in 42 series on the upper jaw and 40 below."

The following are descriptions of 2 of the specimens in our collection:

Description of male: Length of disk slightly over 2 in total length; width of disk 1.75; eye small, 4.5 in interorbital; snout long and sharp, about 2.35 in length of disk; interorbital 3.77 in snout, wider than the distance of eye and spiracle taken together.

Teeth in 47 series above and 45 below; in upper jaw 7 rows at each end are flat, the rest sharp; 9 rows at each end of lower jaw are flat, the remainder sharp; all the sharp teeth hooked inward; margin nearly straight from tip of snout to about opposite anterior margin of eye, then abruptly curving outward as the anterior margin of the pectoral; pectoral rounded, the exertion of the rays giving it a crenulate margin and for the same cause the ventrals being crenate; dorsal moderately high, the second deeply notched near the tip of the tail, each with a thick cartilaginous ray; a series of strong spines from the middle of back to first dorsal and one spine between the dorsals; no other large spines; about 4 rows of small hooked spines near the edge on the widest part of each pectoral; whole anterior margin of pectoral nearly to tip of snout with a broad band of prickles; a band of small prickles from base of snout on the translucent area, between the eyes and whole length of back nearly to tip of tail. Color in spirits, brownish above with streaks and cloudy effects of darker, as if soiled.

Description of female: Length of disk 2 in total length; width of disk about 1.81; snout about 2.27 in length of disk; interorbital about 4.35 in snout; eye 3.85 in interorbital; teeth 42 rows in each jaw; about 6 rows in the upper jaw and 8 in the lower at each end are flat; the remainder pointed on an expanded base.

Body of same general shape, and spines arranged about the same as in the male. Below there is a dense patch of prickles over the whole area between the rows of gill-openings; a large irregularly arranged patch on each pectoral base opposite and posterior to gill-openings; anterior concave margins of pectorals prickly, as in male, and others about the same.

This description from a male 20.12 inches long and a female 21 inches long, both from Buenos Aires. A third female 22 inches long has the teeth in 48 rows in upper jaw and 50 in the lower.

Family CALLORHYNCHIDÆ.

8. CALLORHYNCHUS CALLORHYNCHUS (Linnæus).

GALLO.

Chimæra callorhynchus LINNÆUS, Syst. Nat., 10th ed., 1758, p. 236, "Habitat in Mari Æthiopico."

Callorhynchus callorhynchus, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., 1), 1895, p. 18 (Santa Cruz; Mar del Plata; Montevideo; Rio de la Plata).

Berg says that this species is not rare in the waters of the Atlantic coast from Bahia de Santa Cruz to Montevideo; the usual length 70 to 80 cm., but individuals of 1 m. are very rare.

We have one specimen something over 77 cm. (30.5 inches) total length.

Family CLUPEIDÆ.

9. SARDINELLA ARCUATA (Jenyns).

Clupea arcuata JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 134, Bahia Blanca.—PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 655 ("Canale della Beagle").—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 19 (Bahia de Santa Cruz; Bahia Blanca).

Three specimens in our collection furnish the figures for the following table:

Proportional measurements of Sardinella arcuata.

Total length in inches.	Head in length without caudal.	Depth.	Eye in head.	Snout in head.	Ventral scutes.	D.	A.	Pectoral in head.
3.75	5	4	3.20	4	18+10	14	19	1.33
3.87	5.38	4.11	3.25	4.33	18+10	14	22	1.44
?	5.04	3.88	3	3.85	19+ 9	14	21	1.22

Mouth very oblique; upper outline nearly straight from tip of snout to caudal; ventral outline strongly curved from tip of lower jaw; dorsal origin about halfway between tip of snout and upper base of caudal; ventral insertion in advance of origin of dorsal.

Color in alcohol, thickly punctated with dusky on back, giving it a bluish-gray appearance; lower parts silvery; middle caudal rays dusky; all other fins pale; tip of lower jaw black; tip of snout with black punctulations.

10. BREVOORTIA TYRANNUS (Latrobe).

LACHA.

Clupea tyrannus LATROBE, Trans. Amer. Philos. Soc. Phila., V, 1802, p. 77, Chesapeake Bay.

Clupanodon aureus AGASSIZ in Spix, Pisc. Brasil., 1829, p. 52, pl. XIX, "Habitat Bahiæ et alibi in ora Brasilæ orientale."

Alosa pectinata JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, p. 135, pl. XXV, 1842, Bahia Blanca.

Clupea aurca, PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 655 (La Plata e Belgrano).

Clupea pectinata, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 17 (Bahia Blanca; Mar del Plata; Montevideo; Embocadura del Rio de la Plata).

Brevoortia tyrannus, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 20 (Mar del Plata; Montevideo; Rio de la Plata.)

Berg records "*Brevoortia tyrannus*" from Montevideo and Rio de la Plata, where he says it sometimes occurs in great abundance, ascending the Rio de la Plata as far as Belgrano. He also lists "*Clupea pectinata* (Jen.)" from Bahia Blanca, Mar del Plata, Montevideo, and Embocadura del Rio de la Plata, saying that it abounds during the winter, but apparently does not ascend the Rio de la Plata beyond salt water.

Jenyns' *Clupea pectinata* is a *Brevoortia* and was regarded by Goode^a as a distinct species, taking the place of *B. tyrannus aurea* south of Brazil, from which it was distinguished chiefly by the fewer scales in a transverse series, the formula for which was in 3 specimens 50, -18 to 20. One of these specimens was from Rio Grande, Brazil. Goode did not give the scale formula for *aurea*, but in his figure, Plate III, fig. 3, there are over 60 laterally and 23 or 24 transversely. There are, however, just as many scales in one figure of a menhaden from Woods Hole. Goode had a large number of northern menhaden in which he found great variation in the proportional measurements; in fact, in all their characters, sufficient indeed to cause him to regard local groups as varieties.

He had comparatively few Brazilian specimens, and only 3 which he regarded as *B. pectinata*. It is probable that if he had had more of the latter he would have found as great variation in them as he did in the northern fish. We have examined a small series of northern menhaden, but none of *aurea* and but 1 of *pectinata* which is Goode's Paraguayan example. We are therefore not in a position to reach any positive conclusion regarding the identity or distinctness of these forms. We have, however, 2 specimens in the present collection which in the number of scales agrees with *B. pectinata*, but compared with the above-mentioned Paraguayan example of that species, is as different in other respects as are specimens from Chesapeake Bay. The most notable difference is in the position of the ventrals and the consequent difference in the extent of the pectorals. In northern menhaden Goode states this character is variable and unreliable. Our specimens, compared with 2 Chesapeake Bay specimens of somewhat smaller size, are very different. They have deeper heads, fewer longitudinal scales, and a more posterior situation of the ventrals. With all these difficulties before us we deem it inadvisable to attempt to draw any conclusions further than that intergradation probably exists and that *B. pectinata* is not more than a subspecies at most; and that an examination of a larger series of menhaden from the habitat of this form would reveal that it is the only menhaden there, but subject to great variation as in the north. Being unable more closely to identify our specimens with *B. pectinata* than with *aurea* or *tyrannus* we provisionally designate them as *Brevoortia tyrannus*, in as much as Berg records this species from those waters.

The tails being somewhat broken we have to give their lengths to base of caudal only. Lengths 12.27 and 11.57 inches, respectively; head 3.37 and 3.35 in length; depth 2.76 and 3.01; eye 7.75 and 7.33 in head; snout 4.04 and 4.40; maxillary 2.11 and 2.39; mandible 1.72; scales about 50-15 (vertical); D. 14 ? and 17; A. 21 and 20.

^aRept. U. S. Fish Comm., V, 1877 (1879), pp. 18, 30.

Family ENGRAULIDÆ.

11. LYCENGRAULIS GROSSIDENS (Cuvier).

SARDINA.

Engraulis grossidens CUVIER in Spix (Agassiz) Pisc. Brasil., p. 50, pl. xxiv, fig. 1, 1829.—PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 654 (Montevideo).

Lycengraulis grossidens, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., 1), 1895, p. 21 (Mar. del Plata; Montevideo).

Concerning this species Berg states that it sometimes reaches the markets of Buenos Aires and Montevideo in considerable abundance.

We have the bones of the lower part of the head, a part of the vertebral column, and the stomach of an individual found in the stomach of *Acanthistius patachonicus*.

The teeth sufficiently indicate the genus, but it is impossible to determine the species with certainty.

The stomach was distended with fragments of minute crustaceans.

Family LEPTOCEPHALIDÆ.

12. LEPTOCEPHALUS ORBIGNYANUS (Valenciennes).

Conger orbignyanus VALENCIENNES in D'Orbigny, Voy. L'Amér. Merid., V, 1847; Poiss., p. 10; Atlas, pl. xii, fig. 1.

? *Conger multidentis* CASTELNAU, Anim. nouv. P'éxped. L'Amér. du Sud, Poiss., 1855, p. 84, pl. xliv, fig. 1, "De Rio de Janeiro".

Conger vulgaris, GÜNTHER, in part, Cat., VIII, 1870, p. 38 (South America).—PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 656 (Montevideo).—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., 1), 1895, p. 23 (Mar del Plata; Montevideo).

Conger conger LINNEUS (= *C. orbignyanus*, VALENCIENNES ?).—GÜNTHER, Ann. Mag. Nat. Hist., 5th ser., 3, July, 1880, p. 13 (La Plata).

? *Leptocephalus multidentis*, JORDAN and DAVIS, Rept. U. S. Fish Comm., XVI, 1888 (1892), p. 664 (coast of Brazil).

Leptocephalus conger, JORDAN and DAVIS, Rept. U. S. Fish Comm., XVI, 1888 (1892), p. 664.

The most prominent character used by Günther and by Jordan and Davis to distinguish the species of conger eels is the position of the origin of the dorsal fin with reference to the tip of the pectoral.

Günther^a definitely recognizes 4 species, *Conger marginatus*, *C. vulgaris*, *C. multidentis*, and *C. macrops*, of which *C. vulgaris* and *C. multidentis* are represented from South America.

In a footnote Günther says of *Conger orbignyanus*, that it is probably identical with one of the species described; that D'Orbigny represents the origin of the dorsal as being a short distance behind the extremity of the pectoral fin, while this distance is increased to the entire length of the latter fin in Doctor Kaup's description.

^aCat., VIII, 1870.

Regarding the position of the dorsal in *C. vulgaris*, Günther states that it begins opposite or nearly opposite the extremity of the pectoral; that in *C. multidentis* it begins the length of the pectoral behind the extremity of that fin.

Jordan and Davis recognize 3 species of *Leptocephalus* in America and Europe—*L. multidentis*, *L. conger*, and *L. caudilimbatus*. The only stated distinguishing character of *L. multidentis* is the position of the front of the dorsal, which is the length of the pectoral behind the extremity of that fin; *L. conger* has the position of the dorsal origin opposite or just behind tip of pectoral, and *L. caudilimbatus* above middle of pectoral.

We have 3 specimens of *Leptocephalus* which we have compared with other specimens from North and South America. North Atlantic examples seem to have the dorsal more advanced than those from the south Atlantic, but we do not regard the position of the dorsal as of much diagnostic importance. The figure of Valenciennes's *C. orbignyianus* represents the origin of the dorsal about 0.40 the length of the pectoral from its tip. In Castelnau's figure of *C. multidentis* the dorsal origin is about the length of pectoral posterior to its tip.

In our specimens the dorsal origin ranges from about 0.40 of the pectoral to nearly its whole length behind the tip of the latter fin.

While this character is of little value, there are others exhibited by our specimens which indicate that they are distinct from North American and at least north European congers. Valenciennes gives but a brief note regarding *C. orbignyianus*, stating it is remarkable for its length of snout and the development of the lips, and that there is only a little patch of teeth on the head of the vomer.

Aside from the more posterior situation of the dorsal, Castelnau's description and figure show only a somewhat larger eye to distinguish it from *C. orbignyianus*. The proportionally larger eye may be due to the smaller size of the specimen. Our 3 specimens seem to be much more slender than north Atlantic examples, and appear to differ also in that respect from figures of north European congers. They present also other distinguishing characters, the most prominent of which are the proportionally shorter head, smaller eye, and somewhat larger mouth. In view of the foregoing facts, while from lack of material we do not feel justified in uniting *L. orbignyianus* and *L. multidentis*, we believe that an examination of more material would result in that disposition of them. We do, however, believe that the differences shown in our specimens from *L. conger* justify the adoption for them of the oldest available name, which seems to be *L. orbignyianus* Valenciennes. Berg records the present species as *Leptocephalus conger*, regarding which he says, "It is found rather frequently, but in limited numbers. Examples of this species present great variation in respect to the coloration of the upper half of the body; some are of a

pale gray, others bluish or brownish gray or wholly brown or black; the lower part is whitish or pale or dull ashy; the fins are uniform in coloration or bordered with black."

Proportional measurements of North American specimens of L. conger and of L. orbignyianus.

Name.	Total length in inches.	Head in total length.	Eye in snout.	Eye in inter-orbital.	Snout in head.	Extent of gape.
<i>L. conger</i>	25	6.06	2	1.29	3.88	To 0.75 of eye.
<i>L. conger</i>	22.12	6	2.4	1.21	2.76	To 0.85 of eye.
<i>L. conger</i>	17.12	5.95	1.57	1	3.06	To 0.57 of eye.
<i>L. orbignyianus</i>	38	7.11	2.83	1.83	4	To slightly beyond eye.
<i>L. orbignyianus</i>	32.5	7.13	2.85	1.71	4.83	To somewhat beyond eye.
<i>L. orbignyianus</i>	29.12	7.10	2.70	1.70	2.96	To somewhat beyond eye.

Family ERYTHRINIDÆ.

13. HOPLIAS MALABARICUS (Bloch).

TARARIRA.

Esox malabaricus BLOCH, Ausländ. Fische, 1794, Pt. 8, p. 149, pl. cccxcii, Tranquebar.

Macrodon malabaricus, EIGENMANN and EIGENMANN, Proc. Cal. Ac. Sci., 2nd ser., November 8, 1889, 11, pp. 101 and 102.

Hoplías malabaricus sen taraira, GILL, Proc. U. S. Nat. Mus., XXVI, 1903, p. 1016.

Our collection contains 2 specimens 16 and 18.5 inches in total length, respectively, of this widely distributed species. Head 3.10 and 3.21 in length without caudal; depth 3.56 and 3.97; eye 9.18 and 10.06 in head; snout 4.80 and 4.53; maxillary 1.96 and 2.06; mandible 1.68 and 1.63; pectoral 1.94 and 1.95; ventral 1.80 and 1.85; D. 14 and 12, its longest ray 2.22 and 1.91 in head; A. 9 and 10; scales 7-45-5 and 7-44-5.

Family CHARACINIDÆ.

14. CURIMATUS GILBERTI Quoy and Gaimard.

PAPA-TERRA.

Curimatus gilberti QUOY and GAIMARD, Voy. Uranie, 1824, p. 219, pl. XLVIII, fig. 1, Rio Macacu, Brazil.—EIGENMANN and EIGENMANN, Ann. N. Y. Ac. Sci., IV, 1889, p. 16.

Two specimens in our collection present the following characters: Total length 6.87 and 7 inches; head 3.89 and 3.75 in length; depth 2.88 and 2.77; eye 8 in head, 2.52 and 2.42 in interorbital; snout 3.70 and 3.63; scales 6-36-5 and 6-37-5; D. 10; A. 8 and 10.

There are several dusky spots along side and a larger spot on caudal peduncle, showing through the scales.

15. PROCHILODUS PLATENSIS Holmberg

SABALO.

Prochilodus platensis HOLMBERG, Rev. Argent. Hist. Nat., I, 1891, p. 186, Río de la Plata.

Holmberg says that this is the most common "Sabalo" of Buenos Aires, that it is caught with nets, is a common article of consumption, its abundance making it cheap, and that it is pretty good eating.

There are some discrepancies between the description of this fish by Holmberg and the notes taken on a single specimen from Río de la Plata, but only such as can be accounted for by difference in size. Holmberg's type was a little over 20 inches in length (52 cm.).

Our specimen is about 12.5 inches. It is close to *P. lineatus* (Valenciennes), according to the description, but lack of material for comparison prevents certainty regarding the identity of the two. The following is a brief description of our specimen:

Head 3.88 in length without caudal; depth 3.05; eye 5.15 in head without flap; interorbital 1.81; snout 3.16; length of pectoral 1.26 in head; D. 11, its longest ray about 1.06 in head; A. 11, its longest ray 1.91 in head; ventral nearly as long as pectoral, 1.28 in head.

Two series of close-set, weak, flexible teeth in each jaw; outer series curved, teeth flat and sharp; inner series widely V-shaped, apex directed inward, teeth dilated and crenulated at tips; teeth in both series of lower jaw more closely set, overlapping each other and all dilated at tips; inner series with a wide curve inward.

16. PARODON NASUS Kner.

Parodon nasus KNER, Denks. Ak. Wiss. Wien, XVII, 1859, p. 167, "Cujabafusse."—BERG, Anal. Mus. Nac. Buenos Aires (2d ser., II), 1896-97, p. 280 (Río Cuyaba, República Argentina [Provincias de Córdoba, Tucumán y Salta]).

Berg states that a study of specimens from the province of Salta and an examination of the descriptions and figures given by Cuvier and Valenciennes, Reinhardt, and Lütken incline him to the opinion that *Parodon nasus* Kner is a good species and not a synonym of *Parodon suborbitalis* Cuvier and Valenciennes; that his examples correspond very well with Kner's description of *P. nasus*, with the exception that there are only 2 teeth instead of 3 on the ascending ramus of the lower jaw, a peculiarity that he does not consider sufficient for the establishment of a new species.

He says that the figures given by Cuvier and Valenciennes, Reinhardt, and Lütken represent a rather graceful and slender form, while his examples are very robust, plump, or broad, having the anterior part of the back arched, the belly broad and nearly flat, and the caudal end relatively deep. The fins, especially the pectoral, broad, and somewhat falcate or emarginate, characters that the figures of *P. sub-*

orbitalis Cuvier and Valenciennes and *P. hillarii* Reinhardt do not show. Berg gives the fin rays and scale counts of *P. nasus* as follows:

D. 12; A. 9; P. 15; scales 5-38 to 40-4 or 5.

Kner gives them as D. 11; A. 9; P. 15; scales $4\frac{1}{2}$ -36 to 38- $3\frac{1}{2}$ to 4.

Steindachner has described and figured a *Parodon affinis* from La Plata^a of which he gives D. 12; A. 8; P. 12; scales 5 to $5\frac{1}{2}$ -44 to 45- $3\frac{1}{2}$ to 4, and which differs in other respects from description of figures of *P. nasus*. In his account of this species he expresses the opinion that *P. nasus* Kner and *P. hillarii* Reinhardt are synonymous with *P. suborbitalis* Cuvier and Valenciennes.

In specimens which Berg identifies with *P. affinis* he gives D. 11 or 12; A. 8; P. 12 or -13; scales $5\frac{1}{2}$ -42 to 47-4 (Rio de la Plata; Rio Paraguay).

Perugia^b lists *Parodon nasus* Kner from Tucuman and Cordoba, regarding which he says "Doctor Steindachner in describing a new species of *Parodon*, *P. affinis* (Denk. Ak. Wien, XLI, p. 20) expresses the opinion that *P. suborbitalis*, *P. nasus*, and *P. hillarii* Reinh. (Lütken, Velhas—Floden Fische, p. 194, figs. 3, 4) are synonyms. From the comparison I am able to make of our specimens with the figure and description of Cuvier and Valenciennes, Kner, and Lütken, I agree exactly with Steindachner's view."

Parodon suborbitalis Cuvier and Valenciennes^c has head less than 5; depth 4; D. 11; A. 9; scales 37.

The very limited material at our command prohibits our expressing any decided opinion regarding the value of one or the other of these somewhat contradictory views, and we are, therefore, unable to identify our 2 specimens with certainty. It is especially hard since they are young individuals not over 1.87 inches long; *P. suborbitalis* was 5 inches long; *P. nasus* Kner, over 4 inches; *P. nasus* Berg, 4.75 to $5\frac{1}{2}$; *P. affinis*, about 4. However, since our specimens agree so well with Kner's description and Berg's account, we believe it safest to follow Berg and record them as *P. nasus* Kner.

We regard this as perhaps justifiable also from the fact that *P. suborbitalis* is from a region widely remote from that of the present species. The type of *P. nasus* was from Rio Cuyaba, in southwest Brazil, a tributary of the Parana flowing into La Plata. Other specimens of Weyenbergh and Berg were from the provinces of Cordoba and Salta, respectively. Ours were taken, perhaps in Rio Primero, Cordoba, or perhaps in some of the tributary waters of the Rio Negro, or possibly from La Plata.

^aUeber einige neue und seltene Fish-Arten aus dem La Plata, Denks. Ak. Wiss. Wien, XLI, 1879, p. 20, n. 1, pl. III, fig. 3.

^bAnn. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. DCXXXVII,

^cHist. Nat. Poiss., XXII, 1849, p. 51, pl. DCXXXVII, Maracaibo.

Our 2 specimens present the following characteristics: Total length in inches, 1.87 and 1.68; head, 4.44 and 4.35 in length without caudal; depth 5 and 4.11; 3.6 and 4.25 eye in head; snout 3 and 3.4; scales 6-39-4 and 5-39-5; D. 11 and 10; A. 8; P. 15.

Color, after preservation first in formalin and later in alcohol, brownish olive; from 7 to 9 large dark spots along side of back and about 17 or 18 upright oblong dark spots along side, coalescing more or less on lateral line, making a sort of irregular lateral stripe; belly pale; fins all pale.

17. *ASTYANAX FASCIATUS* ^a (Cuvier).

MOJARRA.

Tetragonopterus fasciatus CUVIER, Mem. Mus. Hist. Nat., V, 1819, p. 352, pl. xxvi, fig. 2, rivers of Brazil.—EIGENMANN and BRAY, Ann. N. Y. Ac. Sci., VII, 1892, pp. 94, 634.

In our collection from Rio Primero, Cordoba, there are examples from about 1.65 to 3.12 inches in total length. In the majority of individuals, after preservation in formalin, there is a narrow lateral plumbeous, black stripe widening toward the tail, where it becomes a large black spot, from which the black extends upon the middle rays of caudal; a vertically oblong spot on shoulder, in some instances extending nearly to pectoral. The dorsal and anal are sometimes tipped with dusky; dorsal origin a little behind insertion of ventrals; pectoral reaching quite to ventral and ventral nearly or quite to anal; a silvery lateral stripe which is indistinct in some lights and very distinct in others; no shoulder spot evident; a very faint duskiness indicates a caudal spot; flap of skin on base of each dorsal ray mentioned by Jenyns in *T. rutilus*, white.

Proportional measurements of Astyanax fasciatus.

Head in length without caudal.	Depth.	Eye in head.	Inter-orbital.	Scales.	Dorsal.	Anal.
3.75	2.81	3.00	3.00	6-36-5	10	20
3.66	2.66	3.00	3.00	7-37-5	10	21
3.41	2.73	3.00	3.00	8-35-5	10	21
3.77	2.96	2.75	2.75	7-37-5	10	21
3.56	2.92	2.87	2.87	7-37-5	10	21
3.77	2.67	2.75	2.44	7-35-5	10	21
3.41	2.64	3.00	3.00	7-35-5	10	21
3.52	3.08	2.62	3.00	7-35-5	10	22
4.25	3.09	2.90	2.66	7-37-6	10	25
4.29	2.70	3.09	2.42	7-37-6	10	25

^a According to a recent note from Dr. Eigenmann, he is of the opinion that 2 species are represented among the specimens here identified as *A. fasciatus*—one being this species, the other unrecognized. We are unable to discover any specific differences.

18. *ASTYANAX RUTILUS* (Jenyns).

Tetragonopterus rutilus JENYNS, Zool. Voy. Beagle, Fish, 1842, p. 125, pl. xxiii, fig. 2, Rio Parana.—EIGENMANN and EIGENMANN, Proc. U.S. Nat. Mus., 1891 (1892), p. 52 (Cauca; Canelos; Ecuador; Rio San Francisco to Rio Plata [Xamapa, Mexico]).

The present collection contains 3 specimens, the definite locality of which is unknown.

Proportional measurements of Astyanax rutilus.

Total length in inches.	Head in length without caudal.	Depth.	Eye in head.	Snout.	Scales.	Dorsal rays.	Longest ray in head.	Anal rays.	Long anal ray in head.	Length of pectoral in head.	Length ventral in head.
5	4.29	2.71	3.00	4.80	7-39-6	10	1	27	1.71	1.09	1.41
4.62	4.36	2.90	3.14	4.40	8-38-6	10	Longer.	27	1.69	1.12	1.46
4.43	4.34	2.69	3.15	4.55	8-39-6	10	Longer.	25	1.46	1.07	1.36

19. *ASTYANAX CORDOVÆ* (Günther).

MOJARRA.

Tetragonopterus cordovæ GÜNTHER, Ann. Mag. Nat. Hist., VI (5th ser.), 1880, p. 21, Rio de Cordoba.

There are 13 specimens in the present collection from Rio Primero, Province of Cordoba, 10 of them presenting the following proportional measurements, scale and fin-ray counts:

Proportional measurements of Astyanax cordovæ.

Total length in inches.	Head in length without caudal.	Depth.	Eye in head.	Snout in head.	Inter-orbital in head.	Scales.	Dorsal.	Anal.
3.43	3.89	3.21	3.80	3.80	2.71	9-43-9	10	27
3.12+	3.82	3.19	3.88	4.37	2.50	9-46-9	10	27
3.12	3.82	3.25	3.40	3.77	2.42	8-44-9	10	26
3.12+	3.82	3.25	3.77	3.77	2.42	9-42-8	10	28
3.37	4.00	3.27	4.00	4.00	2.57	9-46-8	10	29
3.18	3.61	3.09	3.40	.....	.....	9-44-9	10	28
3.06	4.06	3.35	4.12	.....	2.35	8-40-8	10	28
3.25	4.18	3.35	3.55	.....	2.28	9-45-9	10	30
3.56	3.89	3.36	3.80	.....	2.53	9-42-9	10	27
3.25	3.78	3.33	4.11	.....	2.64	9-42-8	10	30

Origin of dorsal over insertion of ventral; ventral reaching vent; pectoral not reaching ventral.

20. *ASTYANAX IHERINGII* (Boulenger).

Tetragonopterus iheringii BOULENGER, Ann. Mag. Nat. Hist., XIX, 5th ser., 1887, p. 172, San Lorenzo, Rio Grande do Sul.

Three specimens in the present collection measuring about 2.44 to 3 inches in total length; probably came from Rio Primero, Cordoba.

Body comparatively deep; dorsal outline more strongly arched than ventral, beginning rather abruptly at occiput; greatest depth in a line beginning immediately in front of dorsal; dorsal high, about equal to length of head, somewhat behind line of insertion of ventral; pectoral reaching ventral, ventral to vent.

Color, after preservation in formalin, then in alcohol, straw with silvery luster, with dusky punctulations on edges of scales above lateral line, especially pronounced on back; a diffuse silvery lateral stripe; a faint dusky shoulder spot, none on caudal peduncle; membranes of dorsal and anal and sometimes caudal finely punctulated with dusky, making the fins dusky when depressed.

Proportional measurements of Astyanax iheringii.

Total length.	Head in length without caudal.	Depth.	Eye in head.	Snout.	Inter-orbital.	Scales.	Dorsal.	Anal.
76	4.33	2.82	3.00	3.75	3.00	6-37-5	9	19
^a 68	4.46	2.90	2.88	4.33	2.88	6-37-5	9	18
62	4.16	2.94	3.00	4.00	3.00	7-37-5	9	17

^a Two adipose dorsals.

21. ASTYANAX EIGENMANNI Evermann and Kendall, new species.

Head 4.2 in length without caudal; depth 3.15; eye 3 in head; snout 4.28; interorbital 2.72; D. 8; A. 17; scales 6-39-4. General form

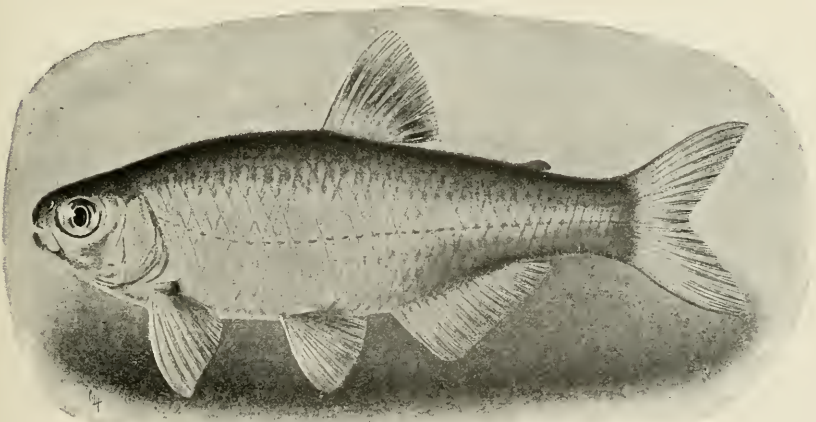


FIG. 1.—ASTYANAX EIGENMANNI. (From the type.)

somewhat oblong-elliptical; dorsal and ventral curves similar, the dorsal slightly concave at occiput; 12 scales along median line of back from occiput to front of dorsal; origin of dorsal considerably behind vertical from insertion of ventrals; height of anterior rays of dorsal about 1.15 in head; pectoral reaching base of ventral; ventral scarcely reaching origin of anal; length of anal base about equal to length of

head, the height of anterior rays about 1.5 in head; external rays of ventral and anterior rays of anal scabrous; head short, eye comparatively large; snout short and somewhat blunt; lower jaw much shorter than upper; 3 teeth on inner surface of upper end of maxillary; 2 rows of teeth on premaxillaries and 1 on mandible; all teeth 3-pointed, the middle point largest.

Color, after preservation in formalin, then in alcohol, light greenish gray; an indistinct, broad silvery lateral stripe; an indistinct, vertical, dusky shoulder spot; no spot on caudal peduncle; tips of dorsal, anal and caudal rays faintly dusky.

Type.—No. 55570, U.S.N.M., a specimen about 3 inches long (76 mm.) from Rio Primero, Province of Cordoba.

Cotype.—No. 11071, Ind. Univ. Mus., about 2.87 inches (73 mm.) in total length; head 4.06; depth 3.21; eye 3.33; snout 4.28; interorbital 3; D. 9; A. 18; scales 6-37-5. Ventral reaching vent. Color similar to type, the lateral silvery stripe more distinct; shoulder spot fainter; anterior half of anal membrane dusky between the rays.

Named for Dr. Carl H. Eigenmann, in recognition of his valuable work on the Characins.

22. XIPHORHAMPHUS JENYNSII Günther.

Hydrocyon hepsetus, JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 128 (Maldonado); not of Cuvier.

Xiphorhamphus jenynsii GÜNTHER, Cat., V, 1864, p. 356 (after *Hydrocyon hepsetus*, Jenyns).

Our collection contains 2 specimens of *Xiphorhamphus* which agree very well with Jenyns' description of *Hydrocyon hepsetus*, which species Günther has considered distinct from *H. hepsetus* of Cuvier and has described under the name *Xiphorhamphus jenynsii*. Eigenmann and Eigenmann^a include *X. jenynsii* in the synonymy of *X. hepsetus* Cuvier, the reason for which we are not able to understand. *X. jenynsii* has fewer anal rays and fewer scales in longitudinal series. The following data are given by Jenyns: Length 4.25 inches; head in length without caudal 3.5; depth 3.5; eye in head not quite 4; D. 11; A. 25; scales 57 or 58-16.

The corresponding measurements in our 2 specimens are: Total length 8.75 and 8.87 inches; head 3.71 and 3.73 in length without caudal; depth 3.30 and 3.36; eye 5.15 and 5 in head; snout 3.76 and 3.75; D. 11; A. 25; scales 10-55-6 and 10-56-6; in the first the upper profile of the head slopes straight from the nape, in the second this outline is somewhat concave; teeth on the maxillary of uniform size; large on premaxillary and in front of lower jaw; longest dorsal ray 1.32 and 1.40 in head; longest anal ray 1.88 and 1.45 in head; pectoral 1.32 and 1.45; ventral 1.75 and 1.80.

^aProc. U. S. Nat. Mus., XIV, p. 58.

Color in alcohol: Top of head olive; black bluish gray; side silvery; trace of spot on caudal peduncle and shoulder when scales are removed; dusky punctulations on tip of dorsal and anal rays anteriorly; middle caudal rays dusky.

23. CYNODON VULPINUS (Agassiz.)

Rhaphiodon vulpinus AGASSIZ in Spix, Pisc. Brasil., 1829, p. 77, "Habitat in Brasiliæ fluviiis".

Cynodon vulpinus AGASSIZ in Spix, Pisc. Brasil., 1829, pl. XXVI.—CASTELNAU, Anim. Nouv. Exped. l'Amer. Sud, Poiss., 1855, p. 75, pl. XXXIX, fig. 1 (Amazon; Ucayale).—PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 649 (La Plata; Santa Fe; Ascuncion, Paraguay).

There are 5 specimens in the present collection; definite locality unknown, probably from the market at Buenos Aires.

Proportional measurements of *Cynodon vulpinus*.

Length in inches.	Head in length without caudal.	Depth.	Eye in head.	Snout.	Maxillary including premaxillary.	Mandible.	Pectoral in length.	Ventral.	Scales.	Dorsal.	Anal.
8	5.10	5.27	4.62	3.70	1.42	1.35	6.09	3.70	125	11	41
8.25	5.07	5.51	3.16	3.80	1.40	1.40	.....	.....	130	11	41
8.12	5.28	5.78	5	3.18	1.40	1.29	.....	.....	130	11	45
7.75	5.02	5.67	5	3.50	1.40	1.40	4.40	.....	125	11	40
5.87	4.93	5.54	4.50	3.75	1.42	1.35	.....	.....	120+	11	44

Family SILURIDÆ.

24. RHAMDIA HILARII (Cuvier and Valenciennes).

Pimelodus hilarii CUVIER and VALENCIENNES, Hist. Nat. Poiss., XV, 1840, p. 180, Rio San Francisco; Montevideo.

Rhambdia hilarii, LÜTKEN, Velhas-Flodens Fiske, 1875, p. 174, and text figure (Lagua Santa; Rio San Francisco).—EIGENMANN and EIGENMANN, Occ. Pap. Cal. Ac. Sci., I, 1890, p. 131 (Rio San Francisco and its tributaries; Porto Alegri south to Rio Plata).

Two specimens from Buenos Aires, from which the following notes were taken:

1. Length without caudal 12.75 inches. Head about 3.57 in length without caudal; greatest width of head 1.54 in its length; snout about 1.67; eye 9.5 in head, 3 in snout, or 3.33 in interorbital; interorbital 2.85 in head; gillrakers 3+10 on each side; fontanelle extending a little beyond eye; occipital process reaching about halfway to dorsal; D. I, 7; distance from dorsal to adipose about 10 in length of adipose, 4.5 in base of dorsal; A. 10.

2. Length without caudal 12.5 inches. Head about 3.7 in length without caudal; width of head about 1.58 in its length; interorbital 2.84; snout 3.17; eye about 8.3 in head, 2.61 in snout, and about 2.92 in interorbital; gillrakers 3+8 on the right side and 3+7 on the left;

fontanelle a little beyond eye; top of head somewhat rougher than in the preceding specimen; D. I, 7; distance from dorsal to adipose 8.66 in length of adipose, 2.4 in base of dorsal; A. 10.

25. *LUCIOPIMELODUS PATI* (Cuvier and Valenciennes).

PAT; PATI.

Pimelodus pati CUVIER and VALENCIENNES, Hist. Nat. Poiss., XV, 1840, p. 176 Parana; La Plata; Corrientes; Buenos Aires.—VALENCIENNES in D'Orbigny, Voy. Amer. Merid., V, 1847, p. 7; Atlas, pl. 1, figs. 7-8 (Corrientes).—PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 631 ("Rio della Plata").

Luciopimelodus pati, EIGENMANN and EIGENMANN, Occ. Pap. Cal. Ac. Sci., I, 1890, p. 106 (Rio Plata; Rio Branco near British Guiana).

One specimen, total length 18.75 inches. Head 3.67 in length; depth 5.22; eye 13.5 in head, 2.75 in interorbital, 6.75 in snout; snout about 2 in head; interorbital 3.09 in width of head; maxillary barbel 1.59 in length without tail; postmental barbel 1.98, mental 1.12 in head; pectoral 1.15; ventral 1.75; dorsal I, 6, height 3.11 in head; anal 11; adipose 2.95 in length without caudal, its height 11.33 in its length

26. *PSEUDOPIMELODUS ZUNGARO* (Humboldt).

MANGURUYN.

Pimelodus zungaro HUMBOLDT, Observations, II, 1833, p. 170, pl. XLVI, fig. 1.

Pseudopimelodus zungaro, EIGENMANN and EIGENMANN, Occ. Pap. Cal. Ac. Sci., I, 1890, pp. 110, 112 (Rio Plata; Rio Magdalena and the region between).

One specimen 15.25 inches total length.

Head wider than long, 3.61 in length without caudal; width of head about 3.4 in length without caudal; eye 17.6 in head, 8.4 in interorbital; maxillary barbel 1.42 in head; length of base of adipose 2 in head; D. I. 6; A., 8.

Family PYGIDIIDÆ.

27. *PYGIDIUM AREOLATUM* (Cuvier and Valenciennes).

ANGUILLA.

Trichomycterus areolatus CUVIER and VALENCIENNES, Hist. Nat. Poiss., XVIII, 1846, p. 492, Riviere de San Jago.

Pygidium areolatum, EIGENMANN and EIGENMANN, Occ. Pap. Cal. Ac. Sci., I, 1890, p. 330 (Mapocho, Chile).—BERG, Anal. Mus. Nac. Buenos Aires, IV, 1895, p. 143 (Catamarca).

Nineteen specimens, 2.18 to 6.5 inches long, easily referable to this species. In some of the proportional measurements there is considerable individual variation not depending upon the size of the fish, which the following table indicates. Six of these were labeled from Rio

Comajo, Territory of Newquen, one from a tributary of Lake Trafal, two from a small tributary of the Limay, and the rest were without label, but were probably from one or another of these places.

Proportional measurements of Pygidium areolatum.

Total length in inches.	Head in length without caudal.	Depth.	Eye in head.	Snout in head.	Interorbital in head.	Nasal barbel in head.	Longest maxillary barbel in head.	Length of pectoral in head.	Length of ventral in head.	Distance from tip of snout to ventral in length without tail.	Distance from tip of snout to dorsal in length without tail.	Length of dorsal base compared with head.	Dorsal rays.	Anal rays.
6.50	5.64	6.43	10	2.08	3.33	2.27	1.56	1.31	1.92	1.93	1.54	Little longer...	14	7
6.50	5.94	6.43	10	2.17	3.33	2.50	1.42	1.38	1.85	1.86	1.52	Equal.....	14	7
6.12	5.70	6.22	9.6	2.00	3.20	2.00	1.54	1.26	1.71	1.88	1.53	Little longer...	16	7
5.75	5.81	7.11	11	2.09	3.14	2.09	1.46	1.33	1.86	1.77	1.47	.....do	16	7
4.37	5.82	6.66	11.33	2.12	3.09	2.00	1.30	1.30	1.61	1.64	1.50	Equal.....	15	7
3.87	5.54	5.73	6.2	2.38	4.87	2.58	1.55	1.29	.....	1.79	1.45	Longer.....	18	7
2.75	5.08	.....	.....	2.18	3.42	2.01	1.50	1.33	2	1.74	1.56	Little longer...	15	7

In the synonymy of this species, Berg includes *T. maculatus*, Girard (part), *T. cordovensis* Weyenbergh, and *T. tenuis* Weyenbergh.

28. PYGIDIUM CORDOVENSIS (Weyenbergh).

Trichomycterus cordovensis WEYENBERGH, Act. Acad. Nac. Cien. Buenos Aires, III, Pt. I, 1877, p. 11, pl. III, figs. 1 and 2, "Rio Primero y acequias de Cordoba."

Trichomycterus tenuis WEYENBERGH, Act. Acad. Nac. Cien. Buenos Aires, III, Pt. I, 1877, p. 12, pl. III, figs. A, B, C., "Laguna en la Sierra de Cordoba, cerca de la Villa Cruz-del-Eje."

Trichomycterus tenuis and *Trichomycterus cordovensis*, EIGENMANN and EIGENMANN, Occ. Pap. Cal. Ac. Sci., I, 1890, p. 326.

Pygidium areolatum, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., 1), 1895, p. 143 (Cordoba); in part.

Berg regards this species and *P. tenuis* (Weyenbergh) as specifically identical with *P. areolatum* (Cuvier and Valenciennes). Eigenmann and Eigenmann list these two among others as "doubtful species of *Pygidium*." They remark: "As most of the young of the species of *Pygidium* are very much alike in coloration, and usually entirely different from the adult, we are compelled to place here most of the species based on young individuals, unless they were collected together with large individuals."

We have 2 specimens easily referable to *Pygidium tenuis*; we also have somewhat larger young of *P. areolatum*, which are certainly different from *P. cordovensis* according to the description of that species by Weyenbergh. We can observe no essential differences other than those that may be due to size between *P. cordovensis* and *P. tenuis* as shown by the descriptions and figures. The most pronounced difference is in the greater length of the barbels in *P. cordovensis*. Disregarding this, *P. tenuis* may be regarded as the young of *P. cordovensis*.

Regarding *P. tenuis*, Weyenbergh states that he is inclined to believe it to represent a new genus, but the lack of literature forces him to treat the subject with caution. He therefore provisionally describes the species under the generic name of *Trychomycterus*. The most important specific characters given by him are the following:

D. 6; A. 5; P. 8; V. 6; C. 10.

Color: Dusky gray, with dull yellow belly, and yellowish fins; base of caudal dusky.

It was found in a little lake in the Sierra de Cordoba, near the town of Cruz-del-Eje. Length of largest individual 3 cm. (about 1.18 inches). The figure represents a fish similar to ours in color.

The most important points given in Weyenbergh's description of *P. cordovensís* are as follows:

D. 7; A. 5; P. 8; V. 5; C. 14.

Color: Clear sepia; fins colorless excepting middle of caudal which is dusky or plumbeous; some have dusky spots or wavy markings on the back and are somewhat dusky about the lateral line; belly pale; top of head with a dusky spot between the eye and upper barbel; this barbel dusky, the others pale. Length of largest individual 8 cm. (about 3.12 inches).

Regarding the habitat and habits of the fish Weyenbergh says that—

This little fish is caught in the Río Primero and in the channels of Cordoba, where it searches for aquatic insects, especially larvæ of the friganids. It moves about amongst the rocks with remarkable swiftness, emptying the shells of the larvæ mentioned, constructed of gravel and stuck to the larger rocks; it is difficult to catch, since it disappears and conceals itself under the rocks and in the mud at the first sign of danger.

Description of the larger of our specimens: Total length 1.75 inches. Head 4.75 in length without caudal; eye 10.6 in head; snout 2.66; longer maxillary barbels about 2 in head; nasal barbel scarcely reaching front of eye; depth of body 7.60 in length without caudal; first pectoral ray somewhat produced, its total length 1.23 in head; length without produced ray 1.45 in head; base of ventral a little in advance of origin of dorsal; D. 9, its base 2 in head; A. 6, its origin immediately under last ray of dorsal; length of anal base 2.66 in head; distance from posterior base of anal to lower base of caudal equaling length of head; caudal emarginate.

Small example: Total length 1.62 inches. Head 5; eye 7; snout 2.80, and longest maxillary barbel 2 in head; nasal barbel just reaching front of eye; depth of body 8.75 in length without caudal; first pectoral ray somewhat produced, about 1.16 in head; without produced ray, pectoral fin 1.40 in head; base of ventral somewhat in advance of origin of dorsal; D. 9, its base 1.75 in head; A. 6, its origin under posterior end of dorsal, its base 2.14 in head; distance from posterior base of anal to lower base of caudal a little greater than length of head.

The coloration of both specimens is essentially the same. Back dusky from thick punctulations; a dusky stripe on side of back from nape along base of dorsal to its posterior end; below this a narrow stripe of straw, with dusky punctulations, to base of caudal; again, below this, along lateral line, a sharply defined black stripe to base of caudal, continued on the caudal fin as a dusky shade; side below abruptly pale, probably white in life; fins all pale; barbels dusky; head dusky above and on snout, to a little below eye; abruptly pale below.

• Locality unknown; perhaps from Rio Primero, Cordoba.

The most pronounced differences between *P. cordovensis* and *P. areolatum* are:

P. cordovensis has a considerably longer head; first pectoral ray produced; pectoral length without produced ray shorter; distance from tip of snout to origin of dorsal in length without tail is somewhat less, 1.66 to 1.69 in head; length of dorsal base very much shorter; dorsal rays fewer; anal rays fewer; and a great difference in coloration.

Family LORICARIIDÆ.

29. PLEcostOMUS CORDOVÆ Günther.

Plecostomus cordovæ GÜNTHER, Ann. Mag. Nat. Hist., II (5th ser.), 1880, p. 11. Cordoba.—EIGENMANN and EIGENMANN, Occ. Pap. Cal. Ac. Sci., I, 1890, pp. 357 and 409 (Bon Jardin on the Rio San Francisco; Port Alegre).—REGAN, Monogr. Loricariidæ, 1904, p. 212, pl. IX, fig. 3 (Cordoba).

Günther had 1 specimen, 9.5 inches long, from Cordoba, as the type of this species.

We have 7 specimens, 3.75 to 13.5 inches long, from Rio Primero, Province of Cordoba, which agree essentially with Günther's description.

The principal difference is in the coloration of the fins. According to Günther, "each ray of the caudal and pectoral is crossed by a number of short black streaks, whilst the dorsal fin is crossed by 6 or 7 black zigzag stripes."

In our examples the fins are all spotted; membranes of all fins excepting caudal with round and elliptical spots in rows on each side of and close to each ray, arranged pinnately in relation to the ray; only the first ray of each of these fins with spots; in the caudal the spots are on the rays only, sometimes extending on the membrane, making short crossbars. If the dorsal is not fully expanded the spots have somewhat the appearance of zigzag stripes; in the smallest 2 examples the spots of all the fins coalesce to some extent, and in the dorsal, especially in the smallest specimens, are actually cross stripes.

In the smallest specimen the spinules on the posterior edge of the lateral plates are proportionally larger than in the larger examples.

The plates counted in the series in the middle line of body are uniformly 28, in the series just below the dorsal, 30; the dorsal formula is always I, 7, and the anal rays 5. There are minute spines on the edge of the opercle; dorsal base considerably shorter than the distance from posterior dorsal ray to adipose, pectoral reaching somewhat beyond base of ventral and the ventral a little beyond anal.

The accompanying table shows some unimportant variation in proportional measurements according to the size of the individual:

Proportional measurements of Plecostomus cordova.

Total length in inches.	Head in length without caudal. <i>a</i>	Head. <i>b</i>	Width of head in its length <i>a</i>	Eye in interorbital width.	Snout in head. <i>b</i>	Interorbital in head. <i>b</i>	Longest dorsal in head. <i>a</i>	Longest anal ray in longest dorsal ray.	Pectoral in head. <i>a</i>
13.5	3.85	4.58	1.13	4.54	1.31	2.32	1.09	1.73	1.15
11.12	3.70	4.26	1.13	5.00	1.26	2.51	1.11	1.74	1.30
11	3.70	4.26	1.09	4.20	1.30	2.47	1.15	1.79	1.30
10.5	3.62	4.34	1.12	4.20	1.27	2.23	1.07	1.67	1.24
9.5	3.62	4.22	1.08	3.80	1.25	2.31	1.06	-----	1.17
6.87	3.51	4.00	1.08	3.87	1.36	2.19	1.14	2.12	1.21
3.81	3.00	3.71	1.18	3.33	1.35	2.10	1.44	1.80	1.58

a Head measured from tip of snout to end of occiput.

b Head measured from tip of snout to upper end of gill-opening.

Family GYMNOTIDÆ.

30. EIGENMANNIA VIRESCENS (Valenciennes).

PEZ-ESPADA OR MACHETA.

Sternarchus virescens, VALENCIENNES in D'Orbigny, Voy. Amer. Merid., 1847, Pt. 2, V, p. 11, pl. XIII, fig. 2.—WEYENBERGH, Act. Acad. Nac. Cien. Cordova, III, 1877, p. 6 (Las Aguas de Santa Fe).

Eigenmannia virescens, EIGENMANN and KENNEDY, Proc. Ac. Nat. Sci. Phila. 1903, p. 530 (Matto Grosso or ASUNCION, Arroyo Trementina).—EIGENMANN and WARD, Proc. Wash. Ac. Sci., VII, 1905, p. 5 (Rio Magdalena to Rio de la Plata, east of the Andes).

We have one specimen which we identify as this species, although it disagrees slightly with the descriptions. It is a female 13.75 inches long, full of ripe eggs.

Head in total length about 12.94; depth 8.8; tail from posterior base of anal about 3.92 in total length; eye 4.25 in head; snout 28.3; pectoral about 1.13 in head; anal rays 232; scales on lateral line to opposite posterior base of anal 123.

Family PÆCILIIDÆ.

31. CNESTERODON DECEMMACULATUS (Jenyns).

Pœcilia decem-maculatus JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 115, Maldonado.

Girardinus decemmaculatus, PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 253 (La Plata).

Cnesterodon decemmaculatus, GARMAN, Mem. Mus. Comp. Zool., XIX, No. 1, 1895, p. 44, pl. v, fig. 13, teeth; pl. VIII, fig. 16, male (Uruguay River, Maldonado).—BERG, Anal. Mus. Nac. Buenos Aires, V, 1897, p. 290 (Argentina; Uruguay; Brazil; Meridional).

According to Jenyns, one specimen taken by Charles Darwin at Maldonado, in a lake that had been suddenly drained, was 1.33 inches in total length, and the vertical fin formulæ were D. 8; A. 10.

One of our 3 specimens, 1 inch long, without caudal (which is broken off), and another about 1.18 total length are females containing well-grown embryos; D. 8 and A. 8 in each; scales 29 or 30-8.

Berg says that it is very abundant in quiet waters of the Province of Buenos Aires and eastern Ecuador. He gives the dorsal and anal formulæ as D. 8; A. 9 or 10; and the scales as 29 to 31-8 or 9.

Family GALAXIIDÆ.

32. GALAXIAS MACULATUS (Jenyns).

Mesites maculatus JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 119, pl. XXII, fig. 4, Hardy Peninsula, Tierra del Fuego; River Santa Cruz, Patagonia.

Galaxias maculatus, GÜNTHER, Cat., VI, 1866, p. 212 (Tierra del Fuego; Patagonia).—PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 654 ("Lago e torrenti di Porto Cook").—PHILIPPI, Verhand-Deutsch. Wiss. Santiago de Chile, III, 1895, p. 21 (Valdivia and Chile).—DELFIN, Revista Chilena Hist. Nat., III, 1901, p. 33 (Puerto Mont, Valdivia; Tierra del Fuego; Malvinas i Puerto Santa Cruz, Patagonia).—STEINDACHNER, Abhandl. Kent. Zool. Chil., I, 1898, p. 328 ("Rio Pescado, Punta Arenas, Magellanstrasse").

Eighteen specimens from 1.5 to 2.66 inches in total length; 12 adults most of which are gravid females, and 6 young, collected November 23, 1903, in Lake Nahuel Huapi.

The adults are clouded and marked with large spots, which consist of groups of fine dusky dots.

The young are colorless or with a few very fine dusky dots, thickest on the back and along the bases of the vertical fins.

Proportional measurements of *Galaxias maculatus*.

No.	Total length in inches.	Head in length without caudal.	Depth.	Eye in head.	Snout.	Dorsal.	Anal.	Pectoral in distance from its base to ventral.	Ventral in distance from its base to anal.	Sex.
1	2.62	4.72	8.42	3.57	4.16	10	15	2.57	2.36	Female.
2	2.56	4.56	5.70	3.33	3.33	9	13	2.28	2.18	Do.
3	2.37	4.33	5.47	4.00	4.00	11	14	2.50	2.20	Do.
4	2.25	4.16	4.54	3.66	3.66	10.5	14	2.46	2.18	Do.
5	2.18	5.44	6.12	3.00	4.5	11	15	2.50	2.75	Do.
6	2.12	4.27	5.87	3.66	3.66	11	15	2.70	2.50	Male.
7	1.87	4.44	3.63	3.60	4.50	10	14	2.00	2.50	Male.
8	1.62	4.50	12	3.20	3.20	10	14	2.22	2.00	Young.
9	1.5	4.71	9.42	2.80	3.50	10	14	2.22	2.33	Do.
10	1.5	4.85	9.70	2.80	3.50	10	14	2.22	2.33	Do.

33. GALAXIAS TITCOMBI Evermann and Kendall, new species.

Head 4 in length without caudal; depth 5.94; eye 4.23 in head; snout 3.92; D. 10; A. 11; snout bluntish; eye moderate, slightly shorter than snout; dorsal outline arching slightly from occiput, thence nearly straight to front of dorsal; height of dorsal 8.56 in length without caudal, its base about 2.20 in head, the first rays when depressed not reaching tip of last rays; distance from tip of snout to origin of dorsal about 1.46 in length without caudal; height of anal about 8.46 in same length, its base about 2.20 in head, the tips of first rays not reaching tips of last when depressed; distance from tip of snout to anal origin about 1.32 in length without caudal; pectoral short, rounded; ventral very short, about 2.5 in head, the distance from its origin to base of pectoral about 3.35 in length without caudal, and distance from its origin to point of anal about 5.25 in same length; caudal deeply emarginate.

Color, very pale gray, slightly more dusky on back from thick minute punctulations; irregular groups of black dots on side extending



FIG. 2.—*GALAXIAS TITCOMBI*. (From the type.)

not quite to belly, giving a clouded effect and the appearance of broken and entire crossbars; belly pale with very few dots in front of ventral; a row of black dots from base of each ventral to each side of vent; fins pale, with some punctulations, head thickly punctulated above, on snout, and on side about to level of upper jaw, abruptly pale below.

Type.—Cat. No. 55571, U.S.N.M., a specimen 5.62 inches long, collected December 13, 1903, by Mr. John W. Titcomb, from Rio Trafal near Lake Trafal, Argentina.

We take pleasure in naming this interesting species for Mr. John W. Titcomb, assistant in charge Division of Fish Culture, United States Bureau of Fisheries, under whose direction the present collection of fishes was made.

We have a second specimen (cotype, No. 1439, Bureau of Fisheries) which may be briefly described as follows:

Total length about 2.5 inches. Head 4.15 in length without caudal; depth 6.75; eye 4.33 in head; snout 3.71; D. 10; A. 10, its height 7.71 in length without caudal; pectoral rounded, about 1.85 in head; ventral

short, its height 2.16 in head. Coloration similar to that of the type, but the groups of spots forming somewhat more definite crossbars.

Ten species of *Galaxias* are recorded from South American waters. These are founded upon specimens ranging from 2 or 3 to 13 inches in length. It is not improbable that some of these nominal species may be based on characters due to differences in size and age, and therefore not of specific value. It is not impossible that the present species is the young of some known species, but the data available do not show it. It is closely related to *G. maculatus* (Jenyns), as indicated by specimens before us which we have identified as that species. It is also close to *G. alpinus* Smitt^a from R. Azopardo, Admiralty Sound.

Smitt suggests the possibility of *G. alpinus* being identical with *G. maculatus*, or *G. coppingeri* (Günther), saying "The length of the head prevents me calling this fish *Galaxias maculatus*, and the length of the ventrals, compared with the post-abdominal, is very much greater than in *Galaxias coppingeri*, as described by Günther. Nevertheless I am of the opinion that the difference in this respect may be transitory."

Our specimens differ from *G. maculatus* chiefly in the blunter snout, smaller eye, usually higher dorsal and anal, fewer anal rays, and somewhat different coloration; the group of dots being more irregular and fewer, this giving the fish less of a clouded or marble appearance.

From *G. alpinus* Smitt, it differs amongst other things, in having a much smaller eye, somewhat longer snout, higher anal, and much shorter pectoral compared with the length of the head, and there are fewer anal rays.

Proportional measurements of species of Galaxias.

Species.	Total length in mm.	Depth in length without caudal.	Head.	Eye in head.	Snout.	Dorsal rays.	Height of dorsal in length without caudal.	Anal rays.	Height of anal in length without caudal.	Pectoral in head.	Pectoral in distance from its base to ventral.	Ventral in head.	Anal in its distance from base of ventral.
<i>Galaxias tilcombi</i>	65	5.94	4	4.23	3.92	10	8.56	11	8.46	1.89	2.24	2.50	1.61
	54	6.75	4.15	4.33	3.71	10	7.71	10	7.71	1.85	2.42	2.16	1.62
<i>Galaxias maculatus</i>	65	5.7	4.75	3.42	3.42	9	8.76	14	8.14	1.71	2.14	2.40	2.50
	60	5.7	4.33	4	4	11	9.45	15	9.45	2	2.33	2.40	2.20
<i>Galaxias alpinus</i>	43	8.38	4.32	3.48	4.59	10	(?)	12	9.91	1.69	2.18	2.01	1.85
	54	7.86	4.05	3.90	4.50	10	7.86	13	7.86	1.70	2.20	2.19	1.35

^aPoisson de L'Expédition Scientifique à la Terre de Feu, Bihang till K. Svenska Vet.-Akad. Handlingar, XXIV, 1895-1897, p. 118, pl. x, figs. 40 and 40a.

Family ATHERINIDÆ.

ODONTESTHES Evermann and Kendall, new genus.

Odontesthes Evermann and Kendall, new genus of Atherinidæ (*O. perugiae*).

This genus differs from *Basilichthys* in having 2 rows of comparatively long, sharp teeth on each jaw, and conspicuous vomerine teeth, instead of several series of fine sharp jaw teeth and no teeth on the vomer as in the latter genus.

(*οδοῦς*, tooth and *ἐσθίω*, eat.)

34. ODONTESTHES PERUGIÆ Evermann and Kendall, new species.

Atherinichthys vomerina?, PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 621 (Montevideo).

Atherinichthys vomerina, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., 1,) 1895, p. 26 (Costa Patagonica; Mar del Plata, Montevideo); not *Atherina vomerina* CUVIER and VALENCIENNES.

Head 4.17 in length without caudal; depth 7.31; eye 4.66 in head, 1.08 in interorbital; snout 3.11; D. IV-8; A. 14; scales 50-10.

Body comparatively slender, somewhat compressed, belly rounded; head flat above, scaleless; snout long, depressed, lower jaw slightly

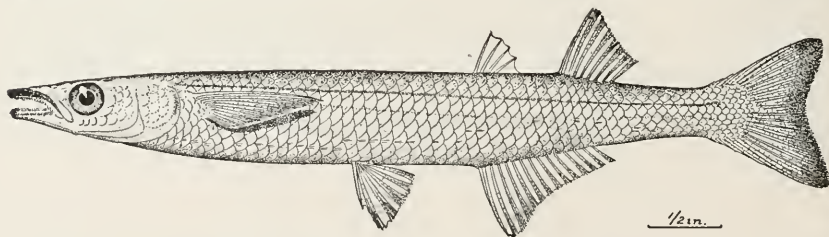


FIG. 3.—ODONTESTHES PERUGIÆ. (From the type.)

shorter than the upper, with comparatively long, sharp, somewhat hooked teeth, in 2 rows in each jaw; somewhat smaller but similar teeth on head of vomer arranged in 3 groups, connected by a single row of still smaller, similar teeth; no teeth on palatines; eye moderate; scales entire; pectoral moderately long, 1.27 in head; posterior portion of first dorsal about over anterior portion of anal; second dorsal inserted posterior to middle of anal.

Color (after preservation in formalin and later in alcohol), generally pale yellowish gray; a silvery stripe below spinous dorsal occupying lower part of fourth, whole of fifth and upper part of sixth scale of the transverse series; margin and tip of snout black; few black dots on back, thickest on margins of scales posterior to dorsal; bases of posterior 5 dorsal rays dusky; extremity of caudal broadly dusky, other fins pale.

One specimen, the type, Cat. No. 55572, U.S.N.M., 5.62 inches long, Argentina; locality label lost; probably from fresh water.

Named for Alberto Perugia, of the Natural History Museum of Genoa, in recognition of his work on South American fishes.

Perugia describes a specimen from Montevideo as doubtfully *Atherinichthys vomerina* Cuvier and Valenciennes.

Atherina vomerina Cuvier and Valenciennes was from Mexico, and is now considered identical with *A. humboldtiana* of the same authors, and as belonging to the genus *Chirostoma*, with which the generic name *Atherinichthys* must be considered synonymous, since it was based on *A. vomerina*.

Berg also records *Atherinichthys vomerina*, regarding which he says that it affects salt water, and is rarely found in the mouths of rivers and those lakes which have immediate communication with the Atlantic Ocean; that it is distinguished from other species which reach a considerable size in having 2 or 3 groups of small teeth on the vomer, in some examples, abnormally, a single group. He states that he had some examples in which the upper lobe of the caudal was the longer, and others with a triangular spot on the pectoral, and that the number of dorsal and anal spines and rays are very variable, giving the fin and scale formula as follows: D. IV to VII-9 to 11; A. 17 to 20; scales 48 to 56-10 or 11.

In the synonymy of this species he includes *A. vomerina*, Perugia. On page 27 of Berg's *Enumeración* he describes a new closely related species, from Mar del Plata, under the name *Atherinichthys platensis*, which differs from the present species principally in the number of scales, which he gives as about 70-15 or 16. This species evidently belongs in our genus *Odontesthes* and should stand as *Odontesthes platensis* (Berg).

35. BASILICHTHYS BONARIENSIS (Cuvier and Valenciennes).

PEJERREY.

Atherina bonariensis CUVIER and VALENCIENNES, Hist. Nat. Poiss., 1835, X, p. 469, Rio de la Plata, near Montevideo.

Atherinichthys bonariensis, PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 620 (Laguna Ihera, near Corrientes).—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 30 (Montevideo; Maldonado; Mar Chiquita).

According to Berg this species is rare in salt water, but abounds in the lakes and rivers, attaining a large size. He says that the species is distinguished from the others that he has mentioned (*A. vomerina*, *A. platensis*, *A. microlepidotus*, *A. latilavina*, and *A. argentinensis*) principally by its smaller eye, which is contained 6 or 7 times in head, and the head about 4 in length of the fish.

In our collection there are specimens from 4 to 21.5 inches long. The proportional size of the eye alone is an unreliable character, since it is somewhat in inverse ratio to the size of the fish.

B. bonariensis is distinguished from *B. microlepidotus* by the rather longer and sharper snout and larger scales.

According to Mr. Titcomb the pejerreys are regarded in Argentina as the most valuable fresh-water fish of the country. They inhabit both fresh and salt water. During the winter months one species at least (*B. bonariensis*), is said to ascend the Rio de la Plata above Buenos Aires where it is caught by anglers with two or three hooks attached to one line very much as smelt are caught through the ice in the tidal rivers of New England. However, they do not have any ice in the Rio de la Plata. Mr. Titcomb found this pejerrey in Lake Chascomus, about two hours' railroad journey from Buenos Aires, where commercial fisheries have their existence. The Chascomus is almost a sea-level lake, having an outlet to the sea during periods of high water. The lake is shallow and is reported to have run dry on one occasion so that the fish were all exterminated. Apparently the pejerrey enter this lake from salt water for the purpose of spawning. The first examples seen in this lake were observed by Mr. Titcomb October 20, and he thinks the spawning season of the pejerrey in the latitude and elevation of Chascomus would be about the latter part of October and the early part of November. The water temperature in Chascomus Lake must become very high in midsummer, and the water is rather sluggish and roily. He next encountered the pejerrey (*B. microlepidotus*) in the Rio Negro in latitude 39°, south but found no spawning fish among them. They were seen at several points on the Rio Limay and its tributaries in the early part of November, and they were found spawning in tributaries of Lake Nuhuel Huapi in the latter part of November. The species seems to be fairly abundant in the Rio Limay and in tributaries of the lake. They evidently go to the lakes and enter the tributary streams for spawning purposes. At Lake Trafal the pejerrey was found spawning December 13. It evidently spawns on a rising temperature. The wind blows for days at a time on these lakes in the Andes Mountains, sometimes for two weeks without ceasing. Apparently the fish in Lake Trafal had been waiting for the wind to go down, and when it did go down the afternoon in question they entered the small bays for spawning purposes, where about 500 pounds were taken at one haul with a 100-foot Baird seine. Mr. Titcomb was informed by responsible persons that the pejerrey is found in waters of Argentina as far south as the Strait of Magellan. Both the trucha and pejerrey are said to be abundant in the latitude of Chile corresponding to those in which it is found in Argentina.

Some of the fish enter rivers tributary to the lakes to spawn, and others select the shallow sandy bottoms of the lakes near the shore, but not necessarily in sheltered places.

Both pejerrey and trucha, in ripe spawning condition, were frequently caught in one and the same haul of the collecting nets.

The pejerrey is quite as prolific as the trucha, its eggs are capable of artificial fertilization, and the species can be artificially propagated.

Since Mr. Titcomb's return from Argentina the pejerrey has been propagated to a limited extent. The eggs were obtained from fish caught in Lake Chascomus, transferred to Buenos Aires and placed in McDonald jars. After being eyed they were distributed in lakes not known to contain any fish and left to nature's care. Fish Culturist Tulian, who was placed in charge of the work after the methods had been developed by Mr. Titcomb, states that when the eggs were thus placed in the lakes he sheltered them with a network of brush to keep away predaceous birds. He reports that he has heard from one of the lakes where these eggs were planted, that numbers of small fish have since been seen, and he believes the plant was a success.

The eggs are quite adhesive in their nature, and should apparently be handled much like those of the pike perch. It is the policy of the present administration in Argentina to propagate the pejerrey on a large scale and distribute them in waters not now productive.

The largest pejerrey seen by Mr. Titcomb was taken in Lake Trafal and measured 48 cm. long (probably *B. microlepidotus*).

Proportional measurements of Basilichthys bonariensis.

Total length in inches.	Head in length without caudal.	Eye in head.	Snout.	Eye in interorbital.	Scales.	Dorsal.	Anal.	Pectoral in head.
21.5	4.15	7.43	2.97	2.18	61-14	VI-10	18	1.48
21.5	4.31	8.21	3.10	2.49	60-14	V-11	19	1.41
(a)	-----	7	3.15	1.88	60-14	V-19	16	1.34
(a)	-----	7.50	3.26	2	54-14	VI-11	18	1.36
(a)	-----	6.69	3.10	2.07	54-13	IV-10	18	1.24
12	4.83	5.60	3.06	1.8	55-12	III-9	18	1.19
10.75	4.28	6.22	3.06	1.55	56-14	V-10	17	1.24
8.75	4.25	4.88	3.14	1.44	55-14	V-10	16	1.15
9.84	4.10	6.25	4.16	1.75	55-14	V-10	16	1.19
7.25	4.41	5.50	3.38	1.62	55-14	V-10	17	1.10

a Deformed.

36. BASILICHTHYS MICROLEPIDOTUS (Jenyns).

PEJERREY DE MANILA; PEJERREY DE MALVINAS.

Atherina microlepidota JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 78, pl. XVI, fig. 1, 1a, 1b, Valparaiso.

Antherinichthys microlepidotus, PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 32 (Bocca del Rio Negro).—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 66 (Costa patagonica; Mar del Plata; Montevideo).

Berg states that this species is usually small. Those that occur in Mar del Plata and Mar Chiquita measure usually from 15 to 17 cm. in length. He further says that according to Eigenmann and Eigen-

mann it inhabits fresh water, but that he knows of it only in the mouth of rivers, in brackish water; for example, the Rio Negro in northern Patagonia.

We have 24 specimens that we identify as this species from lakes Nahuel Huapi and Trafal and from Nirihuahu, tributary of Rio Limay.

Our specimens range in total length from 1.43 to 13.5 inches, agreeing very well with Jenyns' description and figure.

The following table of proportional measurements indicates the range of variation in specimens of the various sizes:

Proportional measurements of Basilichthys microlepidotus.

Locality.	Length.	Head in length without caudal.	Depth.	Eye in head.	Snout.	Interorbital.	Scales.	Dorsal.	Anal.	Base of anal in head.	Pectoral in head.
Uncertain	13.5	4.92	4.92	5.72	3.31	2.86	76	VI-10	15	1.23	1.43
Lake Trafal	10.5	5.	5.22	4.70	3.35	2.93	74	III-10	15	1.20	.....
Do.	7	5.12	6.11	4.13	3.75	.....	70	II-10	.....	.....	.....
Do.	5	4.78	7.33	3.53	3.28	3.53	70	V-10	15	1.24	1.39
Do.	5.25	4.68	6.88	4.16	3.57	3.33	72	IV-10	15	1.19	1.31
Lake Nahuel Huapi	6	4.94	5.69	4.07	3.55	3.31	72	VII-10	15	1.26	.....
Tributary Limay Basin	3.62	4.78	7.18	8.30	3.30	3.66	70	V-10	15	1.26	1.37

Family MUGILIDÆ.

37. MUGIL BRASILIENSIS Agassiz.

LISA.

Mugil brasiliensis AGASSIZ in Spix, Pisc. Brasil., 1829, p. 134, pl. LXXII, Atlantic Ocean.—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 31 (Costa patagonica; Bahía Blanca, Mar del Plata, Cabo de San Antonio; Montevideo; Maldonado).

Mugil liza, PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 622 (Montevideo).

Berg has shown that this species exhibits considerable variation in form according to the size of the fish, and in color according to the character of the water inhabited. It enters brackish and fresh water.

The following notes taken from the 4 specimens representing this species from Rio de la Plata in our collection show some variation in proportional measurements in examples of about the same size:

(1) Total length 12 inches; length without caudal 9.67 inches. Head 3.85 in length without caudal; interorbital 2.10 in head; D. IV-8; A. III, 8; scales 36 or 37, -12.

(2) Total length 13 inches; length without caudal 11 inches. Head 4.09; interorbital 1.79; D. IV-8; A. III, 8; scales 35, -12.

(3) Total length 13 inches; length without caudal 10.5. Head 4; interorbital 1.90; D. IV-8; A. III, 8; scales 35, -12.

(4) Total length 13.5 inches; length without caudal 11. Head 4.09; interorbital 1.95; D. IV-8; A. III, 8; scales 35, -12.

Family SCOMBRIDÆ.

38. SCOMBER JAPONICUS Houttuyn.

CABALLA.

Scomber japonicus HOUTTUYN, Verhand. Holland. Maats. Weet. Haarl., XX, p. 21, Japan.

Scomber colias GMELIN, Syst. Nat., 1, 1788, Pt. 4, p. 1329, Sardinia.

Scomber scombrus, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 40 (Mar del Plata; Montevideo).

Regarding this species, which he believes to be *S. scombrus*, Berg says that the swimming bladder is absent, rendering the determination of the species absolutely certain, and that individuals have been observed with only 10 spines in the dorsal fin. According to Jordan and Evermann,^a the dorsal fin formula of *S. scombrus* is XI-12 with 5 finlets; and of *S. colias=japonicus*, IX-1, 12 and 5 or 6 finlets. Thus the number of dorsal spines given by Berg applies to the present species rather than to *S. scombrus*, yet the number of spines doubtless varies somewhat in both species. If the air-bladder is really absent, the fish mentioned by Berg was *S. scombrus*, but it may be that the air-bladder was overlooked, as it may easily be under certain circumstances, especially when the viscera are somewhat macerated. Under these circumstances, and since the single specimen in our collection is undoubtedly *S. japonicus*, it is not improbable that Berg's specimen also was of this species.

Regarding its abundance, Berg states that it has been observed a very few times at Montevideo and Mar del Plata, where many were caught near the end of January and first of February, 1895.

Our specimen from Mar del Plata presents the following characters: Total length, 13.5 inches; length without caudal, 12 inches. Head 4 in length without caudal; depth 1.26; eye 4.8 in head; maxillary about 2.08, and mandible 1.84; D. VIII-I, 11+5 finlets, the longest spine 2 in head; A. I, 10+5 finlets; pectoral 2 in head.

Family CARANGIDÆ.

39. PARONA SIGNATA (Jenyns).

PALOMETA.

Paropsis signata JENYNS, Zool. Voy. Beagle, Pt. 4, V, Fish, 1842, p. 66, pl. XIII, northern coast Patagonia.—PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 614 (Montevideo; Bacino del Rio Santa Cruz).

Parona signata, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 39 (Bahia de Santa Cruz; Bahia Blanca; Mar del Plata; Montevideo).

Berg says that this species is very common along the whole coast, and is caught at Montevideo at certain times of the year in enormous

^a Fishes North and Mid. Amer., Pt. 1, 1896, pp. 865, 866.

quantities. He calls attention to the fact that the description by Jenyns has been corrected and added to by Steindachner, Lütken, and Perugia, and that the black spot under the pectoral is variable in intensity and extent, and is occasionally absent.

Regarding the size attained by this species, Berg says that he saw one measured at Montevideo that was 45 cm. [over 18 inches] long without the tail, and 18 cm. in height.

Our collection contains 5 specimens 14.25 to 16.5 inches in total length, from Mar del Plata. The following notes were taken from our largest example:

Total length from tip of lower jaw to tip of caudal 16.5 inches; length to fork of caudal 14.75 inches, and to base of caudal 14; depth 2.33 in length without caudal; D. I-I-I-I-I-I, 32, the longest soft rays or anterior lobe, 1.46 in head; A. I-I, 32, the longest rays or anterior lobe, 2.03 in head; head from tip of lower jaw to gill-opening, 3.92 in length without caudal; eye 6.33 in head; snout 4.07; distance from tip of snout to posterior extremity of maxillary a little less than 7 in head; width of posterior extremity of maxillary 1.4 in snout.

The soft dorsals of our other specimens contain 33, 39, 34, and 35 rays, respectively.

Berg gives the vertical fin counts as D. VII, 1, 33-34 (rara V. 35-I, 36); A. II, I, 34-36 (II, I, 37).

Family SERRANIDÆ.

40. PERCICHTHYS TRUCHA (Cuvier and Valenciennes).

TRUCHA.

Perca trucha CUVIER and VALENCIENNES, Hist. Nat. Poiss., IX, 1844, p. 429, Rio Negro, Patagonia.

Perca lavris JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 122, pl. 1, Santa Cruz River, Patagonia.

Cuvier and Valenciennes say that this fish seems to abound in the fresh waters, neither ascending from nor descending to the sea; that the inhabitants call it "trucha," which is the Spanish name for trout. It is also said to be "delicate eating" and highly esteemed. It attains a foot in length.

Mr. Titcomb found the trucha along with the pejerrey in the Rio Negro in south latitude 39°, but no spawning fish were among them. He found them together at several places also in the Rio Limay and its tributaries early in November. Late in that month they were found spawning in Lake Nahuel Huapi. They seemed to be abundant both in the Rio Limay and in tributaries to the lake, which they ascend at spawning time, which appears to be in December, as Mr. Titcomb obtained spawning fish December 13.

The largest trucha seen by Mr. Titcomb was taken in Lake Trafal, and measured 48 cm. long.

The eggs of a mature female trucha were counted and measured. From these data it is estimated that the trucha yields about 35,000 eggs to the pound.

In the present collection are a number of specimens 1.5 to 16.5 inches long; and we have before us some specimens from Chile kindly loaned by Prof. Samuel Garman, of the Museum of Comparative Zoology in Cambridge, Massachusetts, and have examined the types of *Percichthys chilensis* Girard, which are in the United States National Museum. A study and comparison of this material indicate that there may be two species represented. Among them are three large examples (15 to 16.5 inches long) which have about their heads a Sciænoïd appearance, as mentioned by Cuvier and Valenciennes, and by Kner. There are also about a dozen of smaller size (from 1.5 to 12.5 inches) which bear more resemblance to a perch than to a Sciænoïd. They agree with the description of *P. trucha* Cuvier and Valenciennes and with the description and figure of *P. lewis* Jenyns.

Between these two sizes there are some notable differences, but none, perhaps, which may not be accounted for by the difference in size. In the large specimens the eye is somewhat smaller, the inter-orbital wider, and the maxillary longer than in the others. They have also a heavier appearance about the head, and the caudal peduncle seems stouter. The evidence, however, is insufficient to justify us in regarding them as distinct.

The following table shows the variation in proportional measurements, etc., in the two sizes:

Proportional measurements of Percichthys trucha.

Locality.	No.	Total length in inches.	Head in length without caudal.	Depth.	Eye in head.	Snout.	Maxillary.	Mandible.	Inter-orbital.	Pre-orbital.
Lake Trafal.....	1	16.5	3.33	3.88	7.13	3.56	2.74	2.14	3.95	5.35
Do	2	16.25	3.68	3.83	7.14	3.70	2.63	2.27	4	5.26
Do	3	15	3.92	4.45	7.39	3.40	2.65	2.23	3.86	5.30
Arroyo Comajo	4	12.5	3.31	3.88	6.56	3.72	2.82	2.15	4.55	4.82
Do	5	11.5	3.62	3.52	6.14	.....	2.84	2.08	4.43	4.58
Do	6	9	3	3.36	6.50	3.93	2.76	2.28	5.20	5.20
Do	7	7.37	3.10	3.29	5.26	3.57	2.94	2.27	5	5

Locality.	Scales.	Dorsal fin.		Anal fin.		Number of gill-rakers.	Longest gill-raker in eye.
		Formula.	Longest spine in head.	Formula.	Longest spine in head.		
Lake Trafal	9-70-16	IX-I, 11	.....	II-I, 9	5.09	{ 6+13 6+13 }	2.72
Do	10-70-17	IX-I, 11	3.57	II-I, 8	6.25	{ 6+13 5+14 }	2
Do	10-70-17	X-I, 11	2.57	II-I, 9	4.72	{ 6+13 6+13 }	1.70
Arroyo Comajo	12-70-17	IX-I, 10	3.03	II-I, 8	5.65	{ 7+13 6+13 }	2.77
Do	10-70-17	IX-I, 10	2.44	II-I, 8	4.30	{ 5+14 5+14 }	2.30
Do	10-70-17	IX-I, 11	2.24	II-I, 8	4.64	{ 5+12 5+13 }	2.50
Do	10-70-17	IX-I, 10	1.96	II-I, 9	4.16	.....	.....

41. ACANTHISTIUS PATACHONICUS (Jenyns).

MERO.

Plectropoma patachonica JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 11, off mouth Rio de la Plata, coast of Patagonia.

Acanthistius patagonicus, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 46 (Costa patagonica; Bahía Blanca; Mar del Plata; Montevideo; Maldonado).

Berg reports this species as abundant in all the places mentioned, and points out marked differences between it and *A. brasiliensis*.

Eight specimens in our collection from the market at Buenos Aires measure from 7.75 to 19 inches in total length. There is some variation, according to size, as shown in the accompanying table:

Proportional measurements of *Acanthistius patachonicus*.

Total length.	Head in length without caudal.	Depth.	Eye in head.	Snout.	Maxillary.	Mandible.	Interorbital.	Scales.	Dorsal.	Anal.
19	2.42	2.56	6	4.5	2.34	1.88	5.78	100	XII, 1, 15	III, 8
11+	2.32	2.76	5.15	4.08	2.22	1.88	6.53	94	XII, 1, 15	III, 8
9.5	2.23	2.68	4.80	4.68	2.28	1.93	7.41	94	XII, 1, 15	III, 8
8.25	2.33	2.77	4.83	4.41	2.34	2.14	7.50	97	XII, 1, 15	III, 8
7.5	2.43	2.63	4.64	4.33	2.19	1.96	7.22	95	XII, 1, 15	III, 9

The specimens were first preserved in formalin and later placed in alcohol, and the colors have become very much faded; but the ground color of the body seems to be gray, covered with fine reticulations of very dark-brown wavy markings; belly plain brownish and gray without markings; head the same; fins all plain brownish, but with wavy brown markings at base of spinous dorsal and scaly portions of soft dorsal and anal.

Family SPARIDÆ.

42. PAGRUS PAGRUS (Linnæus).

Sparus parus LINNÆUS, Syst. Nat., 10th ed., 1758, p. 279, southern Europe.—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 49 (Mar del Plata; Montevideo).

Pagrus vulgaris, PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 612 (Market of Montevideo).

Berg says that this species is rather common in Mar del Plata and about Montevideo, and occurs in other localities on the Argentine and Uruguayan coasts.

He gives vertical fin and scale formulas, as follows: D. XI 12 to XII, 11; A. 8; scales 6-53 to 56-13.

Two specimens in our collection, 12 and 13.37 inches total length, present respectively the following proportions: Head 3.04 and 3.22 in length without caudal; depth 2.55 and 2.68; eye 4.10 and 4.09 in head; D. XII, 10; A. III, 8; scales 7 and 9-56 and 57-14.

Family SCLÆNIDÆ.

43. MACRODON ANCYLODON (Bloch and Schneider).

PESCADILLA DEL RED.

Louchurus ancylodon BLOCH and SCHNEIDER, Syst. Ichth., 1801, p. 102, pl. xxv, Surinam.

Ancylodon jaculidens CUVIER and VALENCIENNES, Hist. Nat. Poiss., V, 1830, p. 81, Cayenne.

Ancylodon atricauda GÜNTHER, Challenger Rept., Zool., I, 1880, p. 12, mouth of the Rio de la Plata.

Ancylodon ancylodon, JORDAN and EIGENMANN, Rept. U. S. Fish Comm., XIV, 1886 (1889), pp. 372, 373 (both coasts of tropical America; Surinam; Panama).

Sagenichthys ancylodon, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., 1), 1895, p. 52 (Mar del Plata; Montevideo; Maldonado).

Macrodon ancylodon, GILL, Proc. U. S. Nat. Mus., XXVI, 1903, p. 1015.

According to Berg, this fish is very highly esteemed for its delicate flesh. On account of its comparative scarcity, it brings a rather high price in the markets.

Our collection contains 5 individuals from Mar del Plata, from 4 of which the following notes were taken:

Proportional measurements of Macrodon ancylodon.

Total length.	Head in length without caudal.	Eye in head.	Snout.	Dorsal.	Anal.
13	3.53	6.75	4.05	×-1,27	1,9
13?	3.63	6.50	4.33	×-1,28	1,10
12.5	3.61	6	4.16	×-1,27	1,9
15	3.60	6.69	4.14	×-1,27	1,10

44. CYNOSCION STRIATUS (Cuvier).

PESCADILLA.

Otilithus striatus CUVIER, Règne Animal., 2d ed., 1829, p. 173, note.

Otolithus guttucupa, JENYNS, Zool. Voy. Beagle, Part IV, Fish., 1842, p. 41 (Maldonado Bay, Rio Plata).

Cynoscion striatus, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., 1), 1895, p. 56 (Bahia Blanca; Mar del Plata; Montevideo; Maldonado).

According to Berg, next to *Micropogon undulatus*, this is the most abundant species on the Uruguayan coast, appearing principally in the months of January and February and July and August.

Berg gives the fin and scale counts as follows:

D. X-I, 19 to 21; A. II, 9 or 10; scales 56 to 60; and says that the anal often has 2 spines (authors give one only), of which the first is very small and concealed.

Young *Cynoscion regalis* usually has 2 anal spines, and probably small examples of the present species usually have 2, the first growing smaller and disappearing with age.

We have 2 specimens 18.5 and 19.5 inches long, respectively, presenting the following proportional measurements: Head 3.30 in length without caudal; eye 6.20 and 5.90 in head and 1.20 and 1.04 in interorbital; snout 4.27 and 4.33; maxillary 2.33 and 2.32; mandible 1.85 and 1.88; scales 6-57-5 and 6-62-7; D. VIII-I, 20, and VIII-I, 18; A. I, 8 and I, 9.

45. MICROPOGON UNDULATUS (Linnæus).

CORVINA; CURVINA; CURBINA; RONCADERA.

Perca undulata LINNÆUS, Syst. Nat., 12th ed., 1766, p. 483.

Micropogon undulatus, GÜNTHER, Challenger Rept., Zool., I, 1880, p. 13 (Montevideo); Ann. Mag. Nat. Hist., 5th ser., 3, July, 1880, p. 9 (Rio de la Plata).—PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 613 (Montevideo).—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 54 (Bahia Blanca; Mar del Plata; Montevideo; Maldonado).

Micropogon furnieri, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 55 (Embocadura del Rio de la Plata; Montevideo).

According to Berg, this species is very common on the coast from Parrelo to Maldonado, and the number caught in the Uruguayan region reaches 3 or 4 millions annually.

Berg, on the authority of Günther, records also *Micropogon furnieri* from the mouth of Rio de la Plata.

Günther did not consider the South American *Micropogon* as distinct from the northern *M. undulatus*.

The stated distinctive characters of *M. furnieri* in Jordan and Eigenmann's Review of the Sciaenidæ, from an examination of our specimens and comparison with northern *M. undulatus*, and *M. furnieri* from the West Indies, do not seem to obtain. The point regarding the greater regularity of the oblique color-bars perhaps holds good, but these markings are fully as distinct as in *M. undulatus*.

The accompanying table shows the proportional measurements of our 9 specimens.

Proportional measurement of *Micropogon undulatus*.

Total length in inches.	Head in length without caudal.	Eye in head.	Eye in interorbital.	Snout in head.	Pectoral in head.	Scales.	Dorsal.	Anal.
16.25	3.18	7.46	1.86	3.39	1.33	7-56-12	X, I, 29	II, 8
15.50	2.81	7.52	1.80	3.42	1.30	8-57-11	X, I, 27	II, 8
15.12	3.33	6.52	1.66	3.26	1.30	7-57-12	X, I, 27	II, 8
12.75	3.18	5.68	1.50	3.25	1.45	7-55-12	X, I, 23	II, 8
12.36	3.25	5.60	1.46	3.50	1.42	7-53-12	X, I, 24	II, 8
12.25	3.20	5.52	1.46	3.32	1.22	7-53-11	X, I, 23	II, 8
11.50	3.26	5.68	1.56	3.37	1.45	7-53-11	IX, I, 23	II, 8
11.25	3.43	6.53	.....	3.10	1.31	8-52-11	X, I, 28	II, 8
10	3.26	6.54	.....	3	1.26	8-52-11	X, I, 28	II, 8

Family PINGUIPEDIDÆ.

46. PINGUIPES SOMNAMBULA Berg.

SALMÓN.

Pinguipes somnambula BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 61, "Mar del Plata, Oceanicus Atlantus costæ Provincie Bonaërensium."

One specimen, 24 inches long, which agrees very well with Berg's description.

Head 3.65 in length without caudal; eye 6.08 in head; snout 2.43; maxillary 2.21; mandible 2.14; D. V, 26, fifth spine longest, 4.56 in head, fourth ray longest, 2.51 in head; A. 24; pectoral 1.69, and ventral 1.62 in head; scales 16-102-26.

Family PERCOPHIDÆ.

47. PERCOPHIS BRASILIENSIS Quoy and Gaimard.

CONGRIO REAL.

Percophis brasiliensis QUOY and GAIMARD, Voy. Uranie, Zool., p. 351, 1824, Brésil.—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 63 (coast of Patagonia; Bahia Blanca; Mar del Plata; Montevideo; Maldonado).

Percophis fabre QUOY and GAIMARD, Voy. Uranie, Zool., 1824, Atlas, pl. LIII, fig. 1.

Percophis brasiliensis, JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 23 ("Northern Patagonia, Maldonado").—PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 616 ("Rio della Plata").—GÜNTHER, Challenger Rept., Zool., I, 1880, p. 13 (Mouth of the Rio de la Plata, 21 fathoms).

According to Berg this fish is common during the winter months, attaining a length of 70 cm. We have 2 specimens about 16 and 24 inches long, presenting the following proportional measurements respectively:

Head 4.05 and 4.16 in length without caudal; eye 9.1 and 9.35 in head and longer than interorbital width in one and 1.21 in this width in the other; snout 3.65 and 3.74 in head; maxillary 1.93 and 1.83; D. IX-31, the longest spine 2.67 and 3.27 in head; A. 40 and 37.

Family TETRAODONTIDÆ.

48. LAGOCEPHALUS LÆVIGATUS (Linnæus).

Tetraodon lævigatus LINNÆUS, Syst. Nat., 12th ed., 1766, p. 411, Charleston, S. C.—PERUGIA, Ann. Mus. Civ. Stor. Nat. Genova, 2d ser., X (XXX), 1890-91, p. 657 (Montevideo).

Lagocephalus lævigatus, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 82 (Montevideo; Maldonado).

According to Berg, the most southern point from which this species has been obtained is Montevideo, where many, from 25 to 30 cm. in

total length, have been collected. It appears to be present at all seasons of the year.

We have 2 specimens 12.75 and 13.5 inches in total length, respectively, from the market at Buenos Aires. The following notes were taken from these examples: Head about 3 in length, without caudal; depth 3.95; eye about 4.53 in head; snout 2.03; D. 14; A. 12.

Family TRIGLIDÆ.

49. PRIONOTUS PUNCTATUS (Bloch).

RUBIO.

Trigla punctata BLOCH, Syst. Ichth., 1793, pl. CCCLIII, Martinique.

Prionotus punctatus, JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 28 (Bay of Rio de Janeiro).—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1890, 72 (Mar del Plata; Montevideo).

Berg says that though not numerous in individuals this species occurs frequently in the places mentioned, and that it varies much in coloration, he having seen specimens of a very pronounced rosy hue, of a reddish gray, and of a clear plumbeous with more or less distinct black or brownish spots.

Six specimens in our collection, from the market at Buenos Aires, probably from Montevideo, having first been preserved in formalin and afterwards kept in alcohol, show almost uniformly the following pattern of coloration: Ground-color on back and sides, dark gray with some indistinct dark spots of various sizes, on some individuals having an appearance of crossbars; spinous dorsal transparent, whitish at base and near spines, sometimes with irregular, faint, dark lines; sometimes with a black margin in the membrane connecting the first 5 spines; second dorsal with 4 or 5 dark spots on each ray; pectoral dark bluish gray with large black spots along upper 6 rays and white between the spots, lower 7 rays with pale membrane between, bluish black on the rays with here and there thin washes or dashes of white.

In two specimens we count 95 scales, in the others 100 in longitudinal series. The dorsal formula is uniformly X, 12; the anal 10 in one specimen and 11 in all the others.

Proportional measurements of Prionotus punctatus.

Total length in inches.	Head in length without caudal.	Eye in head.	Snout.	Maxillary.	Mandible.	Interorbital.	Pectoral in length without caudal.
11.62	2.71	5.70	2.19	2.37	2.19	7.12	2.31
10.50	2.76	6.25	2.17	2.27	2.00	6.25	2.22
10.12	2.85	5.22	2.13	2.10	2.17	6.71	2.09
10.00	2.75	6.00	2.08	2.28	1.84	6.85	2.23
9.50	2.77	5.75	2.30	2.55	2.09	6.57	2.37

Family PLEURONECTIDÆ.

50. PARALICHTHYS PATAGONICUS Jordan and Goss.

Paralichthys patagonicus JORDAN and Goss, Rept. U. S. Fish Comm., XIV, 1886 (1889), p. 245, east coast of Patagonia.—BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., 1), 1895, p. 77 (Montevideo).

Regarding this species, Berg remarks that it is much less abundant than *P. brasiliensis* and is rather smaller, and that it is distinguished from the latter principally by the shorter gillrakers which are stouter and wider apart, 3 + 11 instead of 4 + 15; by the rather smaller maxillary teeth; eyes closer together; arch of lateral line lower; the salient point of the caudal fin; the body bespattered with small gray spots, and the pectoral bearing black transverse bands.

We have one specimen from the market at Buenos Aires. The total length is 12 inches; length without caudal 10.5 inches; depth 2.34 in length without caudal; head 3.8; eye 5.63 in head; snout about 4.78; maxillary 2.16; mandible 1.21; lengthwise series of scales about 100; dorsal, anal, and caudal scaly nearly throughout; D. 80, beginning opposite front of orbit; A. 65 or 66; teeth sharp, equally developed on both sides of each jaw, canine-like in front and smaller posteriorly; gillrakers 3 + 11.

51. ACHIRUS JENYNSI (Günther).

Achirus lineatus, JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 139 (Rio de la Plata).—VALENCIENNES in D'Orbigny's Voyage, 1847, p. 10, pl. xvi, fig. 2 (Cayenne); not of Linnæus.

Solea jenynei GÜNTHER, Cat., IV, 1862, p. 476, after Jenyns.—PERUGIA, Ann. Mus. Civ. Stor. Nat. Geneva, 2d ser., X (XXX), 1890-91, p. 628 (Belgrano e Rio de la Plata).

? *Achirus lorentzii* WEYENBERGH, Act. Acad. Nac. Cien. Cordova, III, 1877, p. 13, pl. 1.

Jordan and Goss include *Achirus lineatus* of D'Orbigny's Voyage, in the synonymy of *Achirus lineatus* Linnæus, which has a pectoral fin. *A. lineatus* of D'Orbigny has no pectoral fin and should therefore be referred to *A. jenynei*. Perugia has thus disposed of it. Perugia also states that, excepting some trifling difference, *Achirus lorentzii* Weyenbergh could be referred to *A. jenynei*, and he doubtfully places it in the synonymy of that species.

Two specimens in the present collection agree essentially with the description of *A. jenynei* as given by Jordan and Goss. Total length, respectively, about 7.25 and 5.75 inches. Head 3.63 and 3.37 in length without caudal; depth 1.61 and 1.49; snout 3.72 and 3.68 in head; interorbital 6.83 and 7.77; D. 58 and 61; A. 43 and 42; scales 85 or more.

52. SYMPHURUS JENYNSI Evermann and Kendall, new species.

Plagusia? JENYNS, Zool. Voy. Beagle, Pt. 4, Fish, 1842, p. 140, San Bias, coast of Patagonia.

? *Symphurus plagusia*, BERG, Anal. Mus. Nac. Buenos Aires, IV (2d ser., I), 1895, p. 79 (Mar del Plata; Montevideo).

Head 6.66 in length without caudal; depth 3.71; eye 13 in head; snout 4.33; D. 108; A. 93; C. 12; scales about 120.

Body outline nearly straight from about the first third of its total length to about the posterior two-fifths where it tapers to the base of the caudal, differing in this respect from *S. plagusia*, which begins to taper at about the anterior third of the length.

Teeth small, sharp, close-set, in several series in each jaw, on blind side; no teeth on upper side; eyes close together, about on same line, the lower, if either, slightly advanced; origin of dorsal fin about over front of upper eye.

Color (after preservation in formalin and later in alcohol), light yellowish brown, with faint darker streaks along the rows of the scales;

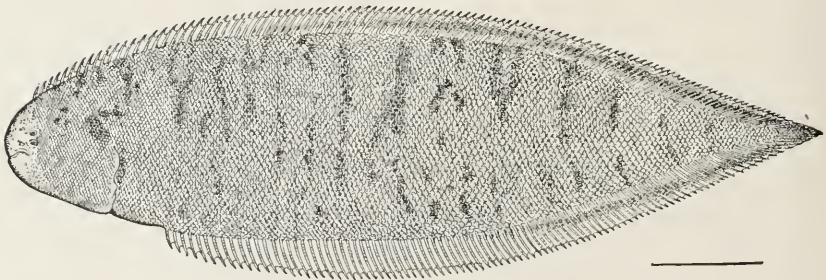


FIG. 4.—SYMPHURUS JENYNSI. (From the type.)

body also with cloudings and irregular, clouded crossbars; dorsal and anal dusky posteriorly, caudal dusky.

The single specimen in our collection differs greatly in several respects from *S. plagusia*, *brasiliensis*, *ornata*, *tesselata*, and all others that have been included in the synonymy of *S. plagusia*.

In shape and number of dorsal and anal rays our specimen resembles *S. nebulosus* (Goode and Bean^a), but it differs from that species in having no teeth on the upper or eyed side. In *S. nebulosus* the teeth are said to be equally developed on both sides. In *S. nebulosus* the color is clouded, while in our specimen there are traces of clouded, irregular crossbands.

Type.—Cat. No. 55573, U.S.N.M., a specimen 7.18 inches long, probably from the market at Buenos Aires.

Named for Rev. Leonard Jenyns, an excellent naturalist, who wrote the report on the fishes collected by Charles Darwin during the memorable voyage of the *Beagle* around the world.

^a *Aphoristia nebulosa* Goode and Bean, Bull. Mus. Comp. Zool., XI, No. 5, 1883, p. 192.