

NOTES ON A COLLECTION OF FISHES FROM THE GULF OF MEXICO AT VERA CRUZ AND TAMPICO.

By DAVID STARR JORDAN and MARY CYNTHIA DICKERSON,
Of Stanford University.

During the winter of 1898-99, Professors Jordan and Snyder made a large collection of fishes in Mexico. The greater part of this collection came from the rivers, and the species obtained have been already recorded in the Bulletin of the United States Fish Commission for 1899.

The marine species are not included in this paper, and these are here recorded. The localities are two—Vera Cruz and Tampico. At Vera Cruz seines are used on the sandy beaches, and the fishes secured are sent to the markets of the City of Mexico, our specimens having been obtained in these markets. At Tampico specimens were taken from the muddy estuary of the Rio Panuco and elsewhere along the sandy shores.

The fish fauna of the east coast of Mexico is not rich, and it is confined mainly to species which inhabit sandy shores. It is, however, of interest, as hardly any collecting has been done hitherto between Yucatan and Corpus Christi, in Texas. In all this region

“The thousand miles of shapeless strand
From Brazos to San Blas that roll
Their drifting dunes of desert sand,”

none of the rock fishes or coral fishes, Chatodontidae, Pomacentridae, and the like, so characteristic of the fauna of Cuba, are to be found.

A series of the specimens mentioned in this paper is in the collections of the United States National Museum.

A single species (*Bairdiella vera-cruceis*) is described as new.

Family CARCHARIIDÆ.

CARCHARIAS PLATYODON (Poey).

One specimen from Tampico.

Length $2\frac{1}{3}$ feet. Evidently identical with specimens collected by Doctor Jordan at Galveston in 1882 and described as *C. platyodon*.^a

^a Proc. U. S. Nat. Mus., 1882, p. 243.

Family ENGRAULIDÆ.

ANCHOVIA BROWNII (Gmelin).

Three specimens (largest $3\frac{3}{4}$ inches) from the lagoon at Tampico. Head $3\frac{2}{3}$ in length; depth $1\frac{1}{2}$; eye $3\frac{1}{2}$ in head. D. 15; A. 21; scales, 10.

ANCHOVIA MITCHILLI (Cuvier and Valenciennes).

Eight specimens (2 to $2\frac{1}{2}$ inches long) from a lagoon near mouth of Rio Panuco.

Head 1 in length; depth $1\frac{1}{2}$; eye 3 in head; D. 14; A. 28; scales 37.

Family DOROSOMATIDÆ.

DOROSOMA CEPEDIANUM (Le Sueur).

Two large specimens (10 inches long) from the market of Mexico City, originally from Vera Cruz; also more than a hundred young specimens (the largest $2\frac{1}{2}$ inches long) from a lagoon near Tampico.

Family CHARACIDÆ.

ASTYANAX ARGENTATUS Baird and Girard.

The collection contains 6 examples, the largest measuring 2 inches, from a lagoon near Tampico.

Family SILURIDÆ.

GALEICHTHYS GÜNTHERI Regan.

Galeichthys güntheri REGAN, Fauna Centr. Amer., 1907, p. 124.

One specimen 1 foot long from Tampico, Gulf of Mexico.

This species is closely related to *Galeichthys milberti* (*felis*), the shorter maxillary barbel (reaching opercle instead of end of head) and the broader occipital process being noteworthy points of distinction. The original *Silurus felis* of Linnaeus is the gaff-topsail catfish (*Felichthys felis*), not the present species. The type, still preserved, has been examined by Doctor Günther.

ICTALURUS FURCATUS (Le Sueur).

Three large specimens from Tampico.

Family SYNGNATHIDÆ.

DORYRHAMPHUS LINEATUS (Valenciennes).

Three specimens (1 female, 2 male) from lagoons at Tampico.

Family MUGILIDÆ.

MUGIL CEPHALUS Linnæus.

Three typical specimens from Tampico.

MUGIL CUREMA Cuvier and Valenciennes.

Many small specimens from the lagoon at Tampico.

JOTURUS PICHARDI Poey.

This large river Mullet, described as *Agonostomus globiceps* by Günther, is common about the base of cascades in the neighborhood of Jalapa, Nico, and Orizaba. It is locally known as Bobo, and was seen on the hotel tables at Jalapa.

Family POLYNEMIDÆ.

POLYDACTYLUS VIRGINICUS (Linnæus).

One example, $8\frac{1}{2}$ inches in length, from Vera Cruz.

Family CARANGIDÆ.

CARANX HIPPOS (Linnæus).

One specimen, $10\frac{1}{2}$ inches, from Tampico.

SELENE VOMER (Linnæus).

Two specimens from Vera Cruz.

Family CENTROPOMIDÆ.

CENTROPOMUS UNDECIMALIS (Bloch).

Four large specimens from Vera Cruz, found in the market of Mexico City.

CENTROPOMUS PEDIMACULA Poey.

Two specimens from Vera Cruz, found in the market of Mexico City. These correspond to the account given by Jordan and Evermann.

Regan regards *Centropomus pedimacula* of Poey, to which our specimens correspond, as identical with Poey's *pectinatus*, a name which has page priority over *pedimacula*. We have seen no specimens referable to *Centropomus pectinatus*, but from the description of Poey,^a confirmed in part by that of Boulenger,^b *Centropomus pectinatus* would seem to be a distinct species, differing from *C. pedimacula* in the smaller eye (6 in head), in the smaller scales (lateral line 65, not 55), in having the ventral fins pale, and in having no dark streak along the lateral line. If all these characters prove fallacious, the name *Centropomus pedimacula* should give way to *Centropomus pectinatus*.

CENTROPOMUS PARALLELUS Poey.

Six specimens from Vera Cruz.

This species is distinguished by its small size, by the very small scales—85 to 90—a pale lateral line, and the presence of teeth on the preorbital.

Family SERRANIDÆ.

EPINEPHELUS ADSCENSIONIS (Osbeck).

Vera Cruz, obtained in markets of Mexico City.

Family LUTIANIDÆ.

LUTIANUS GRISEUS (Linnæus).

Locality, Tampico. One example.

LUTIANUS CYANOPTERUS (Cuvier and Valenciennes).

Locality, Tampico.

Length, 1½ feet. A single example of the so-called "Cubera" of the Cuban markets, bearing a close resemblance to *Lutianus griseus*, but distinguished—as noted in Jordan and Evermann's Fishes of North America—by the $\text{//}\backslash$ shape of the vomerine patch of teeth, the large size of the canines of the lower jaw, and the somewhat caducous character of the scales.

^a Memorias, II, p. 121.

^b Cat. Fishes, I, p. 368.

Family THERAPONIDÆ.

HAEMULON PLUMIERI (Lacépède).

Two specimens from Vera Cruz, found in the market of Mexico City.

BATHYSTOMA RIMATOR (Jordan and Swain).

One specimen from Vera Cruz, found in the market of Mexico City.

CONODON NOBILIS (Linnæus).

Seven specimens from Vera Cruz, found in the markets of Mexico City.

Family SPARIDÆ.

ARCHOSARGUS PROBATOCEPHALUS (Walbaum).

Four specimens (longest $12\frac{1}{2}$ inches) from Tampico.

Family GERRIDÆ.

GERRES PLUMIERI Cuvier and Valenciennes.

Gerres plumieri CUVIER and VALENCIENNES, Hist. Nat. Poiss., VI, 1830, p. 452 (Antilles, Porto Rico).

Gerres brasilianus CUVIER and VALENCIENNES, Hist. Nat. Poiss., VI, 1830, p. 458 (Brazil, Porto Rico).

Gerres patao POEY, Memorias, II, 1868, p. 320 (Havana).

Gerres embryo JORDAN and STARKS, in Jordan and EVERMANN, Fish. North and Mid. Amer., II, 1898, p. 1379 (Charleston).

Nineteen specimens from Tampico forming a graduated series, from $3\frac{3}{4}$ inches to $12\frac{1}{2}$ inches in length.

These show plainly the identity of the nominal species of *Gerres*, *plumieri*, *brasilianus*, and *embryo*. *Embryo* was separated from *brasilianus* mainly because of the greater length of the pectorals, a character which does not hold good in this series. *Plumieri*, as described, differs from *brasilianus* chiefly in the greater length of the second dorsal spine (longer than head, instead of two-thirds to three-fourths of head), again an untrustworthy character as the following measurements prove. *Plumieri*, as described, is the young of *brasilianus*, that is, the dorsal and anal spines are proportionately longer in younger specimens. However, there are exceptions to the presence of long spines in the young, as occasionally a young example will show the measurements of the adult.

This identity of the three species has already been pointed out by Regan.

Dimensions.

	Length of specimen.	Length of second dorsal spine.	Length of second anal spine.	Length of pectoral.
	<i>Inches.</i>			
1	12½	⅔ of head	⅔ of head	1½ of head.
2	11½	do	do	Do.
3	9	⅔ of head	⅔ of head	1½ of head.
4	8½	do	do	1½ of head.
5	8½	Equals head.	⅔ of head	1½ of head.
6	7½	do	⅔ of head	1½ of head.
7	7½	1½ of head	do	1½ of head.
8	7½	1½ of head	do	1½ of head.
9	6½	1½ of head	Equals head	1½ of head.
10	6½	⅔ of head	⅔ of head	Do.
11	6½	1½ of head	1½ of head	Do.
12	6	1½ of head	Equals head	Do.
13	4½	do	do	1½ of head.
14	4½	do	do	Do.
15	4½	1½ of head	do	Equals head.
16	4½	1½ of head	do	Do.
17	3½	do	1½ of head	1½ of head.
18	3½	1½ of head	Equals head	Equals head.
19	3½	do	1½ of head	Do.

EUCINOSTOMUS PSEUDOGULA (Poey).

Eight small specimens (averaging 2 inches in length), from lagoons at Tampico.

These agree with *Eucinostomus pseudogula*; but, on the other hand, they can not be distinguished from *Eucinostomus harengulus*, by comparison either with the description of the species or with specimens (Mayaguez, Porto Rico). It would therefore seem probable that *pseudogula* and *harengulus* are identical.

Family SCLENIDÆ.

CYNOSCION NEBULOSUS (Cuvier and Valenciennes).

Two specimens from Tampico.

BAIRDIELLA VERÆ-CRUCIS Jordan and Dickerson, new species.

Corrina (Homoprion) acutirostris STEINDACHNER, Zur Fisch-Fauna des Magdalenen-Stromes, 1878, p. 9. (Magdalena River): not type (1875), which was from Panama.

Bairdiella armata JORDAN and EVERMANN, Fish North Mid. Amer., II (1898), p. 1437 (Rio Magdalena, San Matheas, and other localities in Brazil); not *Bairdiella armata* GILL, 1863, from Panama.

Head 3½ in length to base of caudal; depth 3½; eye, 4½ in head. D. X-I, 23; A. II, 8. Scales 51 to 53.

Snout long, somewhat shorter and more robust than in the *Bairdiella armata*; chin pores large; lips thin; inner teeth of the lower jaw somewhat enlarged (outer teeth of the upper jaw conspicuously enlarged). Preorbital one-half diameter of eye. Gill rakers 9+16, two-fifths diameter of eye.

Dorsal spines flexible, the longest $1\frac{3}{5}$ in head, the first two considerably thicker than the remaining spines; anal spine somewhat curved, $1\frac{2}{3}$ in head, $1\frac{1}{3}$ in base of soft dorsal. Lateral line pores, each with 4 simple spreading branches.

Color silvery, a broad dorsal area from snout to base of caudal covered with brown dots as in *B. armata* and *B. ensifera*; also brown dots aggregated along the sides in the middle of the scales forming horizontal lateral streaks; spinous dorsal black at tip; caudal and soft dorsal dusky.

The collection contains 3 specimens 8 to $9\frac{1}{2}$ inches in length. They were obtained by Doctor Jordan in 1898, in the market of the City of Mexico, having been received from Vera Cruz.

Bairdiella vera-crucis is very close to *B. armata*, which it represents in the Gulf of Mexico, and with which it has been hitherto con-

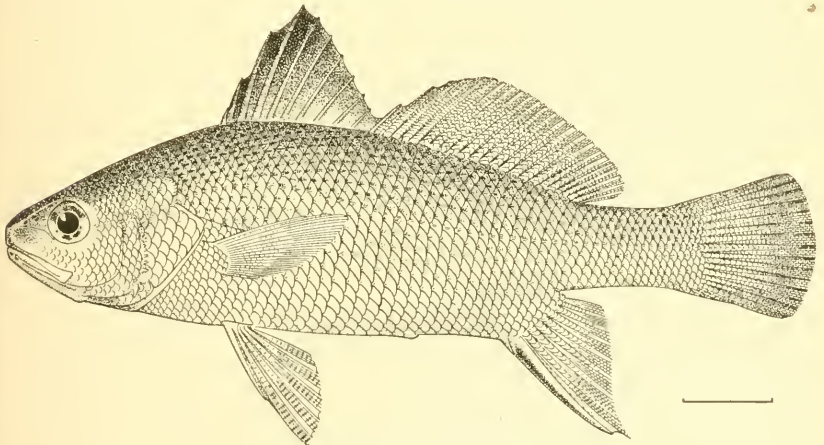


FIG. 1.—BAIRDIELLA VERÆ-CRUCIS.

founded. From *B. armata* it differs in the main as follows: It has a somewhat less long and pointed snout, and larger teeth; the dorsal spines, except the first two, are relatively frail and flexible instead of robust and stiff; the lateral line pores have 4 simple spreading branches, whereas those of *B. armata* have 4 branches which extend more or less horizontally and are branched again. The preopercular spines are stronger; the second anal spine is somewhat curved and proportionally longer ($1\frac{1}{3}$ in base of soft dorsal instead of $1\frac{1}{2}$ or less). The gill-rakers are 9+16 instead of 7+11. (This comparison is made on four authentic specimens of *Bairdiella armata* from Panama, in the Stanford University Museum).

Bairdiella vera-crucis differs from *B. ronchus*, which it somewhat resembles, in the essential characteristics of the teeth, i. e., the teeth in the lower jaw are many and closely set in 4 or 5 rows in front,

which gradually give place to 2 rows on the sides instead of being relatively few and biserial throughout.

Bairdiella vera-crucis is probably the species obtained by Steindachner from the Rio Magdalena (Atlantic) in 1878 and classified as *Corrina* (*Homoprion*) *acutirostris*, a species (identical with *B. armata*) which he had described in 1875 from Panama Bay. He mentions the fact that the East Coast specimens show "eine etwas stärker gerundete und ein wenig kürzere Schnauze," and notes also the somewhat larger preopercular spines and the longer second anal spine.

Direct comparison of the two species, *Bairdiella vera-crucis* from Vera Cruz (Atlantic) and *Bairdiella armata* from Panama Bay (Pacific), leaves no doubt that the two are distinct although undoubtedly representative or "geminate" species.

The type of *Bairdiella vera-crucis* is Cat. No. 61676, U.S.N.M.; Cotypes are in Stanford University.

BAIRDIELLA RONCHUS (Cuvier and Valenciennes).

One specimen from Tampico, length $10\frac{1}{2}$ inches.

MICROPOGON UNDULATUS (Linnæus).

Many dozens of immature specimens from a lagoon near the mouth of the Rio Panuco.

POGONIAS CROMIS (Linnæus).

Two specimens from Tampico and from Vera Cruz.

UMBRINA COROIDES Cuvier and Valenciennes.

Locality, Vera Cruz. Obtained from market of Mexico City.

Two specimens, each 8 inches long.

Head $3\frac{1}{2}$ in length; depth 3; D. X; I, 27; A. II, 6; scales 48. In all respects the specimens correspond with the description in Jordan and Evermann.

Family EPHIPPIDÆ.

CHÆTODIPTERUS FABER (Broussonet).

A single specimen, $6\frac{1}{2}$ inches long, from Tampico.

Family CICHLIDÆ.

NEETROPLUS CARPINTIS Jordan and Snyder.

Locality, Tampico.

Two specimens of *Neetroplus carpintis*, a species first described in 1889 from material collected by J. O. Snyder at Laguna del Carpinte, near Tampico.

The smaller of the 2 specimens (length $8\frac{1}{4}$ inches) corresponds to the original description; the larger (length $9\frac{3}{4}$ inches), a very old representative of the species, disagrees in that the depth has increased disproportionally to the other measurements. The depth is 2 in the length in the types, whereas in this specimen it measures barely $1\frac{2}{3}$.

Family GOBIIDÆ.

GOBIOMORUS DORMITOR (Lacépède).

Locality, Tampico.

Five specimens from $3\frac{1}{4}$ to $12\frac{1}{2}$ inches in length.

The genus *Gobiomorus* was based by Lacépède on 4 species, belonging to the modern genera *Nomeus*, *Valenciænna*, *Philypnus*, and *Periophthalmus*. It was first revived by Jordan and Gilbert in 1882, and restricted to *dormitor*, the type of *Philypnus*. Later, 1882, it was restricted to the *taiboa*, the type of *Valenciænna*, by Gill, by the method of elimination. Still later, 1907, it was used by Jordan for *gronovii*, the type of *Nomeus* by the "first species rule." By the rule of type by first designation, in accordance with the International Code, *Gobiomorus* replaces *Philypnus*, a matter of regret, as the latter name was one especially well chosen.

ELEOTRIS ABACURUS Jordan and Gilbert.

Eleotris abacurus JORDAN and GILBERT, Proc. Cal. Ac. Sci., 1896, p. 228 (Charleston).

A single specimen 2 inches long from a lagoon near Tampico.

Head 3 in length; depth $4\frac{1}{2}$. D. VI-9; A. I-8. Scales 51-20.

The preopercular spine is well developed; the long depressed head completely scaled. The scales on back and belly are cycloid, those on the sides etenoid. The teeth in the outer and inner rows of the villiform bands are somewhat enlarged.

The body is brown, darker on the sides, the combined effect of obscure lengthwise streaks along the middle lines of the scales; continuous with this lateral color is a brown band over the head, through the eye to the end of the snout; two dark streaks extend from the eye downward and backward over the cheeks, and a small black spot (size of eye) lies at the base of the pectoral fin partially hidden by the opercle. The color of the fins, as well as this body color, agrees with the original description by Jordan and Gilbert, but the specimen is smaller than the original type and the markings more distinct.

EVORTHODUS BREVICEPS Gill.

Evorthodus breviceps GILL, Proc. Ac. Nat. Sci. Phila., 1859, p. 195 (Trinidad).

Locality, lagoon near Tampico.

Head $4\frac{1}{2}$ in length; depth $4\frac{3}{4}$; eye 3 in head. D. VI-11; A. 12. Scales 28 to 30, in longitudinal series, 10 in transverse. Body robust, compressed posteriorly. Head thick and short. Snout blunt, rounded. Interorbital space narrow, one-half orbit. Jaws subequal; lips thin. Teeth small, uniserial, deeply notched at tips. Teeth of the lower jaw horizontal, the emarginated tips projecting outwards. Isthmus moderate; gill openings restricted to the sides.

Pectorals not extending to vent, each with 14 rays. Ventrals completely united, not adherent to the belly; shorter than pectorals. Spinous dorsal with third and fourth rays longest (two-thirds of

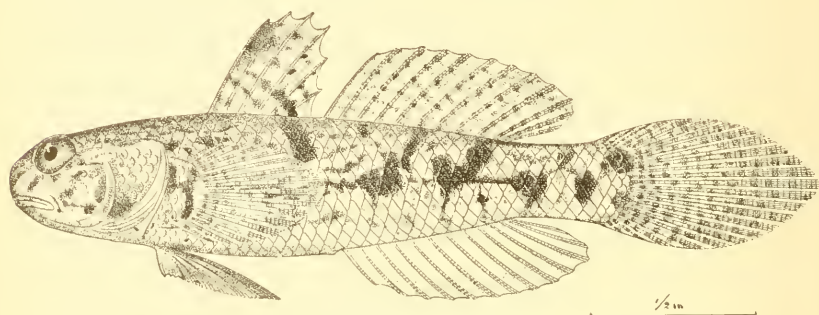


FIG. 2.—EVORTHODUS BREVICEPS.

head). Rays of soft dorsal and of anal as long as third ray of spinous dorsal. Caudal rounded, slightly longer than head, with 21 rays.

Scales ctenoid, of moderate size; those on belly very small. Nape, occiput, and opercles scaled, the scales on opercles rather obscure. Cheek apparently with a number of embedded scales and one or two rows of minute papillae.

Color in alcohol, brown, darker above; irregularly and conspicuously spotted and blotched on the sides; pale and unspotted below; the larger blotches of one side meet those of the other side along the dorsal line, producing the effect of irregular crossbars over the back; two dark spots at base of caudal alternate with a single dark spot on caudal peduncle. Pectorals somewhat pigmented in transverse bands; ventrals without color; spinous dorsal conspicuously barred with black; soft dorsal more or less checkered or barred with dark; anal pale slightly pigmented on the rays; caudal irregularly barred.

This singular little goby, distinguished by the unusual form of its teeth, has been but once recorded since it was originally described

by Doctor Gill from the island of Trinidad. Günther mentions a specimen from Surinam.

We have six examples, the largest $2\frac{1}{2}$ inches long, from a lagoon near Tampico, in Tamaulipas.

RHINOGOBIUS SHUFELDTI (Jordan and Eigenmann).

Gobius shufeldti (JORDAN and EIGENMANN), Proc. U. S. Nat. Mus., 1886, p. 495 (New Orleans).

Several score of specimens of *Rhinogobius shufeldti* were taken from a lagoon near the mouth of the Rio Panuco.

The largest measures $2\frac{3}{8}$ inches in length. All agree very closely with the original description by Jordan and Eigenmann.

GOBIOSOMA BOSCI (Lacépède).

Gobius bosci LACÉPÈDE, Hist. Nat. Poiss., 11, 1798, p. 555, pl. XVI, fig. 1 (Charleston).

Gobius alpidotus BLOCH and SCHNEIDER, Syst. Ichthol., 1801 (after Lacépède), p. 547.

Gobius viridipallidus MITCHELL, Trans. Lit. and Philos. Soc. N. Y., 1, 1814, p. 379 (New York).

Gobiosoma bosci JORDAN and GILBERT, Proc. U. S. Nat. Mus., 1882, p. 613.

Gobiosoma molestum GIRARD, Proc. Ac. Nat. Sci. Phila., 1858, p. 169 (Indianola, Texas).

Head $3\frac{2}{5}$ in length; depth $4\frac{1}{2}$. D. VII-14; A. 10. Body entirely naked.

Teeth in several rows; the outer of both jaws somewhat enlarged, the inner of the lower jaw considerably enlarged and hooked inward.

The color in alcohol is plain olivaceous, studded with dark pin points and shows faint traces of crossbars. The fins are all more or less dusky, dorsals and anals being nearly black.

The head has a complicated arrangement of papillæ and pores, the former close set in rows. The largest papillæ are those encircling the chin; they approach barbels in size and are visible to the naked eye.

The arrangement of papillæ is as follows:

Five rows pass downward from the orbit; the anterior two end in a line of papillæ bordering the maxillary; the middle and the posterior two respectively meet two horizontal rows on the cheek, which rows in turn are at right angles to a perpendicular series extending on a line with the posterior margin of the orbit. A vertical series on the anterior part of the opercle joins a backward extending horizontal row; a double series edges the preopercle below and extends forward around the lower jaw; short rows mark the symphysis, also the snout between the nasal tentacles and the orbits; two rows on the top of the head follow the outlines of the orbits behind and meet in the mid-dorsal line.

This arrangement of papillæ is very similar to that described in *Barbulifer* by Doctor Eigenmann in his description of that genus.

Of this species we have a single representative $1\frac{1}{2}$ inches long.

This specimen seems to agree with the nominal species *Gobiosoma bosci*, but also with *Gobiosoma molestum*. In fact, judging from the material at hand in the Stanford University Museum—specimens from Pensacola, Florida, from Corpus Christi, Texas, and from Roanoke River, Virginia—the two species, *G. bosci* and *G. molestum*, are one and the same. The teeth, however, have been incorrectly described. They are as noted above, i. e., teeth in several rows, the outer of both jaws somewhat enlarged, the inner of the lower jaw considerably enlarged and hooked inward.

Family PLEURONECTIDÆ.

CITHARICHTHYS SPILOPTERUS Günther.

Locality, Tampico.

A single specimen, $6\frac{3}{4}$ inches long.

Head $3\frac{1}{2}$ in length; depth 2; D. 78; A. 57; scales 46.

Color brownish, with darker dots and blotches.

Family BATRACHOIDIDÆ.

OPSANUS TAU (Linnæus).

Four specimens from Tampico, the largest 10 inches long, not evidently different from northern specimens.