



**CATALOGUE OF THE FISHES COLLECTED BY MR. JOHN XANTUS AT CAPE SAN LUCAS, WHICH ARE NOW IN THE UNITED STATES NATIONAL MUSEUM, WITH DESCRIPTIONS OF EIGHT NEW SPECIES.**

By **DAVID S. JORDAN** and **CHARLES H. GILBERT.**

Mr. John Xantus, when stationed at Cape San Lucas as a tidal observer for the Coast Survey, brought together a very large collection of objects of natural history, among which was a most excellent series of the fishes of the coast. The collections were formed under the auspices and direction of the Smithsonian Institution. They were studied by Professor Gill, who published descriptions\* of most of the species in Proceedings of the Academy of Natural Sciences of Philadelphia in 1862 and 1863. Later, during a period of confusion in the Museum, this collection was scattered and many of the specimens lost or destroyed, and the study of the undescribed portion was abandoned by Professor Gill. The writers have gone over the entire collection again, and give here a catalogue of what remains. Even after the extensive collections studied by Günther, Steindachner, and the writers, there still remain in the Xantus collection several species new to science.

It may be observed that the descriptions published by Professor Gill are, for the most part, taken from immature fishes. This accounts for many discrepancies between these descriptions and those taken from adults of the same species. Most of the specimens obtained by Xantus were taken from tide pools and rocks, and few or none bought in the markets.

**1. *Elops saurus* L.**

2521. Small specimens.

**2. *Clupea thrissina* sp. nov.**

6388, 2524, 6339. Several specimens in fair condition, the largest  $7\frac{1}{4}$  inches in length.

Allied to *Clupea (Harengula) clupeola*.

Head 4 in length; depth  $3\frac{1}{3}$ . D. I, 15; A. I, 13 or I, 14. Scales about 40-10. Ventral scutes 16 + 13.

Body rather deep, but more elongate than usual in the group called *Harengula*, to which this species belongs; rather strongly compressed. Head large, deep, rather blunt anteriorly. Mouth not large, rather oblique, the lower jaw projecting; the upper jaw scarcely emarginate in

\* Catalogue of the Fishes of Lower California in the Smithsonian Institution, collected by Mr. John Xantus. By Theodore Gill. Part I, in Proc. Ac. Nat. Sci. Phila. 1862, pp. 140-151; Part II, *op. cit.* pp. 242-246; Part III, *op. cit.* 249-262; Part IV, *op. cit.*, 1863, pp. 80-92. A few species were also described in other papers of Professor Gill, both earlier and later than those here mentioned.

front, its tip on the level of the pupil. Lower jaw very deep, its depth half its length. Maxillary extending to somewhat past the vertical from the front of the pupil, its length 2 in head.

Both jaws with small teeth, which appear to be permanent; teeth present also on palatines, pterygoids, and tongue, the teeth on the pterygoids very conspicuous, forming a large patch.

Eye large, 3 in head. Cheeks much longer than deep, not as deep as eye, the anterior margin of the preopercle very oblique. Opercle short and deep, shorter than eye, its posterior margin nearly vertical. Cheeks and opercles marked with fine, but distinct, branching striæ.

Gill-rakers rather short, slender, and close-set, about 30 below the angle of the arch. Longest gill-raker about half diameter of eye.

Scales firm and adherent, their posterior margins less convex than usual, rough with small fine teeth. Scales before dorsal similar to the others, but much smaller. Belly sharply compressed, the scutes strong, especially behind ventrals.

Distance from snout to dorsal  $2\frac{2}{5}$  in length. Dorsal fin about as high as long, its free margin concave, its last ray slightly longer than that which precedes it. Length of anterior rays of dorsal  $1\frac{1}{2}$  in head. Caudal well forked, the lower lobe slightly the longer, about as long as head. Anal low. Ventrals 2 in head; pectorals  $1\frac{1}{3}$ .

Color bluish above, silvery below; fins all pale; a round black spot behind upper part of gill-opening.

### 3. *Clupea*, sp. incog.

2534. A single young herring in poor condition, not belonging to any species known to us, but not in condition for description.

### 4. *Pristigaster*? sp. incog.

15443. A young specimen in very bad condition, which we are unable to identify with any of the known species of this type.

Body elongate, with a very distinct silvery stripe. Lower jaw strongly projecting, its teeth very strong, much stronger than upper teeth. Ventral outline not very prominent, strongly serrate. Ventral fins now wanting, but perhaps destroyed. It may possibly be a species of *Chirocentrodon*.

### 5. *Synodus scituliceps* Jor. & Gilb.

A single young specimen in bad condition, apparently belonging to this species.

### 6. *Characodon furcidens*, sp. nov.

9571, 30971. Many specimens, in fair condition, except that the coloration has faded; the largest  $3\frac{1}{4}$  inches in length.

Head 4 in length; depth  $3\frac{2}{5}$ . D. 15 to 17; A 13. Scales about 50-15.

Body of a form different from that of the species of *Cyprinodon*; comparatively elongate, not greatly compressed, the head rather low and broad, depressed; the profile rising evenly from the tip of the snout

to the nape, the region thence to the dorsal gibbous, especially in the larger examples, the caudal peduncle comparatively long and slender, about as long as head.

Anterior teeth large, firmly fixed, all bicuspid or Y-shaped, in a single series; a band of minute villiform teeth behind them, at least in upper jaw. Mandible not extending back to front of eye. Eye rather large,  $3\frac{1}{3}$  in head. Interorbital area wide, very nearly half head.

Scales rather small, those on top of head not much larger than the others; humeral scale not enlarged. Opercle connected by membrane to shoulder girdle, from upper base of pectoral upward, as in *Cyprinodon*. Insertion of dorsal very far back, midway between base of caudal and base of pectoral. First ray of dorsal very slender and articulate, not at all spine-like. Dorsal fin low, not so high as long, its base  $1\frac{2}{3}$  in head. Anal inserted below seventh ray of dorsal. Pectorals  $1\frac{2}{3}$  in head; ventrals 2. Caudal obliquely truncate, very slightly emarginate, the upper lobe about one fifth longer than the lower,  $1\frac{1}{4}$  in head; upper lobe usually more or less sharply angular; lower lobe rounded.

Coloration in spirits: Males with the sides profusely mottled with darker, sometimes nearly plain. Vertical fins each with several brownish bars and blotches and each with a dusky subterminal bar. A narrow dark line along middle of each row of scales on the back. Females with several short dark bars on the posterior half of the body, the fins colored as in the male. Some small dark specks on caudal peduncle.

7. *Fundulus parvipinnis* Girard.

7242. Numerous examples, precisely like others from San Diego.

8. *Fundulus vinctus*, sp. nov.

30973. One specimen, somewhat faded, but in fair condition. Length  $2\frac{1}{2}$  inches. Head  $3\frac{3}{4}$  in length; depth  $4\frac{1}{3}$ . D. 12; A. 11. Scales about 31-10.

Body little elongate, compressed posteriorly. Head large, very broad, and somewhat depressed above. Mouth moderate. Teeth in narrow bands, the outer much enlarged. Eye  $3\frac{1}{4}$  in head. Interorbital space 2.

Scales comparatively large. Dorsal inserted moderately in advance of anal, its front midway between base of caudal and occiput; the fin of moderate height. Pectoral  $1\frac{2}{3}$  in head; caudal  $1\frac{1}{5}$ .

Coloration, in spirits, olivaceous, with about 23 narrow silvery bars with undulating edges, the bars narrower than the darker interspaces. Fins now all plain.

This species is apparently related to *F. heteroclitus* and other Atlantic species. It may be distinguished from most of its relatives by its comparatively large scales.

9. *Fundulus extensus*, sp. nov.

30972. Two specimens, faded and rather soft, the longest nearly 3 inches long.

Head  $3\frac{3}{4}$ ; depth  $5\frac{2}{3}$ . D. 15; A. 13. Scales about 47-12.

Body unusually elongate, moderately compressed, the caudal peduncle long, much longer than head. Head slender, not very broad, the interorbital width  $2\frac{2}{5}$  in head. Eye large,  $3\frac{1}{4}$  in head. Mouth rather large; the teeth in a moderate band, the outer considerably enlarged.

Dorsal fin rather long, of moderate height, its insertion well in front of that of anal, at a point midway between eye and base of caudal.

Pectoral small,  $1\frac{2}{3}$  in head. Caudal  $1\frac{2}{5}$ .

Coloration, in spirits, plain, somewhat translucent, with no markings anywhere, except traces of some very narrow dark bars on the sides. Fins now plain.

This species resembles somewhat the Eastern *Fundulus diaphanus*, but it is more elongate.

**10. Hemirhamphus unifasciatus Ranzani.**

6320. An adult example, in fair condition.

**11. Gymnomuræna nectura, sp. nov.**

15442. One specimen,  $6\frac{1}{4}$  inches in length, in good condition.

Body moderately elongate, the snout heavy, compressed, abruptly truncate in profile. Anterior nostril on the front of the snout, in a short tube; posterior nostril directly above the eye, without tube.

Eye rather large, about half as long as snout, which is  $2\frac{2}{3}$  in cleft of mouth. Cleft of mouth straight, its length  $2\frac{2}{3}$  in head. Jaws about even in front, the lower having little motion, but capable of completely closing the mouth.

Teeth rather strong, sharp, straight, erect, mostly in two series, and nearly all depressible; those on the vomer a little larger than the others. Teeth in outer series in each jaw small, much smaller than those of the inner series. Gill-opening small. Head  $2\frac{5}{6}$  in trunk; head and trunk a little shorter than tail.

End of tail with a moderate fin, larger than usual in this genus; the fin more developed on the upper side, where its length is equal to that of the head.

Color dark brown, with ill-defined bars, blotches and reticulations of darker brown, the head and breast more distinctly marked.

Compared with *Gymnomuræna tigrina*, this species has the fin better developed, the snout and mouth longer, the teeth larger, the color different, &c.

**12. Muræna pinta Jordan & Gilbert.**

2324. One half-grown individual, in good condition. Young specimens of this species have an inner row of smaller teeth in the upper jaw.

**13. Apterichthys selachops, sp. nov.**

4391. One specimen, in good condition, about 14 inches long.

Body moderately elongate, the tail sharp-pointed. No trace of fins anywhere. Head tapering anteriorly to the long, sharp snout, which ends

in a short flexible tip. Snout projecting much beyond the mouth; the form and position of the mouth and snout and the position of the nostrils giving a physiognomy remarkably shark-like. Cleft of the mouth oblique, somewhat curved downwards and backwards posteriorly. Teeth all small, pointed, their tips directed backward; apparently in about one series in each jaw and a narrow band on the vomer. Lower jaw anteriorly pointed, incapable of much motion. Width of lower jaw between angles of mouth,  $1\frac{2}{3}$  in its length. Length of snout from eye,  $1\frac{2}{3}$  in length of cleft of mouth. Cleft of mouth 4 in head.

Anterior nostrils without tube, posterior each in a short tube; both pairs on the lower side of the snout. Eyes minute, but evident, somewhat behind the vertical from the front of the lower jaw.

Gill-openings ventral, close together in front, slightly divergent behind, the slits about as long as snout. Lateral line conspicuous.

Head 5 in head and trunk; head and trunk  $1\frac{1}{2}$  in tail.

Color uniform plain brown; the head slightly paler and mottled.

The specimen is a female full of ova; the ovaries extend backward in the abdominal cavity far behind vent.

#### 14. *Ophichthys miurus*, sp. nov.

2304. Three specimens, in good condition, the largest about a foot long.

Body moderately elongate. Head long and slender, anteriorly pointed. Lower jaw included; cleft of mouth  $2\frac{1}{2}$  in head.

Teeth all slender and pointed, directed backwards, most of them not depressible, those of the upper jaw in two widely separated series, those of the inner series largest, slender and close-set. Vomer with a median series of about 4 slender teeth. Lower jaw with a single series of rather long, slender teeth, wide apart, larger than the teeth of the upper jaw, but smaller than those of the vomer.

Snout very short, nearly twice the length of eye, 4 times in cleft of mouth. Eyes small, placed high and well forward. Nostrils without tubes. Lateral line conspicuous. Gill-openings small, placed very low, separated by an interspace, less than the length of one slit, which is about as long as snout.

Pectoral fin very small, pointed, about as long as snout. Gill-opening midway between tip of snout and beginning of dorsal. Fins very low; tip of tail pointed. Tail unusually short. Head  $5\frac{2}{3}$  in head and trunk. Tail  $1\frac{4}{7}$  in rest of body, a little shorter than trunk without head.

Coloration light yellowish; a series of roundish dark brown blotches on each side of body, the two series alternating; a series of small half-blotches on the back, these also mostly alternating. Head covered with small spots; dark spots on sides of lower jaw; fins all pale.

This would be a species of "*Herpetoichthys*" in Dr. Kaup's arrangement.

ordinary *erumenophthalmus*. The pectoral is not in the least shorter than usual, about  $3\frac{3}{5}$  in length to base of caudal. Head  $3\frac{1}{2}$ ; depth  $3\frac{2}{3}$ .

**22. *Caranx caballus* Günther.**

7570. Five young specimens, about 6 inches long, in fair condition.

**23. *Caranx crinitus* Akerly.**

(*Blepharichthys crinitus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 262.)

31012. One specimen, young, in fair condition.

**24. *Trachynotus carolinus* (L.) Gill.**

(*Trachynotus pampanus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 262; *Trachynotus carolinus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 84.)

5085. Seven specimens, the largest 6 inches long. These are not distinguishable from the young of the Atlantic Pompano.

**25. *Trachynotus fasciatus* Gill.**

(*Trachynotus fasciatus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 86=*Trachynotus glaucooides* Günther, Proc. Zool. Soc. Lond. 1864, 150.)

9647. (Not original type.) An adult example, in good condition.

**26. *Seriola dorsalis* (Gill) J. & G.**

(*Halatractus dorsalis* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 84=*Seriola lalandi* Jor. & Gilb. Proc. U. S. Nat. Mus. 1881, 46. Not of C. & V.)

2511. (Type of *Halatractus dorsalis*.) A very young example, in good condition,  $3\frac{1}{4}$  inches in length.

The banded coloration of this specimen is usual in immature *Seriola*. The large number of dorsal rays distinguishes this species from *Seriola mazatlanana* Steind. It is apparently the young of the Californian "Yellow Tail," which we have formerly identified with *Seriola lalandi* C. & V. Until specimens of the two forms can be actually compared, it is better to retain the Pacific species under a separate name as *Seriola dorsalis*.

Head  $3\frac{1}{2}$ ; depth 4. Tail scarcely carinated; vertical fins little elevated anteriorly, not falcate. Head about one-fourth longer than deep, somewhat carinated at the occiput; (this carina probably disappearing with age). Maxillary  $2\frac{1}{2}$  in head, reaching nearly to the middle of the pupil. D. VII-I, 37; A. II-I, 21.

**27. *Rhypticus xanti* Gill.**

(*Rhypticus xanti* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 250.)

30740. (Type of *Rhypticus xanti*.) One specimen, 5 inches long, in good condition.

**28. *Rhypticus nigripinnis* Gill.**

(*Rhypticus nigripinnis* Gill, Proc. Ac. Nat. Sci. Phila. 1861, 53, Panama; *Rhypticus macularius* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 251, Cape San Lucas; not *Rhypticus maculatus* Holbr.: *Promicropterus decoratus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 164, Panama.)

3689. (Type of *Rhypticus maculatus*.) One young specimen, about 2½ inches long, in bad condition.

This specimen is undoubtedly the young of the species called *nigripinnis* and *decoratus* by Professor Gill, a species very closely related to *Rhypticus maculatus* Holbr. of the Atlantic, but distinct from it.

The number of dorsal rays is II, 25, not III, 24, as given by Professor Gill. The first soft ray having been detached and broken, was taken for a third spine, but its articulated tip is still attached.

29. *Epinephelus sellicauda* Gill.

(*Epinephelus sellicauda* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 250=*Epinephelus ordinatus* Cope, Trans. Am. Philos. Soc. 1870, 466.)

7247. (Type of *Epinephelus sellicauda*.) A single specimen, very young and somewhat shrivelled.

30. *Brachyrhinus furcifer* (C. & V.) Poey.

(*Brachyrhinus creolus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 249.)

3688. Nine inches long, in fair condition. We have compared this specimen with one from Cuba, and, with Professor Gill, are unable to point out any differences likely to be permanent. The Californian specimen is somewhat deeper, with deeper and blunter head, and the pale spots on the sides are smaller than in the other, otherwise the two seem to be identical.

31. *Anthias multifasciatus* (Gill) J. & G.

(*Pronotogrammus multifasciatus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 81.)

2762. (Type of *Pronotogrammus multifasciatus*.) A very young example, about two inches long, the fore part of the head injured. It has a blunt head, forked caudal, scaly maxillary, large scales, high lateral line, and other characters of *Anthias*, to which genus it should probably be referred.

32. *Xenichthys xanti* Gill.

(*Xenichthys xanti* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 83=*Xenichthys xenops* Jordan and Gilbert, Bull. U. S. Fish Commission, 1882, 325.)

5086. (Types of *Xenichthys xanti*.) Many small specimens, 3 to 4 inches in length, in fair condition. These evidently belong to the same species as the adult examples lately described by us from Panama as *Xenichthys xenops*.

The dorsal rays are XI-I, 17, instead of XII, 14, as stated by Professor Gill. The scales of the lateral line are perhaps a little more conspicuous than the others, but the difference is of no importance.

33. *Lutjanus novemfasciatus* Gill.

(*Lutjanus novemfasciatus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 251 = ? *Mesoprion ineremis* Peters, Berliner Monatsberichte, 1869, 705 = *Lutjanus prieto* Jordan & Gilbert, Proc. U. S. Nat. Mus. iv, 1881, 353.)

4010. (Types of *Lutjanus novemfasciatus*.) Two specimens, about five inches in length, in fair condition.

The very young specimens on which this species was based, evidently belong to the species which we have lately described as *Lutjanus prieto*, an identification which could not be made from the description published. The dark bands are a character of extreme youth.

*Serranus calopteryx* Jor. & Gilb. (Proc. U. S. Nat. Mus. iv, 1881, 350) seems to be identical with *Prionodes fasciatus* Jenyns (Voyage of the Beagle, Fishes, 1842, 46). The absence of the vomerine and palatine teeth in Jenyns' type is, as has been suggested by Dr. Günther, purely accidental, and without significance. The name *fasciatus* is preoccupied in the genus *Serranus*, by *Holocentrus fasciatus* Bloch. This species may therefore retain the name *Serranus calopteryx*.

**34. Diabasis sexfasciatus** (Gill) J. & G.

(*Hæmulon sexfasciatus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 254 = *Hæmulon maculosum* Peters, Berliner Monatsber. 1869, 705.)

3000. (Types of *Hæmulon sexfasciatus*.) One specimen, 4 inches long.  
6467. About twelve specimens of similar small size.

This species reaches a very large size, and the adult examples are quite different in form and coloration from the little fish which served as the original type. As in related species, the black spots on the scales are developed with age.

**35. Diabasis scudderi** (Gill) J. & G.

(*Hæmulon scudderii* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 253 = *Hæmulon brevirostrum* Günther, Trans. Zool. Soc. Lond. 1869, 418 = *Hæmulon undecimale* Steindachner, Ichth. Beiträge, iii, 11, 1875.)

3683. (Types of *Hæmulon scudderii*.) Three young specimens, in good condition. The coloration is quite different from that of the adult or half-grown of this species, and is extremely similar to that of the young of *Pomadasys bilineatus*.

Grayish, the scales with inconspicuous darker spots. A broad black band through snout and eye, ending in a black blotch at base of caudal. A second band from between nostrils on each side, above eye straight to soft dorsal and upper edge of caudal peduncle. Fins, especially anal, a little dusky. A dark blotch hidden by angle of opercle. All these specimens have 12 dorsal spines, but most of those obtained by Mr. Gilbert have 11, as in the type of *Hæmulon undecimale*.

**36. Diabasis steindachneri** Jordan & Gilbert.

19879. Eight specimens, nearly adult, in good condition. These appear to have been received after the publication of Professor Gill's papers.

**37. Diabasis flaviguttatus** (Gill) Jor. & Gilb.

(*Hæmulon flaviguttatus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 254 = *Hæmulon margariferum* Günther, Proc. Zool. Soc. Lond. 1864, 147.)

3681. (Type of *Hæmulon flaviguttatus*.) An adult example, in good condition.



**38. Diabasis maculicauda** (Gill) Jor. & Gilb.

(*Orthostæchus maculicauda* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 255=*Hæmulon mazatlanum* Steindachner, Ichthyol. Notiz, viii, 12, taf. vi, 1869.)

6557. (Types of *Orthostæchus maculicauda*.) Several immature specimens.

**39. Pomadasys inornatus** (Gill) J. & G.

(*Microlepidotus inornatus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 256 = ? *Pristipoma brevipinne* Steindachner, Ichth. Notiz, viii, 1869, 10 = ? *Pristipoma notatum* Peters, Berlin. Monatsber. 1869, 706.)

3684. (Types of *Microlepidotus inornatus*.) Two adult specimens, in good condition, 8 inches long.

2999. One young example.

6558. Numerous immature examples, from 1 to 4 inches long, showing lengthwise stripes.

7313. Four specimens, partly grown.

All the specimens examined have 14 spines in the dorsal, and the membranes of the soft dorsal and anal seem to be without scales.

The young of this species is silvery, with three regular parallel blackish stripes, the lower from eye to middle of base of caudal, the next from above eye to upper part of caudal peduncle, the third higher up, to middle of soft dorsal. The adults are nearly plain with traces of about 6 narrow, dusky, wavy streaks, which do not follow the rows of scales.

The specimen from Guaymas (No. 29386), referred to by us in a previous paper (Proc. U. S. Nat. Mus. 1881, 274) as *Pomadasys inornatus*, belongs apparently to *Pomadasys cantharinus* (Jenyns) J. & G.

**40. Pomadasys ?bilineatus** (Cuv. & Val.) J. & G.

(*Genytremus interruptus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 256 (young).)

30927. (Types of *Genytremus interruptus*.) Nine young specimens, 3 to 4 inches in length. These young specimens resemble to a remarkable degree the young of the Atlantic species, *P. bilineatus*, with which they were compared by Professor Gill. Compared with specimens of the latter species they differ only in the larger size of the scales, above the lateral line mesially. In *bilineatus* there are usually 6 scales in a vertical series between the spinous dorsal and the lateral line. In the types of *interruptus* we find 4, 5, or 6 scales in such a series. In *Pomadasys fürthi* we find 4. *Fürthi* differs from *bilineatus*, so far as we can see, only in a slightly different color, more arched back, and rather larger scales between the spinous dorsal and lateral line. We are unable at present to decide whether the types of *interruptus* are the young of *fürthi* or of *bilineatus*. If the former, which is not unlikely, the occurrence of the latter species in the Pacific is yet to be verified, although not improbable. All the definite records of *bilineatus* on the west coast of tropical America refer to young specimens, with lateral stripes like the types of *bilineatus*.

The coloration of the types of *Interruptus* is as follows:

Dull grayish, somewhat bluish above; scales anteriorly with inconspicuous darker spots. A wavy, sharply-defined black band through snout and eye, to opposite last ray of dorsal, where it ends abruptly. Behind it, at base of caudal, is a large oval black blotch. A similar black stripe from above eye straight to middle of base of soft dorsal. Ventrals black, other fins more or less tinged with dusky, the pectorals and spinous dorsal palest. If these prove to be the young of *Pomadasys fürthi*, the name *interruptus* is to be substituted for *fürthi*. This question cannot be settled with the material now at hand.

**41. *Girella nigricans* (Ayres) Gill.**

(*Girella nigricans* = *Girella dorsimacula* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 244.)

20320. (Type of *Girella dorsimacula*.) A partly grown specimen, showing the pale blotch on the back by the side of the dorsal fin, characteristic of the young of this species.

**42. *Pimelepterus analogus* Gill.**

(*Pimelepterus analogus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 245 = *Pimelepterus elegans* Peters, Berliner Monatsber. 1869, 707.)

3001. (Types of *Pimelepterus analogus*.) In poor condition.

**43. *Apogon retrosella* (Gill) J. & G.**

(*Amia retrosella* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 251.)

2454. (Types of *Amia retrosella*.) Seven specimens, in fair condition, 1½ to 3½ inches in length.

2997. Four specimens, in poor condition.

4001, 4002, 4003. (Types of *Amia retrosella*.) Three half-grown specimens, in fair condition.

4413. (Types of *Amia retrosella*.) Three specimens.

**44. *Upeneus dentatus* Gill.**

(*Upeneus dentatus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 256.)

3699. (Types of *Upeneus dentatus*.) Three young examples, about 4 inches in length, in good condition. This species has not been obtained by any other collector. It is well distinguished from the common *Upeneus grandisquamis* Gill. Compared with the young of *grandisquamis* of the same size, *dentatus* is more slender, less compressed, with smaller scales, very much larger eye, much weaker teeth, and the dorsal outline less arched.

**45. *Umbrina dorsalis* Gill.**

(*Umbrina dorsalis* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 257.)

3696. (Types of *Umbrina dorsalis*.) Ten specimens, the largest 4 inches long.

**46. *Umbrina xanti* Gill.**

(*Umbrina xanti* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 257 = *Umbrina analis* Günther, Trans. Zoöl. Soc. London, 1869, 426.)

7156. (Types of *Umbrina xanti*.) Three young examples, the largest nearly 4 inches long.

2996. Two small specimens.

Compared with the young of *Umbrina dorsalis*, the young of *U. xanti* differ in the following respects:

The body is more slender and elongate (depth  $3\frac{3}{4}$ ;  $3\frac{1}{6}$  in *dorsalis*), the head is more elongate, the anterior profile much less blunt and rounded, the eye much smaller (not much longer than snout), the pectoral shorter, (2 in head;  $1\frac{2}{5}$  in *dorsalis*), the anal spine shorter. The oblique streaks along the rows of scales are narrower and more sharply defined in *xanti* than in *dorsalis*. The number of dorsal rays in *dorsalis* is constantly greater.

Adult examples of the two species obtained by Mr. Gilbert show the following differential characters:

- a. Snout very blunt, not longer than eye, 4 in head; preopercle with its membranaceous edges crenulate; pectorals more than two-thirds length of head. D. X-I, 30 to 33; A. II, 7. Scales 9-53-12. Dark stripes along rows of scales very faint, broader than the pale interspaces. Depth 3 in length..... DORSALIS.
- aa. Snout rather acute, longer than eye,  $3\frac{1}{2}$  in head; preopercle with its bony edge serrate; pectorals less than two-thirds length of head. D. X-I, 26; A. II, 6. Scales 6-48-10. Dark stripes along rows of scales very distinct, narrower than the pale interspaces. Depth  $3\frac{1}{4}$  in length..... XANTI.

Neither species appears to be very common along the coast.

#### 47. *Myriopristis occidentalis* Gill.

(*Myriopristis occidentalis* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 87: ?*Rhamphoberyx leucopus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 88.)

6348. (Types of *Myriopristis occidentalis*.) Very many young specimens, 2 to 3 inches in length.

6350. (Types of *Myriopristis occidentalis*.) Many young specimens.

6304. (Types of *Rhamphoberyx leucopus*.) Two specimens, each about 2 inches in length.

These specimens appear to belong to the same species. In all the specimens called *occidentalis* the sides are dull and dusky with dark punctulations. In the types of *leucopus* the sides have a silvery luster. There is no tangible difference in form, so far as we can judge from these small specimens.

#### 48. *Myriopristis pæcilopus* (Gill) J. & G.

(*Rhamphoberyx pæcilopus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 87: *Rhamphoberyx leucopus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 88.)

6273. (Types of *Rhamphoberyx pæcilopus*.) Three specimens, each about 2 inches in length, in good condition.

In these specimens the spinous dorsal is all black and the ventrals tipped with black. *Pæcilopus* is probably a species distinct from *M. occidentalis*, although the resemblance is remarkably great, the differences, except in color, being scarcely appreciable.

Compared with *occidentalis* of the same size, *pæcilopus* has the lower jaw a trifle shorter and the eye a little larger. In *pæcilopus* the sides

have a bright silvery luster, without dark punctulations, as in the specimens called *leucopus*.

There is no warrant for the generic name *Rhamphoberyx*. It is strictly synonymous with *Myriopristis*.

**49. *Holocentrum suborbitale* Gill.**

(*Holocentrum suborbitale* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 86.)

2319. (Types of *Holocentrum suborbitale*.)

7312. Numerous specimens.

**50. *Polynemus approximans* Lay & Bennett.**

(*Polynemus approximans* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 258.)

6418. Numerous young examples.

**51. *Prionurus punctatus* Gill.**

(*Prionurus punctatus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 242.)

3679, 4422, 9306. (Types of *Prionurus punctatus*.) Many specimens in good condition, mostly young.

**52. *Pomacanthus strigatus* (Gill) J. & G.**

(*Holacanthus strigatus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 243.)

3668. (Type of *Holacanthus strigatus*.) One specimen, about 3 inches in length, in good condition.

**53. *Chætodon nigrirostris* (Gill) J. & G.**

(*Sarothrodus nigrirostris* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 243.)

3669. (Types of *Sarothrodus nigrirostris*.) Two specimens partly grown, in fair condition, but badly shriveled.

**54. *Pomacentrus rectifrænum* Gill.**

(*Pomacentrus rectifrænum* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 148; 1863, 214: *Pomacentrus analigutta* Gill MSS, in Günther, Cat. Fish. Brit. Mus. iv, 27.)

3670. (Types of *Pomacentrus rectifrænum*.) Three partly grown specimens, in good condition.

3674. (Types of *Pomacentrus analigutta*.) Several specimens, in good condition, 1½ to 3 inches in length.

There seems little reason to doubt that the above-noticed specimens all belong to the same species.

**55. *Pomacentrus flavilatus* Gill.**

(*Pomacentrus flavilatus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 148; 1863, 214: *Pomacentrus bairdii* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 149: *Pomataprion bairdii* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 217.)

3677. (Type of *Pomacentrus flavilatus*.) One half-grown specimen, in fine condition, with the characteristic coloration of the species.

3656. (Type of *Pomacentrus bairdii*.) One very immature specimen, less than an inch long.

We are able to distinguish this species from *P. rectifrænum* only by the difference in coloration. No intermediate conditions have yet been

noticed by us. According to Mazatlan fishermen, it reaches a larger size than as yet observed by collectors, still retaining its characteristic coloration.

**56. *Pomacentrus quadrigutta* Gill.**

(*Hypsypops dorsalis* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 147 (adult): *Pomacentrus quadrigutta* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 149: *Pomataprion dorsalis* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 216: not *Pomacentrus dorsalis* Gill. Proc. Acad. Nat. Sci. Phila. 1859, 29; a Chinese species.)

3657. (Type of *Pomacentrus quadrigutta*.) A very young example, less than one inch in length.

The type of *Hypsypops dorsalis* (4369) has now gone to decay.

**57. *Glyphidodon declivifrons* (Gill) J. & G.**

(*Euschistodus declivifrons* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 145, 146; 1863, 219: *Euschistodus concolor* Gill, l. c. 1862, 145, foot-note = *Euschistodus analogus* Gill, l. c. 1863, 219, Aspinwall.)

9332. (Types of *Euschistodus declivifrons*.) About ten young examples, 2 to 4 inches in length.

30744. A large example, 5½ inches in length, in good condition. On this specimen the dark bands have all disappeared.

**58. *Glyphidodon saxatilis* (L.) Lac.**

(*Glyphidodon troschelii* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 150; 1863, 220.)

8173, 8180. (Types of *Glyphidodon troschelii*.) Many young specimens.

**59. *Chromis atrilobata* Gill.**

(*Chromis atrilobata* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 149; 1863, 220.)

3675. (Type of *Chromis atrilobata*.) A half-grown specimen, in bad condition.

No second specimen of this species has yet been obtained. It may be identical with the Brazilian *Chromis marginatus*, as suggested by Dr. Günther, but it is certainly premature to unite the two on the basis of our present knowledge. A few species of shore-fishes are certainly common to the faunæ of Brazil and Lower California, but the supposition is against identity in any individual case. Much injury has been done to our knowledge of geographical distribution by the random identification of specimens with closely related species belonging to some other fauna. Of 50 species of marine fishes given by Dr. Günther (Trans. Zool. Soc. London, 1869, 385-392) as common to both sides of the Isthmus of Panama, at least 11 have been incorrectly identified and are not found on both coasts, the identity of 18 more is doubtful and must be verified, while but 21 of the list can be positively stated to be specifically identical. A large number not included in this list are also certainly identical, but in this case it is better to retain some doubtful species than to make many doubtful identifications.

We may notice that the green coloration of the type of *Chromis atrilobata* (Proc. Ac. Nat. Sci. Phila. 1863, 220) seems to have come from the copper tank in which it has been kept.

**60. *Harpe diplotænia* Gill.**

(*Harpe diplotænia* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 140 (♀ ?): *Harpe pectoralis* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 141 (♂).)

4441. (Types of *Harpe diplotænia*.) One specimen, 9 inches long, in alcohol.

2986. Stuffed skin of adult; also one of the original types.

6430. (*Harpe pectoralis*; not type; record of locality and collector lost.) A specimen, about 10 inches long, in spirits.

2988, 8867. (Stuffed skins; types of *Harpe pectoralis*.)

These two forms have been well described by Professor Gill. We are unable to find any constant difference between them except in the color. It is not improbable that *pectoralis* is the male and *diplotænia* the female of the same species. The form called *pectoralis* is certainly the male.

**61. *Julis lucasanus* Gill.**

(*Julis lucasanus* Gill, Proc. Ac. Nat. Phila. 1862, 142.)

3676, 3677. (Types of *Julis lucasanus*.) Young and half-grown examples, in good condition.

4396. Two adult and one young example.

**62. *Xyrichthys mundiceps* Gill.**

(*Xyrichthys mundiceps* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 143.)

4370. (Types of *Xyrichthys mundiceps*.) One half-grown and several small examples.

8082. (Types.) Very many young examples, in poor condition.

30929. Three adult males and one female (not types).

The large specimens last mentioned were received after the publication of Professor Gill's papers. The female example is plain light brownish like the original types. The males are darker, with a narrow vertical blue or violet line at the base of each scale, these most distinct and broadest on caudal peduncle. A conspicuous jet-black spot, rather larger than the eye, at base of caudal, just below lateral line. Three concentric blue curved lines on flap of opercle. Three narrow blue lines downward and forward from eye across cheek. Lower jaw and lower side of head with blue stripes and lines, the one connecting angles of the mouth below broader than the others. Fins pale; now plain.

In the male the body is deeper than in the female, and the anterior profile is steeper. The largest of the original types is a male, and still shows traces of the dark caudal spot.

**63. *Novacula mundicorpus* (Gill) Günther.**

(*Iniistius mundicorpus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 145.)

7388. One adult example, probably a male, 7 inches in length, evidently not the original type.

Color olivaceous, whitish below; three broad bars of dark olive on the back and sides, these bars nearly as wide as the interspaces.

Most of the scales of the back and sides with a vertical light bluish stripe, not so distinct as in *X. mundiceps*. In the middle of the first dark band, just above the lateral line, are one or two scales of a different color, the posterior half of each being jet black, the base light blue, the colors abruptly defined. Dorsal with narrow dark stripes running obliquely downward and backward. Anal pale, with a conspicuous light horizontal stripe near the tips of the rays; a narrower similar stripe near the middle of the fin. Some bluish clouds on opercle. Some vertical pale blue stripes below eye. Anterior dorsal dusky. A faint dusky streak below eye; tip of caudal a little dusky.

**64. *Caulolatilus princeps* (Jenyns) Gill.**

(*Caulolatilus affinis* Gill, Proc. Ac. Nat. Sci. Phila. 1865, 67.)

5789. (Type of *Caulolatilus affinis*.) One very young example, about 3 inches long, badly shrivelled. So far as we can see the number of fin rays in this specimen is not less than usual in the species to which it belongs.

**65. *Gobius saporator* C. & V.**

2466. One specimen.

**66. *Gobius banana* Cuv. & Val.**

2464. Several young examples.

2474. Adults.

2772. Adults.

30931. Three adult specimens.

**67. *Dormitator maculatus* (Bloch) J. & G.**

2491, 7350. Many examples.

**68. *Philypnus lateralis* Gill.**

(*Philypnus lateralis* Gill, Proc. Ac. Nat. Sci. Phila. 1860, 123.)

2435 to 2442. Types of *Philypnus lateralis*.

2492, 6283. Many specimens.

**69. *Porichthys margaritatus* (Rich.) J. & G.**

3004. Young examples.

**70. *Clinus xanti* (Gill) Gthr.**

(*Labrosomus xanti* Gill, Proc. Ac. Nat. Sci. Phila. 1860, 107.)

2334, 7050, 7314. Many specimens, of various sizes, some of them types of *Labrosomus xanti*.

This species is extremely close to the *Clinus nuchipinnis*, differing in the specimens examined, in the arrangement of the teeth on the vomer. In *xanti* there are three large bluntish teeth forming a triangle; in *nuchipinnis*, one large tooth and about six smaller ones forming a V-shaped figure. In *nuchipinnis* there is always a distinct black blotch

on the opercle, which is faint or obsolete in *xanti*. In form, structure of fins, numbers of scales, &c., we are unable to find any differences.

**71. *Tripterygium carminale* Jor. & Gilb.**

2487. Two examples.

**72. *Salarias atlanticus* C. & V.**

2745, 7324, 7333, 7794. Many specimens, of various sizes.

**73. *Isesthes gentilis* (Grd.) J. & G.**

2481. Two examples, the largest  $2\frac{1}{2}$  inches long, answering entirely to the description of the female of this species given by Dr. Steindachner (Ichth. Beitr. v, 150). A male specimen of this species is in Mr. Lockington's collection, from La Paz.

**74. *Myxodagnus opercularis* Gill.**

(*Myxodagnus opercularis* Gill, Proc. Ac. Nat. Sci. Phila. 1861, 263.)

2531, 2532, 2533. (Types of *Myxodagnus opercularis*.) Three immature examples, faded.

**75. *Dactylagnus mundus* Gill.**

(*Dactylagnus mundus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 505.)

4915. (Type of *Dactylagnus mundus*.) One specimen, nearly 6 inches long.

**76. *Sebastopsis xyris*, sp. nov.**

30979. Six small specimens, somewhat discolored, the largest about 3 inches in length.

Head  $2\frac{1}{2}$ ; depth  $3\frac{1}{2}$ . D. XIII, 10; A. III, 5. Lat. l. 24 (pores).

Body oblong, somewhat compressed, the back a little elevated. Head large, very strongly armed. Mouth rather large, oblique, the jaws subequal in front, the maxillary extending to beyond pupil, its length  $1\frac{5}{8}$  in head. No palatine teeth. Jaws naked. Preorbital narrow, its edge lobate, not spinous. Eye large, about  $3\frac{1}{4}$  in head.

Cranial ridges very short, sharp, and high, their spines more or less hook-like and compressed. Interorbital space narrow, very deeply concave, with two curved longitudinal ridges, each armed with a small spine. Nasal spines sharp. Preocular, supraocular, postocular, tympanic, occipital, nuchal, and coronal spines present. Occipital ridge very short, spine-like. Coronal spines separating the naked frontal region from the scaly part of the head. A sharp temporal spine on each side; behind it two strong spines on the suprascapula; a spine on the shoulder-girdle. Opercle with two spines. Preopercle with about five spines, the largest with a smaller spine at its base in front, the two lowermost spines almost obsolete. Suborbital stay forming a sharp elevated ridge, with a sharp spine near its front, under the eye, and another near its junction with the preopercle. Gill-rakers very short, rather stout.



Dorsal fin rather deeply notched, the spines strong, the longest  $2\frac{2}{3}$  in head. Longest soft ray about half length of head. Caudal truncate,  $1\frac{3}{5}$  in head. Second anal spine  $1\frac{3}{5}$  in head, very strong, much longer than third or than the soft rays. Pectoral  $1\frac{1}{3}$  in head, the base rather broad, a little procurent, the tip pointed. Ventral  $1\frac{3}{5}$  in head, its insertion under anterior margin of base of pectoral.

Scales unusually large, ctenoid; 25 pores in lateral line, the number of rows of scales somewhat more.

Coloration faded, apparently light red or perhaps brown in life, with traces of darker shades. Caudal with bands and blotches of dark brown; traces of similar bands on anal and dorsal; in some specimens a large dark blotch on last dorsal spines. Pectoral faintly barred, with two dusky blotches near the base.

**77. *Dinematichthys ventralis* (Gill) J. & G.**

(*Brosomphycis ventralis* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 253.)

2479, 2482, 2483. (Types of *Brosomphycis ventralis*.) Three specimens, the largest about 3 inches long, in fair condition.

**78. *Paralichthys adspersus* (Steind.) J. & G.**

7036. One specimen, about 8 inches long.

**79. *Tetrodon testudineus* L.**

12692. Young specimen. We are unable to distinguish the Pacific Coast form (*annulatus* Jenyns=*heraldi* Gthr.) from the West Indian *testudineus*.

**80. *Pylonotus punctatissimus* (Günther) J. & G.**

(=*Tetrodon oxyrhynchus* Lockington, Proc. Ac. Nat. Sci. Phila. 1881, 116.)

9899. Many specimens, the largest about 3 inches long.

**81. *Balistes mitis* Bennett.**

2990. Dried skin.

7318. Three adult specimens in spirits.

**82. *Antennarius strigatus* Gill.**

(*Antennarius strigatus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 92.=*Antennarius tenuifilis* Günther, Trans. Zool. Soc. Lond. 1869, 440.)

6267. (Types of *Antennarius strigatus*.) Two specimens, in fine condition.

**83. *Antennarius sanguineus* Gill.**

(*Antennarius sanguineus* Gill, Proc. Ac. Nat. Sci. Phila. 1863, 91.=*Antennarius leopardinus* Günther, Proc. Zool. Soc. Lond. 1864, 151.)

6393. (Types of *Antennarius sanguineus*.) Two fine specimens, one adult, the other nearly so.

18604. One half-grown example, in good condition.

The types of the following species described by Professor Gill appear

to be lost or destroyed. Of all of these except *Doryrhamphus californiensis*, the Museum now possesses one or more examples in good condition, most of them being from the collection of Mr. Gilbert:

Dactyloscopus pector-	
alis	= <i>Dactyloscopus pectoralis</i> Gill.
Iniistius mundicorpus	= <i>Novacula mundicorpus</i> (Gill) J. & G.
Hypsypops dorsalis	= <i>Pomacentrus quadrigutta</i> Gill.
Diapterus californiensis	= <i>Gerres californiensis</i> (Gill) J. & G.
Diapterus gracilis	= <i>Gerres gracilis</i> (Gill) J. & G.
Hoplopagrus güntheri	= <i>Hoplopagrus güntheri</i> Gill.
Nematistius pectoralis	= <i>Nematistius pectoralis</i> Gill.
Cirrhitus betaurus	= <i>Cirrhitus rivulatus</i> Val.
Argyrosus brevoorti	= <i>Selene vomer</i> (L.) Lütk.
Trachynotus rhodopus	= <i>Trachynotus rhodopus</i> Gill. ( <i>T. kennedyi</i> Steind.)
Trachynotus nasutus	= <i>Trachynotus rhodopus</i> Gill.
Doryrhamphus californi-	
ensis	= <i>Doryrhamphus californiensis</i> Gill.
Hippocampus gracilis	
Gill	= <i>Hippocampus ingens</i> Grd.

UNITED STATES NATIONAL MUSEUM, June 28, 1882.

**LIST OF FISHES COLLECTED BY JOHN XANTUS AT COLIMA, MEXICO.**

**By DAVID S. JORDAN and CHARLES H. GILBERT.**

About twenty years ago a considerable collection of fishes was made by Mr. John Xantus at Colima, on the west coast of Mexico, for the Smithsonian Institution. Much of this collection arrived at Washington in bad condition, and the greater part of it has gone to decay. In the present paper is given a catalogue of the specimens still remaining.

1. *Ginglymostoma cirratum* (Gmel.) Müller & Henle.  
7332. Two young examples, each 10 inches long. This species has not hitherto been recorded from the Pacific coast of Mexico. A young specimen was seen by Mr. Gilbert at Mazatlan.
2. *Arius guatemalensis* Günther.  
8144. Four specimens.
3. *Characodon furcidens* Jor. & Gilb.  
5093. Very many examples in fair condition, the largest 3 inches long.
4. *Muræna pinta* Jor. & Gilb.  
7328. One specimen, 8 inches long.
5. *Rhypticus xanti* Gill.  
7740. One fine specimen, 8 inches long.
6. *Epinephelus sellicauda* Gill.  
9583, 9587, 9589, 9601.