

## NOTES ON A COLLECTION OF FISHES FROM SAN DIEGO, CALIFORNIA.

By DAVID S. JORDAN and CHARLES H. GILBERT.

The writers have spent the greater part of the month of January, 1880, in the collection and study of fishes at San Diego, Cal., in the interests of the United States Fish Commission. As some of the species obtained are new to science, and others new to the United States fauna, it is thought advisable to present an annotated list in advance of the publication of a more extended report.

## HIPPOCAMPIDÆ.

1. *Hippocampus ingens* Girard.

One large specimen seen.

## SYNGNATHIDÆ.

2. *Syngnathus leptorhynchus* Girard.

(*Syngnathus arundinaceus* Girard.)

Not uncommon.

## PLEURONECTIDÆ.

3. *Paralichthys maculosus* Girard.

Very abundant. There seems to us no doubt of the correctness of Lockington's identification of the "*Uropsetta californica*" with this species. The caudal fin in the adult is somewhat double concave; in the young the middle rays are more produced. This species is both dextral and sinistral. Out of twenty-six examples examined in reference to this point fifteen were found to be sinistral and eleven dextral.

4. *Citharichthys sordidus* (Girard) Günther.

Not common; one specimen seen.

5. *Hypsopsetta guttulata* (Girard) Gill.

Common.

## SOLEIDÆ.

6. *Aphoristia atricauda* sp. nov.

Body oblong-lanceolate, anteriorly somewhat blunt, regularly narrowed behind and ending in a point, the snout rather abruptly truncate, eyes and color on the left side. Eyes very small, nearly even behind, the upper eye the larger and extending farthest forward. A single nostril in front of the interorbital space and apparently a single smaller one below it. Mouth moderate, extending to opposite the eye, somewhat



turned toward the eyed side; lips large, not fringed, the upper with a small blackish papilla in advance of lower eye. This is apparently normal, but it may be a detached piece of skin, hardened by the alcohol. Upper jaw scarcely produced, not forming a hook. Teeth small, on the blind side only, the edge of the jaw on the eyed side forming a smooth ridge.

Gill-openings narrow, not extending up to the level of the mouth. Scales very small, ctenoid, pretty regular over the body, much smaller on the head, the rows of scales rendered very distinct by black dots, the stripes converging towards the snout. Scales on the two sides of the body similar. No lateral line on either side. About 105 scales (100 to 110) in a longitudinal series from the head to the tail; 45 to 50 in a cross-series.

Dorsal fin beginning on the head, continuous with the anal around the tail. Ventral fin of the colored side only present, nearly on the ridge of the abdomen, and *separated from the anal* by an interval half longer than the cleft of the mouth. Rays of the middle parts of the dorsal and anal fins with a fleshy border at base on the blind side.

Dorsal rays about 100; anal rays 80; no distinct caudal fin.

Coloration brownish olive, with vertical dark half-bars, irregular in size and position, some of them coming down from the back and others up from the belly, these posteriorly nearly meeting, but anteriorly alternating. Streaks of dark points along the rows of scales, these forming very distinct longitudinal streaks. Posterior part of dorsal and anal broadly edged with black. Right side plain white.

*Measurements.*

	Inches.
Length .....	4.8
Depth (proportion of length).....	.275
Length of head .....	.18
Diameter of eye.....	.02
Interorbital space.....	.01
Cleft of mouth.....	.03
Length of snout .....	.045
Distance from snout to dorsal.....	.085
Distance from snout to anal.....	.25
Height of dorsal.....	.08
Height of anal.....	.085
Length of caudal.....	.08
Length of ventral.....	.05
Interval between ventrals and anal.....	.085
Depth of gill-opening.....	.095

This species is known to us from a single specimen taken by a Chinese fisherman, Ah Sam, in the Bay of San Diego. This specimen is now in the collection of the United States National Museum, No. ——. In form and number of scales, fin-rays, etc., it resembles *Aphoristia ornata* from the West Indies, but the ventral fin is remote from the anal.



## BATRACHIDÆ.

7. *Porichthys porosissimus* (C. & V.) Günther.

Very common.

## BLENNIIDÆ.

8. *Heterostichus rostratus* Girard.

Found in the "kelp" outside the harbor.

9. *Gibbonsea elegans* Cooper.

A single specimen taken in the rock-pools on Point Loma.

10. *Hypleurochilus gentilis* (Grd.) Gill.

With the preceding, and more common.

## GOBIIDÆ.

11. *Gillichthys mirabilis* Cooper.

Exceedingly abundant in the shallow waters of the bay. Only small specimens seen, the maxillary in these being much less developed than in the adult.

## COTTIDÆ.

12. *Leptocottus armatus* Girard.

Common in the Bay of San Diego.

13. *Oligocottus analis* Grd.

Allied, but not closely, to *Artedius quadriseriatus* Lockington.

Body compressed, especially behind, not much depressed anteriorly; head comparatively small, scarcely depressed, narrowed and rather pointed anteriorly, its outline triangular as viewed from above; snout strongly decurved in profile; mouth moderate, horizontal, the lower jaw included; maxillary reaching to opposite posterior margin of pupil; premaxillary anteriorly below the level of the eye; eyes large, high up, close together, as long as the snout,  $3\frac{1}{2}$  in head, their diameter double the width of the deep interorbital space, which has a deep lengthwise groove; nasal spines prominent; a deep cross-furrow behind them, which forms with the interocular furrow a V-shaped figure; preopercle with a blunt process, on which is a spine directed upwards and outwards; no scales on the head; no other spines on the head.

Branchiostegals 6. Gill membranes broadly united, without isthmus.

First dorsal beginning in front of the posterior edge of the opercle, its first two spines set close together at base, diverging above, and shorter than the third.

Dorsal fins contiguous, but not united, neither of them specially elevated; pectoral fin reaching beyond front of anal, its lower rays with the skin thickened, and projecting much beyond the membranes; caudal fin slightly rounded; anal papilla very conspicuous.

Fin rays: D. IX. 16; A. 13-14; V. I, 3; P. 16; C. 10 +.



Posterior part of body covered with minute, imbedded, non-imbricate, pectinate scales, which cover most of the posterior part of the body above and cease anteriorly behind the middle of the spinous dorsal in front and at the posterior third of the soft dorsal behind; some scales also along the region of the lateral line anteriorly; a series of somewhat larger but still minute scales at base of dorsal, one below each ray, and another along lateral line; anteriorly, cirri take the place of the pectinations on the scales.

No prickles on the skin. On the head and anterior parts of the body are very many long white, simple, bifid or trifid cirri, so that the living fish appears almost "woolly" with them. Some of these cirri on the nasal bones; a patch between and behind the eyes; the whole top of the head sparsely covered; two or three on the posterior edge of the maxillary; edge of the cheeks fringed with them as with a gray beard. A conspicuous row of them along the lateral line, which ceases somewhat behind the beginning of the scaly area. A row of cirri along the base of the spinous dorsal extending to about the seventh ray of the spinous dorsal. Many scattering cirri between the dorsal and lateral line. Skin of head with many mucous pores.

Body dark, clear olive-green, with about five irregular bars of darker greenish; much mottled and spotted, some of the spots above clear blue, some rusty red, and the most of them blackish. A dark bar at base of caudal; lower part of sides with round black spots posteriorly. Fins all with cross-bars made of dark spots and lighter areas.

*Measurement of largest specimen--from Point of Rocks.*

Total length .....	4	inches.
Length to base of caudal .....	3.45	inches.
Length of head (percentage of length to base of caudal) .....		.30
Depth of body .....	"	.25
Least depth of body .....	"	.095
Diameter of eye .....	"	.07
Width of head .....	"	.20
Depth of head .....	"	.17
Length of maxillary .....	"	.12
Distance from snout to dorsal .....	"	.27
Length of first dorsal .....	"	.27
Length of second dorsal .....	"	.37
Height of first dorsal .....	"	.12
Height of second dorsal .....	"	.15
Length of anal .....	"	.30
Height of anal .....	"	.13
Length of pectoral .....	"	.33
Length of ventral .....	"	.22
Length of caudal .....	"	.20
Length of longest cirri .....	"	.04
Length of anal papilla .....	"	.06

This description is drawn from two adult examples taken at Point of Rocks, near San Diego, just south of the line of Mexico, and from about



fifteen examples of various sizes taken at the "mussel beds" on Point Loma, near San Diego. These are numbered —? in the museum collection. It inhabits cup-shaped pools in the rocks between tide-marks lurking in the *Corallina*, and may be caught at low tide. Its quick movements when alarmed render this, however, a matter of some difficulty.

14. *Scorpænichthys marmoratus* Grd.

Occasionally taken in the kelp.

SCORPÆNIDÆ.

15. *Sebastapistes guttatus* (Girard) Gill.

Not uncommon.

16. *Sebastichthys atrovirens* Jor. & Gilb. MSS.

Occasionally taken in the kelp.

LATILIDÆ.

17. *Caulolatilus princeps* (Jenyns) Gilb.

Common in the kelp.

SCOMBRIDÆ.

18. *Sarda chilensis* (C. & V.) J. & G.

Abundant off shore in the fall.

PERCIDÆ.

19. *Paralabrax clathratus* Grd.

Frequent.

20. *Paralabrax maculofasciatus* (Steindachner) Gill.

Common in the bay.

21. *Stereolepis gigas* Ayres.

Occasionally taken off the coast.

SPARIDÆ.

22. *Girella nigricans* (Ayres) Gill.

The young common in the rock-pools.



## SCIÆNIDÆ.

- 23.
- Cynoscion magdalenæ*
- (Steindachner) Jor. & Gilb.

Common in the bay of San Diego.

- 24.
- Menticirrhus elongatus*
- (Günther) Gill.

A large species of *Menticirrhus*, probably *Umbrina elongata* of Günther, is taken occasionally in the bay. We have obtained one specimen.

- 25.
- Corvina saturna*
- (Girard) Steindachner.

Not uncommon.

- 26.
- Roncador stearnsi*
- (Steindachner) Jor. & Gilb. (gen. nov.).

Common. This species, having a serrated preopercle and only villiform teeth in either jaw, is not a *Corvina* as that genus is understood by many recent writers. Its relations are rather with *Sciænops ocellatus*, with which it is, however, hardly congeneric. We propose to consider it as the type of a distinct genus or subgenus, for which the name *Roncador*, applied to it by the Italian fishermen, may be adopted. This word appears also in the Latin name of a related species, *Umbrina ronchus*.

*Roncador*, gen. nov. Allied to *Corvina* and *Sciænops*.

Body moderately elongated, the head deep, the profile declivous, lower jaw included; both jaws with a broad band of villiform teeth only; no enlarged teeth or canines; pseudobranchiæ present; preopercle strongly and evenly dentate posteriorly, entire below; spines strong, the second of the anal very robust, but not very long; caudal fin lunate, air-bladder large.

This species, *Roncador stearnsi*, is as readily distinguished by the black pectoral spot as its relative, *Sciænops ocellatus*, is by the black spot on the caudal.

## EMBIOTOCIDÆ.

- 27.
- Embiotoca jacksoni*
- Ag.

Common.

- 28.
- Amphistichus argenteus*
- Ag.

Occasional.

- 29.
- Ditrema furcatum*
- (Grd.) Günther.

Common.

- 30.
- Hyperprosopon arcuatum*
- Gibbons.

Not uncommon.

- 31.
- Cymatogaster aggregatus*
- Gibbons.

Very abundant.

- 32.
- Abeona minima*
- (Gibbons) Gill.

Occasional.



## LABRIDÆ.

33. *Pimelometopon pulcher* (Ayres) Gill.

Very abundant in the kelp outside the bay.

## SPHYRÆNIDÆ.

34. *Sphyræna argentea* Girard.

Very abundant outside the bay in the fall.

## ATHERINIDÆ.

35. *Chirostoma californiense* (Girard) Gill.

Exceedingly abundant.

36. *Atherinops affinis* (Ayres) Steindachner.

Scarcely less common.

37. *Leuresthes tenuis* (Ayres) Jor. & Gilb. (gen. nov.)

*Leuresthes*, gen. nov., allied to *Atherinops* Steindachner, but with the teeth wanting or reduced to slight or deciduous asperities. In the specimens which we have obtained of this species no teeth whatever are observable.

The much greater width of the posterior portion of the premaxillary in *Chirostoma*, *Atherinops*, and *Leuresthes* serve to distinguish these genera from *Atherina*, in addition to the differences in the form of the mouth. *Labidesthes* Cope has, like *Atherina*, a slender premaxillary, but the mouth is curved and the jaws much produced forwards. The group called by Girard *Heterognathus* has likewise a broad premaxillary. It is probably not separable generically from *Chirostoma*, although the lower jaw is much stronger and some teeth are present on the vomer.

*Leuresthes tenuis* is occasionally taken in San Diego Bay, but it is much less abundant than the others and attains a smaller size.

## MUGILIDÆ.

38. *Mugil mexicanus* Steindachner.

Very abundant in San Diego Bay. Our specimens have the anal III, 8, instead of III, 7, as stated by Dr. Steindachner.

## SCOMBERESOCIDÆ.

39. *Hemirhamphus* sp. incert.

The young of a species of *Hemirhamphus* is very abundant in San Diego Bay. We are at present unable to identify it with any of the known species, but having seen no specimens over four inches long, we



do not think proper to describe it as new. The rays both in dorsal and anal are 14 or 15; the lower jaw is contained 4 times in the total length. It is allied to *H. pleii* and *H. unifasciatus*, but it is probably distinct from both.

40. *Belone exilis* Girard.

Occasionally taken. One specimen seen.

### CYPRINODONTIDÆ.

41. *Fundulus parvipinnis* Girard.

Very common in the Bay of San Diego.

### ALBULIDÆ.

42. *Albula vulpes* (L.) Goode.

This species visits the bay at intervals, in considerable schools. Several specimens were obtained.

### CLUPEIDÆ.

43. *Clupea sagax* Jenyns.

Very abundant in San Diego Bay. The very largest are nearly plain in coloration. The ordinary specimens have a very distinct series of round, blackish spots along the sides of the back, with smaller ones above it, which form stripes along the rows of scales.

44. *Clupea mirabilis* Girard.

Very abundant in San Diego Bay. The vomerine teeth in this species are very few and often not to be found. It should not be generically separated from the preceding.

### ENGRAULIDÆ.

45. *Engraulis delicatissimus* Girard.]

Very common.

46. *Engraulis ringens* Jenyns.

Very common.

### MURÆNIDÆ.

47. *Gymnothorax mordax* (Ayres) Jor. & Gilb.

Not rare in rock-pools. This species is extremely pugnacious, striking at a stick after the fashion of a snake. It is also very tenacious of life.

Length of tail almost exactly equal to that of the rest of the body, head forming one-seventh of the total length; snout short, narrow, and pointed, occipital region becoming fleshy and much elevated with age; dorsal fin beginning immediately in front of the gill openings.



Tube of the anterior nostril half as long as the eye; the posterior nostril with a slight membranous expansion, not forming a tube; diameter of eye contained  $2\frac{1}{4}$  times in the length of the snout, being placed nearly above the middle of the gape; gill opening slightly longer than the eye.

Sides of the upper jaw with two series of teeth posteriorly; the outer series small, close-set, somewhat triangular in form, slightly recurved, immovable; the inner series similar in form, but much larger, depressible, the series not extending so far back as the outer and consisting of about five teeth; the two series separated by a well-defined groove; in front of these, and continuous with the outer series, are three nearly fixed knife-shaped teeth, the posterior the larger, next a movable tooth similar to the last fixed one but smaller, and three small fixed teeth in front. On the middle line of the vomer are three depressible, fang-like, arrow-shaped teeth, the first rather smaller than the largest lateral teeth, the other two subequal and considerably larger, the posterior one very freely movable. These teeth are subject to some variation in different individuals, and are seldom quite alike on both sides of the same fish.

In the lower jaw is a single series corresponding to the fixed series in the upper jaw. These are similarly enlarged in front, where the series is partly duplicated and some of the teeth are movable. The teeth in the lower jaw are broader and more directed backwards than those in the upper jaw.

### MYLIOBATIDÆ.

#### 48. *Myliobatis californicus* Gill.

(*Rhinoptera vespertilio* Girard.)

The commonest of the numerous sting-rays in San Diego Bay.

### DASYBATIDÆ.

#### 49. *Pteroplatea marmorata* Cooper.

Common in San Diego Bay. Probably distinct from *P. hirundo*, having a narrower disk and shorter tail, with distinct dermal fold above and below.

#### 50. *Urolophus halleri* Cooper.

Common. This species is certainly not identical with *U. torpedinus*, in the synonymy of which species it is placed by Dr. Günther. Its skin is entirely smooth. It is probably a valid species, more nearly allied to *U. cruciatus* than to *U. torpedinus*.

#### 51. *Dasybatis dipterurus* sp. nov.

Allied to *Dasybatis centrurus* and *D. pastinaca*.

Disk rhomboid, slightly broader than long; anterior margins nearly straight forwards, meeting in a very obtuse angle; posterior margins curved; lateral angles rounded. Tail nearly half longer than disk, with



a conspicuous cutaneous fold below and a smaller but evident one above. Upper jaw considerably curved, with a slight convex protuberance in front, which fits into a slight emargination in the lower jaw, which is convex, its outlines corresponding to the curves of the upper jaw. Bands of teeth wider in front than laterally. Inside of mouth behind the lower jaw with three fleshy processes. Teeth about  $\frac{21}{23}$ ; about 8 in a cross-series in the upper jaw and 10 in the lower.

Color light brown, somewhat marbled with darker, but without distinct spots; tail blackish; belly white.

Skin *everywhere* perfectly smooth in all the specimens seen.

*Measurements of two specimens.*

	No. 1.	No. 2.		
Length of disk (in inches).....	8.75	8.50		
Length of tail (in inches).....	12.25	12.40		
Breadth of disk.....	Percentage of length of disk....	1.04	1.10	
Distance from disk to dorsal fold....	"	....	.45	.53
Length of dorsal fold.....	"	....	.135	.155
Height of dorsal fold.....	"	....	.0175	.019
Distance from root of tail to anal fold.	"	....	.38	.375
Length of anal fold.....	"	....	.30	.335
Height of anal fold.....	"	....	.0225	.0225
Length of snout from eye.....	"	....	.21	.18
Interorbital width.....	"	....	.13	.115
Snout to scapular ridge.....	"	....	.32	.335
Distance between nostrils.....	"	....	.155	.15
Width of mouth.....	"	....	.11	.11
Length of branchial area.....	"	....	.195	.18
Width of branchial area (in front)...	"	....	.32	.31
Mouth to vent.....	"	....	.70	.70
Length of caudal spine.....	"	....	(lost)	.335
Distance of spine from disk.....	"	....	.35	.325

This species is known to us from four female specimens taken in San Diego Bay. These range in length from 18 to 24 inches, and are therefore but partially grown. Several other specimens, some of them larger, have been seen in a pile of refuse fish thrown away by the Chinese fishermen. These were, however, too far gone for preservation or description.

**52. *Platyrrhina exasperata* sp. nov.**

Disk rhombic, about as broad as long, the snout prominent, but bluntish at the tip, the angle made by the anterior margins of the pectorals rather less than a right angle, but the snout itself rounded at the tip. Anterior margin of pectorals nearly straight.

Eyes rather large; nasal ridges well separated, little converging, not meeting anteriorly. Mouth rather narrow, slightly convex forward. Teeth about  $\frac{32}{26}$ . Nostrils with a large anterior flap, which projects backwards and covers a narrower posterior flap.

Ventral fins separate, entire, their outer margin slightly convex.

Tail depressed, with a broad lateral fold; dorsal fins comparatively



large; caudal fin well developed; under side of tail flattened with a blunt medial ridge.

Under side covered with a fine shagreen, like the skin of a shark, the roughnesses being triangular and closely set, depressible backwards; the skin below much as in *Rhinobatus*, but the prickles higher and sharper, the skin much rougher than in the latter genus.

The branchial region, from the nostrils to the pelvic bones, is entirely smooth, except the lower lip, which has a band of close-set prickles. A small tract in the middle of the pelvic area is prickly, and most of the abdomen proper, back to a point in front of the vent; the anterior and outer three-fourths of the pectorals below and about half the ventrals anteriorly and exteriorly also rough, as is the whole snout below, in front of the nostrils; whole lower surface of the tail and the surface of the fins rough with shagreen.

Above, the entire surface is covered with close-set stellated prickles of different sizes, largest on the base of the pectorals, and smallest about the eyes and on the outer edges of the fins.

Besides these are several stout, bluntish, slightly recurved spines, with stellate bases, placed as follows: One at the upper anterior angle of the eye and two behind it, the posterior the larger; a large spine on the back at the shoulder-girdle, in front of which are two or three on the median line, and a series on the middle line of the back of 10 to 12; two more on the tail between the dorsal fins; two series on the shoulder-girdle, the inner of two, the outer of two to four. No other large spines on the body. No claw-like spines are present on the pectorals in the male examples seen, all of which are, however, immature.

*Measurements.*

Total length.....	8.4 inches.	
Length of disk, to root of ventral.....	4.4 inches =	.51 of total.
Breadth of disk.....	.51	"
Length of tail.....	.49	"
Snout to scapular spine.....	.295	"
Eye.....	.05	"
Snout.....	.11	"
Interorbital space.....	.055	"
Scapular spine to first dorsal.....	.31	"
Length of first dorsal.....	.045	"
Height of first dorsal.....	.095	"
Distance between dorsals.....	.075	"
Length of caudal fin below.....	.15	"
Width between nostrils.....	.12	"
Width of mouth.....	.095	"
Snout to vent.....	.46	"
Width of branchial area.....	.225	"
Length of branchial area.....	.085	"

This species is very abundant in the Bay of San Diego, where about twenty examples of both sexes, all very similar in size, were obtained.

This species of the Asiatic genus *Platyrrhina* in the waters of the United States is a very interesting addition to our fauna.



## RHINOBATIDÆ.

53. *Rhinobatus productus* Ayres.

Very common.

## GALEORHINIDÆ.

54. *Mustelus californicus* Gill.

Abundant. This species appears to be identical with the Atlantic *Mustelus canis*, itself indistinguishable from *Mustelus hinnulus* Blainville, of the Mediterranean.

55. *Triacis semifasciatus* Grd.

Not uncommon.

56. *Galeocerdo* sp?

The jaws of a large shark, with the teeth similar in both jaws, triangular, oblique, deeply notched on the outer margin, and all strongly serrate, are preserved by Mr. Pitcher, of San Diego. The shark was taken near San Diego, but south of the Mexican line. The width of the mouth is about a foot. I suppose this to have been a species of *Galeocerdo*.

## HETERODONTIDÆ.

57. *Heterodontus francisci* (Grd.) Jor. & Gilb.

Common.

DESCRIPTION OF A NEW FLOUNDER (*XYSTREURYS LIOLEPIS*),  
FROM SANTA CATILINA ISLAND, CALIFORNIA.

By DAVID S. JORDAN and CHARLES H. GILBERT.

*XYSTREURYS LIOLEPIS*, gen. et sp. nov.

GENERIC CHARACTERS.—Subfamily *Hippoglossinae*, allied to *Hippoglossina*, *Hippoglossoides*, and *Paralichthys* (*Pseudorhombus*). Eyes and color on the right side; mouth large, oblique, with the teeth developed on both sides, stout, unequal, bluntish, in a single series; gill-rakers few, short, thick, almost triangular; scales small, cycloid, membraneous, oblong in form; lateral line simple, arched over the pectorals; caudal fin double-truncate, the angles rounded; dorsal fin beginning over the eye; anal fin preceded by a feeble antrorse spine; ventrals lateral; body oblong, moderately deep, rather thin.

This genus differs from *Hippoglossoides* in the arched lateral line, and from *Hippoglossina* in the cycloid scales and in its dextral habit. From most of the related genera it is separated by the few stout short gill-rakers.





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