

of many of the scales pearly, especially above and between the spots. A conspicuous black blotch on lateral line anteriorly. A row of about six salmon-olive spots along lateral line; above these and below base of dorsal is a row of large faint diffuse blotches of the same color, and below them a series of faint smutty tinges, the whole forming a series of about six obscure and broken cross-bars. Snout olive, mottled with bluish; a bright yellow band between eyes above, a very obscure pearly-blue streak below eye, and two or three similar ones before eye. Preorbital usually bluish, with more or less numerous longitudinal streaks and dashes of golden yellow, around which the ground color forms reticulations; the preorbital sometimes pale salmon yellow, with a few light bluish streaks. Cheeks, preopercle, and opercle pearly, with yellow shades and spots. Opercular membrane coppery orange. Vertical fins bluish, marked with small dusky salmon spots, which form undulating cross-bars on caudal; several blackish spots along base of dorsal. Ventrals, bluish white, faintly barred.

This species is rather common in the eel-grass about the Florida Keys, where it is known as the Grass Porgy, and sometimes as "Shad Porgy," from its occurrence with the "Broad Shad" (*Gerres cinereus*). It is taken in less numbers by the hook-and-line fishermen than the Jolt-head, Little-head, and Sancer-eye Porgy, and it reaches a larger size than any of these, the largest seen being less than a foot in length. A few were taken in the seine near the shore. A single specimen was obtained by Professor Jordan at Cedar Key. This specimen and one of those taken at Key West have the preorbital plain, as in the original type from Pensacola. Most of the specimens have the preorbital marked with bright dashes, somewhat as in *C. calamus*.

10. Calamus medius (Poey) Jordan & Gilbert.

Grammateus medius Poey, Ann. Lyc. Nat. Hist. N. Y., 1872, 183, pl. vii, f. 4 (Havana); Poey, Enum. Pisc. Cubens., 1875, 56 (Havana).

This species is unknown to us.

INDIANA UNIVERSITY, *January 25, 1884.*

**DESCRIPTIONS OF TEN NEW SPECIES OF FISHES FROM KEY WEST,
FLORIDA.**

By DAVID S. JORDAN and CHARLES H. GILBERT.

The month of December, 1883, was spent by Professor Jordan in making collections of the fishes of Key West, Fla., in the interest of the United States National Museum and of the museum of the Indiana University. About 190 species were obtained, of which those enumerated below appear to be new. Typical specimens of each of these are

in the United States National Museum, bearing in the Museum Register the numbers indicated below.

1. *Dussumieria stolifera*. (Catalogue No. 34964.)
2. *Tylosurus sagitta*. (Catalogue No. 34965.)
3. *Querimana gyrans*. (Catalogue No. 34966.)
4. *Atherina arca*. (Catalogue No. 34967.)
5. *Xyrichthys (Iniistius) rosipes*. (Catalogue No. 34968.)
6. *Doratonotus thalassinus*. (Catalogue No. 34969.)
7. *Gobiosoma ceuthæcum*. (Catalogue No. 34970.)
8. *Cremnobates nox*. (Catalogue No. 34971.)
9. *Platophrys nebularis*. (Catalogue No. 34972.)
10. *Achirus (Baostoma) comifer*. (Catalogue No. 54973.)

1. *Dussumieria stolifera*.

Body elongate, slender, moderately compressed, with the shape and general appearance of slender species of *Stolephorus*; belly not compressed to an edge. Snout very sharp, tapering, the jaws equal; cleft of mouth little oblique, the maxillary reaching slightly beyond front of eye, about $2\frac{1}{2}$ in head. Teeth minute, but evident in both jaws. Eye large, $2\frac{1}{2}$ in head. Insertion of dorsal slightly nearer tip of snout than base of caudal; the fin high, the longest ray two-thirds length of head. Insertion of ventrals under fourth or fifth ray of dorsal. Anal low. Ventrals nearly half as long as head, slightly shorter than pectorals, which do not reach their base.

Head $3\frac{3}{4}$ in length; depth $5\frac{1}{2}$. D. 11; A. 17. Scales rather large, caducous, probably about 36 in a longitudinal series, judging from the impressions on the skin.

COLOR.—Translucent green, pale below; sides with a well-defined silvery band as in *Atherina* or *Stolephorus*, about one-fourth depth of body and a little broader than pupil; a double row of dots along back before dorsal fin, and a single row behind dorsal; fins plain.

Very abundant in schools in the surf about Key West, in company with *Stolephorus browni*. All the specimens seen were of about the same size, about $1\frac{2}{3}$ inches in length. It is probable that it does not attain a larger size.

We should identify our specimens with *Clupea lamprotænia* Gosse, from Jamaica, were it not for the difference in the numbers of fin rays.

2 *Tylosurus sagitta*.

Very closely allied to *Tylosurus scapularis* J. & G.

Body slender, not compressed, as broad as deep; caudal peduncle not strongly depressed, its depth about equaling its width; no keel on caudal peduncle; the lateral line not black, and not more conspicuous on tail than elsewhere.

Jaws slender, of moderate length, the upper jaw from eye contained $4\frac{1}{2}$ times in length, and containing length of rest of head $1\frac{7}{8}$ times. Diameter of eye about $1\frac{1}{8}$ in interorbital width, $2\frac{3}{4}$ to 3 in postorbital part of head, about $7\frac{1}{2}$ in upper jaw forward from eye.

Teeth slender and pointed, those of inner row about 25 to 30 in each side of each jaw. Teeth and bones of head not green.

Maxillary not entirely concealed by the preorbital. Interorbital space with a long, narrow, rather shallow groove, with a median longitudinal ridge; the groove is scaly and widens slightly anteriorly. Two parallel ridges on occiput.

Cheeks and opercles everywhere closely scaled. No gill-rakers. Scales not green, of moderate size.

Dorsal fin low, the posterior rays the shortest, the longest ray of anterior lobe $1\frac{1}{2}$ in postorbital part of head. Anal higher than dorsal and beginning in advance of it. Caudal fin well forked. Pectorals about equaling length of postorbital part of head. Ventrals about half length of postorbital part of head, the insertion slightly nearer base of median caudal rays.

Head $2\frac{5}{8}$ in length; depth about one-sixth head. D. I, 15; A. I, 17. Lat. l. about 225.

COLOR IN LIFE.—Light green above, rendered dusky by fine dots; sides and below whitish silvery; a well-defined dark bluish lateral stripe, narrow and intense toward head, becoming much wider posteriorly. Several dark streaks formed of single series of fine black dots on middle of back. Sides of head, and of body in front of ventral fins, with conspicuous coarse black specking; these forming a dark bar in front of opercle; angle of mouth dark blue; tip of lower jaw reddish.

Fins all pale; caudal dusky at tip.

Three specimens, from 10 to 13 inches in length, were taken in the seine at Key West.

3. *Querimana gyrans*.

Close to *Q. harengus*, but differing in coloration, size of scales, fin rays, &c.

Body compressed, especially below; upper anterior profile descending in a curve to the short snout; top of head transversely convex, mouth rather narrow, oblique, the symphysis of lower jaw forming an acute angle. Teeth in a single series in upper jaw, rather better developed than in species of *Mugil*, but not evidently of different character. Eye large, equaling interorbital width, $3\frac{3}{5}$ in head, about twice length of snout.

Origin of ventral fins midway between snout and end of anal fin; pectorals long, five times in length of body; vertical fins, apparently scaleless.

Head $3\frac{1}{4}$ in length; depth $3\frac{3}{4}$. D. IV-I, 7; A. II, 7 (or 8?). Lat. l. 28 or 29.

COLOR.—Some specimens (perhaps females) green above: sides and belly, silvery; middle of back with a large pale area, shining silvery when in the water. Other specimens (perhaps males) with a broad coppery olive shade along the sides, extending on the back; color otherwise the same; the pale dorsal blotch as in the other. Fins, pale.

This little fish was found to be very abundant about the market wharves at Key West, apparently feeding on the waste fishes thrown overboard by the fishermen. None of the many specimens obtained are more than three fourths of an inch long, nor is it likely that the species attains a much greater size.

The fishes swim about in schools of about 50 at the surface of the water, the school having often something of a rotary motion like a school of whirligig beetles (*Gyrinidae*). When so swimming the pale spot on the back is very conspicuous, and the bronze-colored ones (males?) are readily distinguished from the green ones. When alarmed, the whole school sinks to the bottom. All the specimens obtained were dipped up with a pail from the boats.

It is probable that the specimens obtained at Charleston, and referred by us to *Querimana harengus*, belonged to this species. Unfortunately they have been destroyed.

4. *Atherina aræa*.

Body very slender, compressed, the head slender and narrow, with sharply-pointed snout; mouth oblique, narrow, maxillary barely reaching vertical from front of orbit, $2\frac{2}{3}$ in head; eye large, equaling inter-orbital width, $2\frac{2}{3}$ in head; scales moderate, entire.

Origin of spinous dorsal midway between tip of snout and base of caudal, much behind end of pectorals, about opposite tip of ventrals; length of pectorals equaling depth of body; ventrals half length of head; bases of vertical fins concealed in a sheath of scales.

Head $4\frac{1}{2}$ in length; depth 6. D. VI-1, 9; A. 1, 12. Lat. l. 38 to 42.

COLOR.—Translucent olive-green, the snout and mandible dusky; back with a median series of black specks, one on each scale; a similar series on each side the median row; no dark specks on sides; lateral silvery band broad, occupying the greater part of the third row of scales, its width half diameter of orbit; a dusky area behind vent; a series of black specks along base of anal, and thence along caudal peduncle to tail.

This species is rather common about Key West, in company with its larger and much more abundant congener, *A. stipes* Müll. & Trosch., (= *A. laticeps* Poey, *A. veliana* Goode & Bean.) None were obtained of more than 2 inches in length.

5. *Xyrichtys rosipes*.

Body sharply compressed and of moderate height, the anterior profiles not compressed to a sharp edge, the upper profile descending in a regular gentle curve from dorsal fin to end of snout, thus much less nearly vertical than in most species of the genus; the snout comparatively long and pointed, the preorbital low; maxillary nearly reaching vertical from front of orbit, $3\frac{1}{2}$ in head; teeth as usual, no posterior canines; height of preorbital $5\frac{1}{3}$ in head; eye large, $1\frac{1}{2}$ times interor-

bital width, $3\frac{2}{5}$ in head (in young); distance from snout to eye one-third head; a series of small scales below eye, head otherwise naked.

Two anterior dorsal spines, much elevated, with filamentous tips, their length two-thirds that of head; the third or fourth spine is the lowest, the spines thence slightly increasing to the last; second spine connected by membrane with the third; longest soft ray of dorsal about $2\frac{3}{4}$ in head; caudal rounded, $1\frac{1}{5}$ in head; ventrals $1\frac{4}{5}$; pectorals $1\frac{1}{2}$.

Head $3\frac{2}{5}$ in length; depth $3\frac{1}{5}$. D. IX, 13; A. III, 12. Lat. l. 23 or 24.

The specimen described above, 2 inches long, had the following coloration in life: Light olive, scarcely paler below, the head more yellowish; body with five irregular brownish cross-bars, the first obscure, at the nape; the last forming a blotch at base of caudal; a small yellowish spot at middle of base of caudal and a fainter one above it; a dark olive band downward from eye, with a spot-like band of the same color before it, and another, which becomes yellow, on the cheeks behind it; all three of these pass around the lower jaw; an olive blotch on opercle; some brown dots behind eye; dorsal cherry red, paler posteriorly, darkest on the produced anterior rays; caudal pale, scarcely tinged with reddish; anal cherry red, the lateral stripes forming two spots of deeper red on the fin; pectoral plain; ventrals deep cherry red.

A second specimen, smaller in size, probably the female of the species, had a different coloration, as follows: Orange brown, everywhere much mottled, the edges of many scales being brown, the brown becoming yellowish on lower parts, five brown cross-bands darker and broader than in the other specimen, the first at nape, the last at base of caudal, ending behind in a sharply-defined convex curve. Two yellowish brown bands across from eye over lower jaw. Tip of lower jaw of the same color; two similar bands across breast before ventrals. Dorsal and anal transparent except where crossed by the bands. Caudal and pectorals plain, ventrals deep brownish red.

Two specimens were obtained with the seine in the surf at Key West.

6. *Doratonotus thalassinus*.

Body much compressed, moderately elevated; its greatest width behind head two-sevenths of its height; caudal peduncle short and deep; its length but little more than half its height; profile from dorsal to nape convex, carinated; occiput and supraorbital region depressed and flat, the snout protruding, the profile of top of head thus strongly concave.

Snout slender, sharp, compressed, its length $3\frac{1}{5}$ in head; mouth wide; maxillary, 4 in head; teeth growing gradually larger anteriorly, the two front teeth in each jaw, distinctly the largest, canine-like, diverging, opposed to each other; a small but distinct posterior canine in upper jaw, none in the lower; eye moderate, little wider than interorbital width, 5 in head; cheeks with a single series of large scales, 4 in num-

ber; opercle covered with 5 or 6 similar scales; gill-membranes broadly united, free from the isthmus.

Dorsal spines robust and pungent, the first three with conspicuous filamentous appendages; first and second spines with their filaments about equal, $1\frac{1}{2}$ in head; without their filaments the second spine is slightly the longest, equaling distance from end of snout to middle of eye; the fin rapidly descends to the fourth spine, which is one-half as long as the second, then gradually rises to the ninth and highest, which is, however, shorter than the following soft rays; longest soft ray, $1\frac{2}{3}$ in head; anal spines similar to those of dorsal fin, the longest about one-half head; caudal evenly convex, its longest ray $1\frac{1}{2}$ in head; ventrals short, about one-half length of head, an elongate scale between them at base; pectorals reaching beyond the ventrals, but not to vent, $1\frac{3}{4}$ in head.

Membranes of vertical fins, with elongate scales on basal portion. Lateral line following outline of back one scale beyond end of dorsal fin, thence interrupted and continued on four scales of middle of caudal peduncle.

Head, $2\frac{3}{4}$ in length; depth, $2\frac{2}{3}$. D. IX, 10; A. III, 9; Scales $1\frac{1}{2}$ —20 (pores)— $6\frac{1}{2}$.

COLOR IN LIFE.—Very intense grass-green, about uniform over the body; head more yellowish, slightly paler below; opercles mesially a little darker; iris red, with a green ring; dorsal, anal, and caudal grass-green, mottled with light orange; tips of longer spines green, of short ones orange; ventrals, deep green, the membranes largely orange; pectorals, light yellowish.

A single specimen, $2\frac{3}{4}$ inches in length, of this most beautiful species, was obtained with the seine in eel grass at Key West.

7. *Gobiosoma ceuthœcum*.

Body slender; head depressed, flat above, narrow and slender; eyes large, the interorbital space very narrow; snout not blunt: mouth terminal, oblique, maxillary reaching to below eye, about one-third length of head; chin with a fringe of short, whitish barbels, arranged in two rows; eye large, rather more than one-fourth length of head, about three times interorbital width.

Vertical fins high, none of the rays or spines produced; membrane of last dorsal spine reaching origin of soft dorsal: pectorals long, reaching vertical from vent, one-fourth length of body: none of the upper rays silk-like. Ventral not reaching vent, one and five-sixths in head. Head and body scaleless.

Depth one-half head, which is three and two-thirds in length. D. VII, 10; A. 10.

Upper half of head and body of a warm brown, being covered with very close-set, coarse, brown specks; four oblong, colorless areas along base of dorsals, and a smaller one on back of caudal peduncle: head and body below translucent, this meeting the brown in a sharply de-

lined line along middle of sides; back with five or six blackish cross-bars from back to middle of sides, below which they extend in five or six short V-shaped projections; a short brown streak backwards and downwards from eye; a small brown bar obliquely across base of upper pectoral rays; a broad jet-black bar across base of caudal, not including uppermost and lowermost caudal rays.

A single specimen 1 inch in length was taken from a cavity of a sponge at Key West. It is possible that it should be regarded as the type of a genus distinguished from *Gobiosoma* by the presence of the small mental barbels.

8. *Cremnobates nox*.

Snout not very acute, the upper and lower profiles of head nearly evenly convex; mouth large, maxillary reaching slightly beyond eye, one-half length of head. Eye large, equaling length of snout, greater than interorbital width, 4 in head (to end of opercular spine); interorbital width, $4\frac{3}{4}$ in head; nasal, supraorbital and occipital tentacles present; those on snout and above the orbits, simple, slender filaments, the latter about as long as diameter of orbit, one of them divided to the base, the other simple; the tentacle on each side of nape is a compressed slip of skin higher than wide, the margin uneven but not fringed.

Anterior dorsal spines not much elevated, not higher than some of the posterior spines; the first and second spine about equal, $2\frac{1}{2}$ in head; the third spine is shorter, about equal in length to the fourth, from which it is separated by a wide membrane, which is, however, not at all notched. The spines thence increase in length toward the last. Caudal $1\frac{1}{3}$ in head; pectorals reaching anal, nearly equaling length of head; ventrals not reaching vent, $1\frac{1}{5}$ in head.

Scales large, 4 series above lateral line and 4 below.

Head $3\frac{2}{5}$ in length; depth $3\frac{5}{8}$. D. III+XXVII; A. II, 18. Lat. 1. 34 (tubes).

COLOR.—Body and fins uniform blackish brown; a few small silvery-white specks on dorsal region, mostly along base of dorsal fin; head and base of pectoral fin with light pink areas and mottlings; snout pink above; nape with a pink cross-bar; a dark streak upwards and backwards from eye to nape; a light streak from eye backwards to opercle and one backwards and downwards; lower jaw mottled with light and dark. A small round, black spot, near base of dorsal between twenty-third and twenty-fifth spines, and one between twenty-eighth and thirtieth, both very faintly ocellated with lighter. Slight whitish tips on ventrals and lower edge of caudal.

This species is known from a single specimen, $1\frac{3}{4}$ inches long, taken with the seine in algæ on a rocky bottom at Key West. Its congeners, *C. marmoratus* Steind., *C. fasciatus* Steind., and *C. affinis* Steind., were found in the same waters, *C. marmoratus* being much the most abundant of the four, and reaching the largest size.

9. *Platophrys nebularis*.

Body ovate, deep anteriorly, the profile descending steeply, rendered abruptly concave in front of interorbital space by the conspicuously projecting short snout. Mouth very small and oblique, the maxillary reaching vertical from front of lower eye, $3\frac{3}{4}$ in head; tip of lower jaw entering the profile. Teeth fine, conical, in two series in the upper jaw, one in the lower; those of the outer row in upper jaw larger and more widely separated than those of the inner series.

Snout very short, about one-fifth head, equaling interorbital width. Interorbital space narrow, deeply concave, closely scaled. Eyes large, the lower in advance of upper, its diameter $3\frac{2}{3}$ in head. Gill-rakers obsolete, 7 rudiments on horizontal branch of anterior arch.

Scales moderate, not extending on the fins, those on colored side ctenoid, those on blind side smooth. Arch of lateral line short and high, its base contained $4\frac{1}{2}$ to 5 times in the straight portion.

Dorsal beginning opposite anterior nostril, the rays nearly uniform in length, the longest about half head. Pectoral of colored side $4\frac{3}{4}$ in length. Ventral of colored side beginning under middle of lower eye, with six rays; the right ventral with five rays.

Head 4 in length; depth $1\frac{1}{2}$. D. 85; A. 64. L. lat. 75 (pores).

COLOR IN LIFE.—Light grayish with reddish tinge, covered with small round spots of darker gray and with lighter rings inclosing spaces of the ground color. Vertical fins similarly colored, with a small black spot near base of each ninth or tenth ray. Two black spots on median line of body divide the length into nearly equal thirds; some other small black spots scattered over colored side.

This species is very common at Key West in clear, shallow water on sandy bottom. The largest of the numerous specimens taken is 3 inches in length.

The name *Platophrys* has priority over that of *Rhomboidichthys* Bleeker. We have therefore adopted it instead of the latter.

10. *Achirus comifer*. Subgenus *Bæostoma* Bean.

Eyes small, nearly twice the interorbital space, 6 in head. Pectoral of colored side well developed, half as long as head; that of blind side wholly wanting in all our specimens. Dorsal and anal of equal height, the posterior rays longest, two-thirds length of head. Caudal rather sharply pointed, slightly more than one-third length of body.

Scales small, those on front of head and along back anteriorly enlarged and spinous, the largest perhaps three times as large as those on sides. Right side of body beset with conspicuous black ciliæ, some of them clustered together; six of these clusters are more evident than the others, three above and three below lateral line.

Head $3\frac{1}{2}$ in length; depth $1\frac{2}{5}$. D. 50; A. 37. Scales in 65 oblique series.

Head, body, and fins somewhat mottled with varying shades of olive-gray, some of the darker marking with a tendency to form vertical lines;

entire body and fins also with round blackish spots of various sizes. Posterior half of blind side dusted with fine dark points.

Four specimens, varying from 1 to $2\frac{1}{2}$ inches long, were taken with the seine at Key West. They occur on sandy bottoms in shallow waters.

INDIANA UNIVERSITY, *February 15, 1884.*

NOTE ON *CARANX RUBER* AND *CARANX BARTHOLOMÆI*.

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

In our Review of the American Caranginae (Proc. U. S. Nat. Mus. 1883, 188–207), we have provisionally referred (p. 198) the names *Caranx bartholomæi* C. & V., *Caranx cibi* Poey, *Caranx iridinus* Poey, and *Caranx beani* Jordan, to the synonymy of *Caranx ruber* (Bloch) = *Caranx blochi* C. & V. An examination of many specimens collected by Professor Jordan of the "*Cibi amarillo*" (*Caranx cibi* Poey) and the "*Cibi carbonero*" (*Caranx iridinus* Poey) of the Havana markets shows that the two species are really distinct, although closely related. The "*Cibi carbonero*" is more elongate than the "*Cibi amarillo*," the depth in specimens a foot long, $3\frac{1}{2}$ in length; the head smaller, $3\frac{2}{5}$ in length, the straight portion of the lateral line longer, considerably longer than curved part, $2\frac{1}{2}$ in body. In color it is bluish olive, silvery below, scarcely tinged with yellow in life; a vaguely defined horizontal stripe of clear blue just below the dorsal fin. Dorsal yellowish gray; other fins dusky olive; a distinct blackish bar extending the length of the lower lobe of the caudal.

In the "*Cibi amarillo*" (called Yellow Jack at Key West) the body is rather deep, the depth in specimens a foot long, $2\frac{1}{5}$ in length; the head $3\frac{1}{5}$; the straight part of the lateral line scarcely as long as curved part, $2\frac{4}{5}$ in head. The color is bluish silvery in life, everywhere strongly washed with golden; the young sometimes with round golden spots; blue stripe along side of back very faint or obsolete; yellow brightest on back, on iris, and along base of anal; fins all pale yellow, the color most intense on anal and ventrals; no blackish stripe on lower lobe of caudal.

In numbers of fin rays and scutes, in dentition, and in form of the fins, the two agree very closely. The soft dorsal and anal, although very low anteriorly, are in both slightly falcate. Our analysis of species on page 194 is therefore erroneous as regards these species.

The following is an outline of the synonymy of the two species, which may be amplified by reference to page 198:

Caranx ruber (Bloch) Jor. & Gilb.—*Cibi carbonero*; *Cibi mancho*.

Scomber ruber Bloch, Ichth. taf. 342.

Caranx blochi Cuv. & Val. ix, 69, 1833.

Caranx iridinus Poey, Mem. Cuba, II, 226, 1860.

West Indies.