

Color in spirits uniform olivaceous, the scales dark-edged; lips and some of membrane bones of head margined with blackish. Fins dusky: each 7th (to 10th) ray of vertical fins with a very small but conspicuous black spot on its middle.

A single specimen (31099, U. S. Nat. Mus.) was collected at Santa Barbara, California, by Mr. A. Lareo.

In the collection of which these specimens formed a part, are the following species not hitherto known from farther south than Monterey: *Oxylebius pictus*, *Ophidium taylori*, *Anarrhichthys ocellatus*, as also a single specimen of *Siphonostoma bairdianum*.

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**DESCRIPTIONS OF TWENTY-FIVE NEW SPECIES OF FISH FROM THE SOUTHERN UNITED STATES, AND THREE NEW GENERA, LEITHARCUS, IOGLOSSUS, AND CHRIODORUS.**

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The following budget of descriptions is presented as the result of a partial examination of the large collections of fishes from the Southern Atlantic States in the United States National Museum, some of which have been on hand for twenty years or more.

**1. *Tetrodon nephelus*, n. sp.**

The types are numbered 31427, 31428, and 26570. The first two were taken at Indian River, Florida, by Mr. R. E. Earll; the last at Pensacola, Florida, by Mr. Silas Stearns. The specimens range from  $7\frac{1}{2}$  to 9 inches in length.

This species is the southern representative of *Tetrodon turgidus*, from which it differs in several particulars, as mentioned below.

The spines of the upper parts are much larger, farther apart, distinctly stellate with conspicuous roots; they extend backward not quite to front of dorsal above and to the vent below, the whole region behind these points being entirely smooth. There are less than 40 spines on the median line of the back between the eye and front of dorsal.

The dorsal is larger than in *T. turgidus*, its base one-fifth to one-sixth as long as the head, its largest ray three-sevenths as long as head.

The anal, also, is larger than in *turgidus*, its longest ray nearly one third as long as head.

The humeral process is somewhat longer than in *turgidus*, its length from axil of pectoral being a little more than half that of head.

Head contained  $2\frac{5}{6}$  times, depth 4 times in length to caudal base.

D. 8; A. 6 (D. 7; A. 5 in *T. turgidus*).

Color somewhat variable, but distinguished from that of *turgidus* by the presence of paler blotches on the back and sides, around which the ground color often forms distinct reticulations. Dark bars on the sides

placed as in *T. turgidus*, but much less distinct, the one in the axil of pectoral much smaller and less conspicuous than in *T. turgidus*.

**2. Baiostoma brachialis**, n. g. and n. s. Bean.

(*Achirus brachialis* Bean, in Goode & Bean, Proc. U. S. Nat. Mus., vol. v, p. 235. No description.)

Two specimens of this species have been sent to the Museum by Mr. Silas Stearns: No. 26605, 1.95 inches in length, from Appalachicola Bay; the other, No. 30463, 1.45 inches in length, from South Florida. Both were collected in 1879. In form and in most other characters *Baiostoma* is like *Achirus*, but it has a well-developed dextral pectoral fin. To this genus should, probably, be referred the *Monochir reticulata* of Poey, which has, however, a trace of a sinistral pectoral and a greater number of dorsal and anal rays than *B. brachialis*. The genus will be fully described in a later paper.

**DESCRIPTION.**—The body is ovate in form, being much more angular in its posterior than in its anterior outline. Its height is contained about  $1\frac{2}{3}$  times in its standard length, and is nearly twice the length of the head, and about three times the greatest height of the dorsal and anal fins. Its least height, at the base of the tail, is slightly greater than one-third its height at the ventrals and one-fourth of its greatest height. Its greatest thickness is equal to about twice the diameter of the orbit and one-third the length of the head.

The scales of the nape, chin, and breast are larger than those of the body, and are armed with many more spinules. The scales upon the blind side are less strongly etenoid than those upon the eyed side. The number of scales in the longitudinal series is about 60, about 53 of which are tube-bearing. The lateral line is almost straight upon the eyed side, very slightly arched in its anterior portion upon the opposite side; always conspicuous. The scales extend upon the dorsal, anal, and ventral fins almost two-thirds the length of the rays, but barely cover the base of the caudal rays.

The pectoral is scaleless. The head is short; its length is contained three times in the standard body length, and four times in the total. The length of the snout is slightly greater than that of the eye, and is contained four times in the length of the head. The mouth is small, oblique, the dorsal outline of the head projecting far beyond the upper jaw in a sickle-like expansion, which almost meets the tip of the lower jaw when the mouth is open; the contour of the head is consequently very peculiar. The width of the interorbital space is equal to half that of the eye. The teeth are inconspicuous, and upon the eyed side apparently absent; present, however, on the blind side, but very small in both upper and lower jaw.

The dorsal fin begins in advance of the tips of the jaws and contains 47–48 rays, the greatest height in its posterior portion equalling, as has been stated, one-third the length of the body.

The distance of the insertion of the anal from the tip of the snout

equals the length of the head. The anal contains 35-37 rays, which correspond in general appearance to those of the dorsal.

The length of the caudal is one-third the standard length of the body, and one-fourth the total length. It is ovate-lanceolate in form, slightly pointed.

The distance of the ventral from the snout equals one-third the height of the body. The right ventral is composed of five rays, and is connected with the anal by a low membrane. The left ventral is slightly smaller. Both are situated upon the ventral keel and are very close together, so that when expanded they are in contact throughout the entire surface, looking like one fin.

There is no trace whatever of a pectoral upon the sinistral, or blind side. The pectoral on the dextral side consists of five rays and its length equals one-third or two-fifths that of the head.

*Color.*—Grayish or brownish on eyed side with five or six faint dark vertical lines, and with scattered white spots, the largest nearly equal in size to the eye. The blind side is whitish.

*Radial formula.*—D. 47-48; A. 35-37; V. 5; P. 5; L. lat. 60; tube-bearing scales 53.

### 3. *Hemirhombus pætulus*, n. sp.

A single specimen, No. 30180, was obtained at Pensacola Florida, in 1882, by Mr. Silas Stearns.

*DESCRIPTION.*—Body sinistral; general form that of an ellipse, the caudal extremity being considerably produced. Its height is contained  $2\frac{1}{4}$  times in its length,  $2\frac{2}{3}$  times in its length to the end of the caudal fin, and is 4 times the height of the tail at its lowest portion. Its height at the ventrals is 3 times as great as at the tail. Its greatest width is equal to the diameter of the upper orbit.

The scales on the cheek of the blind side are arranged in thirteen series; those upon the nape and interorbital space of the eyed side are smaller than upon the body. The scales on the body are large, thin, deciduous, and cycloid. There are fifty-seven scales in the lateral line, fifty-four of which are tube-bearing. Lateral line straight, and over the axis of the body, save in its anterior fourth, within which it slightly ascends with a very gentle upward curve, to the upper angle of the gill-opening. Above the lateral line are thirteen scales; below, twenty-two. The vertical fins are scaly two-thirds of the distance to their tips.

The head is short, its length being contained  $3\frac{2}{3}$  times in the standard body length,  $4\frac{1}{2}$  times in the total length, and  $1\frac{2}{3}$  times in the greatest height of body. The snout is short; its length, slightly less than the diameter of the lower eye, is contained 5 times in the length of the head. Mouth rather large, the upper edge somewhat curved, its cleft very oblique, the maxillary extending to below the middle of the lower eye. The lower jaw extends to the vertical from the anterior margin of the

upper eye. Length of the upper jaw equals one-third the distance from the snout to the insertion of the anal. The lower jaw equals the distance from the tip of the snout to the posterior margin of the lower eye and is contained  $2\frac{1}{3}$  times in the length of the head. Teeth moderate, equally developed on both sides, in two rows in the upper jaw, those of the outer row upon the blind side of the upper jaw and the anterior portion of the eyed-side considerably larger than those in the inner row. The teeth of the lower jaw uniserial, almost as large as in the outer row of the upper jaw.

The eyes are large, prominent, and far apart. Their longitudinal diameter equals the length of the snout, and is contained five times in the length of the head. Their vertical diameter is about three-fourths as great as their longitudinal diameter. The lower eye is far in advance of the upper, the vertical from the anterior margin of the upper orbit entering the lower orbit at a point about two-thirds the distance from its anterior to its posterior margin. The upper eye is close to the dorsal profile, separated from it by a distance equaling about one-half its longitudinal diameter. The interorbital space is flattish and uneven, its width being contained four times in the length of the head. A prominent ridge extends from the upper posterior margin of the lower eye to the lower posterior margin of the upper eye, thence widening and curving downward to the upper angle of the branchial aperture. The margin of the pre-operculum is also somewhat elevated. The length of the operculum is very slightly greater than the width of the interorbital space.

There are eleven short and thick gill-rakers on the anterior arch, the longest equal in length to one-third the diameter of the eye.

The dorsal fin begins on the blind side of the body in advance of the anterior margin of the lower eye; its anterior rays are almost free, the longest rays behind its middle, its greatest height equal to the length of the upper jaw.

The anal is inserted under the anterior angle of the pectoral axilla. Its anterior rays are less free than are those of the dorsal, about two-thirds of their length being extruded from their membrane. Its outline similar to that of the dorsal, but greatest height somewhat less, being one-third the length of the head.

The greatest length of the caudal equals the length of the head without the snout, and one-fifth of the body length. Its middle rays are somewhat longer than the outer rays, giving to the posterior margin the outline of an obtuse angle.

The pectoral is inserted at the tip of the opercular flap; its second and third rays much produced in a filamentous extension. Its greatest length slightly exceeds  $1\frac{1}{2}$  times that of the head. The pectoral on the blind side has no prolonged rays; its greatest length equalling that of the upper jaw.

The ventral on the eyed side is inserted on the ridge of the abdomen slightly behind its mate, which is a little removed from the medial line.

Distance between insertion of the ventral and the snout equals one-fourth the length of the body. The length of the ventral equals one-third that of the head. Vent, close to the origin of anal, and slightly removed from the medial point of the body on the blind side; behind it a small papilla, one-fourth as long as the eye.

Color: Eyed side, grayish brown; blind side, somewhat clouded with darker shade.

*Radial formula*.—D. 87; A. 67; C. 8 + 7; P. 11 sinistral and 9 dextral; V. 5; Scales 13—57—22.

**4. *Blennius asterias*, n. sp.**

The types of this species are the following: 2620, two specimens from Garden Key, Florida, collected by G. Würdemann; 2625, one specimen collected at the same place by Dr. Whitehurst; 6596, three specimens collected at Tortugas, by Dr. J. B. Holder. They vary from about  $2\frac{1}{2}$  inches to 4 inches in length.

Length of head contained 4 times, depth 4 times in total without caudal. D. XI, 16; A. 19.

Body moderately elongate, compressed; the head very blunt and deep, almost as deep as long, its anterior profile straight or slightly concave, and nearly vertical. Mouth moderate, the maxillary reaching to past front of eye, its length contained 3 times in that of head. The lower jaw with two short, stoutish posterior canines; upper jaw without canines. Teeth about  $\frac{32}{28}$ . Preorbital deep, its depth equal to diameter of eye and contained  $4\frac{1}{4}$  times in length of head. Interorbital space flat, narrow, two-thirds width of eye. Supraocular cirri small, fringed, their length about equal to that of pupil. Nape with a longitudinal dermal crest reaching to front of dorsal, provided with a series of about 20 filaments, the longest about as long as the eye. Gill-membranes forming a broad fold across the isthmus as in all species of *Blennius*.

Dorsal nearly continuous, the last spine a little lower than the first soft ray, not very high, beginning on the nape in front of the vertical of the preopercle; the spines all slender and flexible, the longest three-eighths as long as the head, the longest soft ray four-sevenths as long as the head. The caudal free from dorsal and anal, four-fifths as long as head. Anal moderate, four-ninths length of head. Pectoral somewhat shorter than head; ventral a little more than half length of head.

The lateral line forming the usual arch above pectoral, and continued backward on the median line to base of caudal, becoming indistinct posteriorly.

Color faded, apparently olivaceous, with about six dark cross-bars, which extend on the dorsal fin. Anal and posterior half of body with numerous round, whitish, stellate spots, probably bluish in life. Bluish streaks from eye across the cheeks. Anal edged with dusky; the other fins vaguely marked.

**5. *Blennius favosus*, n. sp.**

Of this new species there are two specimens, number 2629, collected

at Garden Key, Florida, by Gustavus Würdemann; they are  $3\frac{2}{3}$  inches and 3 inches long, respectively.

Length of head contained  $3\frac{2}{3}$ , depth  $4\frac{3}{4}$  times in total to caudal base. D. XII, 18; A. II, 20.

Body comparatively elongate and compressed; anterior profile moderately decurved; head nearly one-half longer than deep; snout very short and blunt; mouth large, horizontal; jaws even; the maxillary reaches to posterior margin of orbit, its length contained  $2\frac{1}{2}$  times in that of head. Each jaw with a long, curved, posterior canine, the canines of lower jaw largest. Preorbital two-thirds diameter of eye, which is contained  $3\frac{3}{4}$  times in length of head, and equals more than twice interorbital width. An extremely long and slender supraocular cirrus, trifid to the base, the longest branch nearly as long as the head. No nuchal cirri. Gill-membranes forming a rather narrow fold across the isthmus.

Dorsal low, continuous; the spines very slender and flexible, the longest half as long as the head; the longest soft ray three-quarters as long as head; the last ray slightly joined to base of caudal. Caudal three-quarters as long as head. Anal rather high. Pectoral four-fifths as long as head; only the straight part of lateral line developed.

Color faded, brownish, finely reticulated, a series of obscure bluish blotches along the sides; front and sides of head marked with very distinct blue, reticulating lines surrounding honey-comb-like hexagonal interspaces; top of head with many small blue spots; dorsal with black dots and streaks; a black spot bordered with whitish between the first and second dorsal spines. Anal with oblique blue streaks; the fin margined with dusky; tips of the rays whitish. Base of pectorals with blue reticulations. The whole body was probably reticulated with blue in life.

#### 6. *Opistognathus scaphiurus*, n. sp.

The type of this species is a finely-preserved specimen, No. 5936, collected many years ago at Garden Key, Florida, by Dr. Whitehurst. Its length is 5 inches.

Body moderately elongate, somewhat compressed, its greatest depth contained 5 times in length to caudal base. Head rounded, blunt anteriorly in profile; snout very short, about as long as pupil; eye large, its length contained 4 times in that of head; maxillary reaching slightly past edge of preopercle, but not to end of head, its length contained  $3\frac{3}{4}$  times in total to caudal base; ending in a flexible flap; lower jaw slightly included.

Teeth rather strong, wide set, forming two distinct series in front of each jaw, those of the inner series directed backward, especially in the upper jaw; the lateral teeth of lower jaw largest; a single vomerine tooth.

Anterior nostril with a short flap. Gill-rakers rather long and slender, the longest not quite half length of eye, nearly 20 below angle.

Head naked; scales of body very small, about 100 in a longitudinal series. Lateral line ceases near middle of trunk.

Dorsal fin low, continuous, the soft rays but little higher than the spines, which are slender and flexible, the longest contained  $3\frac{1}{3}$  times in length of head. Caudal short, rounded, its length  $5\frac{2}{3}$  times in total to its own base. Anal similar to soft dorsal. Pectoral half as long as head and a little longer than ventral, which does not quite reach the vent. Vent midway between front of eye and base of caudal.

Color grayish olive, much variegated with whitish and dark olive; about 6 irregular dusky bands on the body, which extend up on the dorsal fins; the bands are widest near the middle; the whitish markings on the body form roundish spots and are surrounded by reticulations of grayish olive. Head marbled, its posterior part as well as the sides of back and the pectoral base, with small blackish dots. Membrane lining the inside of the maxillary with two curved inky black bands on a white ground. Angle of mouth with a black spot. Lining of opercle inside black. Fins all variegated like the body. Pectorals pale, with small olive spots. Obscure blackish spots on the 6th and 7th dorsal spines; soft parts of vertical fins with a narrow dusky margin.

D. XI, 16; A. 18; V. I, 5; P. 17.

**7. *Gobius stigmaturus*, n. sp.**

Head contained 4, depth 6 times in total to caudal base. D. VI, 12; A. 12; V. I, 5; scales about 30 in lateral line.

Body rather elongate, little compressed. Head moderate, not very blunt, the anterior profile somewhat evenly decurved, the snout not very short, little shorter than the eye. Mouth rather large, nearly horizontal, jaws even, the upper jaw extending nearly to below middle of eye, its length  $2\frac{2}{3}$  times in that of head. Teeth in upper jaw in narrow bands, the outer series much enlarged, some of the anterior teeth canine-like. Teeth of lower jaw apparently in a single, somewhat irregular series, slightly smaller than those in the outer series of upper jaw. Eyes placed high, about  $3\frac{1}{4}$  in head; interorbital space very narrow—a mere ridge. Scales large, ctenoid; those on the nape much smaller. Gill-openings not continued forward above opercle. Dorsal spines very slender, none of them filamentous, the longest three-fourths as long as the head, soft dorsal low, its longest ray two-thirds as long as head. Anal similar to soft dorsal. Caudal as long as the head. Pectorals slightly longer than the head. Ventrals about as long as head. Upper rays of pectoral not silk-like.

Color light olive, the sides marbled with whitish, the back with dark punctulations. A dark spot on opercle and one below eye, sides with about 5 dusky blotches along the median line, the last one forming a distinct round black spot at caudal base. Vertical fins with wavy, blackish bars; paired fins plain.

*Ioglossus*, n. g., Gobiid, Bean.*Ioglossus* Bean, in Jordan & Gilbert, Proc. U. S. Nat. Mus. V, 297.

**DIAGNOSIS.**—A genus closely allied to *Oxymetopon* Bleeker; but differing from it in the absence of a keel on the head and in the smoothness of nearly all of the scales. The body is moderately elongate and compressed, covered with small scales, which are all cycloid except a few at the caudal base; anteriorly the scales are not imbricated, posteriorly they are somewhat larger and regularly imbricated, mostly cycloid, a few in the tail weakly ctenoid; no lateral line; cheeks with imbedded cycloid scales. Head naked; mouth oblique, the lower jaw projecting. Teeth of the upper jaw in two rows, conical, slightly recurved, those in the outer row the largest. The two central teeth in the inner row enlarged, canine-like and much recurved. Teeth in lower jaw uniserial, with a pair of large canines on each side. Tongue free, slender, and elongate, sub-terete. Vomerine and palatine teeth absent. Eyes moderate. Gill-openings wide, the membranes attached mesially to the narrow isthmus, across which they do not form a fold. Gill-rakers long and slender.

Dorsal fins closely approximate; the first with six slender thread-like spines, the second with numerous rays, separated from the caudal by a considerable interval. Caudal very elongate, lanceolate, its middle rays filamentous. Anal similar to second dorsal. Ventrals inserted under the base of pectorals, closely approximate, very slightly connected by a basal membrane, inner rays filamentous; pseudo-branchiaæ present; branchiostegals, four.

**Etymology:** *ἰος*, barb; *γόσσα*, tongue.

**8. *Ioglossus calliurus* n. s. Bean.**

*Ioglossus calliurus* Bean, in Goode & Bean, Proc. U. S. Nat. Mus. V, 236. Name only; also in Jor. & Gilb., op. cit., 297.

The museum has received from Mr. Silas Stearns, Florida, three specimens of a species of *Ioglossus* (No. 30198, one specimen; and No. 30797, two specimens) taken by him at Pensacola. Professor Jordan obtained specimens of the same species at Pensacola from the stomach of the red-snapper, *Lutjanus Blackfordii*.

**DESCRIPTION.**—The height of the body is contained  $5\frac{1}{2}$  to 6 times in its length to the origin of the middle caudal rays, and 8 to 9 times in the extreme length. Its greatest width equals half its height and is also about equal to the distance from the posterior ray of the second dorsal to the origin of the upper caudal rays. The least height of the tail is about equal to that of the head at the eye.

The greatest length of the head is contained  $4\frac{1}{2}$  times in the standard body length. The width of the interorbital area is equal to the diameter of the eye and considerably greater than the length of the snout, which is contained 3 times in the postorbital length of the head. The length of the postorbital region, including the opercular flap, is con-

tained 8 times in the standard body length. The upper jaw extends to the vertical through the anterior limb of the pupil, and its length equals the distance from the tip of the snout to the posterior margin of the orbit. The lower jaw equals the upper in length, slightly projecting beyond it, however, and, on account of the thickness of the chin, giving a heavy bulldog appearance to the head. The diameter of the eye is contained 4 times in the length of the head, the eye being inserted close to the upper profile. Nostrils minute, close to the upper anterior margin of the orbit, double; the two apertures placed side by side in a lateral line rather than longitudinally, as is usual. A pair of large pores near the upper posterior margin of the orbit, and a series of three or four similar pores along the posterior limb of the preoperculum; others scattered here and there over the head. Operculum membranous; gill-openings very wide, the upper angle of the branchial aperture located close to the upper angle of the pectoral base. About 10 teeth in the lower jaw in advance of the double canines. Teeth behind the canines minute; 14 or more on each side. Teeth in the upper jaw much more uniform than in the lower; at least 30 in the inner row. Slight granulations, or asperities, upon the vomer; palatines toothless.

The distance of the first dorsal from the snout is contained  $3\frac{1}{2}$  to 4 times in the standard body length, the base of the first dorsal being equal to the height of the body; the distance between the fifth and sixth dorsal rays being double the distance between the other rays. The dorsal contains six slender filamentous rays, the greatest length of the longest being nearly or quite equal to the length of the head. The point of insertion of this fin is somewhat variable in its location, sometimes directly over that of the ventral and sometimes a little behind. The interspace between the first and second dorsal fins is equal to the width of the base of the pectoral. The second dorsal fin contains twenty-two or twenty-three slender, filamentous rays, those in the anterior portion being slightly longer than the others, and equal in length to the greatest height of the body.

Insertion of anal midway between the tip of snout and the base of caudal fin. The anal papilla large and located close to the vent. The anal fin contains 20 to 22 rays, about as long as those of the second dorsal, but much stouter, and apparently used in burrowing.

The caudal is lanceolate and extremely elongate. The length of the middle rays slightly greater than half that of the body, or one-third of the total length of the fish.

The pectoral is inserted directly over the ventrals. Its length is about equal to the height of the body, its base broad, vertically placed, and equal in width to the length of the operculum. The ventrals are composed of a spine and four filamentous rays; their length greater than that of the head, the tips reaching almost or quite to the vent; they are distinct, though slightly united by a basal membrane; their insertion is closer to the tip of the snout than to the vent.

*Radial formula.*—B. IV; D. VI, 22-23; C. 9+11; P. 20; V. I, 5.

*Color.*—In alcoholic specimens, pale yellowish; in fresh condition, according to Jordan, light olive. Top of first dorsal dusky, middle of caudal dusky (blue) with paler (perhaps red) edgings.

9. **Scorpæna Stearnsii**, n. sp.

Body robust, little compressed, tapering posteriorly. Mouth moderate, oblique, the jaws equal when closed, the lower jaw with a small symphysial knob. The maxillary reaches to below posterior margin of orbit, and is half as long as head.

Height of body contained  $2\frac{5}{6}$  times in length to caudal base; length of head,  $2\frac{3}{5}$  times.

The preorbital has two strong diverging spines; the suborbital without deep pit, its stay low, armed with two small spines. Nasal spines inconspicuous. Interorbital space deeply concave, with two longitudinal ridges, its width equalling three-fifths of the long diameter of eye. Eye 4 in length of head. The cranial ridges are rather low, moderately sharp, the following pairs of spines present: Preocular, supraocular, postocular, coronal, occipital, nuchal, besides three on the temporal region arranged in a right line behind the eye. Occipital region deep, a little broader than long.

Preopercular spines five, the two lower blunt and short, the upper much the longest, half as long as the eye, a small spine at its base. Opercular spines moderate. Scapular spines small. Supraocular flap very small, its length less than one-third that of eye. Preorbital, preopercle, cheeks, and nostrils with small dermal flaps. Opercular flap scaly; a few rudimentary scales on cheeks and front of opercle. Breast with small scales. Gill-rakers short and thick, not twice as long as broad.

Scales large, smooth, their edges with a thin membrane, the radiating striae conspicuous, but the concentric striae inconspicuous. Scales of the belly smaller. A series of dermal flaps along the lateral line, and at the dorsal base.

Dorsal spines slender, the longest contained  $2\frac{1}{4}$  times in length of head; the longest soft ray half as long as head. Caudal subtruncate, its angles rounded, its length four-fifths that of head.

Anal spines small, the second and third equal, contained  $2\frac{4}{5}$  times in length of head. Soft anal rays high, the longest half as long as head.

Ventrals contained  $1\frac{3}{4}$  times in length of head, the last rays joined to the belly by a broad membrane which extends nearly to their tips.

Pectorals reach to soft rays of anal, the longest ray slightly shorter than head. The base of the fin is a little procurent, its length one-third that of head, the lowermost rays rapidly shortened.

D. XI, I, 9; A. III, 5; P. 20; V. I, 5. 32 series of scales in lateral line (31 tubes).

Color dusky olivaceous, whitish below. Head with some dark blotches, its lower and posterior parts with a few round black spots about as

large as the nostril. The jaws dusky, marbled with whitish; sides of back with diffuse blackish blotches. Entire body sparsely covered with round dusky spots smaller than the pupil; these spots are most numerous and distinct in the axillary region, which is otherwise whitish. Skin of shoulder-girdle above marbled with black. Spinous dorsal with a broad, median, dusky band; tips of its membranes dusky, its base whitish, with black spots. Soft dorsal and anal irregularly marbled with blackish. Caudal with a broad median, and a terminal band of blackish. Pectorals blackish above, with dark spots; lower edge whitish; three obscure, broad, dusky cross-bands. Ventrals dusky towards the tips.

The type of this species is numbered 30,169; it is  $6\frac{9}{10}$  inches long, and was obtained at Pensacola, Florida, by Mr. Silas Stearns, to whom the species is dedicated in appreciation of his services in adding to our knowledge of the fishes of the Gulf of Mexico.

A smaller *Scorpæna*  $4\frac{7}{10}$  inches long (No. 30,185), from the same locality, agrees with the type of *S. stearnsii* in all respects, except that the preorbital and supraorbital flaps are very much longer, the latter reaching the front of dorsal, its length half that of head. The preorbital flap is as long as the pupil. The margins of both these flaps are without fringes. In the type of *S. Stearnsii* the supraorbital flap is nearly as broad as long, not so long as the pupil, and is distinctly trilobate; the preorbital is minute. Without additional material it is impossible to decide whether these differences are sexual or of specific value.

#### 10. *Scorpæna calcarata*, n. sp.

The type of this species is numbered 23566; it is  $2\frac{1}{2}$  inches long, and was taken in Clear Water Harbor, Florida, by Dr. J. W. Velie. The specimen is in poor condition.

Body moderately robust, the greatest depth slightly less than a third of length to caudal base, the lower jaw slightly projecting, with a small symphysial knob. The maxillary reaches to past the pupil; its length equal to half that of head.

The preorbital has three diverging spines; the suborbital without pit, the bony stay moderate, armed with two small spines. Nasal spines small. Interorbital space narrow, with two longitudinal ridges, its width two-fifths length of eye. The cranial ridges are rather low, with sharp spines, the following pairs present: preocular, supraocular, postocular, coronal, occipital, nuchal, besides three or four on the temporal region. Occipital cavity almost obsolete, represented by a slight depression.

Preopercular spines five, the lowermost stout, directed downward and forward, the uppermost rather long—more than half as long as the eye. Opercular and scapular spines moderate. Eye large, nearly one-third as long as the head. Supraocular flaps minute; a few other small flaps on the head.

Cheeks with rather large imbricated scales; opercle with some

scales anteriorly and on its flap; breast sealy; scales of body large, not ctenoid, with few dermal flaps or none.

Pores of lateral line very conspicuous. Gill-rakers short and small. Dorsal spines rather slender, the longest contained  $2\frac{2}{3}$  times in length of head; the longest soft ray  $2\frac{1}{2}$  times in length of head.

Anal spines small, the second and third subequal, one-third as long as head. Soft anal rays moderate, the longest half as long as the head.

The ventrals reach past vent, their length contained  $1\frac{3}{5}$  times in that of head, the last rays largely united to the belly by a membrane.

Pectoral long, contained  $1\frac{1}{3}$  times in length of head, its base oblique, contained  $2\frac{1}{2}$  times in length of head, the rays all simple.

D. XI, I, 9; A. III, 5; P. 19; V. I, 5.

Scales in about 28 series, the number being uncertain because many of them are rubbed off. There are about 25 tubes in the lateral line.

Color mostly obliterated, dusky grayish marbled with blackish; a black suborbital bar; a black bar at caudal base; axil of pectoral whitish with dusky specks, a black spot at its upper edge; ventrals mostly black.

#### 11. *Gerres olisthostoma*, n. sp.

Mr. R. E. Earll, when engaged in the fishery-census investigation upon the coast of Florida, obtained at Indian River six specimens (No. 25118), of a new species of *Gerres*. They are known as the "Irish pompano" and "hog-fish." This species is one of the largest of the genus, and in general form resembles *Gerres gula* and *G. homonymus*, having short thick body, very protractile snout, elevated dorsal and elongate ventral fins. This species is reported to be rather common in the Indian River region; it is evidently the same as No. 12561, referred by Poey to *Gerres rhombeus*. The true *rhombeus* has, also, been sent to the Museum by Professor Poey.

**DESCRIPTION.**—A *Gerres*, with short, thick body, the greatest height of which, at the ventrals, is contained twice in its length and  $2\frac{3}{4}$  times in the distance from its snout to the tip of the upper caudal lobe. Its least height at the base of the tail, being one-quarter of its greatest height. The greatest width of the body is equal to the greatest height of the tail.

The scales are large, somewhat loosely set; 39 in the lateral line; above it 7; below it 11. Jaws entirely naked, as well as the ordinary patch over the groove for the reception of the protractile snout. The greatest length of the head is contained  $3\frac{1}{3}$  times in that of the body; the greatest width of the head is equal to half its length, and is half as wide again as the interorbital area. The length of snout is equal to the diameter of the eye; the length of the operculum, including the flap, equals one-fifth of the greatest height of the body. The length of the groove for the reception of the premaxillaries equals the length of the maxillary. The upper jaw when protruded extends beyond the tip of

the maxillary a distance equal to the least height of the tail. Teeth brush-like, in bands; the band of the upper jaw more developed than that of the lower one, the length of the band equaling half that of the eye. The maxillary extends to the perpendicular through the anterior margin of the pupil; the mandible, to the vertical through the posterior margin of the eye. The length of the mandible equals half that of the head. The preoperculum is denticulated on its lower border and at the angle, the denticulations at the angle being slightly the largest. The gill-rakers are short, 12 in number on the anterior arch below the angle, the longest one-fifth as long as the eye. The eye equals the snout in length, and is contained  $3\frac{2}{3}$  to 4 times in the length of the head. The naked space above the premaxillary groove in the majority of the types is prolonged backwards to an acute point, but in two of the types the acute point is replaced by a scaly space.

The distance of the spinous dorsal from the snout equals about  $1\frac{1}{2}$  times the length of the head. It is inserted nearly over the middle of the pectoral base. The position of this fin varies very slightly in different individuals. The subsequent spines to the seventh are much stouter and longer than any of the others, and are so graduated in length that, when the fin is erect, the outline of the anterior portion presents nearly the figure of an isosceles triangle. The last two spines are nearly equal in length. The length of the first ray of the soft dorsal is nearly double that of the last dorsal spine; the last ray being about as long as the first. The spines and rays all protrude from one-half to one-third of their length beyond the membrane, giving to the fin a ragged appearance. The basal sheath of the dorsal fin is thick and prominent.

The insertion of the anal is equidistant between the tip of the snout and the tip of the upper caudal lobe, the fin being inserted under the perpendicular from the fourth dorsal ray. The first anal spine is short and stout, being half as long as the diameter of the eye; the second very stout, not quite so long as the third, being equal in length to the distance from the center of the eye to the end of the operculum. The first ray of the anal is also elongate, giving to this fin, when expanded, the appearance of an isosceles triangle, with base somewhat slenderer than that described in the first dorsal. The soft anal in its posterior part is lower than the soft dorsal.

The caudal fin is deeply forked, the longest ray of the upper lobe being equal to about one-third of the body length, and five times as long as the inner rays.

The pectoral is inserted at the tip of the opercular flap, and has its upper rays elongate, equalling the head in length.

The ventral is inserted beneath the axil of the pectoral at a distance from the snout equal to two-fifths of the length of the body. Its spine is as long as the fourth spine of the dorsal, but double as stout, the first ray being prolonged.

It seems desirable to state that the proportions in this species differ very considerably with individuals.

*Radial formula*.—D. IX, 11; A. III, 8; V. I, 5; C. 9, 8; P. 16.

Scales: L. lat. 39; L. trans.  $\frac{7}{11}$ .

**12. *Calamus arctifrons*, n. sp.**

A species belonging to *Calamus* of Swainson. The type numbered 30163 is a specimen  $9\frac{1}{2}$  inches long, collected at Pensacola, Florida, by Mr. Silas Stearns.

Body oblong ovate, more elongate than is usual in species of this group, deepest at origin of dorsal, the greatest depth being contained nearly  $2\frac{1}{3}$  times in the total length to caudal base. Anterior profile evenly curved, unusually convex. A blunt protuberance before eye. Mouth comparatively large, the maxillary barely reaching the vertical from front of orbit. Length of upper jaw contained  $2\frac{1}{6}$  times in head. The anterior teeth of both jaws are conical, rather strong and canine-like, 6 to 8 in each jaw. Behind these are bands of cardiform teeth. Molars rather large, in two rows anteriorly and three posteriorly in upper jaw; two rows in the lower; the molars of the inner series of both jaws much larger than the others. Lower jaw slightly included. Behind the upper lip on each side is an enlarged oblong pore, two-thirds as long as the posterior nostril; above it is a fleshy flap. The posterior nostrils slit-like and much larger than the circular anterior ones. Preorbital very deep, its depth, from eye to angle of mouth, contained  $3\frac{1}{3}$  times in length of head. Eye rather small, placed very high, its diameter contained  $3\frac{3}{4}$  times in length of head, and equaling four-fifths of the convex interorbital space. Cheeks with 5 to 6 series of scales. Four rows of scales on the opercle. Opercle very short, its length equaling two-thirds diameter of eye, and less than one-third of its height. Gill-rakers very short, thickish, few. Least depth of tail two-thirds length of caudal peduncle and contained  $3\frac{1}{2}$  times in head.

The length of the head is contained  $3\frac{1}{5}$  times in total to caudal base. Interorbital space contained  $3\frac{1}{2}$  times in length of head. The oblique distance from snout to origin of spinous dorsal is slightly less than half the total length to caudal base. Dorsal spines slender, the longest (fourth) contained  $3\frac{2}{3}$  times in length of head and about equal to longest ray of second dorsal.

Distance from front of anal to base of caudal contained  $3\frac{1}{5}$  times in total. Anal spines small, graduated, the third one-fourth as long as head. The second spine somewhat stronger, but shorter, than the third.

Caudal deeply forked, its middle rays two-fifths as long as the outer. The upper lobe is nearly as long as the head.

Pectoral narrow, reaching slightly past vent, as long as head.

Ventrals inserted slightly behind pectoral origin, five-eighths as long as the head. A partly-concealed procumbent spine before the dorsal. First spine less than two-fifths as long as second, which is not much shorter than the third.

D. XII, 12; A. III, 11; P. 16; V. I, 5; Scales 5-46-14. Tubes in lateral line 46.

Color light olive, with bright reflections, paler below. Back and sides with 7 or 8 obscure dusky cross-bands, narrower than the interspaces; these, doubtless, disappearing with age. Head without distinct markings. Fins plain olivaceous; the ventrals and posterior edge of caudal slightly dusky, with faint traces of cross-bands on the lobes.

**13. *Stenotomus caprinus* n. s., Bean.**

*Stenotomus caprinus* Bean, in Goode & Bean, Proc. U. S. Nat. Mus., Vol. v, p. 238, name only; also in Jor. & Gilb., op. cit., 278.

Two specimens, No. 30795, of a new species of *Stenotomus* were obtained, from the stomachs of red snapper at Pensacola, Florida, by Mr. Silas Stearns. Two were also similarly obtained by Professor Jordan at Pensacola. It is distinguished from *S. versicolor* by the presence of two short spines in advance of the elongate spines of the first dorsal, by the great elongation of the anterior dorsal spines, and by the greater depth of the cheeks and preorbital region.

**DESCRIPTION.**—Body irregular oblong-ovate. Its height is contained twice in its length. Its height at the tail is contained  $4\frac{1}{2}$  times in its greatest height, and a little more than three times in the length of the head.

Scales in lateral line 45 to 47; above it, seven; below, fourteen. Anterior profile protuberant over the eyes; mouth moderate, maxillary arching almost to the vertical from the anterior margin of the orbit. Length of the upper jaw contained  $2\frac{2}{3}$  times in that of head. There are ten narrow compressed incisors in the front of the upper jaw, and the same number in front of the lower jaw. Two rows of small molars in each jaw, the inner series very slightly larger than the outer.

Eyes circular, their diameter contained  $3\frac{1}{4}$  times in the length of the head.

Distance between insertion of dorsal and snout contained  $2\frac{1}{4}$  times in length of body. In front of the elongate dorsal rays are two upright and slightly curved spines, the height of which equals the diameter of the pupil, and a well-developed spine of about the same length projecting forward horizontally. The dorsal spines, from the third to the seventh, inclusive, are much elongated, filamentous, the length of the first being equal to the length of the pectoral fin, and contained  $2\frac{1}{2}$  times in the body length. The base of the dorsal is equal to half the distance from tip of snout to the end of the middle caudal rays.

The anal is inserted in the perpendicular from the origin of the soft dorsal, almost equidistant between the tip of the snout and the tip of the upper caudal lobe. The three anal spines are stout, the second and third being the longest and of equal length, slightly shorter than the anal rays. The length of the base of anal equals the length of the sixth dorsal spine, and also the length of the ventral.

Caudal fin forked. The outer rays of the lower lobe twice as long as

the middle rays, those of the upper lobe slightly less than those of the lower lobe.

Pectoral inserted in the vertical from the middle of the space between the third and fourth dorsal spines, its length being equal to the height of the body at the insertion of the anal; its longest ray reaches from the perpendicular to the fourth ray of the soft anal.

Ventral inserted in the perpendicular from the origin of the fifth dorsal spine; length almost equal to that of the sixth dorsal spine.

*Color*.—Silvery gray, slightly olivaceous above. Professor Jordan states that in fresh specimens there are faint traces of dark cross-bands, and that the posterior margin is probably blackish.

*Radial formula*.—D. XI, 12; A. III, 10; C. 17; P. 15; V. I, 5.

Scales: L. lat. 45 to 47; L. trans.  $\frac{7}{4}$ .

#### 14. *Trisotropis stomias* n. s., Goode & Bean.

The species provisionally referred to by us, in the Proceedings of the National Museum, Vol. II, p. 143, as *T. brunneus* Poey, and which by previous writers was catalogued under the name *T. acutirostris*, having proved distinct from both of these species, we now propose to describe as new under the name *T. stomias*. The Museum has received five specimens, a tabulated list of which is here given.

	Number.	Locality.	Collector.
I	15462	New York market; Florida (?) .....	E. G. Blackford.
II	16902	Florida (?) .....	J. H. Richard.
III	21336	Pensacola, Fla .....	Silas Stearns (1878).
IV	26561	Key West, Fla .....	Silas Stearns.
V	26587	Pensacola, Fla .....	Silas Stearns.

This species is the black grouper of Pensacola, a fish of some commercial importance. Specimens were also obtained at Pensacola in 1882 by Jordan, who states that it is almost as abundant as the red grouper, *Epinephelus morio*, and reaches a weight of 40 pounds.

**DESCRIPTION.**—A *Trisotropis* with body moderately compressed. Its greatest height slightly more than one-fourth its length without caudal, and equal to or slightly less than 3 times as great as the least height of the tail; length of the head three-eighths length of the body and  $3\frac{1}{2}$  times length of the snout; the lower jaw projects beyond the upper a distance equaling one-half the diameter of the eye. The maxillary extends to the vertical from the center of the eye, and the mandible almost to the vertical from its posterior margin. The distance of the eye from the upper profile of the head is about equal to half of the vertical diameter of the orbit. The horizontal diameter of the eye is contained  $1\frac{2}{3}$  times in the length of the snout, almost 3 times in the postorbital portion of the head, and exactly twice in the length of the operculum to the tip of its flap. Lower jaw without canines. The teeth in two rows, those in the inner row being double the length of those in the outer row and much less

numerous. The teeth in the upper jaw very irregular in size, and hardly specialized, excepting in two patches at each side of the symphyysis. Two moderate sized canines in advance of these patches. Vomerine teeth numerous and feeble. Palatine teeth very weak and with inconspicuous bands upon the crest of the bone. Preoperculum with minute denticulations, somewhat stronger at the angle. The length of the intermaxillary is considerably more than half that of the lower jaw.

Distance of insertion of dorsal from snout equals the greatest length of head including the opercular flap, the dorsal origin being very slightly in advance of the insertion of the ventral, which is located under the base of the third dorsal spine. Length of third dorsal spine is equal to that of the intermaxillary.

Distance of anal from snout about equal to twice the length of the head, the length of its base being slightly greater than the greatest length of the pectoral. The second anal spine is the stoutest, and is twice as long as the first, while the third, which is slender, is  $2\frac{1}{2}$  times as long as the first.

Distance of pectoral from snout is one-third the standard body length.

Distance of ventral from snout is equal to twice the postorbital length of the head. The length of the ventral is slightly more than one-eighth of the standard body length (one-sixth or more in smaller specimens).

The length of the middle caudal rays is equal to the distance from the posterior margin of the orbit to the tip of the largest opercular spine. The upper and lower lobes of the caudal produce an incurving, giving to the space between the lobes a semicircular outline.

Scales in lateral line 130. Above lateral line 27-28; below, 60-61.

*Radial formula*.—D. XI, 16-17; A. III, 10-11; C. +17+; P. I, 16; V. I, 5.

Full measurements of three specimens will be found in Proceedings of the National Museum, Vol. II, p. 144.

#### 15. *Hypoplectrus gemma*, n. sp.

A single specimen, No. 3422, of a new species of *Plectropoma*, has for many years been preserved in the museum. Name of collector unknown. In general appearance this species resembles *Hypoplectrus nigricans* of Poey, a specimen of which from the same locality was found in the same bottle and recorded under catalogue number 3423. In shape it is also similar to *Hypoplectrus puella*, but its coloration appears to have been much more uniform. The crescent-shaped caudal is a diagnostic mark, by which it can be distinguished from all other species now accessible to us.

**DESCRIPTION.**—Greatest height of the body is contained 3 times in its total length, and  $2\frac{1}{3}$  times in its standard length. Greatest width equals length of second dorsal spine; least height of the tail is contained 3 times in the length of the head. The scales are small, weakly

ctenoid, there being about 76 in the lateral line, 9 above it, and 29 below. The lateral line follows very closely the contour of the dorsal profile throughout its entire extent. Greatest length of the head is contained 3 times in the distance from the tip of the snout to the end of the middle caudal rays. Greatest width of head is about equal to the width of the body. Length of snout is contained 3 times in the length of the head. Length of the operculum to the end of the flap equals the length of the snout. The upper jaw extends to the vertical from the anterior margin of the orbit; its length is equal to half that of the head; the lower jaw is about the same length. The armature and squamation of the opercular bones are normal, as is likewise the dentition. The diameter of the eye equals one-fourth length of the head.

The distance of the dorsal fin from the snout is very slightly less than the greatest height of the body, the length of the dorsal base equalling the distance between its origin and the base of the posterior ray of the anal fin. Its fourth spine is the longest, its length equaling that of the base of the anal.

The anal fin is inserted below the origin of the second dorsal ray, the base of its ultimate ray being beneath that of the ninth dorsal ray. Its third spine is very slightly longer than the second; their diameters are equal. The anal is higher than the dorsal, its greatest height being equal to the distance between the base of the ventrals and the origin of the anal fin.

The caudal is crescent-shaped, the external rays being much prolonged, especially those of the upper lobe, which are twice as long as the middle caudal rays.

Distance of pectorals from snout equals the height of the body at the ventrals, their length being equal to that of the superior caudal lobe. When extended horizontally these fins reach to the vertical from the insertion of the first anal ray.

Distance of the ventrals from the snout equals half the standard body-length. They extend to the insertion of the anal, and are equal in length to the rays of the lower caudal lobe.

*Radial formula*.—B. VII; D. X, 15; A. III, 7; C. 9 + 8; P. 14; V. I, 5. L. lat. 70; L. trans. 9-32.

*Color*.—In alcohol dull purple; in life probably deep purple, with cloudings of lighter color. Fins in alcohol colorless; in life probably pearly. The external rays of the caudal corresponding in hue with the deeper portions of the body color.

#### 16. *Menidia dentex*, n. sp.

The types of the present description, No. 18051, were taken at the mouth of the Saint John's River, Florida, by Prof. S. F. Baird. There are ten individuals in the lot, varying in length from  $2\frac{3}{4}$  to  $4\frac{1}{2}$  inches. The three which are made the special types of this description measure  $3\frac{1}{2}$ ,  $4\frac{2}{3}$ , and  $4\frac{1}{2}$  inches, respectively.

The species may be at once distinguished from *M. peninsula* and *M. vagrans* by the smaller number of dorsal spines and the larger number of anal rays, as well as by the stronger teeth; the teeth are much stronger than those of *Menidia notata*, the body is deeper, and there are fewer scales in a longitudinal series. From *M. boscii* of J. & G. it differs in its smaller eye, position of first dorsal, stronger teeth, and fewer scales in the lateral line.

The head, in shape and squamation, agrees with that of other species; its length is very slightly less than the greatest depth of the body, and is contained from  $4\frac{1}{3}$  to  $4\frac{1}{2}$  times in total length to caudal base (end of silvery band). The eye is a little shorter than snout, equals width of interorbital space, and is two-sevenths as long as the head. The snout is almost one-third as long as the head. Mouth rather large, the strongly curved and freely protractile intermaxillary being as long as the snout. Teeth in narrow bands, the outer series in both jaws much enlarged, a pair of canine-like teeth in the inner series at the symphysis of upper jaw. Lower jaw much longer than eye, as long as second dorsal base, contained  $2\frac{2}{3}$  times in length of head. Jaws equal.

The greatest depth of the body equals the distance from origin of first dorsal to end of second dorsal, or nearly so. The origin of spinous dorsal is midway between tip of snout and end of middle caudal rays, immediately above anal origin. Longest dorsal spine one-third as long as head. Longest ray of soft dorsal equals length of head without postorbital part; it also equals two-thirds of length of pectoral. The ventral is inserted under the ninth scale in a longitudinal series; its length is about one-half that of the head; it does not quite reach the vent. The length of anal base equals twice that of head without postorbital part. The length of middle caudal rays equals one-eighth of total length to end of silvery band; the external rays are about  $1\frac{1}{2}$  times as long as the middle rays. Only the caudal fin is scaly, and that for half its length.

Light olivaceous; minute brown punctulations on the jaws, top of head, and around the posterior margins of the scales of the back.

D. IV, I, 8; A. I, 22; V. I, 5; P. I, 12; Scales 8 to 9—39 to 40. Width of silvery band about two-thirds that of a scale in the series through which it runs, half length of snout, one-sixth length of head.

#### 17. *Tylosurus gladius*, n. sp., Bean.

*Tylosurus gladius* Bean, in Goode & Bean, Proc. U. S. N. M., v, 239. Name only.

The type of the species (No. 30151) was taken at Pensacola, Florida, by Mr. Silas Stearns. It is about 29 inches long.

Body robust, little compressed, its greatest breadth a little more than two-thirds greatest depth; caudal peduncle slightly depressed, a little broader than deep, with a slight dermal keel.

Head broad, broader above than below. Interorbital space nearly two-thirds length of post orbital part of head, with a broad, shallow, naked, median groove, which is wider behind and forks at the nape.

Supraorbital bones with radiating striae. Distance between nostrils a little more than one-sixth length of snout.

Jaws comparatively short, strong, tapering; very stiff; lower jaw wider and longer than upper. Both jaws with broad bands of small teeth on the sides; within these is a series of very large knife-shaped teeth. The length of the longest teeth is a little more than 3 times the breadth.

Posterior teeth in both jaws directed backward; anterior teeth erect.

Number of large teeth about  $\frac{25+25}{23+23}$ ; length of large teeth about one-fifth diameter of eye; no vomerine teeth.

Upper jaw from eye about  $1\frac{3}{4}$  times as long as the rest of head. Eye large, 7 in snout,  $2\frac{2}{3}$  in post orbital part of head, and  $1\frac{4}{5}$  in interorbital width. Maxillary entirely covered by the preorbital. Cheeks densely scaled; opercles scaled only along the anterior margin. Scales minute, especially on the back; somewhat larger below.

Dorsal fin rather high in front, becoming low posteriorly, the height of its anterior lobe equaling post orbital part of head; its longest ray is two-fifths of the length of the base of the fin. Caudal lunate, its lower lobe nearly one-half longer than the upper; middle rays about as long as eye. Anal falcate, low posteriorly, its anterior lobe equal to anterior dorsal lobe.

Ventrals inserted midway between base of caudal and middle of eye, their length a little less than that of pectoral, and equal to postorbital part of head.

Upper ray of pectorals broad, sharp-edged; length of pectorals  $3\frac{2}{5}$  in head, and slightly greater than postorbital part of head.

Head  $3\frac{1}{3}$  in length to base of caudal; depth nearly 4 in head, about 13 in total to caudal base.

D. I, 22; A. I, 20; V. 6; P. 14.

Color dark green above, silvery below; dorsal and pectoral blackish; ventrals somewhat dusky; anal yellowish, the lobe slightly soiled; caudal dusky olivaceous. No suborbital bar and no seapular spot. A slight dusky shade on upper posterior part of cheeks, and a yellowish bar on anterior edge of opercle. Caudal keel black.

This species is closely allied to *T. fodiator* Jor. & Gilb., described from Mazatlan, differing from it chiefly in its longer jaws and greater number of fin-rays.

#### CHRIODORUS, new genus, SCOMBRESOCIDÆ.

Body moderately elongate and compressed, covered with large smooth scales. Lateral line extending along the lower side of the belly. Jaws short, equal, not produced. Teeth large, incisor-like, tricuspidate, close set, in two distinct series in each jaw, those of the inner series somewhat smaller than the outer. No teeth on vomer or palate. Premaxillary not protractile, slightly movable. Maxillary ankylosed with the

intermaxillary. Gill-rakers rather long and slender, not very numerous. No pseudobranchiae. Branchiostegals rather numerous. Gill-membranes separate and free from the isthmus.

Pectorals rather short, placed high. Ventrals small, median. Dorsal and anal far back, opposite and similar to each other, the anterior rays elevated. Caudal deeply forked, the lower lobe somewhat the longer.

**18. Chriodus atherinoides, n. sp.**

The greatest breadth of the body is about three-fifths of its depth, which is contained  $6\frac{3}{4}$  times in the length to caudal base.

The length of the caudal peduncle is one-half greater than its least depth and is a little less than half length of head.

Head rather long, contained  $4\frac{3}{5}$  times in length to caudal base. The interorbital space is broad with a wide median ridge, on each side of which is a groove; the width of the space is about equal to eye. Eye large, very nearly median, equal to snout, contained  $3\frac{1}{6}$  times in head. The area formed by the premaxillaries is fully 3 times as long as broad. Maxillary entirely concealed by the preorbital when the mouth is closed. Edge of premaxillary slightly concave and curved. The upper jaw extends to anterior nostril, its length contained 4 times in length of head. The lower jaw  $2\frac{1}{2}$  times in head, its tip broadly rounded, without a symphyseal projection. There are about 28 teeth in the outer series in each jaw.

The distance from snout to dorsal fin equals  $3\frac{3}{4}$  times length of head; the dorsal base is a little greater than anal base and equals the distance from snout to posterior margin of preopercle. Dorsal elevated in front, but not falcate, its longest ray equals longest anal ray, which equals half length of head; the last dorsal and anal rays are very short. Anal entirely similar to dorsal, its insertion opposite front of dorsal. The upper lobe of caudal is nine-tenths as long as the head; the lower lobe is slightly longer than head; the length of middle rays is contained  $2\frac{1}{4}$  times in head.

Ventrals midway between snout and caudal base, their length contained  $2\frac{1}{6}$  times in length of head. Pectorals two-thirds as long as head, the upper ray broadened.

Vertical fins with small deciduous scales. Scales large, thin, deciduous. Top of head sealy.

B. 12; D. I, 14; A. I, 15; V. 6; P. 12. Scales 7—47—3.

Color very pale olivaceous, silvery below and on the sides of head; fine punctulations on the back, following the rows of scales; snout punctulate; a narrow, distinct, silvery lateral band, its width under dorsal origin nearly half length of eye, becoming much narrower anteriorly and on the caudal peduncle.

The single type specimen is  $8\frac{1}{2}$  inches long, and is numbered 26593; it was collected by Mr. Silas Stearns at Key West, Florida.

**19. Cyprinodon mydrus, n. sp.**

Two specimens, No. 30479, were collected by Silas Stearns, at Pensacola, Florida. This species is most closely related to *C. gibbosus* Baird & Girard, from which it is distinguished by its much larger eye (the diameter of which is considerably greater than the length of the operculum, to which in *C. gibbosus* it is equal); by the greater number of dorsal rays, of which there are 13; by the smaller number of its anal rays, of which there are 29; by the smaller number of its scales, which in the lateral line is 24; by the smaller number of scales in the transverse line, 9 in number; by the longer tail and the greater size of the ventral fin.

The color of this species is silvery, the back being olivaceous, and the sides marked with seven or eight indistinct vertical bands. The scales are large, and their outlines are strongly marked, giving to the fish the appearance of a piece of hammered metal work; hence the specific name, which is derived from *μέδρος*, "a lump of metal."

**DESCRIPTION.**—Body short; similar in shape to females of *C. gibbosus*. Mouth small, terminal. Premaxillaries very protractile. Humeral scale scarcely as large as the contiguous scales; one-third as long as the head, and equal to the width of interorbital space.

Origin of the dorsal midway between the tip of the snout and the root of the caudal.

Origin of the dorsal and ventrals equidistant from the tip of snout. Dorsal fin, when depressed, not extending to the caudal. The longest dorsal ray equal to length of head without snout. Length of head is contained 3 times in the standard body length. Height of body is contained  $2\frac{3}{4}$  times in the same length.

**20. Zygonectes craticula, n. sp.**

The types of this species, No. 31439, were obtained in a small branch of Elbow Creek, a tributary of Indian River, in East Florida, by Dr. J. A. Henshall, of Cynthiana, Kentucky, and a second lot, No. 28506, were obtained in July and August, 1880, at Nashville, Georgia, by Mr. W. J. Taylor. The relations of this beautiful species are with that described by Agassiz under the name *Z. dispar*.

Body stout, moderately compressed, especially posteriorly; head moderately broad and flattened above. Interorbital space flat, its width less than half the length of the head and  $1\frac{1}{3}$  times the diameter of the eye. The distance between the eyes above is greater than below. Snout rather obtuse, its length equal to that of the eye. The total length of the head is contained  $3\frac{1}{2}$  times in the standard length and  $4\frac{1}{2}$  times in the total length of the body. Teeth in narrow bands, the outer series in both jaws enlarged and somewhat recurved. Scales moderate; 36 in lateral line, 10 in transverse series.

Fins small; dorsal smaller than anal, and inserted over the 20th scale in the longitudinal series, and slightly behind the anal insertion; somewhat nearer to the end of the tail than to the tip of the snout.

The ventrals and pectorals moderate, the length of the latter almost equaling the height of the body at the ventrals.

*Color*.—Brilliant, the ground color being yellowish-white with six deep black longitudinal stripes equidistant from each other; broader anteriorly; about as wide as the interspaces, and almost coalescing at the base of the caudal fin, an indistinct stripe of same width on each side of the dorsal line, about midway between the uppermost of the black lines and the center of the body. Cheeks brilliant white, a deep black blotch under and confluent with the eye. Dorsal and anal fins with indistinct blackish longitudinal lines. Sides of certain individuals, apparently males, with eleven or twelve distinct vertical bars, about equal in width to the longitudinal bars, the arrangement of these intersecting stripes suggesting the idea of a gridiron, whence the name "*eraticula*."

Length of the largest individuals about  $2\frac{1}{2}$  inches.

*Radial formula*.—D. 7; A. 9-10. Scales 36-10.

#### 21. *Stolephorus perthecatus*, n. sp.

A single specimen 3.6 inches long, No. 30483, was collected by Mr. Silas Stearns, at Pensacola, Florida.

**DESCRIPTION.**—Body not carinated or serrated, somewhat compressed. Height of body contained 5 times in its length without caudal, and about 6 times in its total length. Length of head contained  $3\frac{2}{3}$  times in standard length. Diameter of the eye greater than length of snout and contained  $3\frac{1}{3}$  times in length of head. Width of eye equal to that of interorbital space. Snout conical, slightly compressed. Teeth minute in both jaws. Maxillary with acute tip, extending back almost to the gill-opening; toothed to the posterior angle of the straight inferior edge. Gill-rakers rather numerous, the longest two-thirds as long as the diameter of the eye.

Origin of the dorsal fin midway between root of caudal fin and the center of the pupil, and also between the tip of the snout and the end of the middle caudal rays.

Anal fin inserted vertically below penultimate ray of dorsal fin.

Pectorals considerably longer than ventrals and more than half as long as head, their tips falling short of reaching the origin of the ventrals by a distance almost equal to the diameter of the eye.

Ventrals half as long as lower jaw, inserted far in advance of the dorsal, their tips reaching to the perpendicular of the origin of the dorsal.

Axillary sheaths exceedingly large; in the case of ventrals and pectorals almost equaling the length of the fins.

Silvery stripe narrow, one-fourth height of body at the ventrals, not more than half as wide as the eye. Scales in lateral line about 38.

*Radial formula*.—D. ii, 11; A. i, 16.

**22. *Conger caudicula*, n. sp., Bean.**

*Conger caudicula* Bean, in Goode & Bean, Proc. U. S. N. M., v, 240, name only; also, in Jor. & Gilb., op. cit., 262.

Eye equal to snout,  $4\frac{1}{2}$  in head. Lips moderately developed. The posterior nostril is small, on a line with the lower edge of the pupil; the anterior nostril tubular near the intermaxillary symphysis. Upper jaw longer than the lower; the cleft of the mouth extends to the hind margin of the pupil. The patch of intermaxillary teeth subrectangular, scarcely a third as long as the eye; vomerine teeth in a patch one-third as long as the eye, tapering behind. The outer series of maxillary teeth contains 38 close-set, slightly truncate teeth, continued backwards after a slight interruption by six conical teeth which rake forward. In the mandible are about 36 close-set slightly truncate teeth, extended forward by a patch of conical teeth. The teeth in the main rows of both jaws are biserial. The length of the head is contained a little more than  $1\frac{1}{2}$  times in that of the trunk and 6 times in total length; the length of the tail exceeds that of the rest of the animal by the length of the head without the snout. The dorsal fin commences over the anterior part of the pectoral. The pectoral is a little more than one-third as long as the head. The width of the gill-opening equals one-half of the length of the postorbital part of the head. The color in the present partially digested condition of the fish is mainly light olive. The vertical fins are well developed; their coloration cannot be made out. The distance between the eyes is less than one-half of their diameter. The lower jaw extends beyond the hind margin of the eye and equals the distance from the end of the snout to the hind margin of the eye; it also equals the greatest depth of the head; the greatest width of the head equals one-half its length without the snout.

The type of the species, number 30709, was sent from Pensacola, Florida, by Mr. Silas Stearns. Its length is 13 inches.

**23. *Muræna retifera*, n. sp.**

Body moderately stout, somewhat compressed, its greatest depth equaling two-thirds length of head.

Teeth of upper jaw in two series, the outer series composed of a few short fixed teeth; the inner series of about 10 long compressed teeth, a few of which are depressible, all more or less directed backward, those of the middle of the jaw somewhat larger than those in front; vomer with one or two depressible canines. Teeth of lower jaw similar to those of upper; the large teeth rather shorter and broader, all of them entire; the lateral teeth as large as the anterior ones. The mouth does not close completely. Jaws subequal.

The tubes of anterior and posterior nostril about equal, slightly shorter than eye. Cleft of the mouth contained  $2\frac{3}{4}$  times in length of head, the eye over middle of cleft. Eye  $1\frac{2}{3}$  in snout. Snout contained 6 times in length of head.

Head contained  $2\frac{3}{4}$  times in length of trunk. Tail very little longer than rest of body. Height of body contained 6 times in distance from tip of snout to vent.

Dorsal moderately high, beginning at the middle of the length of the head. Gill-opening small, about as broad as the eye.

The color light brown regularly reticulated with blackish, the reticulations inclosing hexagonal or roundish spots of the ground color irregular in size, larger than the eye. The entire fish is thickly covered with small whitish spots, smaller than the pupil; these spots are smallest and most numerous anteriorly, nearly obsolete on the belly, and present on the inside of the mouth. Gill-opening surrounded by a small blackish blotch, whose diameter is less than twice that of the eye. Angle of the mouth black. Dorsal with about 5 longitudinal blackish lines, which become obsolete posteriorly. Anal with a single narrow blackish stripe extending along its whole length.

The single typical specimen is  $20\frac{1}{2}$  inches long. It was collected at Charleston, S. C., by Mr. C. C. Leslie. The museum number is 31393.

#### 24. *Sphagebranchus teres*, n. sp.

Body terete, moderately elongate, its greatest depth slightly more than two-fifths length of head.

Snout short, moderately pointed, projecting somewhat beyond lower jaw, its length contained  $6\frac{1}{2}$  times in length of head, and contains the very small eye  $2\frac{1}{2}$  times. Tubes of anterior nostril rather short—shorter than eye; posterior nostrils labial, not tubular. Cleft of mouth 4 in head; the front of eye behind middle of cleft. Teeth small, subequal, in moderate bands on jaws and vomer. Lower jaw rather short and weak. Tongue not free in front. Length of head contained  $8\frac{2}{3}$  times in that of trunk. Trunk and tail equal in length.

The distance from the tip of snout to beginning of dorsal is contained  $2\frac{2}{5}$  times in length of head. The dorsal is of moderate height, its longest ray slightly less than length of snout. Free end of tail acute, short. Anal well developed, lower than the dorsal. Pectorals minute, pointed at the upper edge of gill-opening, usually shorter than eye.

Gill-openings vertical, the length of one slit slightly more than breadth of isthmus, about equal to length of snout.

Lateral line distinct, the pores well separated, extending forward in a curve above the opercular region. Head with no conspicuous pores.

Color uniform, clear brown, paler below, whitish on the head. Front of head somewhat mottled. Fins all pale, without dark margins.

The museum possesses three specimens, number 31457, ranging in length from  $18\frac{1}{2}$  inches to  $21\frac{1}{2}$  inches; they were collected in West Florida many years ago, by Kaiser and Martin.

#### LETHARCHUS, new genus, OPHISURIDÆ.

This genus agrees with *Sphagebranchus* in most respects; it lacks, however, an anal fin; the anterior nostrils are not tubular, and the gill-

openings are almost horizontal; the dorsal begins on the head; the tongue is largely free in front.

**25. *Letharcus velifer*, n. sp.**

Body rather robust, somewhat compressed; its greatest depth a little more than two-fifths the length of head. Head large, abruptly tapering anteriorly; snout very slender and pointed, projecting considerably beyond the lower jaw; its length contained nearly 10 times in that of the head, and equaling a little more than twice the diameter of the very small eye. Nostrils with nasal tubes rudimentary, posterior nostril labial, anterior under the tip of snout. Cleft of mouth, from tip of snout, 4 in head. Eye nearer tip of snout than angle of mouth. Lower jaw short and weak. Tongue short, free in front. Teeth small, pointed, subequal, in narrow bands on jaws and vomer.

Length of head contained  $6\frac{1}{2}$  times in that of trunk; head and trunk equal  $1\frac{4}{7}$  times length of tail.

The dorsal is unusually high, its height at the nape equaling distance from tip of lower jaw to angle of mouth; it begins at the end of the first third of the head. Free end of tail rather sharp. The anal fin is wanting or represented by a minute fold near the end of the tail. No trace of pectorals.

Gill-openings large, subinferior, oblique, convergent anteriorly; their length more than 3 times the breadth of the isthmus and equal to that of the lower jaw.

Lateral line very distinct, extending forward in a broad curve over the opercular region to below beginning of dorsal. Four conspicuous pores on each side of lower jaw, three behind each eye, three at the nape in front of dorsal, one on top of the head, and four on each side of upper part of snout, besides a few smaller ones about the lips.

Color dark brown, slightly mottled with darker, not paler below. Head paler than body. Dorsal fin pale below, with a broad blackish margin.

There are four individuals of this new fish, which were collected in West Florida by Kaiser and Martin; the types are numbered 31458; they vary in length from 15 inches to 18 inches.

UNITED STATES NATIONAL MUSEUM,  
Washington, August 3, 1882.

**DESCRIPTION OF A NEW SPECIES OF GOBY (*GOBIOSOMA IOS* FROM VANCOUVER'S ISLAND).**

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

*Gobiosoma ios*, sp. nov. (No. 29672.)

Head  $4\frac{1}{6}$  in length to base of caudal; depth  $6\frac{2}{3}$ . D. VI-15; A. about 12.

Body comparatively long and slender, moderately compressed, the back not elevated. Head long and low, rather pointed anteriorly; the