

5.—DESCRIPTIONS OF NEW OR LITTLE-KNOWN GENERA AND SPECIES OF FISHES FROM THE UNITED STATES.

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The recent investigations of the United States Fish Commission in Florida, Louisiana, and elsewhere have resulted in large and important collections of fishes from those regions. The preliminary study which has been given to these collections has shown that they contain a number of species new to science, besides several others which have not hitherto been taken in the waters of the United States, or are of rare and unusual occurrence within our limits. Among the collections of especial interest which have not yet been fully studied are those made in the St. Lawrence Basin in 1894, in Florida in 1896, and in Louisiana and Mississippi in 1897. A multiplicity of duties having delayed the completion of the detailed reports, it has been thought desirable to publish in advance, in the present paper, descriptions of three new genera and eight of the new species. Descriptions are also given of *Anisotremus curinamensis* and *Lophogobius cyprinoides*, species not until now known to occur in our waters. Illustrations are presented, showing both the male and female of the Alabama shad.

1. *Ictalurus anguilla*, new species. *Eel Cat*; *Willow Cat*. (Pl. 6, fig. 1.)

Type, No. 48788, U. S. N. M., a ripe female, 14 inches long. Cotypes, No. 48787 and 48789, U. S. N. M.; No. 1078 and 1079, U. S. F. C.; and No. 5772, L. S. Jr. Univ. Mus. Type locality, Atchafalaya River, Louisiana. Collectors, Evermann and Chamberlain.

Head 4; depth $4\frac{1}{2}$; eye 7 in head; snout $2\frac{1}{2}$; interorbital $1\frac{1}{2}$; maxillary (without barbel) 3; free portion of maxillary barbel longer than head; dorsal spine 2 in head; pectoral spine 2; width of mouth 2. D. 1, 6; A. 24; vertebrae 42. Head large, broad, and heavy; the mouth unusually broad; cheeks and postocular portion of top of head very prominent; interorbital space flat, a broad, deep groove extending backward to origin of dorsal fin; body stout, compressed posteriorly; back scarcely elevated. Eye small; maxillary barbel long, reaching considerably past gill-opening; other barbels short. Origin of dorsal fin equidistant between snout and origin of adipose fin, its distance from snout $2\frac{3}{4}$ in length of body; base of dorsal fin $3\frac{1}{2}$ in head; longest dorsal ray $1\frac{1}{2}$ in head; dorsal spine strong, entire both before and behind; pectoral spine strong, entire in front, a series of strong, retrorse serræ behind; humeral process $2\frac{1}{2}$ in pectoral spine; ventrals barely reaching origin of anal, their length 2 in head; anal fin long and low, the longest rays about $2\frac{1}{2}$ in head; base of fin greater than head, $3\frac{1}{2}$ in body; caudal moderately forked, the middle rays about $2\frac{1}{2}$ in outer rays, which are about $1\frac{1}{2}$ in head.

Color, uniform pale yellowish or olivaceous; no spots anywhere.

An examination of the 6 cotypes shows that there is not much variation, all the important characters remaining quite constant. The maxillary barbel varies somewhat in length, in some individuals scarcely reaching gill-opening, and the number of anal rays varies from 24 to 26.

A comparison of the skull of this species with that of *I. furcatus* and *I. punctatus* of the same size shows a number of very marked differences. Nearly all the bones in *I. anguilla* are heavier than

in the other species; the supraoccipital is broadly triangular, and its upper surface finely grooved, while in each of the other species it is much longer and narrower and the upper surface nearly smooth.

From the blue cat (*Ictalurus furcatus*) this species differs chiefly in the fewer rays in the anal fin, the wider mouth, the shorter, heavier head, the much longer maxillary barbel, and in the cranial characters already given. From the spotted cat (*I. punctatus*) it may be distinguished by its wider mouth, more blunt snout, heavier head, the color, and the cranial characters already mentioned.

This species is well known to the fishermen of the Atchafalaya River, by whom it is usually called the "eel cat," though the name "willow cat" is sometimes applied to it. It was explained by the fishermen that the name "eel cat" was given on account of the long feelers (i. e., barbels) and the name "willow cat" because it is most frequently found about the roots of willow trees. The eel cat is not an abundant species in the Atchafalaya River. During six days (April 19-24) spent at Morgan City, several hundred catfish were examined at the three fish-houses, and the total number of eel cats seen was fewer than twenty-five. The fishermen report that this proportion is about as great as at any time of the year. Of the four commercial species of catfishes handled on this river the most abundant one is the blue cat (*Ictalurus furcatus*), and the next is the yellow cat or goujon (*Leptops olivaris*); the eel cat comes next and the spotted cat (*Ictalurus punctatus*) last. The blue cat and the yellow cat probably constitute 98 per cent of the entire catch.

The eel cat rarely attains a greater weight than 5 pounds, and usually does not exceed 3 pounds. Its flesh is firm and of excellent flavor. The spawning season appears to be during the spring, as several of the individuals examined were in mature spawning condition.

Etymology, from *Anquilla*, the generic name of the eel.

2. *Notropis hudsonius* (DeWitt Clinton). (Pl. 6, fig. 3.)

A specimen of this species, collected by Mr. George D. Head, at Kilpatrick Lake, Minnesota, presented certain peculiarities in the dental formula (2, 5-4, 2) and coloration which led us at first to identify it as an undescribed species. But other specimens subsequently received from the same lake show that all belong to the very variable *N. hudsonius*. The presence of 5 teeth on one side in the inner row and 2 in each of the outer rows is an unusual combination for a species of *Notropis*, and this is, so far as we are aware, the first record of the fact. As long ago as 1886 one of us called* attention to the strong tendency of *N. hudsonius* to vary in this character. The specimen with the unusual number of teeth may be described as follows:

Head $4\frac{1}{2}$; depth $4\frac{1}{2}$; eye $3\frac{3}{8}$ in head; snout $3\frac{3}{8}$; maxillary $3\frac{3}{8}$; interorbital width 3; D. 8; A. 8; scales 7-43-4. Teeth 2, 5-4, 2, hooked and with evident grinding surface. Body moderately long, slender, and compressed; profile of back rising gently to origin of dorsal; head moderate; mouth rather large, oblique, lower jaw included, the maxillary nearly reaching vertical of pupil; snout blunt, forming an angle in front of nostrils; eye large, in axis of body; caudal peduncle long and slender. Fins moderate; dorsal, anal, and pectoral each somewhat falcate; longest dorsal ray equal to length of head, $1\frac{1}{2}$ greater than base of fin; longest anal ray $1\frac{1}{2}$ in head; pectoral $1\frac{1}{2}$ in head, not nearly reaching insertion of ventrals; ventral short, $1\frac{1}{2}$ in head, not reaching vent; caudal widely forked, the lobes subequal and nearly equal to length of head; origin of dorsal slightly in front of base of ventral, nearer tip of snout than base of caudal. Scales large, regularly imbricated, 15 before the dorsal; lateral line complete, gently decurved above the pectoral. Color in alcohol, dark olivaceous on back; sides and under parts rich satiny silvery, everywhere showing steel-blue iridescence; upper parts of head dark, lower parts silvery; a black blotch at base of caudal fin, as usual in this species; fins all plain.

3. *Notropis welaka*, new species. (Pl. 6, fig. 2.)

Type, No. 48786, U. S. N. M. Cotypes, No. 48785, U. S. N. M.; No. 529, U. S. F. C.; and No. 5773, L. S. Jr. Univ. Mus. Type locality, St. Johns River, near Welaka, Florida, where numerous specimens were collected March 19, 1897, by Dr. Kendall.

Head $4\frac{1}{2}$; depth 5; eye 3 in head; snout $3\frac{1}{2}$. D. 8; A. 8 or 9; scales 6-35-3; teeth 4-4, hooked. Body rather slender, moderately compressed; head short, snout bluntly pointed; mouth moderate, somewhat oblique, lower jaw slightly included, maxillary scarcely reaching front of eye; premaxillaries protractile. Eye large; posterior edge of pupil at middle of longitudinal length of head; interorbital width greater than eye; caudal peduncle long and slender. Dorsal fin inserted well behind base of ventrals, a little nearer base of caudal than tip of snout, its longest rays shorter than head,

* Fishes of the Monongahela River, in Ann. N. Y. Ac. Sci. 1886, 338.

but slightly longer than longest anal rays; anterior dorsal and anal rays longest; pectoral $1\frac{1}{2}$ in head; ventrals reaching origin of anal; caudal deeply notched, the lobes long and pointed. Scales large, lateral line incomplete, developed only on 6 to 10 scales. Back olivaceous; side with a broad black band extending from snout through eye, and ending in a rather distinct black spot on base of caudal, the black spot in some specimens (probably mature males) surrounded by orange; the black line bordered above by a narrow orange or reddish line, less distinct, or even whitish, in females and immature individuals; under parts plain; fins all plain; dorsal and caudal somewhat dusky; dusky specks on body along base of anal and under side of caudal peduncle; lower jaw tipped with dusky.

This species resembles *Notropis anogenus*, but differs in having the mouth somewhat larger and less oblique, the lower jaw more included, the body more slender, the lateral line less developed, the dorsal fin more posterior, and the anal rays more numerous. It was found in considerable abundance in the St. Johns River near Welaka, Florida.

Etymology, *welaka*, from the type locality.

4. *Alosa alabamæ* Jordan & Evermann. *Alabama Shad*. (Pl. 7, fig. 5, male, and fig. 6, female.)

Alosa alabamæ Jordan & Evermann, in Evermann, Rept. U. S. F. C. 1895 (December 28, 1896), 203-205.

Since the publication of the original description of this species some additional information has been obtained regarding the occurrence of shad in the streams tributary to the Gulf of Mexico.

During the season of 1897 the run of shad in the Black Warrior River at Tuscaloosa seems to have been unimportant. During the investigations in the South in April, 1897, some testimony was obtained indicating that there is usually each year a large run of shad at Mobile. That the fish is not taken there in large numbers is due, it is claimed, to the fact that suitable apparatus is not used.

Some inquiries made at Montgomery failed to elicit any definite information concerning the occurrence of shad in the Alabama River at that place. The same inquiries made at the mouth of Pearl River and at different places along the Atchafalaya, Sabine, and Neches rivers yielded similar results. No one of those interviewed had ever seen real shad in any of these rivers. The Atchafalaya fishermen use for bait on their set-lines what they call shad, but they are *Dorosoma*, *Signalosa*, and *Hiodon*. "Shad" have been from time to time reported from the larger rivers of Arkansas; also from the Ohio and the Great Kanawha; but whether they are *Alosa alabamæ* or some other species has not been determined.

SIGNALOSA, new genus of *Clupeidæ*, allied to *Alosa* and *Dorosoma*.

Type: *Signalosa atchafalaya* Evermann & Kendall.

Body short, deep, and compressed, the form somewhat elliptical; ventral outline more strongly curved than the dorsal; head rather large, snout sharp and pointed, not tumid; mouth small, oblique, the lower jaw scarcely included; maxillary of three pieces, broad and curved, but without notch in the outer margin as in *Dorosoma*; caudal peduncle short and deep. Branchiostegals 5; pseudo-branchiæ large; gillrakers short and very numerous, about 340 in number. No teeth; adipose eyelid present; stomach gizzard-like; scutes about 6+10. Last ray of dorsal very long and filamentous.

This genus is allied to *Dorosoma*, from which it is plainly distinguished by the absence of the notch in the maxillary, the more pointed snout, the less-included lower jaw, the shorter anal fin, larger scales, and the fewer scutes. It differs from *Alosa* in the very numerous gillrakers, the character of the dorsal fin, and in other respects.

Etymology, *signum*, a flagstaff or pole; *Alosa*, the shad; a reference to the long dorsal ray.

5. *Signalosa atchafalayæ*, new species. (Pl. 7, fig. 4.)

Type locality, Atchafalaya River at Melville, Louisiana. Type, No. 48790, U. S. N. M. Cotypes, No. 48791, U. S. N. M.; No. 532, U. S. F. C.; and No. 5775, L. S. Jr. Univ. Mus. Collector, F. M. Chamberlain, May 5, 1897. Associate type localities, Grand Plains Bayou and Black Bayou, Mississippi. Collectors, F. M. Chamberlain and H. R. Center.

Length of type, $4\frac{1}{4}$ inches to base of caudal, or $5\frac{1}{4}$ inches to tips of caudal rays.

Head $3\frac{3}{4}$; depth $3\frac{1}{4}$; eye $3\frac{1}{4}$ in head; snout $5\frac{1}{4}$; maxillary $3\frac{1}{2}$; D. 1, 12; A. 1, 24; scales 42-15; scutes 17-10. Body oblong-elliptical, compressed, the back in front of dorsal narrow; ventral edge sharp, serrate; head small, mouth terminal, oblique, lower jaw slightly included; snout rather pointed, not blunt, as in *Dorosoma cepedianum*; maxillary in 3 pieces, long and curved, reaching vertical at front of pupil, the outer edge not notched; no teeth. Caudal peduncle short, compressed, and deep. Origin of dorsal fin over base of ventrals, much nearer tip of snout than base of caudal, the last ray

filamentous, about one-fourth longer than head and nearly reaching base of caudal; the first dorsal ray about 2 in the last one; pectoral $1\frac{1}{2}$ in head, reaching base of ventrals; ventrals short, reaching only half way to vent, their length $1\frac{1}{2}$ in pectorals; anal rays short, base of fin $1\frac{1}{2}$ in head; scutes moderate; caudal widely forked, the lower lobe the longer; scales large, thin, deciduous, somewhat crowded anteriorly; accessory scales at bases of pectorals and ventrals; base of caudal with small scales. Color, bluish-black or dark olivaceous on back and sides to level of the jet-black humeral spot; rest of sides and under parts bright silvery; dorsal and caudal dusky; other fins plain.

The cotypes from Grand Plains Bayou are 2 females with ripe roe. They are $4\frac{1}{2}$ and $5\frac{1}{2}$ inches long, respectively, and differ from the types only in the deeper body and the much darker coloration of the upper parts.

The amount of variation in this species, shown by the material at hand, is exhibited in the following table:

No.	Head.	Depth.	Eye.	Snout.	Max.	Dorsal.	Anal.	Scutes.	Scales.	Locality.
1	$4\frac{1}{2}$	3	$3\frac{3}{4}$	$5\frac{1}{2}$	$3\frac{3}{4}$	I, 12	I, 24	16 + 11	40-15	Grand Plains Bayou, Miss.
2	4	$2\frac{3}{4}$	$3\frac{1}{2}$	$5\frac{1}{2}$	$3\frac{3}{4}$	I, 12	I, 24	16 + 11	42-15	Do.
3	4	3	$3\frac{3}{4}$	$5\frac{1}{2}$	$3\frac{3}{4}$	I, 12	I, 24	16 + 10	42-14	Melville, La.
4	$3\frac{3}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$5\frac{1}{2}$	$3\frac{3}{4}$	I, 12	I, 24	17 + 10	42-15	Do.
5	$3\frac{3}{4}$	3	4	5	$3\frac{3}{4}$	I, 12	I, 24	16 + 11	43-15	Do.
6	$3\frac{3}{4}$	3	$3\frac{3}{4}$	5	3	I, 12	I, 24	16 + 10	41-15	Grand Plains Bayou, Miss.
7	$3\frac{1}{2}$	3	$3\frac{1}{2}$	$5\frac{1}{2}$	$3\frac{1}{2}$	I, 12	I, 24	17 + 9	41-15	Do.
8	$3\frac{1}{2}$	3	$3\frac{1}{2}$	5	3	I, 12	I, 24	17 + 9	41-15	Black Bayou, Miss.
9	$3\frac{1}{2}$	$2\frac{3}{4}$	$3\frac{1}{2}$	$5\frac{1}{2}$	3	I, 12	I, 24	17 + 9	40-15	Do.

This species appears to be rather common in the larger lowland streams and bayous of Louisiana and Mississippi. It probably does not reach a large size, adult examples being less than 6 inches long. It is not used as food, but is of considerable value as bait in the catfish fishery of the Atchafalaya River and its connecting lakes and bayous.

Etymology, *atchafalaya*, from the type locality.

6. *Corythoichthys cayorum*, new species. (Pl. 7, fig. 7.)

Type, a male $3\frac{1}{2}$ inches long, No. 48784, U. S. N. M. Cotype, a male, $3\frac{1}{2}$ inches long, No. 526, U. S. F. C. Type locality, near Crawfish Bar, Key West, Florida, where 3 specimens were obtained, October 19, 1896, by Evermann & Kendall.

Head $8\frac{3}{4}$; depth $12\frac{3}{4}$; snout $3\frac{1}{2}$ in head; eye $4\frac{1}{2}$. D. 21 rays, on $1\frac{1}{2}$ + $3\frac{3}{4}$ rings; A. 3, on first caudal ring; C. 10; P. 10. Rings $17 + 26 = 43$. Body short and stout; head short, snout very short; tail but little longer than head and trunk. Cranial ridges strong; a high, sharp keel on snout, the occipital keel very high, its edge convex, notched near the middle, not continuous with keel on snout; a strong supraocular ridge, beginning opposite posterior end of nasal keel and continuing backward with one hiatus upon upper edge of opercle; just below this on the opercle another longer but scarcely stronger ridge; another short ridge on anterior part of opercle at level of lower part of eye; opercles very convex, as if swollen outward; keels on body and tail all strong; the 2 lateral keels on body terminating on third caudal ring; the 2 lateral keels on tail beginning on the last body ring, thus overlapping the body keels; median keel on side well developed, terminating on sixteenth body ring; ventral keels strong; abdominal keel very strong. Egg-sac on first 18 caudal rings. Color yellowish-brown, with darker punctulations; tip of snout white; cheek, throat, and under parts of snout white, crossed by about 7 or 8 irregular brownish bars extending downward and backward; opercles brown; fins pale.

This species is related to *C. albirostris* of Heckel, differing from it chiefly in the shorter snout, smaller dorsal, and fewer rings. The genus *Corythoichthys*, established by Kaup in 1856, seems to be well distinguished from *Siphostoma* by the strong keel on the top of the head, the strong opercular ridges, the short, stout body with prominent angles, and the very short snout. As thus defined, *Corythoichthys* contains two species besides the one here described, viz, *C. albirostris* Heckel and *C. cayennensis* Sauvage.

Etymology, *cayorum*, of the Keys; from Cayo Hueso, Bone Key, the original Spanish name of the island of Key West.

7. Cottogaster cheneyi, new species. (Pl. 8, fig. 8.)

Type, No. 48781, U. S. N. M. Cotypes, No. 48782, U. S. N. M.; No. 527, U. S. F. C.; and No. 5774, L. S. Jr. Univ. Mus. Length of type, $2\frac{1}{2}$ inches. Type locality, Racket River, Norfolk, New York. Collectors, Barton W. Evermann and Barton A. Bean.

Head 4; depth 6; eye 4 in head; snout 4; maxillary $3\frac{1}{2}$; interorbital width $5\frac{1}{2}$. D. XI-12; A. II, 8; scales 7-56-6. Body rather stout, heavy forward, compressed behind; head heavy; mouth moderate, slightly oblique, lower jaw included, maxillary reaching front of pupil; premaxillaries protractile. Cheeks, opercles, breast, and nape entirely naked; scales of body large and strongly ctenoid; lateral line complete, straight; median line of belly naked anteriorly, with ordinary scales posteriorly. Fins large; dorsals separated by a space equal to half diameter of eye; origin of spinous dorsal a little nearer origin of soft dorsal than tip of snout, its base about equal to length of head; longest dorsal spine $2\frac{1}{2}$ in head, the outline of the fin gently and regularly rounded; soft dorsal higher than spinous portion, the second to tenth rays about equal in length, scarcely 2 in head, the first, eleventh, and twelfth rays but slightly shorter than the others; anal moderate, its origin under base of third dorsal ray, the spines slender, the second a little longer than the first, whose length is $3\frac{1}{2}$ in head; longest anal rays about $2\frac{1}{2}$ in head; caudal lunate, the lobes more produced and pointed than usual among darters; pectorals long and pointed, the middle rays longest, about $1\frac{1}{2}$ in head, reaching tips of ventrals; ventrals well separated, not nearly reaching vent, the longest rays $1\frac{1}{2}$ in head.

Color in alcohol, back dark brownish, covered with irregular spots and blotches of darker; side with about 8 or 9 large dark spots lying on the lateral line; belly pale; top of head dark; snout black; lower jaw and throat dark; a broad black line downward from eye to throat; cheek and opercles rusty; spinous dorsal crossed by a median dark line; ventrals blue black; other fins pale, but dusted with rusty specks.

An examination of the 14 cotypes shows some variation in the species. In 2 examples there is a well-developed frenum, rendering the premaxillaries nonprotractile, and in a third specimen the frenum is partially developed; in some individuals the origin of the spinous dorsal is exactly midway between the tip of snout and origin of soft dorsal. The females and immature males are less highly colored than the adult male described above. Length $1\frac{1}{2}$ to $2\frac{1}{2}$ inches.

This species is most closely related to *Cottogaster shumardi*, from which it may be readily distinguished by the shorter snout, the naked cheeks and opercles, the smaller soft dorsal, the smaller anal, and the different coloration.

Fifteen examples of this interesting darter were obtained July 18, 1894, by Messrs. Evermann and Bean in the Racket River near Norfolk, St. Lawrence County, New York. It did not seem to be very common, as only 15 examples resulted from numerous hauls of the collecting seine.

Named for Mr. A. Nelson Cheney, State fish-culturist of New York, in recognition of his valuable contributions to our knowledge of the food and game fishes of that State.

8. Dermatolepis zanclus, new species. (Pl. 8, fig. 9.)

Type, No. 48843, U. S. N. M.; a specimen 20 inches long to base of caudal fin. Type locality, Key West, Florida, or more definitely, near Dry Rocks Reef, 1 mile east of Sand Key, on rocky bottom in 5 fathoms. Collectors, Evermann & Kendall.

Head $2\frac{1}{2}$; depth $2\frac{3}{8}$; eye 8 in head; snout $3\frac{1}{2}$; maxillary 3; mandible 2. D. XI, 19; A. III, 10; scales difficult to count, but about 30-130-35, those above lateral line counted obliquely backward and downward from origin of dorsal, those below from origin of anal upward and forward to lateral line. Branchiostegals 8; gillrakers 8 + 12, short and stout, the longest $1\frac{1}{2}$ in orbit.

Body stout, compressed, oblong-elliptical, the dorsal and ventral outlines about equally curved; head moderate, the profile rising from tip of snout to origin of dorsal fin, thence descending in a regular, gentle curve to caudal peduncle; a depression above nostrils and a slight one on nape; interorbital very narrow, equal to orbit; mouth moderate, somewhat oblique; premaxillaries protractile; maxillary broad at tip, reaching vertical at posterior edge of the pupil; supplemental bone well developed; lower anterior edge of maxillary covered by the broad dermal flap of the premaxillary; eye small, high up; nostrils close together and close to eye, the anterior small and round, the posterior oblong-oval, much larger than the other. Small cardiform teeth on each jaw, those in front movable, scarcely canine-like; similar teeth on vomer and a long, narrow band on each palatine. Preopercle coarsely serrate, the serræ short and blunt, more or less obscured by the skin; opercle with a broad dermal border, somewhat produced at lower angle. Fins all large; origin of dorsal slightly in advance of base of pectoral, its distance from tip of snout equal to length of head; third dorsal spine longest, its length about $2\frac{1}{2}$ in head or $2\frac{1}{2}$ times length of first ray; interspinal membranes of the spinous dorsal deeply

incised, the anterior portion of each somewhat produced beyond its spine; soft dorsal high, the middle rays longest, $1\frac{1}{2}$ in head, the anterior portion of the fin gently convex, the posterior slightly concave; pectoral short, broad, and rounded, barely reaching origin of anal, the length $1\frac{1}{2}$ in head; ventral pointed, the second and third rays longest, $1\frac{1}{2}$ in pectoral, the fin somewhat falcate; anal fin strongly falcate, the fourth and fifth rays longest, longer than pectoral, $1\frac{1}{2}$ in head, $2\frac{1}{2}$ times length of last anal ray; second anal spine short, $5\frac{1}{2}$ in head; caudal shallowly lunate, the lobes $1\frac{1}{2}$ in head. Scales small, smooth, and thin, closely but irregularly imbricated; nape, opercles, and cheeks scaled, snout and lower jaw naked; bases of all the fins except the ventrals densely scaled; lateral line beginning at upper angle of opercle, gently arched above pectoral fin, following approximately the curvature of the back and on median line of caudal peduncle.

General color of body in life brown, with large, irregular blotches of dirty white on back and upper part of sides, these blotches with small rusty spots; lower part of sides, belly, and caudal peduncle with irregular whitish spots; belly brassy brown; snout and nape with numerous small, round dark spots; cheek with large blotches of whitish overlaid with black and brassy spots; lips whitish, with dark spots; spinous dorsal blotched with white, olivaceous and black; soft dorsal brown, with numerous white spots and a few black ones, the posterior rays tipped with white and orange; anal olivaceous, with irregular white spots, greenish at edge, the produced rays black toward distal ends; pectoral dark olivaceous, with greenish white splotches, the edge yellowish; ventral rays greenish white, the membranes black; inside of mouth white; eye brown. Related to *D. inermis* (Cuvier & Valenciennes), but differing notably from that species in the shorter, stouter gillrakers, the emarginate caudal, the shorter anal spines, and the strongly falcate anal fin.

Only the type of this species is known. It was obtained by James E. Roberts, a Key West fisherman, October 23, 1896, while fishing in 5 fathoms of water, with hook baited with sardine. Mr. Roberts reports that the fish at first pulled very hard, showing good game qualities, but very soon ceased its struggles and came up a dead weight. This fish was wholly unknown to Mr. Roberts and many other Key West fishermen who saw it. One man claimed to have seen it or a similar fish in the Canaries, which was there known as "cabosa."

Etymology, *ζάγκλον*, a scythe or sickle, from the falcate anal fin.

9. *Anisotremus surinamensis* (Bloch). *Pompon*. (Pl. 8, fig. 10.)

Anisotremus surinamensis Evermann & Bean, Rept. U. S. F. C. 1896, 244.

Not until recently was this species known from the waters of the United States. Its known range extended from Cuba south to Brazil, Surinam being the type locality. On January 23, 1896, a single large example (15 inches long) was obtained at Fort Pierce, Fla., by Messrs. Evermann & Bean. It had been caught in the Indian River near Fort Pierce and was kindly presented to the Commission by Capt. Joseph Smith of that place. No other specimens from our waters were known until in November, 1896, when Dr. Jordan saw a fine example in the French Market at New Orleans. It had been received along with other fish from Eden, Fla., and was doubtless taken in Indian River.

This species is apparently quite rare on the East Florida coast, as the Indian River fishermen to whom we showed our specimen did not recognize it as known to them.

The following is a description of the specimen obtained at Fort Pierce:

Head $3\frac{1}{2}$; depth $2\frac{1}{2}$; eye $4\frac{1}{2}$; snout $2\frac{3}{8}$; maxillary 3. D. XII, 16; A. III, 8 or 9; scales 5-50-13. Body deep, back elevated, greatly compressed, profile steep, nearly straight from snout to above eye, a slight depression in front of nostril and another in interorbital space; profile from interorbital space to dorsal strongly arched in a broad curve. Head moderate; cheek deep; mouth rather small; jaws subequal, maxillary barely reaching front of orbit; ventral line of body nearly straight; caudal peduncle moderately long, its least depth equal to snout; teeth in several bands, the outer enlarged and canine-like. Fourth dorsal spine strongest and longest, its length $2\frac{1}{2}$ in head; soft dorsal as well as anal, pectorals, ventrals, and caudal densely covered with minute scales; height of longest soft dorsal ray 3 in head; second anal spine very stout, its length equal to that of fourth dorsal spine; third anal spine broad at base, but shorter than second; free edge of soft anal straight; dorsal and anal fins depressible in a scaly sheath; pectoral long and falcate, nearly reaching tip of ventrals, $1\frac{1}{2}$ in head; ventral shorter, $1\frac{1}{2}$ in pectoral; caudal well forked, the lobes about equal to ventral. Preopercle strongly but irregularly serrate.

Scales of cheek in about 7 rows; those on opercle in about 8 rows; those on interorbital and nape small and crowded; scales of back and sides arranged in oblique rows not parallel with the lateral line; lateral line arched, following approximately the contour of the back. Gillrakers rather short, stiff, 13+19.

Color grayish, darkest on anterior half of body, where each scale is dark brown on its basal half, then with a white ellipse, the narrow border darker, the contrast between the dark base and the white ellipse very marked; owing to the irregular arrangement of the scales the dark bases in some cases appear as spots; upper side of caudal peduncle brown, sides nearly plain white; snout and under parts of head lilac-brown; under parts of body rusty brown; fins all dark brown, especially the soft parts of dorsal and anal.

LYOSPHERA, new genus of *Diodontidae*, allied to *Chilomycterus*.

Type: *Lyosphara globosa* Evermann & Kendall.

This genus is distinguished from *Chilomycterus* by its armature of flattish, papery or cartilaginous plates to which minute hair-like papillæ are attached. The nostril, as in *Diodon*, is undivided.

Etymology, *λύω*, to loose, i. e., lax or flabby; *σφαῖρα*, sphere, ball.

10. Lyosphæra globosa, new species. (Pl. 9, figs. 11 and 12.)

Type locality, the Rappahannock River near the mouth of Windmill Creek, Virginia, where 2 specimens were collected by W. C. Kendall, July 18, 1892. Type, No. 48794 U. S. N. M. Associate type locality, Biscayne Bay at Cape Florida, Florida, 1 specimen. Cotype, No. 531 U. S. F. C.

The type specimen is about $1\frac{1}{4}$ inches long and about 1 inch wide and deep.

Head 3; depth $1\frac{1}{2}$; eye $3\frac{1}{2}$ in head; snout 4; D. 11; A. 4. Form oblong-ovoid; head broad; interorbital space slightly convex, broad, its width $1\frac{1}{2}$ in head. Dorsal and anal far back, each separated from the caudal by a space equal to two-thirds diameter of eye, each very small, the anal rays scarcely distinguishable; pectoral broad and short, with about 20 rays, the length less than interorbital width. Tooth of each jaw solid and continuous. Entire body sparsely covered with minute hair-like appendages or flexible, dermal papillæ, these very short ($\frac{1}{2}$ inch in type), and appear to be two-rooted. Nostril a short, entire papilla with two lateral openings and no division at the tip. Ground color yellowish white, this color regularly broken up into hexagonal spots by a network of dark brown, the width of the brown spaces being usually less than one-fourth the diameter of the spots, which are smallest on back and top of head; a villous papilla in the center of each spot.

The two specimens from the Rappahannock agree closely, but the one from Cape Florida, which is a younger individual, differs from them somewhat in color. It may be described as being pale yellowish-white, covered with about 50 narrow dark-brown or blackish rings or circles, each inclosing a circular spot of pale, yellowish-white; these circles smallest on the back and not touching each other anywhere; on the belly they are distant from each other a distance about equal to their own diameter. It seems that as the fish grows older these dark rings approach each other and finally unite to form the reticulations seen in the two other specimens.

We were at first disposed to regard these specimens as being the young of some known species, or possibly *Trichodiodon pilosus*¹ (Mitchill), but an examination of DeKay's figure² shows that they can not be Mitchill's species. It is equally apparent that they can not be Cuvier's *Diodon asper*³ or Günther's *Trichocycolus erinaceus*.⁴

Etymology, *globosus*, spherical.

11. Lophogobius cyprinoides (Pallas). (Pl. 9, fig. 13.)

Gobius cyprinoides Pallas, Spicilegia, Zool., VIII, 17, pl. 1, fig. 5, 1770, Amboina (♀); Poey, Repertorio, I, 335, 1868.

Lophogobius cyprinoides Poey, Synopsis, 393, 1868; Poey, Enumeratio, 125, 1876.

Gobius crista-galli Valenciennes, in Cuvier & Valenciennes, Hist. Nat. Poiss., XII, 130, 1839, Havana (Coll. Poey); Poey, Repertorio, I, 335, 1868.

One of the most interesting results of the recent investigations of the fish-fauna of the coastal waters of Florida is the finding of this remarkable goby in considerable numbers in the mouth of Little River, near Miami. It is a West Indian species, not hitherto known north of Cuba. The type used by Pallas is said to have come from Amboina, and the specimens which Valenciennes had came from Havana, whence they were sent by Professor Poey. Poey had specimens from Cuba, Haiti, Jamaica, and Santo Domingo.

¹ *Diodon pilosus*, Mitchill, Trans. Lit. and Philos. Soc., vol. I, 1815, 471, pl. 6, fig. 4.

² DeKay, N. Y. Fauna: Fishes, 326, pl. 55, fig. 180, 1842.

³ *Diodon asper*, Cuvier, Mem. du Muséum, IV, 1818.

⁴ Günther, Cat., VII, 316, 1870.

On October 23, 1896, several hauls with a 45-foot fine-meshed seine were made by Messrs. Evermann & Kendall in the Little River at various places in the last half mile of its course, and 35 fine specimens of this species were secured. They were found in all portions of the stream examined, in very brackish water about the mouth, in company with *Neomanis griseus* and *Lagodon rhomboides*, and farther up where the water was perfectly fresh, and associated with such fresh-water fishes as *Notropis*, *Abramis*, *Lucania*, *Jordanella*, *Heterandria*, *Acantharchus*, and *Elassoma*.

In studying the fishes collected in Florida by Dr. H. M. Smith, in 1895, we find 3 specimens of this species which he obtained in Crocodile Hole, Indian Creek, a locality on the opposite side of Biscayne Bay from the mouth of Little River.

Little River flows into Biscayne Bay a short distance north of Miami. It is a short stream, having its rise in the Everglades a few miles to the westward. At the mouth there are a good many mangrove bushes, but farther up the shores are lined with tall marsh grasses. The bottom is composed in most places of hard coral rock, worn into an irregular surface, over which it is difficult to haul a seine. In some places this rock is more even and is overlaid by a thick layer of mud and vegetable débris. The current was slow and the stream was well filled with such water plants as *Myriophyllum*, *Chara*, *Potamogeton*, various species of filamentous algae, and an occasional patch of pickerel weed (*Pontederia*).

The thirty-five specimens of *Lophogobius cyprinoides* from Little River vary in length from 1 to 1½ inches. The following description is based upon one of the largest examples:

Head 3½; depth 4; eye 4 in head; snout 4. D. VII-10; A. II, 8; P. 16; scales 27, 9 in a transverse series, counting from origin of anal upward and forward to dorsal.

Head very broad and heavy, its greatest width 1½ in its length; snout short and blunt; mouth large, oblique, maxillary reaching vertical of pupil; teeth in a single series in each jaw, none on vomer or palatines; gill membranes united to the isthmus, the gill slits wholly lateral; branchiostegals 4; jaws subequal; anterior nostril in a short tube; body compressed, tapering from head to the rather long, slender caudal peduncle, which is considerably expanded vertically at base of caudal fin; least depth of caudal peduncle 2½ in head, depth at base of caudal fin 2 in head. Fins all large; origin of spinous dorsal at one-third distance from tip of snout to base of caudal, its base 1½ in head, its longest spine slightly greater than base of fin; the 2 dorsal fins not connected, the interspace very short; base of soft dorsal nearly equal to length of head, the rays all about equal in length, the last reaching base of caudal, 1½ in head; anal fin similar to the soft dorsal, immediately under it, the last rays reaching base of caudal; pectoral broad and long, the length equaling head, reaching past origin of anal; pectorals completely united, the middle rays reaching anal; caudal rounded, the middle rays longest; a high dermal crest from above eye nearly to origin of spinous dorsal, its height about equal to diameter of eye. Scales very large, finely ctenoid; no lateral line; head, nuchal region, and breast naked; cheek and opercles beautifully vermiculated with about 10 irregular lines of close-set mucous tubes.

Color in adult, uniform dark brown, almost black on back and upper part of sides, somewhat paler beneath; fins all black; entire head black.

There is not much variation among the thirty-five specimens. The smaller individuals are somewhat more chunky in general form and the color is lighter. The nuchal dermal crest is present on all.

OGILBIA Jordan & Evermann, new genus of *Brotulida*, allied to *Dinematichthys*.

Type: *Ogilbia cayorum* Evermann & Kendall.

Body moderately elongate, covered with small, smooth, embedded scales; no lateral line; sides of head with similar scales. Preopercle with its margin adnate, and mucous pores along its border; opercle with a small spine posteriorly; no barbels; jaws subequal; gape of mouth wide, the maxillary broadened posteriorly, but without distinct hook; teeth in jaws in bands, subequal; similar teeth on vomer and palatines; lower lip without cirri. Gill membranes little connected, free from the isthmus; dorsal fin low, continuous, of soft rays only, inserted behind base of pectoral and not joined to the caudal, the base of the fin embedded in thick skin; anal similar to dorsal, but shorter; caudal small, rather pointed; pectorals moderate, inserted high; ventrals inserted before pectorals, each developed as a long filament of two soft rays. Anal papilla of the male without horny appendages or claspers. This genus is closely related to *Dinematichthys*, from which it differs in the absence of horny claspers to the anal papilla. *Dinematichthys ventralis* Gill, from the Pacific coast of Mexico,

belongs to it. *Brosmophycis* is also closely related, differing in the presence of cirri on the lower jaw and the absence of developed scales on the side of the head.

Named for J. Douglas Ogilby, the accomplished naturalist of the Museum of Sidney, in recognition of his excellent work on the fishes of Australia.

12. *Ogilbia cayorum*, new species. (Pl. 9, fig. 14.)

Type, No. 48792, U. S. N. M., a young individual $2\frac{1}{2}$ inches long. Type locality, Key West, Florida, October 23, 1896. Collectors, Evermann and Kendall.

Head 4; depth $4\frac{1}{2}$; eye $8\frac{1}{2}$ in head; snout 4; D. about 68; A. about 50; scales about 14-87-13; maxillary $1\frac{1}{2}$; pectoral $1\frac{1}{2}$; ventral $1\frac{1}{2}$; caudal $2\frac{1}{2}$. Body moderately elongate, compressed; head moderate, snout blunt; mouth large; jaws subequal, maxillary extending beyond vertical of eye a distance nearly equal to length of snout; eye very small, high up, situated in anterior third of head; nostril small, close to eye. Teeth small, in bands on jaws, vomer, and palatines. Back elevated, strongly arched from snout to origin of dorsal fin, thence descending in a nearly straight line to base of caudal; ventral outline comparatively straight, slightly concave at front of anal. Dorsal and anal long and low, distinct from caudal, the posterior rays longest, about $3\frac{1}{2}$ in head, base of each scaled; distance from tip of snout to origin of dorsal about 3 in length of body; origin of anal under about 22d dorsal ray, equidistant between tip of snout and base of caudal. Scales very small, embedded, but showing distinctly under a lens; cheek and opercles partially covered with minute, embedded scales; top of head naked; opercle with a large, flat, flexible spine on level with eye. No barbels, cilia, nor tubercles; 2 large mucous pores at symphysis of lower jaw, 2 on preorbital near anterior edge on each side, and a row of 5 or 6 pores on lower jaw and edge of preopercle.

Color, uniform pale olivaceous or light brown, finely punctate with minute brown specks.

A single example of this species was seized on a shoal covered with algæ, at Key West.

Etymology, *cayorum*, of the keys, from Cayo Hueso, Bone Key, the original name of the island of Key West.

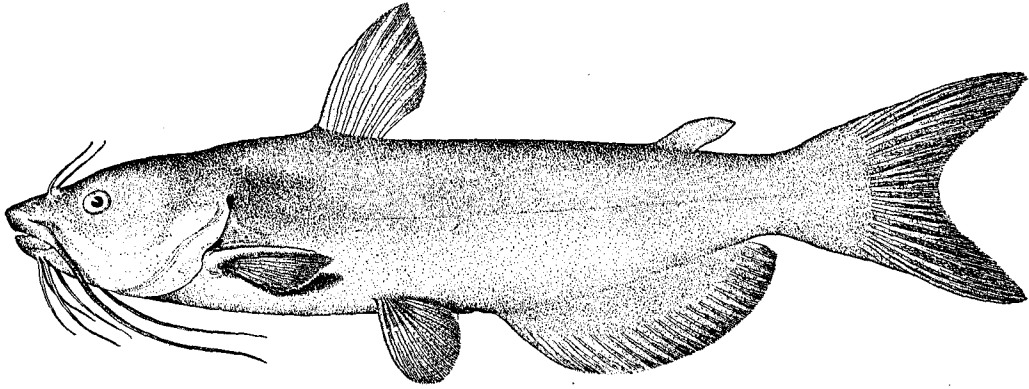


Fig. 1. ICTALURUS ANGUILLA, new species. Type.

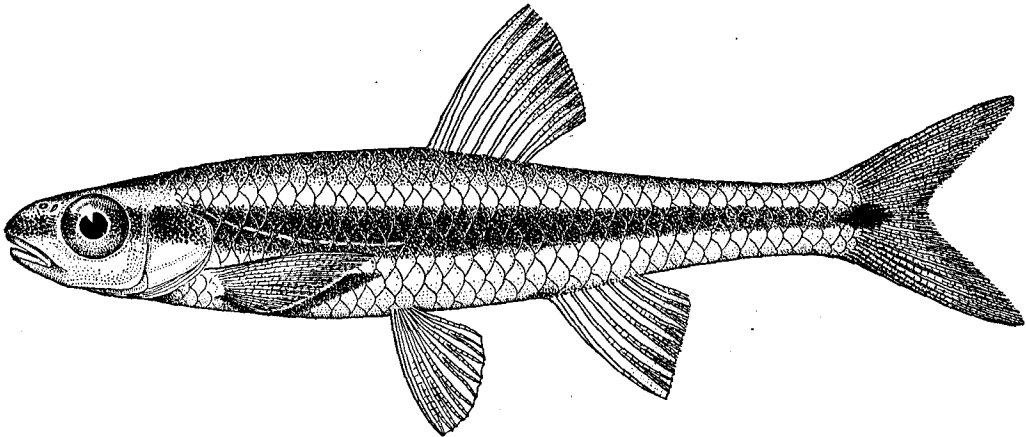


Fig. 2. NOTROPIS WELAKA, new species. Type.

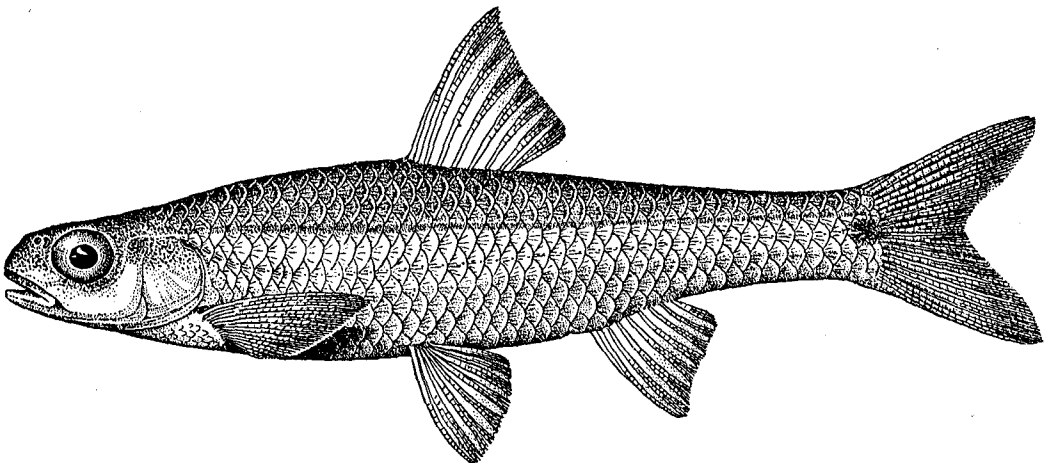


Fig. 3. NOTROPIS HUDSONIUS (DeWitt Clinton).

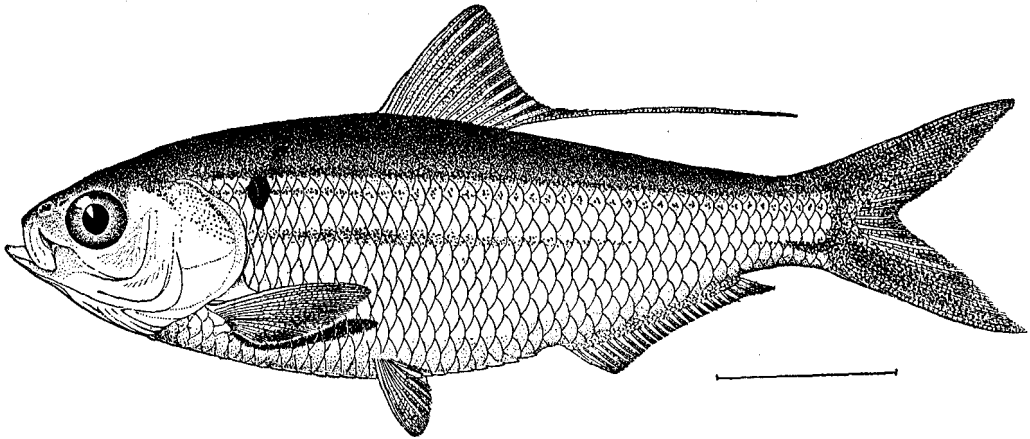


Fig. 4. *SIGNALOSA ATCHAFALAYÆ*, new species. Type.

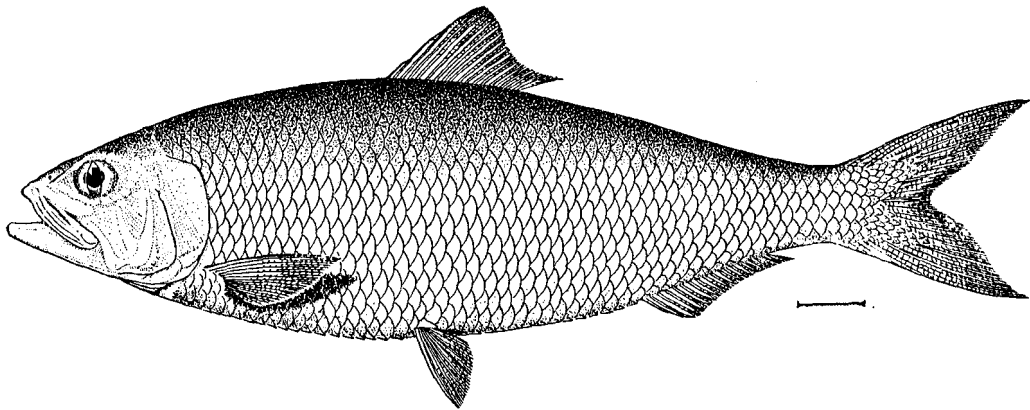


Fig. 5. *ALOSA ALABAMÆ* Jordan & Evermann. Male; one of the types.

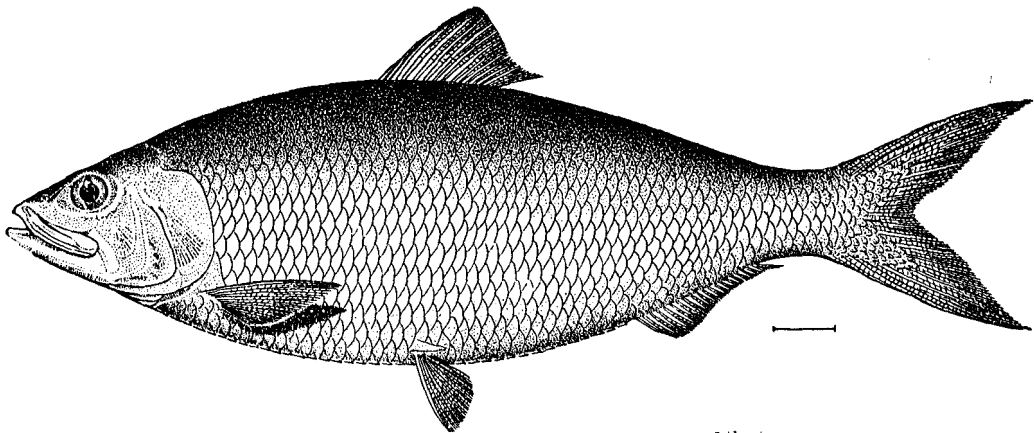


Fig. 6. *ALOSA ALABAMÆ* Jordan & Evermann. Female; one of the types.

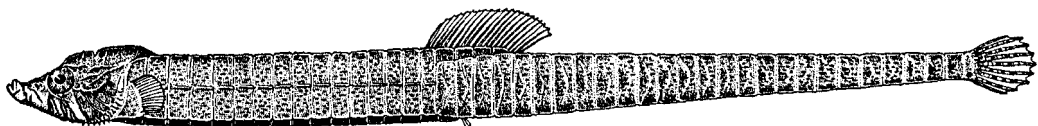


Fig. 7. *CORYTHROICHTHYS CAYORUM*, new species. Type.

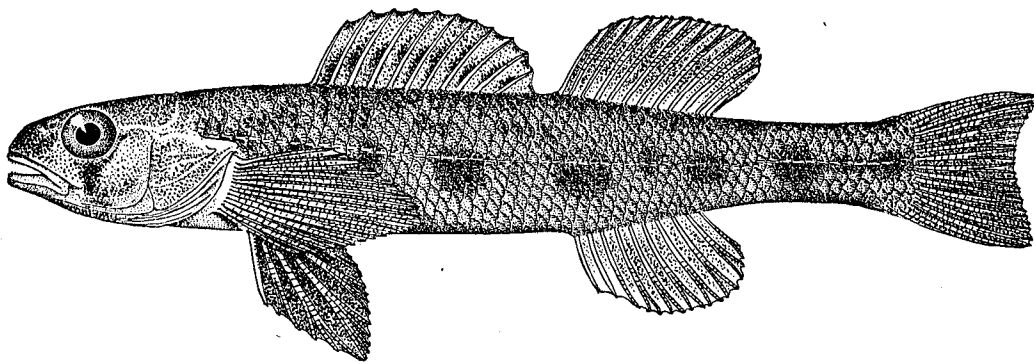


Fig. 8. COTTOGASTER CHENEYI, new species. Type.

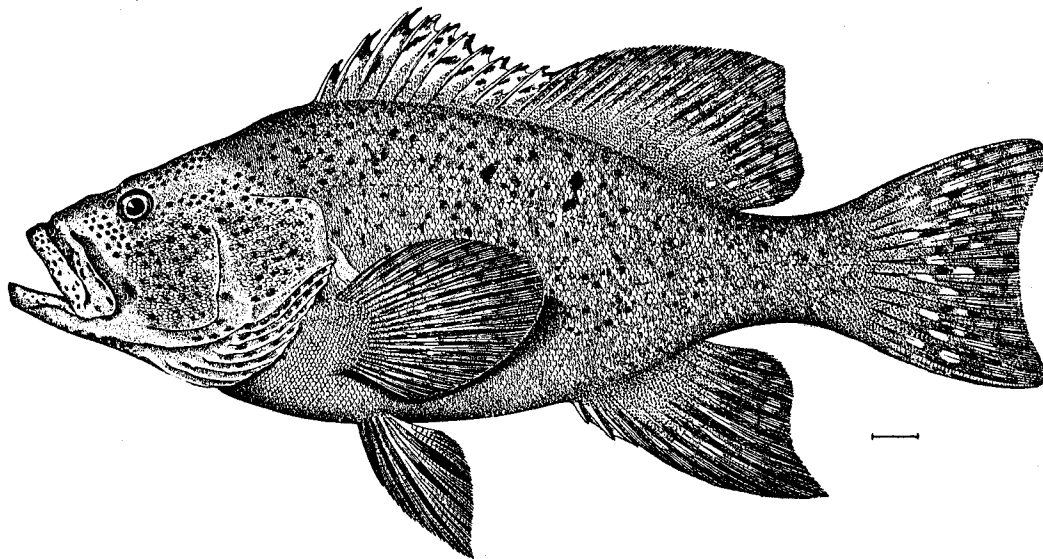


Fig. 9. DERMATOLEPIS ZANCLUS, new species. Type.

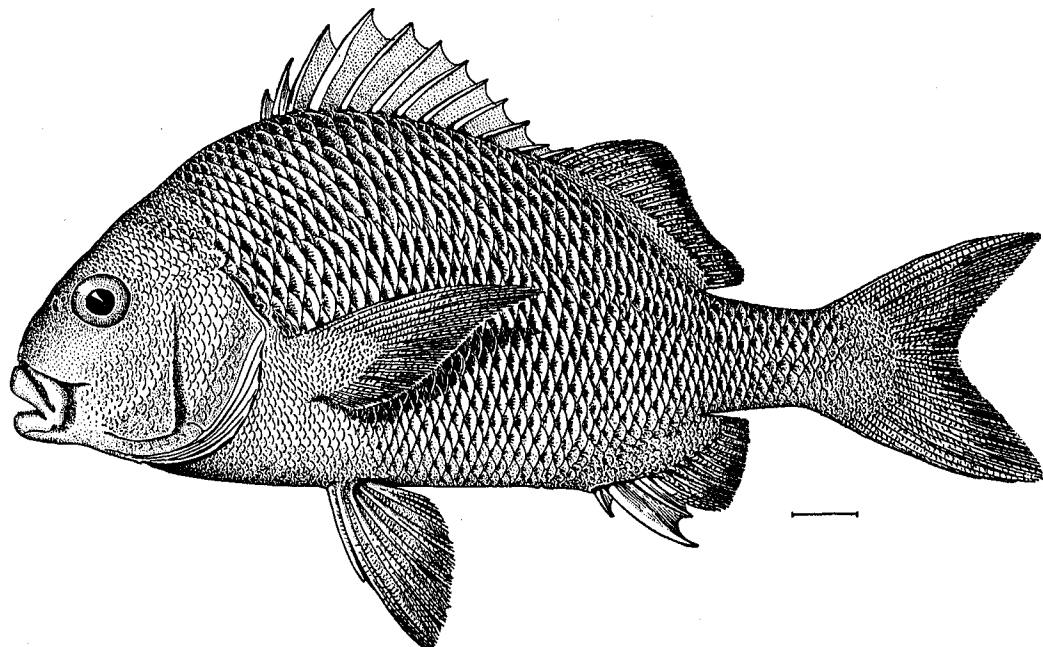


Fig. 10. ANISOTREMUS SURINAMENSIS (Bloch).

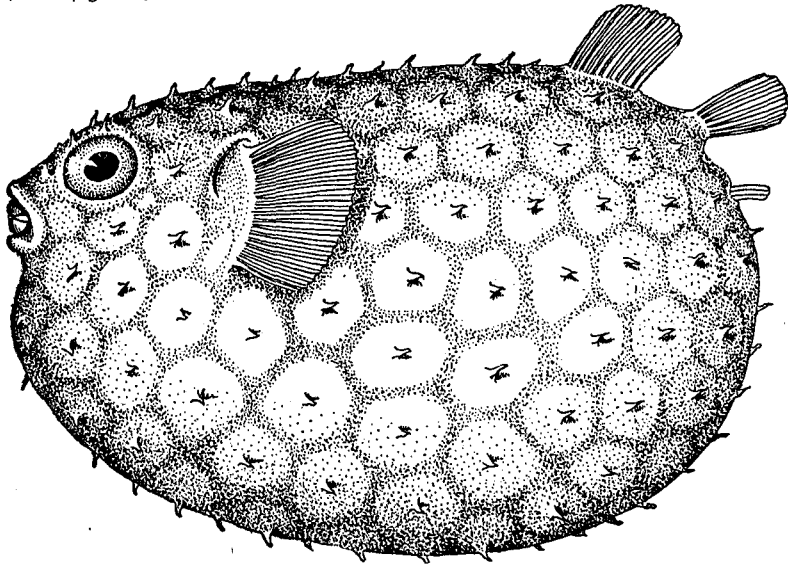


Fig. 11. LYOSPHÆRA GLOBOSA, new species. Type.

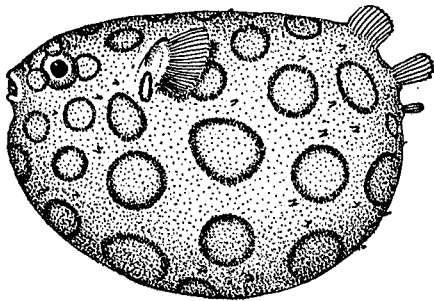


Fig. 12. LYOSPHÆRA GLOBOSA, new species. Cotype; young.

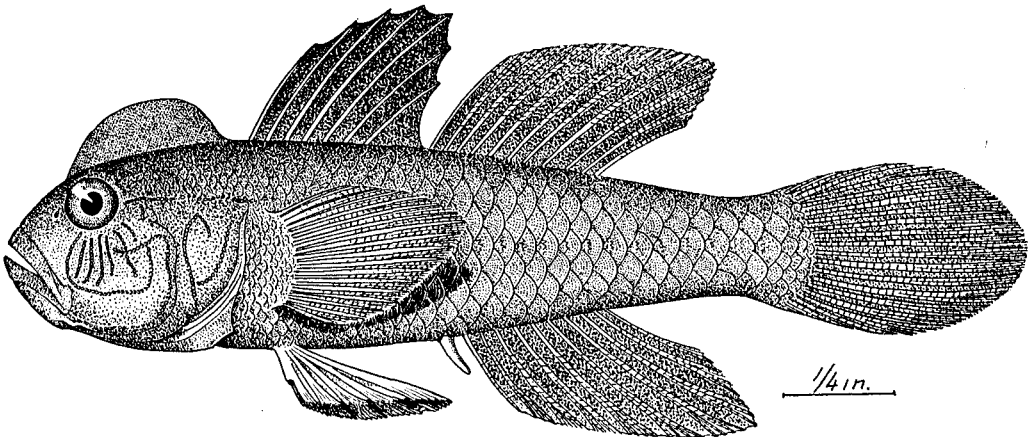


Fig. 13. LOPHOGOBIUS CYPRINOIDES (Pallas).

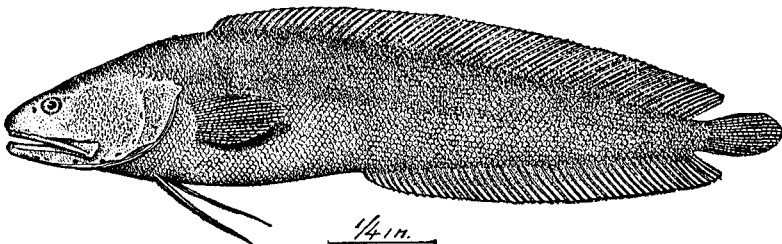


Fig. 14. OGILBIA CAYORUM, new species.