

are indebted for the information that his *Girardinus* is subsequent to *Heterandria*.

5. *Mugil albula* (Linnaeus). *Mullet*.

Very abundant; full of ripe spawn. November 20.

6. *Lepomis pallidus* (Mitch.) Gill & Jordan. *Brim*.

7. *Lepomis holbrooki* (Cuv. & Val.) McKay. *Brim*.

8. *Pomadasys chrysopterus* (Linn.) Goode & Bean. *Hog fish*.

9. *Diplodus probatocephalus* (Walb.) Jordan & Gilbert. *Sheep's-head*.

10. *Pogonias chromis* (L., Cuv. & Val.)

11. *Sciæna ocellata* (L.) Günther. *Red Bass*.

12. *Liostomus xanthurus* La Cépède.

13. *Micropogon undulatus* (L.) Cuv. & Val. *Croaker*.

14. *Menticirrus alburnus* (L.) Gill. *Whiting*.

15. *Cynoscion maculatum* (Mitchill) Gill. *Trout*.

16. *Paralichthys lethostigma* Jordan & Gilbert MSS. (nom. sp. nov.).

(*Paralichthys dentatus* Jor. & Gilb. Syn. Fish N. A., 822, not *Pleuronectes dentatus* L. fide Bean.*)

NOTES ON THE PIPE-FISHES OF KEY WEST, FLORIDA, WITH DESCRIPTION OF *Siphostoma McKayi*, A NEW SPECIES.

By JOSEPH SWAIN AND SETH E. MEEK.

The collection of pipe-fishes upon which this paper is based was obtained by Professor Jordan at Key West, Fla., during his recent visit to that place. Besides the single species, which is apparently new to science, we find in this collection all the species, except *Siphostoma fuscum*, hitherto known from the Atlantic coast of the United States.

We wish to express our indebtedness to Professor Jordan for the use of his library and for kindly aid.

The synonymy of the different species has been already published by Mr. Swain (Proc. U. S. Nat. Mus., 1882, 307-315), and the National Museum has specimens of all the species here recorded.

Analysis of species of the genus *Siphostoma*, found in the United States.

a. Top of head strongly carinated.

b. Breast shields not covered by soft skin; opercle with a prominent ridge; snout short; D. 22 or 23, covering 1 + 4 rings; rings, 18 + 30; belly concave; twelve irregular brown cross-bars on body. (*Corythroichthys* Kaup.). ZATROPIS, 1

bb. Breast shields covered by soft skin; D. 41; rings, 19 + 39. (*Dermatostethus* Gill.) PUNCTIPINNE, 2

* Dr. Bean, who has examined the Linnaean type of this species, now preserved in London, identifies it with the species called *P. ophryus* or *P. ocellaris* by Jordan & Gilbert.

- aa. Top of head with a slight carination or with none; opercle without prominent longitudinal ridge. (*Siphostoma*.)
- c. Dorsal fin covering 1 + 9 rings; snout usually long; size large.
 d. Rings 20 to 21 + 45 to 49; D. 39 to 46; top of head without keel.
 CALIFORNIENSE, 3
- dd. Rings 18 to 19 + 39 to 42; D. 36 to 41; top of head slightly keeled.
 GRISEOLINEATUM, 4
- cc. Dorsal fin covering 1 + 6 or 7 rings. (Occasionally 2 + 6 in *S. florida*.)
 e. Rings 15 + 38; D. 29 to 30; top of head distinctly keeled; snout short.
 AULISCUS, 5
- ce. Rings before vent, 16 to 19.
- f. Dorsal fin low, not longer than head.
 g. Rings 18 + 31; D. 34; snout short; body comparatively stout; tail short BARBARÆ, 6
- gg. Rings 17 to 19 + 36 to 41; D. 30 to 32; snout moderate or rather short; body slender LEPTORHYNCHUS, 7
- ggg. Rings 17 to 18 + 31 to 33; D. 27 to 31; snout rather long. FLORIDÆ, 8
- ccc. Dorsal fin covering 3 + 5 (sometimes 3 + 4) rings.
 h. Dorsal fin very high; rings 16 to 18 + 30 to 33; D. 25 to 32; belly in female with black carina; snout rather short; sides of body with narrow vertical streaks in life; dorsal spotted AFFINE,* 9
- hh. Dorsal fin not very high; rings 20 to 21 + 36 to 38; D. 32 to 37; belly flat or slightly concave; snout moderate LOUISIANÆ, 10
- cccc. Dorsal fin covering 5 + 4 or 4 + 5 rings; rings 18 to 20 + 36 to 40; D. 36 to 40; snout moderate FUSCUM, 11
- ccccc. Dorsal fin covering 2 + 5 to 6 rings; rings 18 + 33; D. 29 to 31; opercle not keeled; body deep; its greatest depth in adult females equal to width of 4 body rings (2½ in males); snout about 1¾ in head; belly in females angulate, without keel; dorsal pale, marked with dark green; opercle and snout barred with white MCKAYI, 12
- ccccc. Dorsal fin covering 0 + 4 (occasionally ½ + 4) rings; top of head slightly keeled; snout very short, 3 in head; rings 16 + 37 to 39; D. 17; belly convex; color in spirits dusky gray, with about 13 conspicuous cross-bars, each wider than a body ring CRINIGERUM, 14

1. *Siphostoma zatropis* Jordan & Gilbert.

Two specimens taken at Key West, each with rings 16 + 27; dorsal with 22 rays, covering 1 + 4 rings.

6. *Siphostoma barbaræ* Swain, sp. nov.†

8. *Siphostoma Floridæ* Jordan & Gilbert.

Four specimens obtained, with dorsal rays 27 to 29, covering 1 + 7 rings. In addition to these we have referred to this species two female

* NOTE.—In the key to this genus, formerly published by Mr. Swain (Proc. U. S. Nat. Mus., 1882, 303), this species was inadvertently placed under *cc*, "Dorsal fin covering 1 + 7 rings," instead of under *ccc*, "Dorsal fin covering 3 + 5 rings."

This error is copied in Jordan & Gilbert's Synopsis Fishes N. A., p. 906. It is here corrected.

† *Siphostoma barbaræ* Swain, sp. nov. This name is proposed for the specimen taken by Andrea Larco at Santa Barbara, Cal. (No. 31253 U. S. Nat. Mus.), described by Mr. Swain, Proc. U. S. Nat. Mus., 1882, 311, under the erroneous name of *Siphostoma bairdianum*. We are informed by M. Alexandre Thominot, of the Museum of Paris, who has re-examined the type of *Syngnathus bairdianus*, that the specimen has the dorsal fin on 3 + 5½ rings, as stated by M. Duméril. *S. bairdianum* is therefore a different species, apparently closely allied to *S. affine*.

specimens, differing from the typical *S. florida* in the following characters: The dorsal covering 2 + 5 or 6 rings, the keel of belly distinct, no cross-bars on sides of body; D. 29 to 31, rings 19 to 20 + 33. These, perhaps, represent a distinct species, but we think it more likely an extreme variation of *S. florida*.

9. *Siphostoma affine* (Günther) Jordan & Gilbert.

Many specimens obtained in greater abundance than any other species. D. 25 to 28. We have also examined two specimens of this species in the museum of Yale College, collected by Prof. C. F. Hartt at Abrolhos Reef, off the east coast of Brazil.

10. *Siphostoma louisianæ* (Günther) Jordan & Gilbert.

Seven specimens in the collection.

12. *Siphostoma McKayi*, sp. nov.

Head $5\frac{3}{8}$ to $6\frac{1}{4}$ in total length; D. 29 to 31; rings 18 + 33 to 34.

Snout rather long, compressed, $1\frac{3}{4}$ to 2 in head, its median line with a slight keel above and below, with smaller keels on each side; opercle not keeled.

Dorsal somewhat higher than width of a body ring, its base about $1\frac{1}{3}$ in length of head, covering 2 + 6 rings. Pectoral higher than length of base; tail about $1\frac{5}{6}$ in total length of fish; body deep; its greatest depth in adult females equals width of 4 body rings.

Color in spirits grayish or dark olive; the males often with gray cross-bars on the sides; the body is usually more or less spotted with small white spots. Dorsal pale, usually dotted over with darker; caudal dusky, generally spotted with white; opercle usually with white bars.

This species is described from three female and six male specimens, obtained by Professor Jordan at Key West. Some of these typical specimens (No. 34989) are now in the United States National Museum. This species is named for our friend and fellow-student, Charles Leslie McKay, of the United States Signal Service, who recently lost his life in the cause of science in Alaska.

14. *Siphostoma crinigerum* Bean & Dresel.

Bean & Dresel, Proc. Biol. Soc. Wash. II, p. 99.

Four specimens, with dorsal rays 17, covering 0 + 4 (one example $\frac{1}{2}$ + 4) rings; rings 16 + 37; snout very short, 3 in head; size small. Two specimens of pipe fish in the museum of Yale College, obtained by Prof. C. F. Hartt at Abrolhos Reef, off the east coast of Brazil, appear to belong to this species.

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