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# THE CYPRINODONTS.

By S. GARMAN.

WITH TWELVE PLATES.

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forehead. Mouth medium, oblique, opening upward. Teeth in a single series, tricuspid. Branchiostegal rays six. Origin of dorsal midway from front edge of orbit to base of caudal. Base of anal below hinder half of that of dorsal, and extending a little farther backward. Anal fin rounded, hardly half as large as dorsal, but extending farther back. Ventrals small, with six or seven rays, or absent. Some have six rays on one side, seven on the other, and in one case there is no trace of the fin. Pectorals broad, rounded, hardly reaching a line from first ray of dorsal to base of ventral. Caudal large, longer than deep at the base, about two thirds as long as head, slightly concave on the hind margin.

Back greyish brown to brownish; sides lighter, to silvery on the entire ventral surface. Sides with or without a median series of small blotches separated from the brown of the back and from one another by silvery. In cases each scale has a spot of brown, those on the lateral line being larger and darker. Some have silvery cheeks, others are punctulate with brown on the sides of the head. The longitudinal bar of silvery above the lateral line when present becomes indistinct in its forward half. Pectorals dusky; other fins freckled with brownish toward their bases. A darker spot on the basal portions of the hindmost rays of the dorsal; a darker bar across the bases of the rays of the caudal; caudal in the majority of cases tipped with a narrow border of black. The specimens described are from the Rio Grande del Norte, the locality furnishing the original description of Baird and Girard, and from the Chihuahua, whence Girard's specimens of *C. eximius* were brought. The Chihuahua representatives are lighter in colors, but otherwise furnish no reasons for separation from those of the Rio Grande.

#### *Cyprinodon macularius*.

*Cyprinodon macularius* B. & G., 1854, P. Phil. Ac., VI, 389; Grd., 1859, Mex. Bd. Fish, 68, pl. 37, f. 8-11; Blk., 1860, Cypr., 484; Trosch., 1865, Verz. Wirb. Mex., 104; Jor. & C., 1877, B. Buf. Soc., III, 141; Jor., 1878, B. U. S. G. Sur., IV, 432, — 1887, R. U. S. F. Com., 835; Jor. & G., 1882, B. 16 U. S. Mus., 330; Eig., 1892, P. U. S. Mus., XV, 142; Gilb., 1893, N. Am. Fauna, No. 7, p. 232.

*Cyprinodon californiensis* Grd., 1859, P. Phil. Ac., 157; Blk., 1860, Cypr., 484; Jor. & C., 1887, B. Buf. Soc., III, 141; Jor., 1878, B. U. S. G. Sur., IV, 432, — 1887, R. U. S. F. Com., 835; Jor. & G., 1881, P. U. S. Mus., III, 457, — 1882, P. U. S. Mus., IV, 42, — B. 16 U. S. Mus., 330; Jor. & J., 1882, P. U. S. Mus., IV, 13; Eig., 1888, W. Am. Sci., V, No. 1, p. 3.

*Cyprinodon nevadensis* Eig., 1889, P. Cal. Ac., (2) I, 270.

B. 6; D. 11-10; A. 11; V. 7 (rarely 6, or absent); P. 15; Ll. 27-29;  
Ltr. 11-10; Vert. 12+14.

In the young stages this species resembles *C. elegans*; large specimens,

however, do not retain the elongate form of that species, but become much deeper and more like *C. variegatus*, and they lose their markings in a nearly uniform light olivaceous. On a two inch specimen the depth is one third and the head one fourth of the total length. Body compressed; caudal pedicel deep. Head short, thick, nearly as wide as deep from the occiput; crown arched, rather pointed. Snout short, blunt, as long as the eye; chin steep. Mouth medium, oblique, opening upward; lower jaws longer; upper short, protractile. Eye large, three tenths of head, two thirds of forehead. Origin of dorsal about midway from snout to base of caudal. Anal origin under hind half of base of dorsal. Ventrals small, most often with seven rays, occasionally with six on one side or the other, sometimes six on each side; one or both of the fins are occasionally lacking. Caudal short, deep, truncate to slightly convex.

The smaller individuals are brownish on the back, more or less clouded and mottled, and have a series of irregular brown blotches along the lateral line, sometimes divided into two series by a longitudinal band of silver color on the lower half of the flank. In cases the blotches on the flank are confluent into a brown band. Fins clouded or punctulate with brownish; hind rays of dorsal with a darker spot, not always present; caudal, and frequently the dorsal and anal, tipped with black. With age the markings on the scales are lost and the coloration becomes nearly or quite uniform olivaceous, light to dark, with or without lighter centres to the scales, while the entire body takes on a metallic tint that varies in individuals from silvery to golden. Ventral surfaces lighter, bright to dingy.

Colorado River basin to the Pacific Coast.

#### Cyprinodon Baileyi.

*Cyprinodon macularius baileyi* Gilb., 1893, N. Am. Fauna, No. 7, 233.

"Eleven immature specimens from Pahrnagat Valley, Nevada, show no trace of ventral fins. They are olivaceous above, bright silvery on the lower half of sides and below, and have two lengthwise series of coarse black spots, one along middle line of body, the other on a level with the lower edge of caudal peduncle. The anal fin is larger than in typical *macularius*, the eleven specimens having each 13 rays instead of 10 or 11, as constantly in the latter. The material is insufficient to fully decide the status of this form. Except in the characters noted it agrees in proportions and formulæ with *macularius*."