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NOTES ON FRESH-WATER FISHES FROM MEXICO AND CENTRAL AMERICA

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By SETH EUGENE MEEK.

During the past year and a half the Museum has received from Mexico and Central America several collections of fresh-water fishes. The Central American countries represented are Guatemala, Beliz, Nicaragua and Costa Rica. In the following paper those from each country are listed separately. The largest collections are from Guatemala and are listed first. These collections were made during January and February, 1906, as follows: Collections made by the writer are from the Motagua River at El Rancho, Lake Amatitlan, Mazatenango San José del Idolo and Caballo Blanco; a collection made by Dr. N Dearborn, Rio Motagua, Los Amates; a collection made by C. M. Barber in Lake Atitlan.

The Rio Motagua at El Rancho and at Los Amates flows with a swift current over sandy and rocky bottom. It is a large stream, but does not appear to be well supplied with fishes, especially in its upper course. Its fishes were studied some two years ago by Newton Miller*, who has given an excellent account of the ichthyology of this river, which is the largest one in the Republic.

The water-courses visited by the writer at Mazatenango and San José del Idolo, are swift mountain streams, flowing for the most part over rocky bottoms. The Rio Tilapa at Caballo Blanco drains the western slope of the volcano Santa Maria, and since the eruption of 1902 it has been almost without fishes. At Caballo Blanco this river is very wide, but averages in February less than a foot in depth. It is overloaded with sediment from the ashes thrown out during that eruption. A collection of fishes was made in the Rio Isquia a short distance south of Caballo Blanco. In these the current was sluggish, and fishes were more abundant in them than in the waters of the higher lands. The physical features and the biology of the lakes Amatitlan and Atitlan will be described in a paper now in preparation. The study of these lakes was made under the patronage of the Guatemalan government.

I wish to acknowledge my indebtedness to Mr. Combs, U. S. Minister to Mexico, his secretary, Mr. Brown, and to Mr. Winslow, U. S.

*Bull. Amer. Mus. Nat. Hist., 1907, pp. 95–124.

Notropis braytoni Jordan & Evermann.
Sabinas (15), 45 to 65 mm.

Notropis calientis Jordan & Snyder.
San Miguel (34), 45 to 63 mm.; Jesùs Maria (60), 35 to 45 mm.

Notropis lutrensis (Baird & Girard).
Roderiguez (23), 45 to 50 mm.

Notropis santarosaliæ Meek.
Roderiguez (21), 50 to 65 mm.

Hybopsis æstivalis (Girard).
Roderiguez (41), 50 to 60 mm.

Family **Characinidæ.**

Astyanax mexicanus (Filippi).
Jesus Maria (8), 60 to 90 mm.; Roderiguez (49), 55 to 75 mm.; Sabinas (8), 45 to 60 mm.

Family **Dorosomidæ.**

Dorosoma exile Jordan & Gilbert.
Sabinas (20), 45 to 90 mm.; Roderiguez (1), 165 mm.

Family **Pœciliidæ.**

Characodon variatus Bean.
San Miguel (290), 35 to 70 mm.

Gambusia affinis (Baird & Girard).
San Miguel (60), 30 to 50 mm.

Goodea atripinnis Jordan.
Jesus Maria (175), 30 to 50 mm.; San Miguel (19), 33 to 75 mm.

Family **Atherinidæ.**

Chirostoma arge (Jordan & Snyder).
San Miguel (47), 33 to 75 mm.

Family **Scienidæ.**

Haploidonotus grunniens Rafinesque. MATALOTE.
Roderiguez (7), 145 to 260 mm.

Family **Centrarchidæ.**

Lepomis pallidus (Mitchill).
Sabinas (50), 40 to 110 mm.; Roderiguez (12).

Lepomis megalotis (Rafinesque).
Sabinas (6), 75 to 105 mm.; Roderiguez (2), 93 mm.

Family **Cichlidæ.**

Cichlasoma cyanoguttatum (Baird & Girard).
The dentition of this species varies greatly, especially so if we consider *Neetroplus carpintus* Jordan and Snyder identical with it. In my account of the genus *Neetroplus* (Field Mus. Pub., Zoöl. Ser., V., 221) I called attention to the fact that the incisor teeth of *N. carpintis* were not always evident. Owing to the variation in color and form as well as in dentition, I am inclined to believe Mr. Regan is correct in combining these two supposed species. The smallest specimens (50 mm.) usually have pointed conical teeth. Other specimens (100 to 150 mm.) may have very few incisor-like teeth while in others of the same size these teeth are quite evident. For fishes of the length

of 150 mm. it is difficult to say which is the oldest because they grow so irregularly. The incisor-like teeth have the appearance, however, of becoming more developed in this species with age, though perhaps very irregularly so. I do not believe that we can retain the genus *Herichthys* on the character of dentition alone. The genus *Neetroplus* is based on the incisor-like teeth of *N. nematopus*, but these flat truncate teeth are quite different from the more or less compressed truncate or rounded anterior teeth which we usually find in many of the larger individuals of the species in question. So far as I have studied them, by far the larger number of the *Cichlasoma* appear to have a quite uniform and regular dentition. The teeth in the young are conical and pointed, while usually in the larger and apparently older individuals some or all of them are more or less blunt at the tips. To give this character specific or generic value one must distinguish between teeth which are worn or changed by age, and those whose structure is constant, but to do this is very difficult.

Roderiguez (5), 30 to 55 mm.