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Studies of the Fishes of the Order Cyprinodontes. XI.  
*Zoogoneticus zonistius*, a New Species from  
Colima, Mexico

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THE rich collection of cyprinodont fishes in the Museum of Comparative Zoology includes some species which were indicated as new by the late Dr. Samuel Garman, who for some time before his death had in preparation a revision of his *Cyprinodontes* of 1895. Among these are two specimens from Colima, Mexico, collected by Gustav Glückert, and donated to the Museum on November 1, 1913. These represent, as Garman correctly appreciated, a very distinct species of *Zoogoneticus*. Permission to describe this species has graciously been extended by Dr. Thomas Barbour.

The genus *Zoogoneticus* has not been reported heretofore from outside the confines of the Rio Lerma drainage basin (including the Rio Santiago de Grande, under which name the lower course of the Lerma is known): the home of the entire family Goodeidae (see Hubbs, 1924a: 4). But two species of the family have been recorded from streams south of the Lerma basin. These are: (1) *Goodea whitei* Meek, of the Rio Balsas basin, made the type of a distinct genus *Balsadichthys* by Hubbs (1926: 19), and (2) *Characodon fuscus* Jordan and Gilbert. The latter is the only goodeid heretofore recorded from Colima. It also has been reported from the Rio Tuxpan<sup>1</sup> (Pellegrin, 1901: 122) and the Rio de Mascota (Regan, 1907: 90), both streams in Jalisco south of the mouth of the Rio Grande de Santiago, and on either side of Colima. *C. fuscus* has also been reported, no doubt erroneously, from "Cape San Lucas" (Hubbs, 1931: 2).

The only prior records of freshwater fishes from Colima of which I am aware are those given by Jordan and Gilbert (1882). In addition to the *Characodon*, these records are of three semi-fluviatile gobies: *Philypnus maculatus*, *Dormitator latifrons* and *Eleotris picta* (recorded

<sup>1</sup> Pellegrin gave this record as "de la rivière Tuxpan," "de l'Etat de Jalisco," presumably from the Tuxpan in Jalisco which lies east of Colima. Meek (1904: xxxvii and 122) apparently erroneously gave this record as for the "Rio San Pedro at Tuxpan, Jalisco." There is a Tuxpan on the Rio San Pedro (the name for the lower course of the Rio Mezquital), but it is in Tepic (=Nayarit), not Jalisco.

respectively as *Philypnus lateralis*, *Dormitator maculatus* and *Culius aequidens*). The known Colima freshwater fish fauna of five species is therefore 40 per cent of Rio Lerma, and 60 per cent of marine affinities.

The described species of *Zoogoneticus*, now regarded as valid, number four: *Z. robustus* (Bean), *Z. cuitzeoensis* (Bean), *Z. dugèsi* (Bean) and *Z. diasi* Meek. These are all diagnosed and figured by Meek (1904: 109-115, fig. 29-33), who, however, recognized three other species: *Z. pachycephalus* (Günther), which belongs in *Profundulus* Hubbs (1924b: 13), and *Z. maculatus* Regan and *Z. miniatus* Meek, now resting respectively in the synonymies of *Z. robustus* and *Z. diasi*. These species are now accepted as recognized by Regan (1907: 85-87).

#### *Zoogoneticus zonisti*, new species

Holotype: Cat. No. 32818, Museum of Comparative Zoology, an adult male 44 mm. lat. to caudal. Paratype: Cat. No. 97316, Museum of Zoology, University of Michigan, 48 mm. long.

*Zoogoneticus zonisti*, like each of the four other recognized species of the genus, is characterized by a strikingly distinctive color pattern. The most conspicuous features of *zonisti* are the five oblique ocellated bands on the posterobasal half of the dorsal fin, the jet black comma-shaped mark behind shoulder girdle and the intensely blackened scale borders on upper posterior sides.

In other respects than coloration, this species matches fairly well with *Z. robustus*. The scales appear to be a little smaller, in 40 instead of 36 to 39 rows. It appears to be most closely related to that species, which I interpret as the most primitive in the genus (and family). It is of interest that it approaches *robustus* most closely in distribution also, for *robustus* is the only species known to occur in the lower portion of the Rio Lerma, where the stream changes its name to Rio Santiago de Grande.

From *Z. cuitzeoensis*, the present species differs further in the much smaller size of the scales and in the much smaller eye. From *Z. dugèsi* it is readily set off by the finer scales, by the concave anterior profile, and the much more anteriorly placed dorsal and anal fins. From *Z. diasi* it is distinguished by the smaller scales, and by the more robust build, especially in having the caudal peduncle more than half as deep as the body, as in all the species other than *diasi*.

*Description*.—The body is heavy-set forward (the head two-thirds as wide as long); sharply compressed posteriorly. The greatest depth is contained 3.0 (3.3)\* times in the standard length. The least depth is contained 1.8 (1.7) times in length of caudal peduncle, and 1.7 (1.6) times in head. The nuchal region is strongly humped, so that the profile near the occiput is distinctly concave. The edges of the caudal peduncle are nearly straight and parallel.

The head is widest through the turgid cheeks. The least width of the slightly convex interorbital enters the head 2.7 times. The orbit is not quite all included in the anterior half of the head; its length measures 4.3 (4.4) times in head. The jaws are equal; the upper lip anteriorly

\* Parenthetic entries represent those measurements and counts of the paratype which differ from the corresponding ones of the holotype.



is on the same horizontal as the pupil. The mouth, more transverse than lateral, describes a very wide U-curve as seen from above; its horizontal lateral projection is only half that from tip of mandible to orbit; the width of the mouth, lips included, is just equal to the length of snout, being contained 3.25 (3.15) times in head; the length of the upper lip is about one-fourth its width. The teeth of the main row are strong, triangular incisors. Those of the narrow inner band are similar but much smaller. The gill-slit is restricted, as the opercular membrane is bound down: the slit continues straight upward and backward to less than half the pupillary diameter above the uppermost pectoral ray. The branchiostegals number 4 only, and the uppermost is expanded ventrally enough to be exposed between subopercle and interopercle. The gill membranes are broadly united and form a very narrow fold where united to the isthmus. The gill-rakers on the outer arch number 1+18, counting rudiments; all are shorter than the pupil. (The branchiostegal and gill-raker characters were determined on the paratype.)

Dorsal, 13; anal, 14; about 7 anterior anal rays shortened (both specimens are males); pectoral, about 21; pelvic, 6. The origin of the dorsal is midway between caudal base and upper edge of preopercular margin (or posterior edge of orbit); the length of the dorsal when depressed is contained 2.1 (1.9) times in distance forward to tip of muzzle; the highest ray measures 2.0 times in head, the base of the fin 1.5 times. The length of the stubby caudal fin enters 1.7 times in head. The highest anal ray enters the head 2.1 (2.0) times, the base of anal 2.2 (2.3) times. The length of the rounded pectoral, from upper angle, is two-thirds as long as head; the fin extends beyond vertical from pelvic origin a distance about 0.6 orbit. The rounded pelvics have their bases in contact, extend to the anus and enter the head 2.2 times.

Scales 16 or 17—40.

The sides (of the two alcohol specimens, both males) are purplish, except on the yellowish silver lower surface. The cheeks are golden, the opercles greenish, the top of head and muzzle purple. There are faint traces of vertical bars anteriorly and of an irregular median band posteriorly. There are some rounded dark spots above and behind pectoral bases, but these are not nearly so conspicuous as the somewhat scattered blackened scale borders on the upper two-thirds of the posterior two-thirds of the body. These markings, blackish purple, have a rounded posterior and a straight anterior margin. The boldest marking on the body is the large jet-black comma-shaped mark extending from just behind the opercle, including its bound-down membrane, downward to behind the pectoral base, leaving a milk-white spot, in the angle of the comma, about the upper end of the pectoral base.

The dorsal fin is boldly marked by five black bands, bordered narrowly by whitish, and extending downward and backward across the posterobasal half of the squarish fin; elsewhere this fin is dark and indefinitely mottled. The caudal fin has a light yellowish crescent behind a diffuse dark basal blotch; behind the light bar the fin is abruptly darkened by black membranes. The other fins are somewhat dusky.

(*zonistius*, from ζώνη, zone, and ιστίον, sail, referring to the black-banded dorsal fin.)

# ERRATUM

To studies of the fishes of the order Cyprinodontes, X (Hubbs, 1931):  
Page 7, line 10: in place of *catenatus* read *confluentus*.

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