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A NEW SUBSPECIES OF POECILIID FISHES OF THE GENUS *GAMBUSIA* FROM EASTERN CUBA

by

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In order to make the name available to other workers in the genus, a new subspecies of *Gambusia* from eastern Cuba is herein described. This subspecies belongs to the *G. puncticulata* species group as restricted and diagnosed by me (Rivas, 1963: 342, 345). A revision of this group (as the *G. puncticulata* complex) by William L. Fink is published in this issue of the Pub. Gulf Coast Res. Lab. Mus. I am grateful to him for providing comparative data to establish the relationships of the present subspecies.

This paper is based on the author's private collection of poeciliid fishes. Type material has been deposited in the United States National Museum (USNM) and the Gulf Coast Research Laboratory Museum (GCRL).

Methods are the same as those described and used by me (Rivas, 1963, 1969). Fin-ray, scale, gill raker, and vertebral counts of male and female paratypes follow, in parentheses, those of the holotype.

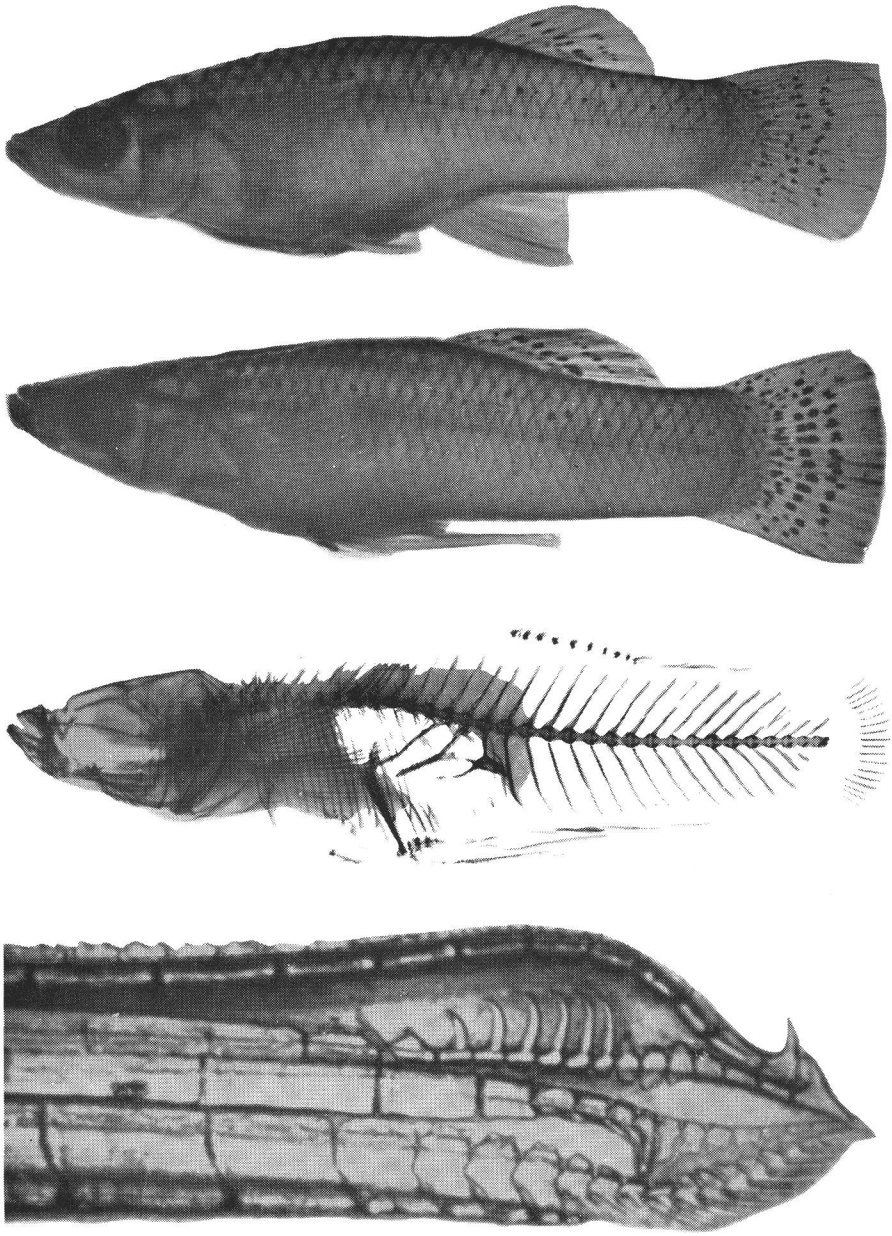

Figure 1. *Gambusia puncticulata monticola* new subspecies. Top to bottom: Adult female paratype 31.0 mm SL (USNM 203914). Adult male holotype 29.0 mm (USNM 203913). Radiograph of adult male paratype 26.7 mm (GCRL 3636). Photomicrograph of distal end of gonopodium of holoype.

Gambusia puncticulata monticola new subspecies

(Fig. 1)

TYPES.—The holotype (USNM 203913) is an adult male, 29.0 mm in standard length (SL), collected by Luis R. Rivas in Rio Yao, a left subtributary of Rio Cauto, 15 km upstream from Bueycito, Municipality of Bayamo, Province of Oriente, Cuba, on December 29, 1942. Paratypes, collected with the holotype, comprise one young 17.8 mm, 2 adult females 28.0 and 31.0 mm, and 3 adult males 19.5 to 26.8 mm (USNM 203914), and one adult male 26.7 mm (GCRL 3636).

NAME.—The name *monticola* refers to the clear, cool, mountain stream habitat to which this subspecies appears to be confined.

GONOPODIAL CHARACTERS.—Ray 3 spines 11 (10). Segments distal to elbow 6 (5-6, usually 6). Segments distal to ray 4p serrae 5 (3-4, usually 4). Ray 4p serrae 7 (6-8).

Proximal half of longest ray 4p serrae not perpendicular to axis of ray, directed obliquely towards tip of gonopodium. Longest spine of ray 3 (without inner process) about equal to or shorter, usually shorter, than axial length of segments distal to ray 4p serrae (terminal hooked segment not included). Length of gonopodium 31.7 percent (32.4-36.7) of SL.

GONOPODIAL SUSPENSORIUM.—On the basis of radiographs of the holotype and the 4 paratypes, there are 3 gonapophyses. Uncinatoid processes and parapophyses cannot be clearly seen in radiographs, but dissection of a paratype shows that the second and third gonapophyses each bears a strongly developed uncinatoid process; that on the second gonapophysis is much longer than that on the third. The first and second gonapophyses each bears a parapophysis.

MERISTIC CHARACTERS.—Dorsal rays 10 (9-10, usually 10); anal rays 11 (11); pectoral rays 15 (15); pelvic rays 6 (6); branched caudal rays 14 (14); lateral scales 32 (31); predorsal scales 17 (16-17); scales around caudal peduncle 16 (16); gill rakers 13 (12-14, rarely 14); vertebrae 32 (32-33).

MORPHOLOGICAL CHARACTERS.—The cephalic lateral line system consists mostly of open canals and pits as in other forms of *Gambusia* (Rosen and Mendelson, 1960). Mandibular canal consists of two close-set grooves one behind the other. Preopercular canal is closed (with 1-3, usually 3 pores) below the cheek, but the ascending branch is an open groove from the angle of the preopercle; the preorbital and supracephalic canals are open.

Predorsal contour nearly straight to slightly convex, longitudinally, in males, convex in females; nearly flat to slightly convex transversely. Body axis straight. Body widest at middle of opercle, deepest at origin

of anal fin in males, at insertion of pelvic fin in females. Head slightly shorter than distance between origins of dorsal and anal fins in males, slightly longer than that distance in females. Mandible slightly shorter than interorbital width. Snout about three-fourths of interorbital width. Lateral gape of mouth about half of front gape; greatest transverse width of mouth longer than snout. Origin of dorsal fin nearer pectoral fin insertion than middle of caudal base in males, midway in females. Gonopodium reaching beyond vertical from end of dorsal base, but not beyond vertical from mid-length of depressed last dorsal ray. End of anal base behind vertical from dorsal fin origin and in advance of vertical from middle of dorsal base in females. Depressed dorsal fin longer than distance between tip of snout and pectoral fin insertion in males, shorter than that distance in females, reaching to or slightly beyond a point midway between end of its base and vertical from middle of caudal base. Appressed pectoral fin reaching beyond vertical from origin of anal fin in males, beyond vertical from insertion of pelvic fin in females. Pectoral rays of males gradually reduced in thickness from the second, the first abruptly much thinner and shorter; fourth and fifth rays longest; distal half of rays 2 to 5 curved upwards.

Dentition consists, on each jaw, of uniserial outer and inners rows of enlarged, depressible incurved canines, separated by a middle band of smaller, depressible incurved canines.

COLORATION.—There is no marked sexual dichromatism. After original fixation in 10 percent formalin and 26 years of preservation in 60 percent ethanol the color pattern is as follows:

Ground color, light brown on back and upper sides gradually becoming lighter on middle sides and belly. Darker margins of scale pockets producing a reticulate pattern on back and sides. Nape dark brown, the dark pigment extending as a middorsal streak to origin of dorsal fin. A faint very thin dark line along ventral edge of caudal peduncle. Sides of body with a diffuse, brownish longitudinal band, wider and more conspicuous anteriorly, continuing cephalad as a dark brown streak curving dorsad to merge with dark pigment of nape but not extending caudad to caudal base Chin darkly pigmented, more so in males. Subocular dark mark more conspicuous in males. Sides of body with 2 to 6 scattered black spots. Dorsal and caudal fins crossed by 2 or 3 rows of dark spots. Anal, pectoral, and pelvic fins unspotted.

RELATIONSHIPS.—*Gambusia puncticulata monticola* differs from all other members of the *G. puncticulata* complex in the number of dorsal rays, modally 10 (mean 9.8) in *monticola* and modally 8 or 9 (means 8.2-9.0) in the others. With the exception of *baracoana* it differs from all other subspecies of the complex in the number of lateral scales, modally 31 (mean 31.1) in *monticola* and modally 30 (means 29.8-30.4) in the others. In addition to the number of dorsal rays, *monticola* differs from

baracoana in the number of branched caudal rays, 14 in *monticola* and 12 in *baracoana.*

The number of vertebrae is usually 32 in *monticola, baracoana,* and *bucheri,* and usually 31 in the others. In addition to characters discussed in the preceding paragraph, *monticola* differs from *bucheri* in the much fewer, irregularly scattered, body spots not arranged in rows.

In gonopodial characters *monticola* differs from all other subspecies in the number of segments distal to serrae, modally 4 (mean 4.0) in *monticola* and modally 4, 5, 6, or 7 in the others. It also differs from all other subspecies in the number of serrae, 6-8 (mean 6.8) in *monticola* and 4-7 (means 4.9-6.1) in the others.

DISTRIBUTION, HABITS and ECOLOGY.—*Gambusia puncticulata monticola* is known only from the type locality. Rio Yao is a clear, cool, mountain stream tributary to Rio Bayamo which, in turn, is a left tributary of Rio Cauto, the largest river of Cuba. The type specimens were collected in rapids over gravel bottom and around boulders, at an elevation of 1,250 feet, 198 km upstream from the sea. In this habitat, *monticola* occurs syntopically with *punctata* of a different and recently revised species group (Rivas, 1963: 342, 346; 1969).

This is the only member of the *puncticulata* complex known to occur in a mountain stream habitat; all others occur in lowlands and in estuaries and most are also found in salt water.

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