

NOTES ON THE POECILID FISHES *POECILIA FORMOSA* AND *GAMBUSIA MYERSI*
FROM THE RIO TAMEST SYSTEM, TAMAULIPAS, MEXICO

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INTRODUCTION. — The Amazon molly, *Poecilia formosa* (Girard) (formerly *Mollienesia formosa*), occurs south to the Río Papaloapan system, Vera Cruz, Mexico, but on the basis of published records appears to be rare in the southern parts of its range (Rosen and Bailey, 1963: 54). In an extensive survey of the Río Tamesí system of Tamaulipas, Mexico, only a single specimen was taken, by Darnell (1962: 333), and the only other published record from that drainage known to us is that of Hubbs and Hubbs (1932: 628). The other poeciliid with which this paper is concerned, recently re-described as *Gambusia myersi* Ahl (see below), may be endemic to the spring-fed Río Mante, a tributary of the Río Tamesí (Darnell, 1962, as "*Gambusia* sp."; Rosen and Bailey, 1963: 96-7). However, Rivas (1963: 343) reported what he considered an undescribed species of *Gambusia* from the "Río Tamesí near Ciudad Mante," that also may be this species. This paper records a number of localities in the Río Tamesí system for each of the above species, lists the fishes that were associated with them, and provides additional descriptive information on *G. myersi*. Collections were made by R. H. Goodyear, D. R. Tindall, and A. T. Hotchkiss in 1961, by Koehn, Tindall, Hotchkiss, and J. Pierce in 1963, and by W. S. Brown, W. S. Birkhead, and M. A. Nickerson in 1964. Specimens were deposited in the collection of fishes of Arizona State University (ASU); some comparative materials were obtained from the University of Michigan Museum of Zoology (UMMZ).

Comments on the name *Gambusia myersi*. — Rosen and Bailey (1963: 96-7) published a translation of Ahl's (1923) description of *Gambusia modesta* (= *G. myersi*; Ahl, 1925), from "Mexico." They provide descriptive information on the basis of a series of specimens from a canal five miles S of Limón, Tamaulipas, Mexico (UMMZ 97546). A number of facts make us dubious of the allocation of this name to the form of *Gambusia* from the Tamesí system, and inclined to consider the name a synonym of *G. affinis* (Baird and Girard). This seems especially probable since the Tamesí fish is rare and restricted in distribution, whereas *G. affinis* is widespread and abundant in northeastern Mexico.

Our 40 specimens of *G. "myersi"* have seven dorsal fin-rays (counting the last split to its base), not six or seven as given by AM; most forms of *G. affinis* in Mexico have six dorsal fin-rays. All of our specimens have nine anal fin-rays, rather than seven or eight, and none of them is dark laterally as was the series available to Ahl, nor do they have a darkened

peritroct ("gravid spot"). The mention by Ahl that the elbow of the gonopodium in males was "only weak" further weakens the allocation of *G. myersi* to the Tamesí fish, especially since he compared his materials with *G. holbrooki* Girard (= *G. affinis holbrooki*) and *G. affinis* from unknown localities. The gonopodium of the Tamesí species has a very strong elbow but in some of the distinctive forms of *G. affinis* from the southern parts of its range the elbow is reduced (Fig. 1, C). The gonopodium of the Tamesí fish is almost unique in having the anterior and posterior branches of ray four meeting at their distal ends. This condition also exists, however, in a form of *G. affinis* from the Rio Pesqueria system, near San Juan, Nuevo Leon, Mexico (Fig. 1, A), and in an apparently undescribed species of *Gambusia* from Cuba (Fig. 1, D). This was noted by Ahl and the "relatively large space" between the branches of the fourth ray that he described is pronounced in many forms of *G. affinis* that we have examined (Fig. 1).

If the types of Ahl's species cannot be found in the near future we suggest that the name *Gambusia myersi* be relegated to the status of nomen dubium, or that it be placed in synonymy with *G. affinis* and the Tamesí form assigned a new name.

COLLECTION LOCALITIES. — *Poecilia formosa*. — Collections were made with dip nets and small seines to obtain living stocks of poeciliids for other studies; only small numbers of the fishes were preserved. Thirty specimens of *P. formosa* were obtained from the following localities: ASU 29 — eight specimens, Río Guayalejo, 16.2 miles N El Encino on Hwy. 85, September 5, 1961; ASU 532 — nine specimens, same locality as ASU 29, January 30, 1963; ASU 38 — three specimens, canal 1.05 miles S jct. Hwys. 80-85, on Hwy. 80, September 6, 1961; ASU 49 — six specimens, canal 8.7 miles E jct. Hwys. 80-85, on Hwy. 85, January 25, 1963; and ASU 744 — four specimens, canal 3 miles N Ciudad Mante, January 25, 1964.

Twenty-seven of the specimens have 11 rays in the dorsal fin and three have 12. Individuals of *Poecilia sphenops* Valenciennes from the same localities mostly have nine dorsal rays (range, eight to nine; average, 8.95 for 50 specimens). Habitats and the species of fishes collected with *P. formosa* are given below.

Gambusia myersi. — Forty-one specimens of this form were preserved from the following localities: ASU 36 — seven specimens, canal 1.05 miles S jct.

Hwys. 80-85, on Hwy. 80, September 6, 1961; ASU 501 — one specimen, same locality as ASU 36, January 26, 1963; ASU 68 — five specimens, canal 1.2 miles S jct. Hwys. 80-85, on Hwy. 85, September 9, 1961; ASU 515 — two specimens, same locality as ASU 68, January 25, 1963; ASU 519 — five specimens, canal 1 mile N Ciudad Mante, January 29, 1963; ASU 521 — eighteen specimens, canal 12 miles N Ciudad Mante, January 30, 1963; ASU 756 — two specimens, same locality as ASU 521, preserved from wild-caught stock; and ASU 741 — one specimen 3 miles N Ciudad Mante, January 28, 1964.

Both previous records of *P. formosa* from the Rio Tamesí system have been from the Rio Guayalejo portion at Adjuntas (Darnell, 1962) and at Forlón (Hubbs and Hubbs, 1932); the stream in those areas

has been described by Darnell. Collections from the Rio Guayalejo reported here were both from pools near the highway crossing. The current was moderate over mud-gravel bottom and aquatic vegetation was abundant. Fishes taken with *P. formosa* included *Astyanax faciatatus mexicanus* (Filippi), *Ictalurus* sp., *Notropis* spp., *Gambusia regani* Hubbs, *Flexipenis vittatus* (Hubbs), *P. sphenops*, *P. atipunctata* (Meek), *Cichlasoma cyanoguttatum* (Baird and Girard), and *C. steindachneri* (Jordan and Snyder).

Canals in the vicinity of Ciudad Mante shared a number of characteristics. All had dear water and relatively slow currents, the bottoms were mud along the banks and sand-gravel in the center, the water was 2 to 4 feet in depth, and the canals were unshaded by riparian vegetation. They ranged from 1

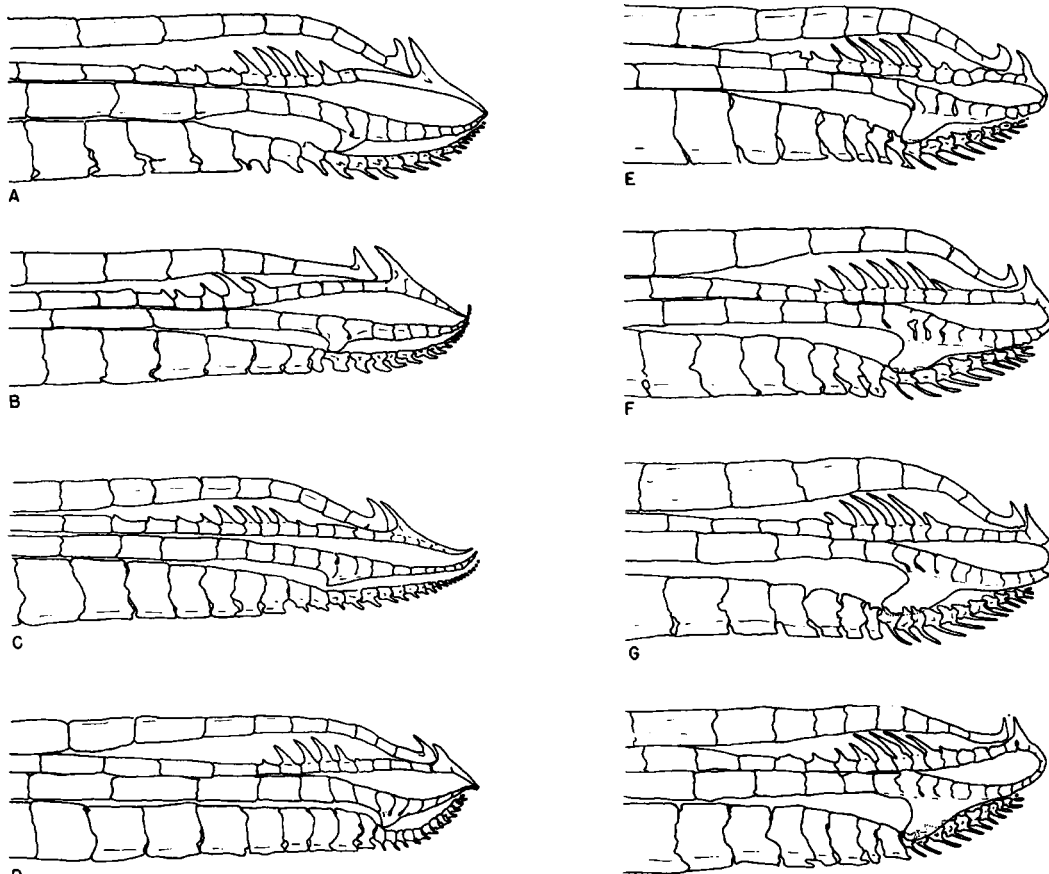


Figure 1.—Distal ends of the gonopodia of three forms of *Gambusia affinis* from Mexico (A. UMMZ 97549, Rio Pesqueria system, Tamaulipas; B. UMMZ 97553, Rio Soto la Marina system; C. UMMZ 169634, Rio Panuco system); and D. of an undescribed *Gambusia* from Cuba (UMMZ 136377), and of four specimens of *G. myersi* (E. ASU 36 and F-H. ASU 519). The variable posterior branch of ray 5 was not illustrated.

to 15 feet wide, however, most of them being about four feet. Considering all collections from canal habitats, all of the species that occurred in the Rio Guayalejo were taken (excepting the catfish), and two additional poeciliids, *Gambusia affinis* and *Xiphophorus v. variatus* (Meek), were obtained. *Poecilia formosa* was associated with aquatic vegetation in the canals, and was invariably collected along with *P. sphenops*.

Descriptive information on *Gambusia myersi*. — The gonopodial morphology of the species is relatively uniform (Fig. 1, E-G), and has been described by Rosen and Bailey (1963: 97, Fig. 40). The gonopodial tip illustrated in our Figure 1, H, is aberrant or from a sub-adult fish.

Colors of living fish were recorded under bright light while they were under anesthesia (MS-222), and on fish that had been recently preserved. The ground-color is an intense canary yellow in life, becoming whitish on the belly and with blue reflections on the sides. In breeding males the scale-row along the mid-side develops an intense chalk-blue reflection. Males also have an indication of yellow-orange developed on the ventral third of the caudal

peduncle. The dorsal fin of the male is yellow-orange, as is the proximal half of the pelvic fins and the base of the modified anal fin. The dorsal fin bears a thin, black distal margin and three to five rows of dark spots (Fig. 2). The caudal fin is intense yellow at the base and becomes transparent yellow distally; there are two to four vertical series of dark spots. The anal fin of the male is whitish (except at the base and at the transparent tip); the female has a variably developed, dusky edge on the anal fin. Pelvic fins do not have dark markings in either sex. Pectorals tend to be transparent to opaque whitish; some males have a very thin, dark margin on the pectoral. There is a wide predorsal streak and a thin postanal streak. No lateral band is developed in our specimens; however, a dark sub-ocular bar is variably present and best developed in large males. The lower lip is black in breeding males and dusky in live females. Dark cross-hatching is highly developed on the sides and back of all individuals, even the very young, and on the caudal peduncle. This, along with regular series of lateral spots at the junctions of the cross-hatching, is vividly set off by the yellow ground-color (Fig. 2), and makes this species one of the most strikingly colored in the genus *Gambusia*.

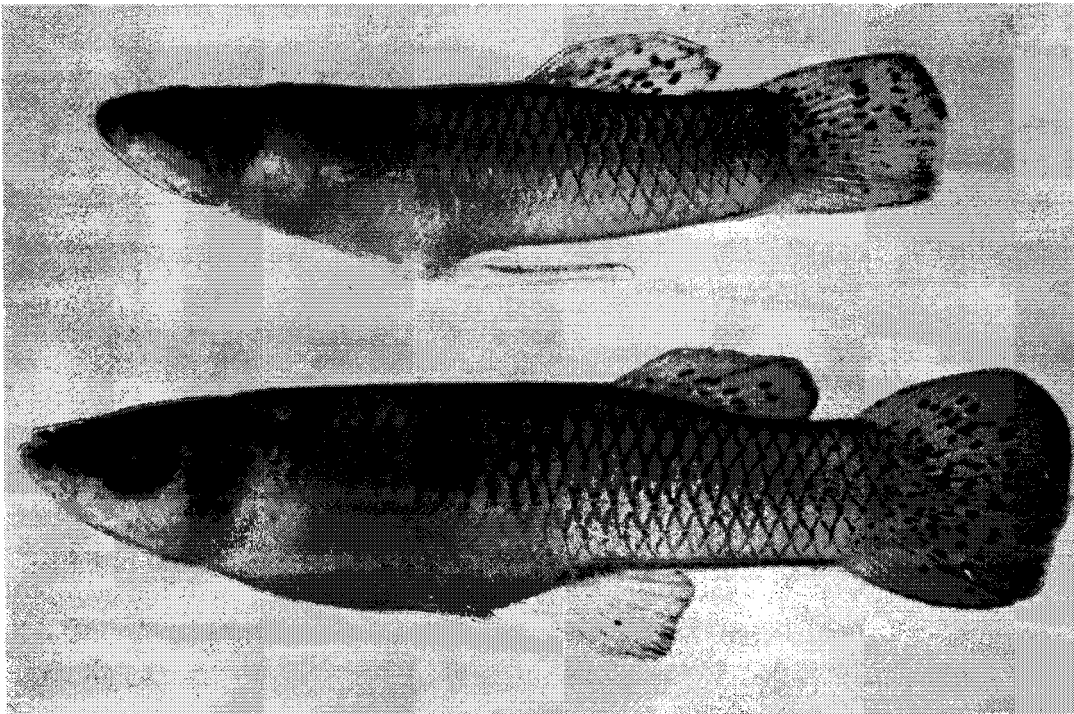


Figure 2.—Photographs of two specimens of *Gambusia myersi* (ASU 36), from the Rio Tamesi system, Tamaulipas, Mexico.

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