

# Notes on the subgenus *Mollienesia* LESUEUR, 1821, with a description of a new species of *Poecilia* BLOCH & SCHNEIDER, 1801 (Cyprinodontiformes: Poeciliidae) from Venezuela

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## Summary

After some notes on systematics and taxonomy of the subgenus *Mollienesia* of the genus *Poecilia*, a new species, *Poecilia (Mollienesia) dauli* sp.n., from northwestern Venezuela is described.

## Zusammenfassung

Nach systematisch – taxonomischen Anmerkungen zur Untergattung *Mollienesia* und zur Gattung *Poecilia* wird eine neue Art, *Poecilia (Mollienesia) dauli* sp.n., aus dem Nordwesten Venezuelas beschrieben.

## Resumen

Después de una serie de diferentes notas de systemáticas y taxonómicas del subgénero de *Mollienesia* y género *Poecilia* un nuevo taxon *Poecilia (Mollienesia) dauli* sp.n. del noroeste de Venezuela se describe.

## Introduction

The poeciliid subgenus *Mollienesia* was described by monotype by LESUEUR (1821), with the type species *latipinna* (LESUEUR, 1821), from Lake Pontchartrain, Louisiana, USA.

MILLER (1983) recognized – together with the type species – the following taxa for *Poecilia (Mollienesia)* from North America: *P. (M.) petenensis* (GÜNTHER, 1866), from Lake Peten, Guatemala; *P. (M.) velifera* (REGAN, 1914) from Progreso, Yucatan, Mexico; *P. (M.) formosa* (GIRARD, 1859) from near Brownsville, Texas, USA; *P. (M.) sphenops* VALENCIENNES, in CUVIER & VALENCIENNES, 1846, from Veracruz, Mexico; *P. (M.) orri* FOWLER, 1942, from Bonacca Island, Honduras; *P. (M.) sulphuraria* (ALVAREZ, 1948), from Banos del Azufre, Tabasco, Mexico; *P. (M.) mexicana* STEINDACHNER, 1863, from Orizaba, Veracruz, Mexico; *P. (M.) catemaconis* MILLER, 1975, from Lake Catemaco, Veracruz, Mexico; *P. (M.) chica* MILLER, 1975, from La Huerta, Jalisco, Mexico; *P. (M.) butleri* JORDAN, 1889, from Rio Presidio, Sinaloa, Mexico; and *P. (M.) latipunctata* MEEK, 1904, from Forlon, Tamaulipas, Mexico.

MEYER (1983) included in the taxa listed above: *P. (M.) elegans* (TREWAVAS, 1948) from Jarabacoa, Dominican Republic, Hispaniola; *P. (M.) dominicensis* (EVERMANN &

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CLARK, 1906), from San Francisco Mountains, Dominican Republic, Hispaniola; *P. (M.) hispaniolana* RIVAS, 1978, from Rio Mijo, Dominican Republic, Hispaniola; *P. (M.) vivipara* BLOCH & SCHNEIDER, 1801 from Surinam and *P. (M.) caucana* (STEINDACHNER, 1880) from Caceres, Colombia. *P. (M.) maylandi* MEYER, 1983, from Altamirano, Guerrero, Mexico, is a further species that has been described subsequently.

In the following years several taxa of *Mollienesia* were described or reestablished: *P. (M.) salvatoris* REGAN, 1907, from, San Salvador, El Salvador (MILLER, 1994, POESER, 1995); *P. (M.) vandepolli* VAN LIDTH DE JEUDE, 1887, from Curacao (FELTKAMP & KRISTENSEN, 1969, POESER, 1992); *P. (M.) teresae* GREENFILED, 1990, from Macal River, Belize; and *P. (M.) marcellinoi* POESER, 1995, from Rio Lempa, El Salvador.

The present paper describes a new freshwater species of the subgenus *Mollienesia*, genus *Poecilia*, from Northwestern Venezuela.

One of us (A.R.) received fish collected in October 1999 by a team of aquarists in a lagoon near Chichiriviche and in a small brook near Miranda in northwestern Venezuela.

### Materials and methods

The new species of the subgenus *Mollienesia* described in this paper is based on 13 adult males and females. The holotype and a series of paratypes have been deposited in the Naturhistorisches Museum Wien and the Museum Senckenberg Frankfurt/Main.

Comparative material examined: Types of *Poecilia (M.) caucana* (NMW-81128).

Measurements and counts follow standard practice (MILLER, 1948). Measurements were made by vernier callipers reading to 0.1 mm. The number of specimens for all counts is greater or equal to 6. The gill-raker count of the first gill arch includes any gill rakers in the angle of the gill arch. The last two rays in the dorsal fin are counted as a single ray. Vertebral count includes the hypural plate as one vertebra.

Nomenclature of the sensory canal system of the head follows the standard of GOSLINE (1949), that of the gonopodial system follows ROSEN & BAILEY (1963).

#### Abbreviations:

NMW = Naturhistorisches Museum Wien; SMF = Museum Senckenberg Frankfurt/Main; SL = standard length; S-MO = synapomorphy of *Mollienesia*.

### Genus *Poecilia*, Subgenus *Mollienesia* LESUEUR, 1821

Diagnosis: S-MO(1): Gonopodium short in length and broadly expanded. S-MO(2): Gonopodium ray 5a nearly as long as 5p, including distal hook (if present) of ray 5p, and with numerous and prominent outgrowths present above 2/3 of the proximal part of serrae 4p. S-MO(3): Distal part of membranous genital palp broad, rounded and bloated; palp not overlapping gonopodium rays 3 to 5.

Species included are: See introduction.

Type species: *P. (M.) latipinna* LESUEUR, 1821

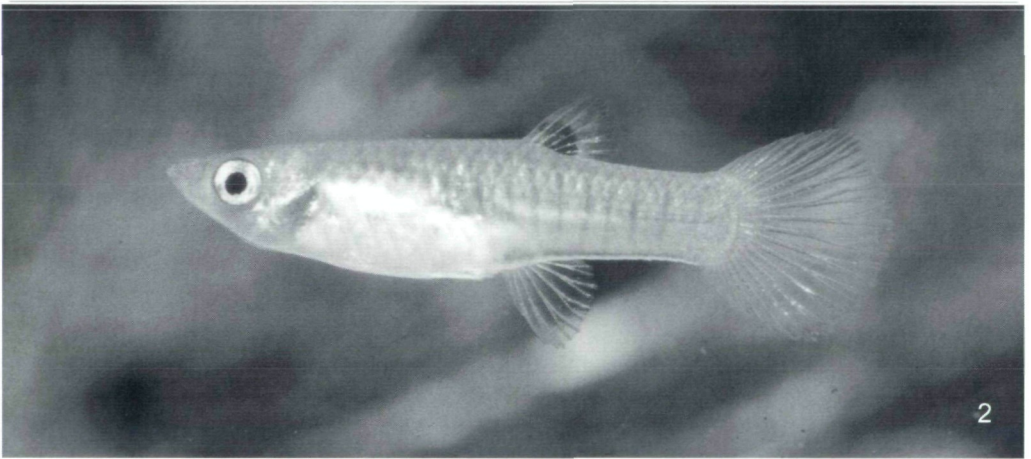
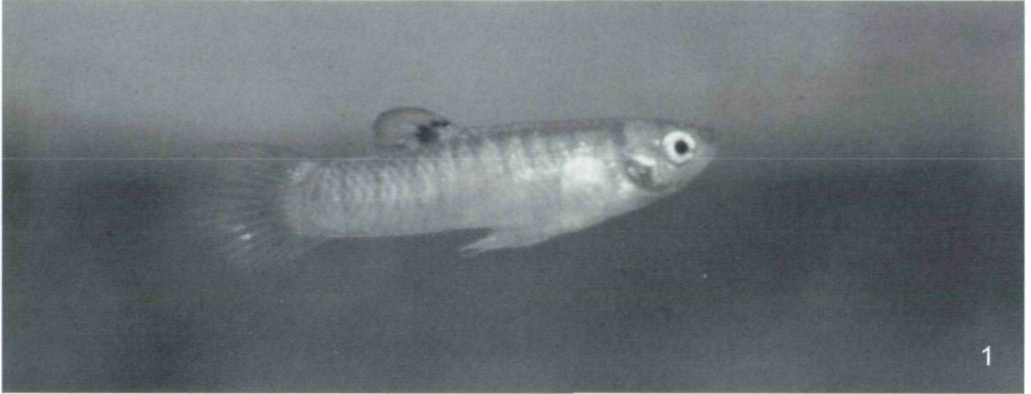


Fig. 1 - 2: (1) *Poecilia (Mollienesia) dauli* n.sp. male, holotype (NMW-94540), photograph taken after four months in a tank; (2) *Poecilia (Mollienesia) dauli* n.sp. female, caught in the wild, photograph taken after four months in a tank.

***Poecilia dauli* sp.n. (Figs. 1-2, 4)**

Holotype: Male (NMW-94540), SL = 17.0 mm, brook near Miranda, Venezuela; October 8, 1999, Bimüller et al. leg.

Paratypes: 2 females (NMW-94541), SL 18.0 and 19.0 mm, Chichiriviche, Venezuela; October 13, 1999, Bimüller et al. leg.; 7 males, 3 females (SMF-28884), SL 23.4 to 38.9 mm, ditch near Bachaquero, Venezuela; March 28, 1992, Böhme & Fey leg.

**Etymology**

The new taxon is named in honour of Mr. Günter Daul, Berlin, Germany.

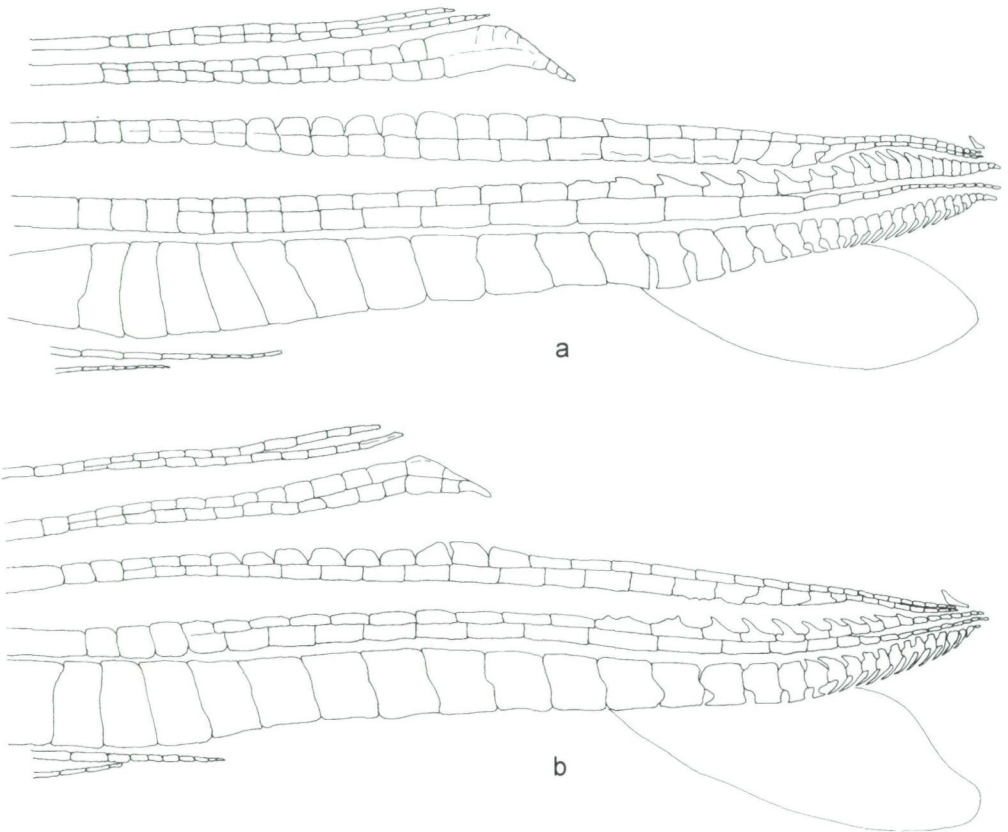


Fig. 4: (a) Gonopodium of *Poecilia (Mollienesia) caucana* and (b) *Poecilia (Mollienesia) dauli* sp.n.

### Diagnosis

A small slender-bodied species of *Poecilia*, males and females with a series of 10 to 11 well marked dark colored horizontal stripes along the body side. Gonopodium tip of male with a very large hook at ray 5. *Poecilia dauli* sp.n. is also distinguished by a combination of morphological characteristics, described below.

### Description

Body moderate and slender, head long, 3.7 to 4.0 in SL. Longitudinal scale series 27 to 28 (rarely 29); predorsal scale series 15 to 16 (rarely 14); scale series around caudal peduncle 14. Number of vertebrae 28 to 29. Gill rakers on the first arch 8 to 9 + 1.

Teeth of upper and lower jaws unicuspid and recurved, those of the outer row enlarged, numerous and well separated, unicuspid inner teeth numerous and densely crowded.

Upper pharyngeal bones kidney-shaped. The distal teeth of the pharyngeal bone plates not enlarged, each side with a series of 11 to 12 rows, teeth small and conical.

Lower pharyngeal bone (ceratobranchial 5) with a total of 125 to 150 small unicuspid teeth, number of posterior rows 19 to 21, number of medial rows 4 to 5. The teeth of the middle region are somewhat enlarged and curved. The two halves of the lower pharyngeal are heart-shaped and are close together along the midline. The ends of the pharyngeal arms are short and split. Ceratobranchial 4 with conical teeth, concentrated near the medial-region, hypobranchial 4 absent.

Supraorbital canal system developed, section 1 + 2a not represented, infraorbital section 2 and 5 represented as groove, 6 and 7 as pores; preopercular canal with 6 pores (8-11, U, V); preorbital canal represented with 4 pores; mandibular canal developed with 4 pores (W-Z).

Gonopodium short and slender, 4.0 to 4.4 in SL; gonopodium palp well developed, reaching to the tip; ray 3 broadly expanded and shorter than ray 4a and 4p, 12 to 14 spine-like elements, subdistal spines produced antrorsely; base of ray 3 somewhat thickened, segments somewhat broader than long; segments of ray 4a longer than broad; ray 4a a little bit longer than ray 4p; serrea of ray 4p with 9 to 12 thorns; ray 5 shorter than rays 3 to 4; a very large hook above ray 5. Rays 6 to 7 thickened distally; tip of ray 6 broadly expanded and curved in direction to ray 5.

Gonopodial suspensorium with two to three developed gonapophyses, gonapophysis I and II with well developed uncini, gonapophysis III (when present) without uncini. Ligastyle not present. Gonactinostal complex 2 to 4 without superior lateral wings, gonactinosts 5 to 8 without wing-like bony plates or outgrowths.

Fins well developed; dorsal (6 rays) small and rounded, origin behind the insertion of anal fin; caudal 25 to 26 (12-13 branched) rays, anal of female short (9 rays); pectoral (13 rays); ventral fin (6 rays) long, in females reaching to the anus and in males reaching to the middle of the gonopodium, second ray extremely prolonged and with a series of small thorns along the middle region.

Males and females with no pronounced sex-specific coloration. Ground colour of body of adult females and males greyish brown to yellow; body side with a series of 10 to 11 dark vertical stripes; the upper body sides show a dark coloured reticulum. Dorsal fin orange and with a black spot-like band near the base, most pronounced in males, weak in females; caudal fin and ventral fins light orange; anal fin light orange. Gonopodium light orange coloured and slightly dark pigmented.

### Comparison and relationships

On the basis of synapomorphies, *Poecilia dauli* sp.n. is unequivocally attached to the subgenus *Mollienesia*. The derived characters of *Mollienesia* are given in the subgenus diagnosis.

Synapomorphies among *Poecilia dauli* sp.n. and *Poecilia caucana*: S-MO(4) lack of ligastyle; S-MO(5) number of gonactinosts 8; S-MO(6) gonapophyses I and II very long and curved dorsally.



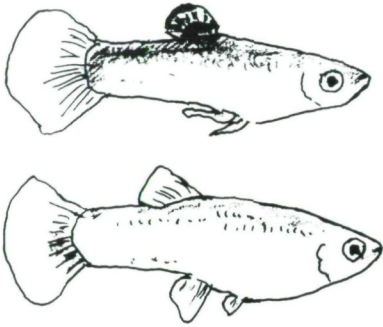


Fig. 3: Male and female of *Poecilia (Mollienesia) caucana*, strain from Tolu, Columbia. Only males of some other populations have 5 to 10 fine vertical stripes on their body sides.

In comparison to *Poecilia caucana*, which is the closest known relative of *Poecilia dauli* sp.n., the new species is distinguished by the lower number of dorsal fin rays. The terminal segments of ray 4p of the gonopodium are higher than long in *caucana* and longer than high in *dauli* sp.n. Additional differences are: very large hook above ray 5 (small in *caucana*); basis segments of ray 3 somewhat broader than long (much broader than long in *caucana*); rays 4a and 4p close together on distal region (spatulate in *caucana*). The presence of prominent black vertical stripes along the body side in both sexes of *Poecilia dauli* sp.n. further distinguishes the new species from *Poecilia caucana* (Fig. 3).

### Distribution

Distribution and collection sites of *P. (M.) caucana* and *P. (M.) dauli* sp.n. can be seen on the map (Fig. 5). *P. caucana* can be found in Panama (Canglon and Torti), as well as in Tolu, Caceres (terra typica) and Rio Sinu in Columbia. Two other Columbian sites, namely Rio Camarones, Arroyo de Arena and Rio Aruza have been mentioned by ROSEN & BAILEY (1963). It was not possible to find either place on the maps.

At Chichiriviche two other poeciliid fishes could be found: *Poecilia (M.) vandepolli* and *Poecilia (Lebistes) reticulata* PETERS, 1859. In a brook near Miranda *Poecilia (Poecilia) heterandria* (REGAN, 1913) could be found syntopic with *P. (M.) dauli* sp.n. At Bachaquero besides the new species guppies were also found. In all three places several species of Characidae and Cichlidae as well as several species of catfish were found.



Fig. 5: Distribution of *Poecilia (Mollienesia) caucana* and *Poecilia (Mollienesia) dauli* sp.n.

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