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Description of a new species of the rivuline genus *Rivulus* POEY, 1869 (Rivulidae, Osteichthyes) from Rio Caura, Bolivar State, Venezuela

A.C. Radda*

Summary

Description of a new species of the genus *Rivulus* from the Rio Caura in Venezuela.

Zusammenfassung

Beschreibung einer neuen Art der Gattung *Rivulus* vom Rio Caura in Venezuela.

Resumen

Descripción de una especie del género *Rivulus* del Rio Caura en Venezuela.

Introduction

In total eight species of the genus *Rivulus*, POEY 1860 have been described from Venezuela until today. In order of the date of the first description these are: *R. ocellatus* HENSEL, 1868, *R. hartii* (BOULENGER, 1880), *R. stellifer* THOMERSON & TURNER, 1973; *R. deltaphilus* SEEGERS, 1983; *R. immaculatus* THOMERSON, NICO & TAPHORN, 1991; *R. lyricauda* THOMERSON, BERKENKAMP & TAPHORN, 1991; *R. tecminae* THOMERSON, NICO & TAPHORN, 1992 and *R. gransabanae* LASSO, TAPHORN & THOMERSON, 1992.

As has already been pointed out by several authors (PARENTI 1981, WILDEKAMP 1981, HUBER, SEEGERS & WILDEKAMP 1983) of these species *R. stellifer* belongs to the genus *Rachovia* MYERS, 1927, which is caracterized by its annual reproductive behaviour. *R. stellifer* is confined to the swamp areas of the Portuguesa and Cojedes rivers.

Also *R. gransabanae,* inhabiting the swamp areas of the Gran Sabana savannah east of the Caroni Rive, is differentiated from all other *Rivulus* species by its annual reproductive behaviour. It seems to belong to the genus *Pituna* COSTA, 1989.

Of the remaining six species, *R. ocellatus* is a hermaphrodite with populations in Brazil, the Guyanas, the Dutch Antilles and in Venezuela near Maracaibo. *R. hartii* is located in the northern coastal areas of Venezuela east of Caracas and also in the Carribean, on Trinidad, Tobago, and other islands.

* Alfred C. Radda, Institut für Virologie, Universität Wien, Kinderspitalg. 15, 1095 Vienna, Austria.

Tab. 1: Meristic and morphometric data, shape of caudal fin and colour patterns of 9 species of the genus Rivulus of Venezuela (according to HUBER (1992) and present data).

Species	Tl	Sql m	D m	A m	D/A m	Pdl %	CS	CCP	CPB
R. ocellatus	65	46.5	8.8	11.2	8.0	77.0	R	D	M
R. hartii	115	38.4	9.8	17.0	11.0	77.0	R	We	Rw
R. stellifer	75	34.9	11.3	16.0	9.2	71.6	R	D	D
R. deltaphilus	55	36.3	6.7	12.0	10.8	79.0	R	D	Rw
R. immaculatus	95	40.9	10.0	15.0	9.7	74.1	R	De	Sc
R. lyricauda	55	30.6	8.8	12.5	6.0	70.0	S	B	Sc
R. tecminae	55	40.1	8.7	13.3	9.1	73.0	S	Ye	L
R. gransabanae	50	32.0	8.8	11.1	7.0	68.0	O	We	Sc
R. caurae sp.n.	50	35.9	6.4	13.4	10.7	76.9	R	Le	Sc

Abbreviations: Tl = Total length, Sql = Scales in a longitudinal row, m = mean, D = Dorsal fin rays, A = Anal fin rays, D/A = Position of D over A, Pdl % = Praedorsal length in percentage of standard length, CS = Caudal shape, CCP = Caudal colour pattern, CPB = colour pattern of the body, R = Rounded, S = Spade, O = Oval, D = Dots, We = White edges, Rw = Rows, De = Dark edges, M = Marbels, Ye = Yellow edges, L = light edges, B = Blue, Sc = Scattered, L = Lines.

Tab. 2: Meristic and morphometric data of *R. caurae* sp.n. in percentage of standard length (mm).

Types	D	A	Sl	Pdl	Pal	Pvl	Bh	Hl	Ed	Snl
m (ht)	7	14	39.0	76.9	62.8	53.8	17.9	23.0	7.7	6.4
f (pt)	6	13	31.0	77.4	62.9	54.8	16.1	22.6	6.5	4.8
m (pt)	6	13	26.5	75.5	62.3	52.8	16.9	22.6	7.5	5.6
f (pt)	6	14	29.0	79.3	68.9	55.1	18.9	24.1	8.6	6.8
f (pt)	6	14	30.0	80.0	63.3	45.0	13.3	23.3	8.3	6.6
f (pt)	7	14	28.0	76.7	57.1	48.2	16.1	21.4	7.1	5.3
f (pt)	6	13	29.0	74.1	65.5	55.1	15.3	20.7	6.9	5.2
f? (pt)	7	13	26.0	75.0	63.5	53.8	17.3	23.0	7.6	5.7
m? (pt)	7	13	22.0	75.6	63.6	54.5	18.1	22.7	9.0	6.8

Abbreviations: m = male, f = female, ht = Holotype, pt = Paratype, D = Dorsal fin rays, A = Anal fin rays, Sl = Standard length, Pdl = Predorsal length, Pal= Praeanal length, Pvl = Praeventral length, Bh = Body hight, Hl = head length, Ed = Eye diameter, Snl = Length of snouth.

Four further *Rivulus* species in the south and east of Venezuela should be mentioned: *R. tecminae* inhabits the feeders of the upper Orinoco. *R. lyricauda* lives in brooks of the Rio Caroni System, *R. immaculatus* is known from the border areas in the highlands of Guyana an *R. deltaphilus* is distributed along the coast of the Orinoco delta and to the south of it. All *Rivulus* species inhabit ecologically and zoogeographically defined zones which are designated by different river courses (see Fig. 1 and Table 1). Detailed information on the morphology, distribution and ecobiogeography of all species mentioned are given in HUBER (1992).

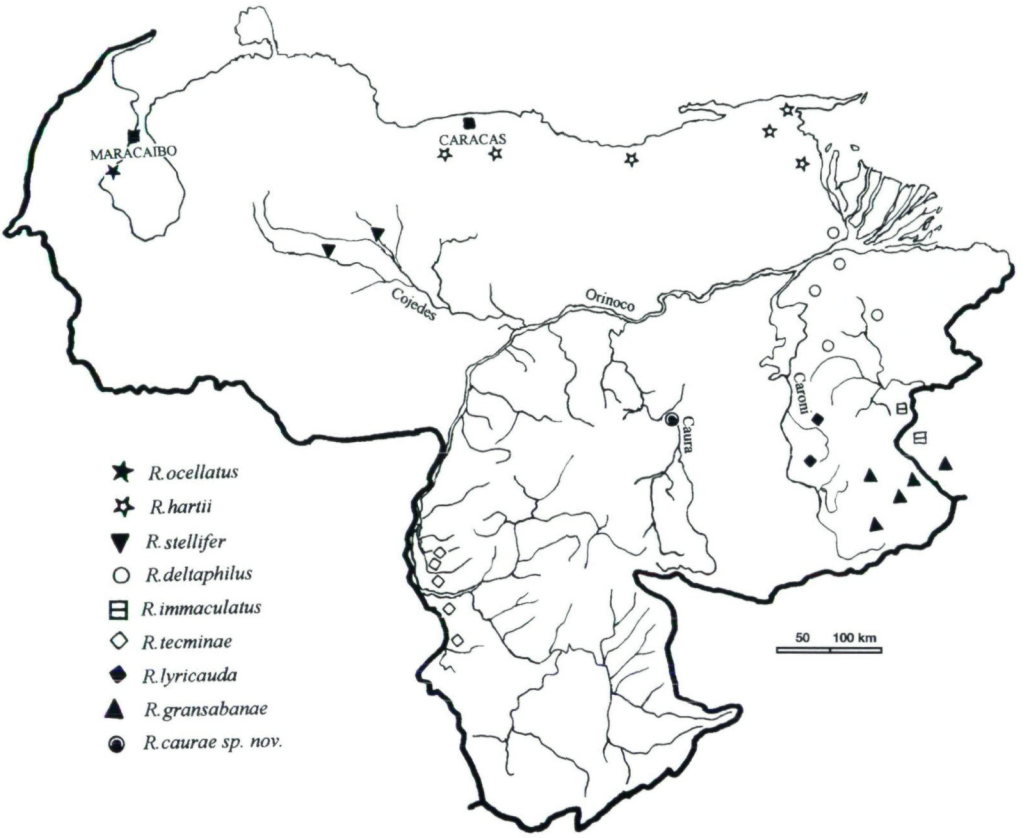

Fig.1: Distribution of *Rivulus* spp. in Venezuela.

From March 20 until April 10 2003 Mr. E. Pürzl, Vienna, Austria, together with Mr. J. Gamperl, K. Wepper and N. Flauger made a collection trip by car and boat to the Rio Caura of Bolivar State of Venezuela in order to collect fish, particularly of the genus *Rivulus*; this area was probably not investigated until now.

The new species was found in a very shallow brooklet near the Salto Para waterfall of the lower Rio Caura; other fish species were *Poecilia reticulata* PETERS, 1859 and juvenile specimens of characids and cichlids.

Material and Methods

The new species from Rio Caura is based on one specimen (holotype), which was kept for nine weeks in an aquarium after its collection. The type specimen will be deposited in the Naturhistorisches Museum Wien. Meristic and morphometric data are given based on the type as well as on eight paratypes collected on the same locality according to the Table in HUBER (1992) page 502 (see Tab. 1). Measurements and counts follow standard practice (MILLER 1948). Measurements were made by vernier callipers reading to 0.1 mm.

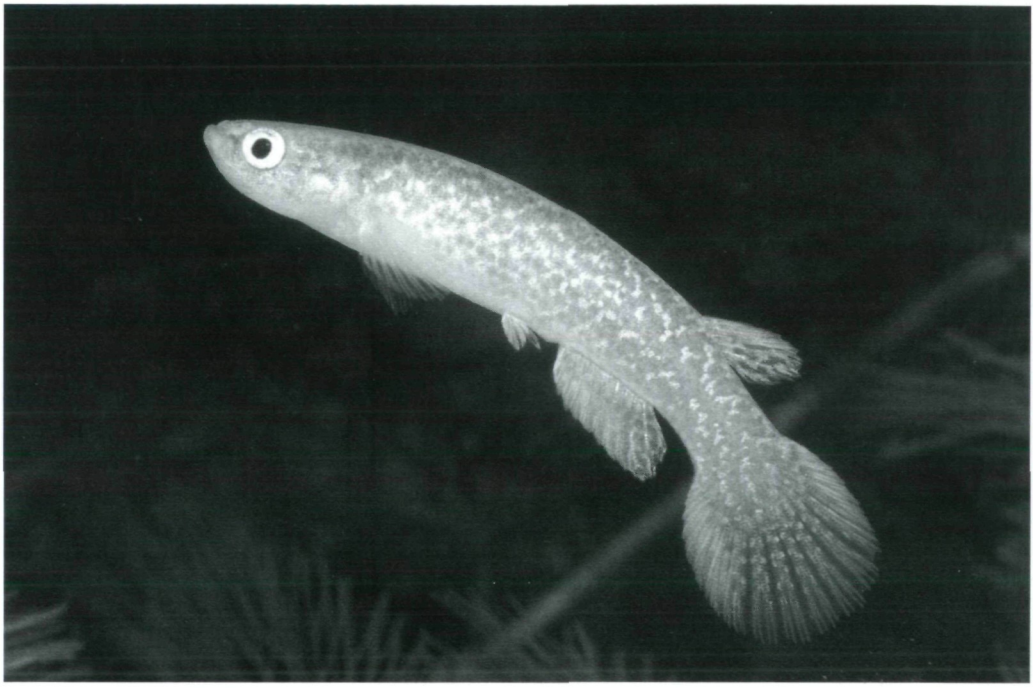

Fig. 2: *Rivulus caurae* sp.n.

Genus *Rivulus* POEY, 1860

The genus *Rivulus* is characterized by its non annual reproductive behaviour. The distribution area is from south of Florida to the Caribbean Islands, Mesoamerica and South America to Argentina.

Rivulus caurae sp.n.

Holotype: male (NMW-94902), SL 39.0 mm, fixed in 70% alcohol after 9 weeks in an aquarium; collected on March 30 2003 during the peak of the dry season in a very small body of water (depth: 2 cm), 1 km from the village of El Playon towards the waterfall (Raudal Pará); N 6°18‘ W 64°25‘; collector E. Pürzl. Paratypes: 6 immature females and 2 immature males, same time, place and collector as above; SL 31.0 to 22.0 mm (NMW-94903). Data are given in Table 2.

The mean dorsal finray count of *R. caurae* sp.n is 6.4, the lowest value of all *Rivulus* species of Venezuela. In comparison to *R. deltaphilus* – probably the next related species – the mean anal finray count is 13.4 for *R.caurae* vs. 12.0 of *R. deltaphilus*. The praedorsal length of *R. caurae* sp.n. is 76.9 vs. 79.0 of *R. deltaphilus*. The body colour of *R. caurae* is scattered with blotches vs. dots in lines of *R. deltaphilus* (Fig. 2 and 3).

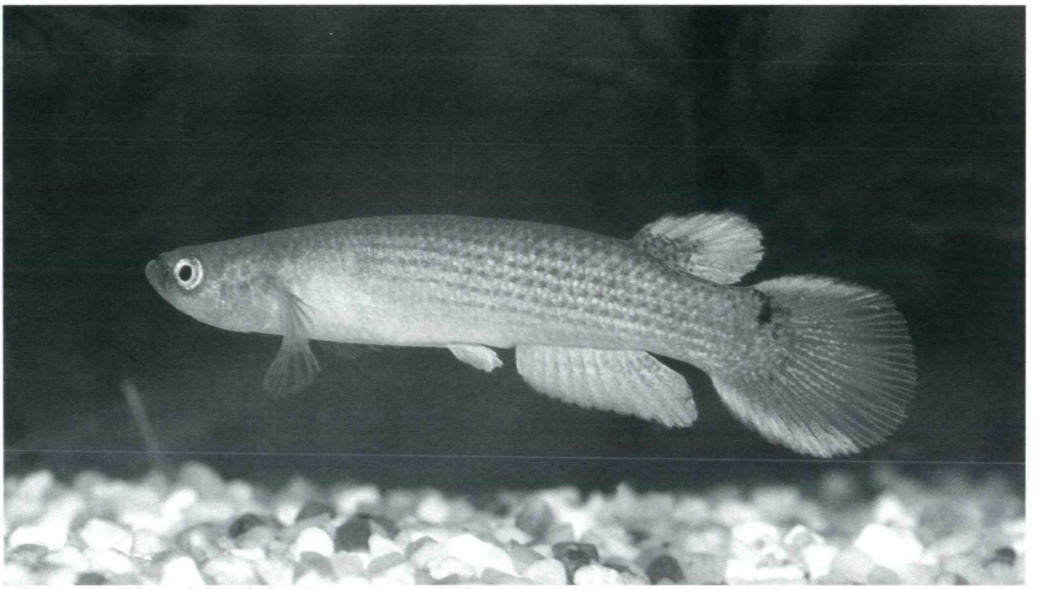

Fig. 3: *Rivulus. deltaphilus* SEEGERS, 1983.

Etymology

The new species is named after the type locality, Rio Caura.

Acknowledgements

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References

COSTA W.J.E.M., 1989: Descricao e Relacaos Filogeneticas de dois Generos novas e tres Especies novas de Peixes anuais neotropicais (Cyprinodontiformes, Rivulidae). – Revta. Bras. Biol. 49 (1): 221-230.

HUBER J.H., 1992: Review of *Rivulus*. – Ecobiogeography - Relations, 586 pp.

HUBER J.H., SEEGERS L. & WILDEKAMP R.H., 1983: Updated List of Cyprinodontid species – Paris: privately published, 48 pp.

MILLER R.R., 1948: The cyprinodont Fishes of the Death Valley system of eastern California and southwestern Nevada. – Misc. Publ. Mus. Zool. Univ. Michigan 69: 1-55.

PARENTI L.R., 1981: A Phylogenetic & Biogeographic Analysis of Cyprinodontiform Fishes (Teleostei, Atherinomorpha). – Bull. American Museum Natural History, 168, 4: 341-557.

WILDEKAMP R.H., 1981: Pracht-Kärpflinge. – Essen: Kernen, 208 pp.