

dal peduncle and reaching caudal-fin base, remaining rows reaching vertical between dorsal and anal-fin bases; dark chromatophores concentrated on longitudinal zone between flank and dorsum. Dorsum light brown. Venter white. Side of head metallic yellowish green to metallic purplish blue, sometimes dark bluish grey when fish exposed to strong sunlight. Lower jaw light brown, often with red tip. Iris light yellowish to greenish brown. Dorsal fin pale light grey with subbasal oblique row brown spots, often forming stripe; distal portion pale yellow. Anal fin pale yellow, basal portion sometimes blue, often with dark grey margin. Caudal fin light grey, dorsal portion pale yellow. Paired fins yellowish hyaline.

Female: Side of body light brown, with eight longitudinal rows of dark red to reddish brown dots, sometimes in close proximity, forming stripes; dark chromatophores concentrated on longitudinal zone between flank and dorsum. Dorsum light brown. Venter white. Side of head pale metallic yellowish green to metallic purplish blue, sometimes dark bluish grey



Fig. 17. Brazil: Amazonas: Presidente Figueiredo; creek close to rio Urubuí, habitat of *Rivulus taeniatus*. Photo by W. J. E. M. Costa.

when fish exposed to strong sunlight. Lower jaw light brown. Iris light yellowish brown. Unpaired fins yellowish hyaline with faint brown dots; round black spot on dorsal portion of caudal fin reaching fin margin, anteriorly bordered by small, triangular pale yellow spot. Paired fins yellowish hyaline.

### Distribution

Western and middle rio Amazonas basin (Fig. 10).

### Habitat

Shallow creeks at sunny places, sometimes in forest border, at depths of about 5-10 cm (Fig. 17).

### *Rivulus micropus* (Steindachner, 1863)

(Fig. 18; Table I)

*Fundulus micropus* Steindachner, 1863: 184 (type locality: Rio Negro, Brazil; holotype: NMW 77762; photographs and X-ray of lectotype in Huber 1991: 67, fig. 2).

*Rivulus compressus* Henn, 1916: 111 (type locality: Manáos [now Manaus]; emended as Igarapé da Cachoeira Grande, 2 miles out of Manaus, near mouth of rio Negro by Eigenmann 1911; holotype: FMNH 57003, illustrated by Henn 1916: fig. 1).

### Material examined

Brazil: Estado do Amazonas: UFRJ 6288, 2; creek at the road Manaus-Manacapuru, 3°13'51.2"S 60°32'37.5"W; W. J. E. M. Costa, R. Paiva & D. Ramos, 9 Jun. 2004. UFRJ 6289, 3; stream at the road Manacapuru-Novo Airão, lower rio Negro basin, 3°10'30.7"S 60°42'34.9"W; W. J. E. M. Costa, R. Paiva & D. Ramos, 9 Jun. 2004. MZUSP 38307, 13; MZUSP 38449, 2 (c&s); lago Buiucu, Ati-Paraná, NW of Fonte Boa; EPA, 11-12 Oct. 1968. INPA 1837, 3 (1c&s); FUA, Manaus; J. Zuanon, J. Porto & E. N. S. Silva, 10 May 1988. INPA 2371, 2; Distrito Industrial, Manaus; J. Zuanon, 21 Nov. 1988.



Fig. 18. *Rivulus micropus*, UFRJ 6288, male, 31.9 mm SL (one day after collection); Brazil: Amazonas: Manacapuru. Photo by W. J. E. M. Costa.

## Diagnosis

Distinguished from all other congeners by the combination of the following features: anterior portion of trunk slightly deeper than wide, jaws slightly elongated, snout pointed, tip of anal fin slightly pointed in male, caudal fin rounded in male, pelvic-fin tip reaching anterior portion of anal-fin base in male, dorsal-fin origin on vertical between base of penultimate and last anal-fin ray, dorsal-fin rays 7-9, anal-fin rays 13-15, frontal squamation E or D-patterned, frontal scales arranged circularly, canal preopercular short and opened, contact organs on flank scales in male, longitudinal series of scales 40-45, gill rakers of first branchial arch 2 + 10, pink stripes on flank, jaws not distinctively pigmented, and round black spot on dorsal portion of caudal fin in female.

## Description

Morphometric data appear in Table I. Largest specimen, a male 42.8 mm SL. Dorsal profile gently convex from snout to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile slightly convex from lower jaw to end of anal-fin base, about straight on caudal peduncle. Body slender, subcylindrical anteriorly, slightly deeper than wide, to compressed posteriorly. Greatest body

depth at vertical just in front to pelvic-fin base. Jaws slightly elongated, snout pointed.

Tip of dorsal rounded; tip of anal fin slightly pointed in male, rounded in female. Caudal fin rounded. Pectoral fin short and rounded, posterior margin reaching vertical at about 80 % of distance between pectoral and pelvic-fin bases. Pelvic fin elliptical, tip reaching between urogenital papilla and base of 2<sup>nd</sup> anal-fin ray in male, and urogenital papilla in female. Pelvic-fin bases medially separated by short interspace. Dorsal-fin origin on vertical between base of penultimate and last anal-fin ray, and between neural spines of 24<sup>th</sup> and 25<sup>th</sup> vertebrae. Anal-fin origin between pleural ribs of 16<sup>th</sup> and 17<sup>th</sup> vertebrae. Dorsal-fin rays 7-9; anal-fin rays 13-15; caudal-fin rays 29-30; pectoral-fin rays 15; pelvic-fin rays 7-8.

Scales small, cycloid. Body and head entirely scaled, except anterior ventral surface of head. Body squamation extending over anterior 30-40 % of caudal-fin base; no scales on dorsal and anal-fin bases. Frontal squamation E or D-patterned; E-scales not overlapping medially; scales arranged in regular circular pattern around A-scale without exposed margins. Longitudinal series of scales 40-45; transverse series of scales 8; scale rows around caudal peduncle

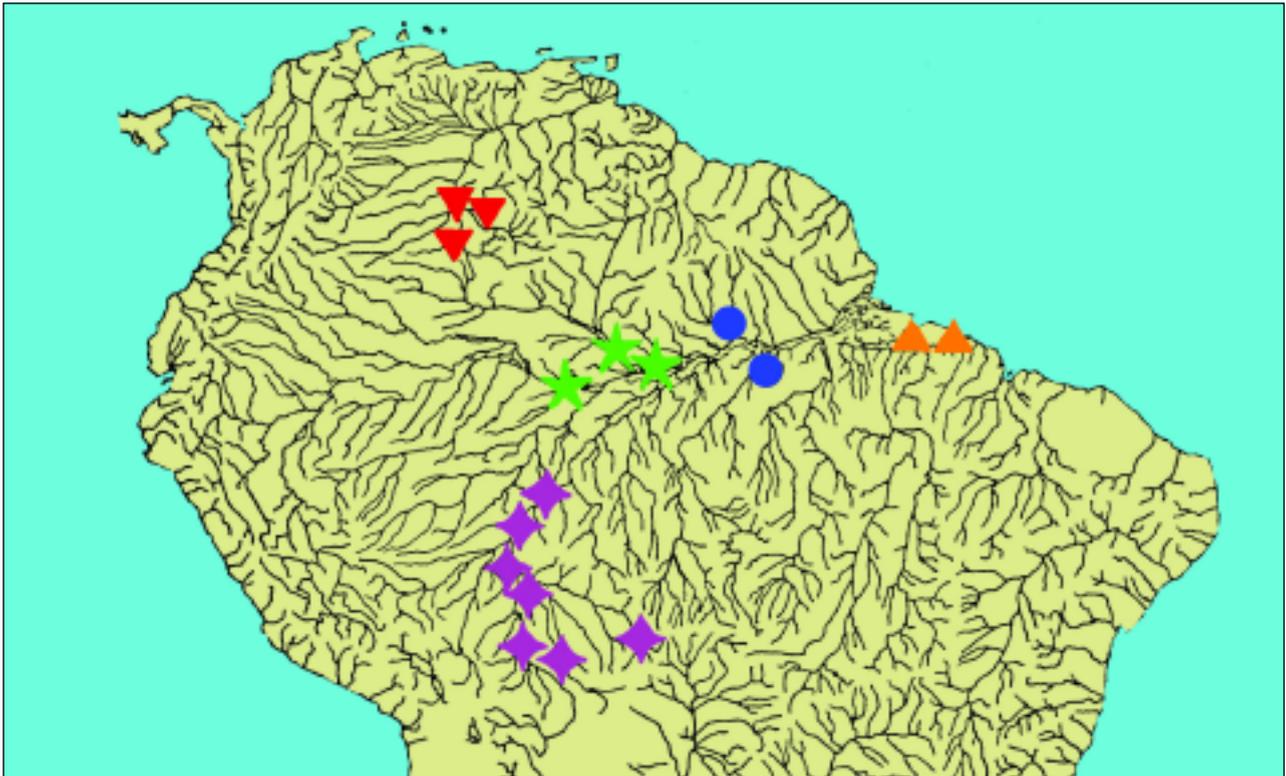


Fig. 19. Geographic distribution of: *Rivulus beniensis* (lozenges), *R. dibaphus* (dots), *R. micropus* (stars), *R. strigatus* (triangles), and *R. tecminae* (inverted triangles). One symbol may represent more than one collecting site.

16. Contact organ on each scale of midventral ventral portion of flank in male.

Cephalic neuromasts: supraorbital 3 + 3, parietal 1, anterior rostral 1, posterior rostral 1, infraorbital 1 + 16 + 1, preorbital 3, otic 1, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 2 + 4, mandibular 4 + 2, lateral mandibular 3.

Interhyal minute, cartilaginous. Basihyal subtriangular, width about 55% length; basihyal cartilage about 25% basihyal length. Six branchiostegal rays. Second pharyngobranchial teeth 3-4. Gill rakers of first branchial arch 2 + 10. Vomerine teeth 1. Ventral process of posttemporal long. Total vertebrae 35.

**Coloration in life:** Male: Side of body dark blue, with 8 narrow pink stripes, of which 3-5 reaching caudal-fin base; dark chromatophores concentrated on longitudinal zone between flank and dorsum. Dorsum light brown. Venter white. Side of head dark purplish blue. Jaws dark brown. Iris brown. Unpaired fins pale yellow with brown spots. Paired fins hyaline.

Female: Similar to male, but flank stripes darker, and round black spot on dorsal portion of caudal fin reaching fin margin, anteriorly bordered by small, triangular pale yellow spot.

### Distribution

Middle rio Amazonas basin (Fig. 19).

### Habitat

Margins of streams and lakes at sunny places, sometimes in forest border, at depths of about 10-50 cm (Fig. 20).



Fig. 20. Brazil: Amazonas: Manacapuru; stream near road Manaus-Manacapuru, habitat of *Rivulus micropus*. Photo by W. J. E. M. Costa.

### Subgenus *Anablepsoides* Huber, 1992

*Anablepsoides* Huber, 1992: 43 (type species: *Rivulus atratus* Garman; type by original designation).

### Diagnosis

Distinguished from the remaining subgenera of *Rivulus* by the following apomorphic features: rounded rostral cartilage (15.0), external medial teeth of premaxilla and dentary laterally displaced (20.1), long, acuminate caudal fin (76.1, 77.3), frontal squamation S-patterned (80.4; also occurring in *Owiyeye*), oblique dark grey on flank in male when exposed to sunlight (93.3), and transverse stripe through chin (98.2; also occurring in *Owiyeye*).

### Included species

*Rivulus atratus* Garman, 1895 and *R. ornatus* Garman, 1895.

### Distribution

Amazonas river basin, in Brazil and Peru.

### *Rivulus ornatus* Garman, 1895

(Fig. 21; Table I)

*Rivulus ornatus* Garman, 1895: 139 (type locality: Silva, Cudajas, Lago Aleixo, Lake Hyanuary [four distinct localities in the Brazilian Amazon, Estado do Amazonas: Silves, Codajás, lago Aleixo and paraná do Januári]; lectotype: MCZ 6266, designated by Huber 1992: 347).

*Rivulus obscurus* Garman, 1895: 140 (type locality: Lake Hyanuary [paraná do Januári, Estado do Amazonas, Brazil]; lectotype: MCZ 6853, designated by Huber 1992: 336).

### Material examined

Brazil: Estado do Amazonas: MCZ 6854, 4 paralectotypes; paraná do Januári, 3°12'S 60°5'W; L. Agassiz, 27 Oct. 1865. MCZ 98664, 1 paralecto-



Fig. 21. *Rivulus ornatus*, not preserved, male, about 20.0 mm SL (about one week after collection); Brazil: Amazonas: Manaus. Photo by W. J. E. M. Costa.

type of *R. obscurus*; same data as MCZ 6854. UFRJ 7499, 28; stream tributary to rio Sanasani, Silves; EPA, 7 Oct. 1967. INPA 3908, 3; igarapé Candiru, km 50 of the road Manaus-Itacoatiara; C. Pereira, 11 Jul. 1990. Estado do Pará: MZUSP 37208, 3; lago Jacaré, rio Trombetas; EPA, 7 Nov. 1969. MZUSP 38440, 2 (c&s); rio Curuinapui; EPA, 26 Jan. 1968.

### Diagnosis

Distinguished from all other congeners by the combination of the following features: anterior portion of trunk slightly wider than deep, jaws short, snout blunt, tip of anal fin rounded in male, caudal fin elliptical to acuminate in male, pelvic-fin tip reaching the anterior portion of the anal-fin base in male, dorsal-fin origin posterior to anal-fin base, dorsal-fin rays 5-7, anal-fin rays 9-11, frontal squamation S-patterned, contact organs absent, frontal scales arranged circularly, canal preopercular short and opened, longitudinal series of scales 29-32, gill rakers of first branchial arch 1 + 7, oblique rows of red dots on flank in male, transverse black bar through the chin, and no black spot on dorsal portion of caudal-fin.

### Description

Morphometric data appear in Table I. Largest specimen, a male 21.1 mm SL. Dorsal profile gently convex from snout to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile weakly convex from lower jaw to end of anal-fin base, about straight on caudal peduncle. Body slender, sub-cylindrical anteriorly, wider than deep, to compressed posteriorly. Greatest body depth at vertical just in front of pelvic-fin base. Jaws short, snout blunt.

Tip of dorsal and anal fins rounded. Caudal fin elliptical, often pointed in male. Pectoral fin rounded, posterior margin reaching vertical between pelvic-fin base and anus in male, and vertical just anterior to pelvic-fin base in female. Pelvic fin elliptical, tip reaching between urogenital papilla and base of 4th anal-fin ray in male, between urogenital papilla and anal-fin origin in female. Pelvic-fin bases medially separated by short interspace. Dorsal-fin origin on vertical just posterior to anal-fin base, between neural spines of 20<sup>th</sup> and 21<sup>st</sup> vertebrae. Anal-fin origin between pleural ribs of 13<sup>th</sup> and 14<sup>th</sup> vertebrae. Dorsal-fin rays 5-7; anal-fin rays 9-11; caudal-fin rays 24; pectoral-fin rays 12-13; pelvic-fin rays 7.

Scales small, cycloid. Body and head entirely scaled,

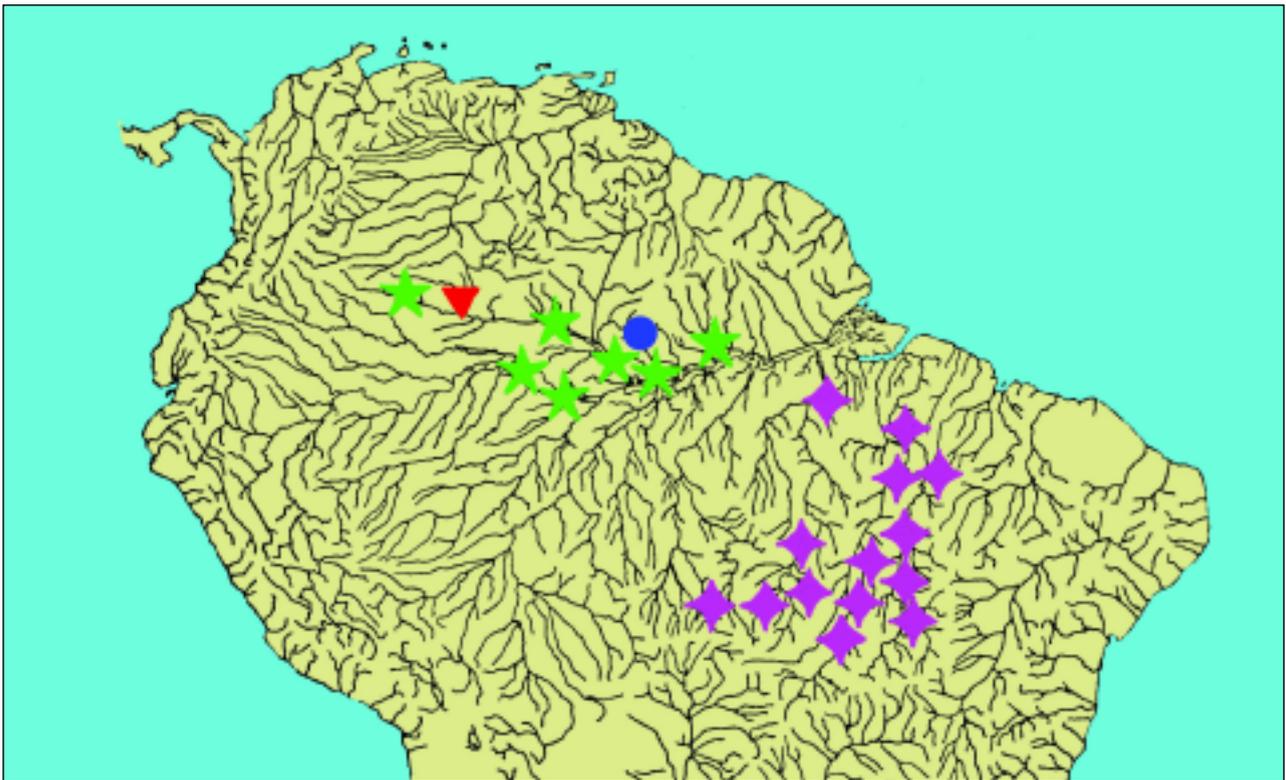


Fig. 22. Geographic distribution of: *Rivulus ornatus* (stars), *R. uakti* (inverted triangle), *R. uatuman* (dot), and *R. zygometes* (lozenges). One symbol may represent more than one collecting site.

except anterior ventral surface of head. Body squamation extending over anterior 20 % of caudal-fin base; no scales on dorsal and anal-fin bases. Frontal squamation S-patterned; E-scales not overlapping medially; scales arranged in regular circular pattern around A-scale without exposed margins. Longitudinal series of scales 29-32; transverse series of scales 7; scale rows around caudal peduncle 16. Contact organs absent.

Cephalic neuromasts: supraorbital 3 + 3, parietal 1, anterior rostral 1, posterior rostral 1, infraorbital 1 + 12 + 1, preorbital 2, otic 1, post-otic 1, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 2 + 4, mandibular 3-4 + 1, lateral mandibular 3.

Interhyal minute, cartilaginous. Basihyal subtriangular, width about 50% length; basihyal cartilage about 10% basihyal length. Six branchiostegal rays. Second pharyngobranchial teeth 1-2. Gill rakers of first branchial arch 1 + 7. Vomerine teeth 1. Ventral process of posttemporal absent. Total vertebrae 29-30.

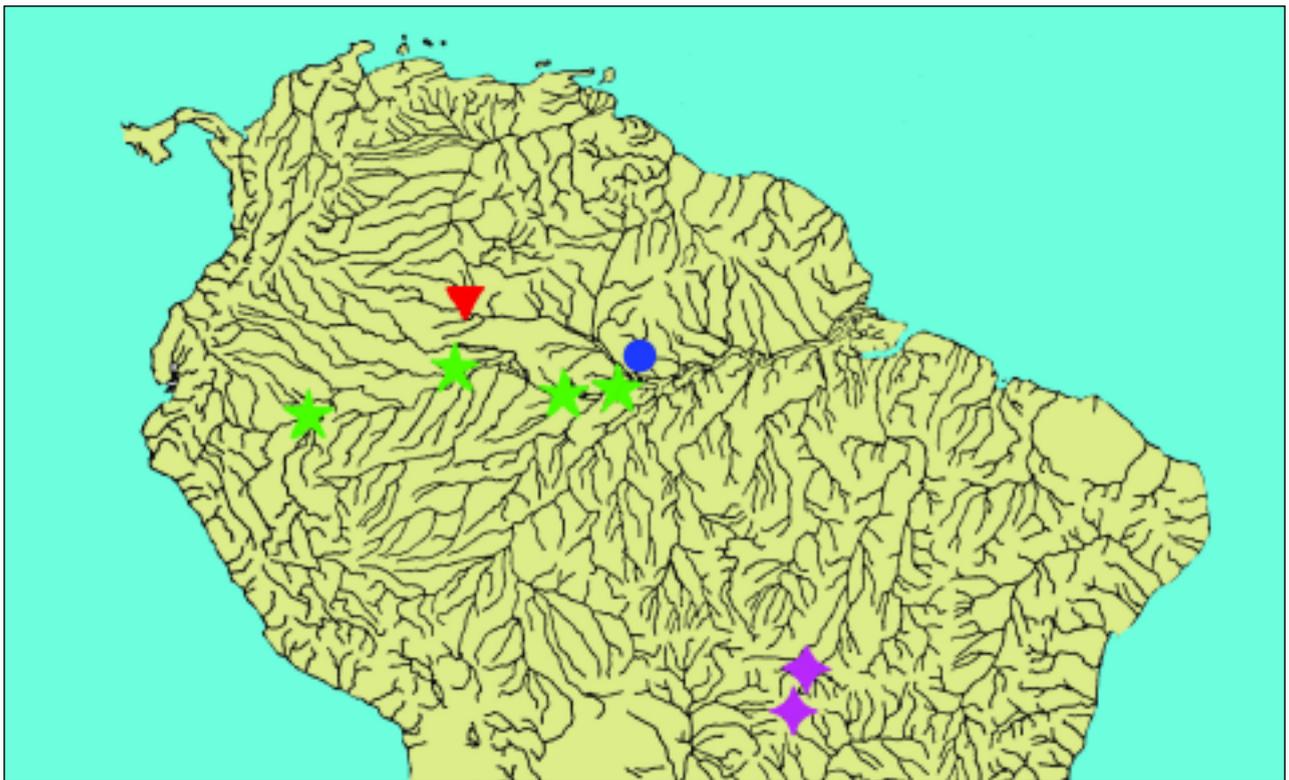
**Coloration in life:** Male: Side of body pale blue, usually with 8 narrow light brown vertical lines, overlapped by oblique rows of red dots; dark chro-

matophores concentrated on longitudinal zone between flank and dorsum. Dorsum light brown with transverse dark brown bars. Venter brown. Side of head and infraorbital region dark metallic blue with red dots. Jaws light brown; dark brown to black transverse bar just below lower jaw. Iris brown. Dorsal and anal fins pale yellow to pale blue, with red to reddish brown bars. Dorsal portion of caudal fin pale yellow to pale blue with dark red narrow bars, median portion dark brown, and ventral portion reddish orange. Pectoral fin hyaline. Pelvic fin pale yellow.

Female: Side of body light brown with 8 narrow brown vertical lines, and 5-7 oblique dark brown bars; dark chromatophores concentrated on longitudinal zone between flank and dorsum. Dorsum light brown with transverse brown bars. Venter light brown. Side and ventral portion of head brown. Jaws light brown; dark brown to black transverse bar just below lower jaw. Iris brown. Unpaired fins hyaline with transverse narrow dark brown bars. Paired fins hyaline.

### Distribution

Middle rio Amazonas basin, Brazil (Fig. 22).



**Fig. 23.** Geographic distribution of: *Rivulus amanapira* (inverted triangle), *R. atratus* (stars), *R. kirovskyi* (dot), and *R. litteratus* (lozenges). One symbol may represent more than one collecting site.

## Habitat

Stagnant waters in sunny places near forest border, with dense aquatic vegetation, about 50-150 cm deep.

## *Rivulus atratus* Garman, 1895

*Rivulus atratus* Garman, 1895: 140 (type locality: Jutahy [now Jutaí, Estado do Amazonas, Brazil]; lectotype: MCZ 6318, designated by Huber 1992: 102)

## Material examined

Brazil: Estado do Amazonas: MCZ 98675, 1 paralectotype; Jutaí; Thayer Expedition, Sep. 1865. MZUSP 38310, 1; MZUSP 38449, 1 (c&s); rio Içapó, mouth of rio Jutaí; EPA, 22 Oct. 1968. MZUSP 38494, 12; lago Miuá, above Codajás; EPA, 25 Sep. 1968.

## Diagnosis

Distinguished from all other congeners by the combination of the following features: anterior portion of trunk wider than deep, jaws short, snout blunt, tip of anal fin rounded in male, caudal fin elliptical to acuminate in male, pelvic-fin tip not reaching to urogenital papilla in male, dorsal-fin origin posterior to anal-fin base, dorsal-fin rays 5-6, anal-fin rays 8-10, frontal squamation S-patterned, frontal scales arranged circularly, canal preopercular short and opened, contact organs absent, longitudinal series of scales 32-34, gill rakers of first branchial arch 1 + 7, dark brown oblique bars on flank, transverse black bar through the chin, and no black spot on dorsal portion of caudal fin. Also distinguished from all other congeners in having venter dark brown to black and dark brown spots on pectoral fin.

## Distribution

Middle rio Amazonas basin, Brazil and Peru (Fig. 23).

## Habitat

Still waters close to river and lake margins.

## *Benirivulus*, new subgenus

Type species: *Rivulus beniensis* Myers, 1927.

## Diagnosis

Two autapomorphic conditions were found in *Benirivulus*, which are not present in other con-

geners: a colour pattern of anal fin, consisting of one or two subbasal rows of reddish brown close dots, sometimes forming stripes, and a broad dark grey distal zone on the dorsal fin (Fig. 24).

## Etymology

The name *Benirivulus* is derived from Beni, an important Amazonian river, and *rivulus*, from the Latin meaning stream, in reference to the occurrence of the new taxon in streams of that river basin. Gender masculine.

## Included species

Only *R. beniensis*, the type species of the subgenus.

## Distribution

Madeira river drainage, Amazonas river basin, in Bolivia and Brazil.

## *Rivulus beniensis* Myers, 1927

(Fig. 24; Table II)

*Rivulus strigatus* (*non R. strigatus* Regan); Pearson, 1925: 51 (misidentification).

*Rivulus beniensis* Myers, 1927b: 133 (type locality: Ivon, Rio Beni [lower río Beni, just above confluence with río Madre de Díos, Departamento de Beni], Bolivia; lectotype: USNM 86776, designated by Fels & Huber 1985: 35).

*Rivulus beniensis lacustris* Myers, 1927b: 133 (type locality: lagoons along shores of Lake Rogoagua [lago Rogoaguado, río Yata basin, which drains into río Mamoré, immediately above confluence with río Beni], Bolivia; lectotype: UMMZ 66396, designated by Fels & Huber 1985: 35).

*Rivulus bolivianus* Seegers, 1988: 172 (type locality: laguna Suarez, ca. 4 km SW Trinidad, río Mamoré, Bolivia; holotype: ZFMK 14602).

## Material examined

Bolivia: Departamento de Beni: CBF 1886, 54;



Fig. 24. *Rivulus beniensis*, UFRJ 5885, male, 19.6 mm SL (one day after collection); Brazil: Rondônia: between Mutum Paraná and Abunã. Photo by W. J. E. M. Costa.

**Table II.** Morphometric data of *Rivulus beniensis*, *R. strigatus*, and *R. dibaphus*.

	<i>R. beniensis</i>		<i>R. strigatus</i>		<i>R. dibaphus</i>	
	males (10)	females (10)	males (10)	females (7)	males (9)	females (6)
Standard length (mm)	19.6-23.0	19.4-25.8	22.2-26.5	18.7-22.2	19.2-26.5	17.8-23.4
<b>Percents of standard length</b>						
Body depth	19.8-22.0	19.5-21.3	18.8-21.9	19.2-20.8	19.7-23.3	19.6-21.5
Caudal peduncle depth	13.0-14.3	12.7-14.4	13.4-15.5	12.7-14.6	13.0-14.9	13.1-14.4
Pre-dorsal length	76.2-78.3	76.8-79.9	70.4-73.3	71.2-74.1	70.5-73.1	71.4-72.9
Pre-pelvic length	53.0-55.2	52.7-55.8	52.3-57.1	53.1-56.0	55.0-57.4	53.6-57.1
Length of dorsal-fin base	8.2-9.9	7.0-9.2	10.0-12.1	10.7-12.1	12.0-13.6	10.3-12.7
Length of anal-fin base	17.0-20.2	16.5-17.9	17.7-19.5	16.5-18.5	18.9-21.2	16.6-19.1
Caudal-fin length	34.5-39.3	34.0-37.4	36.0-41.6	36.7-42.6	36.2-41.0	36.9-41.0
Pectoral-fin length	18.2-21.1	18.8-21.2	18.8-21.1	19.4-22.7	20.6-23.2	20.1-21.9
Pelvic-fin length	9.9-11.9	8.7-10.6	9.5-11.3	8.5-10.8	9.3-10.7	9.2-10.8
Head length	25.1-27.6	24.7-26.8	25.4-27.4	25.9-27.3	26.1-28.5	26.5-28.9
<b>Percents of head length</b>						
Head depth	63.0-67.9	60.2-66.3	63.4-68.8	63.8-68.0	61.0-67.7	60.1-64.8
Head width	71.7-79.6	72.7-77.8	73.4-79.7	73.8-80.2	71.7-77.0	73.7-79.3
Snout length	14.2-16.4	12.7-16.4	11.7-14.4	12.2-14.0	11.9-15.1	12.3-16.3
Lower jaw length	15.8-20.8	16.7-20.3	19.1-23.0	19.0-22.0	19.3-23.5	19.8-21.9
Eye diameter	33.3-36.2	31.5-37.1	33.1-35.4	32.2-37.0	30.1-33.8	32.7-35.1

CBF 1873, 39; Espírito, Estación Biológica Beni; J. Sarmiento, 23-24 Apr. 1987. Brazil: Estado de Rodônia: UFRJ 5884, 67; UFRJ 5885, 4 (c&s); swamp near road BR-364, between Mutum-Paraná and Abunã, rio Madeira basin, 9°40'34.2"S 65°4'9.9"W; W. J. E. M. Costa, S. Lima & A. Pinto, 6 Jun. 2003. UFRJ 5881, 6; swamp close to rio Mamoré, near Guajará-Mirim, 10°45'53.5"S 65°20'21.7"W; W. J. E. M. Costa, S. Lima & A. Pinto, 7 Jun. 2003. Estado de Mato Grosso: swamp at km 2 of the road between Vila Bela and Casal Vasco, near rio Guaporé; W. J. E. M. Costa, M. I. Landim, R. D'Arrigo & C. Moreira, 29 Apr. 1996.

### Diagnosis

Distinguished from all other congeners by the combination of the following features: anterior portion of trunk slightly deeper than wide, jaws short, snout blunt, tip of anal fin rounded in male, caudal fin rounded in male, pelvic-fin tip reaching the anterior portion of the anal-fin base in male, dorsal-fin origin on vertical between base of 9<sup>th</sup> and 10<sup>th</sup> anal-fin rays, dorsal-fin rays 7-8, anal-fin rays 11-13, frontal squamation E-patterned, frontal scales arranged circularly, canal preopercular short and opened, contact organs on flank scales in male, longitudinal series of scales 29-32, gill rakers of first branchial arch 1 + 7, longitudinal rows of reddish brown dots stripes on flank in male, jaws black, and round black spot on dorsal portion of caudal-fin in female.

### Description

Morphometric data appear in Table II. Largest specimen, a female 28.8 mm SL. Dorsal profile gently convex from snout to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile slightly convex from lower jaw to end of anal-fin base, about straight on caudal peduncle. Body slender, subcylindrical anteriorly, slightly deeper than wide, to compressed posteriorly. Greatest body depth at vertical just in front to pelvic-fin base. Jaws short, snout blunt.

Tip of dorsal and anal fins rounded. Caudal fin rounded. Pectoral fin rounded, posterior margin reaching vertical at about 80% length between pectoral-fin and pelvic-fin bases. Pelvic fin elliptical, tip reaching between urogenital papilla and anal-fin origin in male, between anus and urogenital papilla in female. Pelvic-fin bases medially separated by short interspace. Dorsal-fin origin on vertical between base of 9<sup>th</sup> and 10<sup>th</sup> anal-fin rays, and between neural spines of 19<sup>th</sup> and 21<sup>st</sup> vertebrae. Anal-fin origin between pleural ribs of 15<sup>th</sup> and 16<sup>th</sup> vertebrae. Dorsal-fin rays 7-8; anal-fin rays 11-13; caudal-fin rays 23-26; pectoral-fin rays 13; pelvic-fin rays 6.

Scales small, cycloid. Body and head entirely scaled, except anterior ventral surface of head. Body squamation extending over anterior 25 % of caudal-fin base; no scales on dorsal and anal-fin bases. Frontal squamation E-patterned; E-scales not overlapping medially; scales arranged in regular circular pattern around A-scale without exposed margins.

Longitudinal series of scales 29-32; transverse series of scales 7; scale rows around caudal peduncle 16. Contact organ on each scale of midventral portion of flank in male.

Cephalic neuromasts: supraorbital 3 + 3, parietal 1, anterior rostral 1, posterior rostral 1, infraorbital 1 + 12 + 1, preorbital 2, otic 1, post-otic 1, supratemporal 1, median opercular 1, ventral opercular 1, preopercular 2 + 4, mandibular 3 + 1, lateral mandibular 2.

Interhyal minute, cartilaginous. Basihyal subtriangular, width about 35 % length; basihyal cartilage about 30 % basihyal length. Six branchiostegal rays. Second pharyngobranchial teeth 2. Gill rakers of first branchial arch 1 + 7. Vomerine teeth 2. Ventral process of posttemporal absent. Total vertebrae 30-32.

**Coloration in life:** Male: Side of body metallic yellowish green; six longitudinal rows of reddish brown dots, of which often two or three rows with sparse dots or absent, middle row forming stripe; dark chromatophores concentrated on longitudinal zone between flank and dorsum, often forming short oblique dark brown bars when fish exposed to strong sunlight. Dorsum light brown. Venter white. Side of head metallic yellowish green with small dark brown spots. Lower jaw black. Iris light yellowish with black vertical stripe. Dorsal fin pale yellow with subbasal row of reddish brown dots and dark grey distal stripe. Anal fin light blue on basal portion and pale yellow on distal portion, with one or sometimes two subbasal rows of reddish brown dots and dark grey distal stripe. Caudal fin light grey. Paired fins hyaline, anterior margin of pelvic fin dark grey.

Female: Side of body with irregularly shaped brown



Fig. 25. Brazil: Rondônia: between Mutum Paraná and Abunã; lake at the border of forest, habitat of *Rivulus beniensis*. Photo by W. J. E. M. Costa.

blotches, forming longitudinal row of rounded light brown interspaces on ventral portion; sometimes almost inconspicuous rows of brown dots coalesced to brown blotches; dark chromatophores concentrated on longitudinal zone between flank and dorsum, often forming short oblique dark brown bars when fish exposed to strong sunlight. Dorsum light brown. Venter white. Side of head pale metallic yellowish green with small dark brown spots. Lower jaw black. Iris light yellowish with black vertical stripe. Dorsal fin hyaline with two subbasal rows of brown dots and grey distal stripe. Anal fin hyaline with two or three subbasal rows of brown dots and grey distal stripe. Caudal fin light grey; round black spot on dorsal portion of caudal fin reaching caudal-fin margin, anteriorly bordered by small, triangular pale yellow spot. Paired fins hyaline, anterior margin of pelvic fin grey.

### Distribution

Rio Madeira basin, Bolivia and Brazil (Fig. 19).

### Habitat

Stagnant waters in sunny places near forest border, with dense aquatic vegetation, about 50-150 cm deep (Fig. 25).

### Subgenus *Laimosemion* Huber, 1999

*Laimosemion* Huber, 1999: 49 (type species: *Rivulus geayi* Vaillant; type by original designation).

### Diagnosis

Distinguished from other rivulids by having bifid epipleural ribs (43.1).

### Included species

*Rivulus agilae* Hoedeman, 1954, *R. dibaphus* Myers, 1927, *R. breviceps* Eigenmann, 1909, *R. cladophorus* Huber, 1991, *R. corpulentus* Thomerson & Taphorn, 1993, *R. frenatus* Eigenmann, 1912, *R. geayi* Vaillant, 1899, *R. gransabanae* Lasso, Taphorn & Thomerson, 1992, *R. lyricauda* Thomerson, Berkenkamp & Taphorn, 1991, *R. nicoi* Thomerson & Taphorn, 1992, *R. strigatus* Regan, 1912, *R. torrenticola* Vermeulen & Isbrücker, 2000, and *R. xiphidius* Huber, 1979.

### Distribution

Orinoco river basin, Guiana rivers, eastern Amazonas river basin and adjacent coastal areas in Venezuela, Guiana, Suriname, Guyana and Brazil.

***Rivulus strigatus* Regan, 1912**

(Figs 26-28; Table II)

*Rivulus strigatus* Regan, 1912: 502 (type locality: Amazon [Belém, Pará, Brazil]; holotype: BMNH 1912.8.30).

*R. geayi* (*non R. geayi* Vaillant); Huber 1991: 69-70 (equivocal synonymy).

**Material examined**

Brazil: Estado do Pará: UFRJ 6249, 25; UFRJ 6250, 6; UFRJ 6251, 4 (c&s); stream at the road PA-446, Primavera, 0°57'57.3"S 47°8'46.8"W; W. J. E. M. Costa, R. Paiva & D. Ramos, 19 Jun. 2004. UFRJ 6262, 1; stream at ilha do Mosqueiro, road PA-391, Belém, 1°8'59.5"S 48°21'27.9"W; W. J. E. M. Costa, R. Paiva & D. Ramos, 21 Jun. 2004. UFRJ 4075, 16; UFRJ 4078, 11; igarapé Maguary, Belém; A. Sarraf & E. Nogueira, 1 Aug. 1996. UFRJ 1820, 1 (c&s); Belém; M. Lacerda, 1990.

**Diagnosis**

Distinguished from all other congeners by the combination of the following features: anterior portion of trunk slightly deeper than wide, jaws short, snout blunt, tip of anal fin slightly pointed in male, caudal fin rounded in male, pelvic-fin tip reaching the anterior portion of the anal-fin base in male, dorsal-fin origin on vertical between base of 7<sup>th</sup> and 8<sup>th</sup> anal-fin rays, dorsal-fin rays 8-9, anal-fin rays 11-13, frontal squamation F-patterned, frontal scales arranged circularly, canal preopercular short and opened, contact organs on flank scales in male, longitudinal series of scales 30-32, gill rakers of first branchial arch 1 + 7, longitudinal rows of red spots on anterior portion of flank and red chevron-like oblique bars on posterior portion of flank in male, jaws black, and no black spot on dorsal portion of caudal-fin.

**Description**

Morphometric data appear in Table II. Largest specimen, a male 26.5 mm SL. Dorsal profile slightly convex from snout to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile weakly convex from lower jaw to end of anal-fin base, about straight on caudal peduncle. Body slender, subcylindrical anteriorly, slightly deeper than wide, to compressed posteriorly. Greatest body depth at vertical just in front to pelvic-fin base. Jaws short, snout blunt.

Tip of dorsal and anal fins slightly pointed in male, rounded in female. Caudal fin rounded. Pectoral fin

rounded, posterior margin reaching vertical at about 75 % length between pectoral-fin and pelvic-fin bases. Pelvic fin elliptical, tip reaching between base of 1<sup>st</sup> and 2<sup>nd</sup> anal-fin rays in male, between urogenital papilla and base of 1<sup>st</sup> anal-fin ray in female. Pelvic-fin bases medially in contact. Dorsal-fin origin on vertical between base of 7<sup>th</sup> and 8<sup>th</sup> anal-fin rays, and between neural spines of 18<sup>th</sup> and 19<sup>th</sup> vertebrae. Anal-fin origin between pleural ribs of 14<sup>th</sup> and 15<sup>th</sup> vertebrae. Dorsal-fin rays 8-9; anal-fin rays 11-13; caudal-fin rays 28; pectoral-fin rays 14-15; pelvic-fin rays 6.

Scales small, cycloid. Body and head entirely scaled, except anterior ventral surface of head. Body squamation extending over anterior 25 % of caudal-fin base; no scales on dorsal- and anal-fin bases. Frontal squamation F-patterned; E-scales not overlapping medially; scales arranged in regular circular pattern around A-scale without exposed margins.



Fig. 26. *Rivulus strigatus*, UFRJ 6262, male, 23.0 mm SL (two days after collection); Brazil: Pará: Belém. Photo by W. J. E. M. Costa.



Fig. 27. *Rivulus strigatus*, UFRJ 6250, male, 26.5 mm SL (one day after collection); Brazil: Pará: Primavera. Photo by W. J. E. M. Costa.



Fig. 28. *Rivulus strigatus*, UFRJ 6250, female, 22.2 mm SL (one day after collection); Brazil: Pará: Primavera. Photo by W. J. E. M. Costa.

Longitudinal series of scales 30-32; transverse series of scales 7; scale rows around caudal peduncle 16. Contact organ on each scale of midventral portion of flank in male.

Cephalic neuromasts: supraorbital 3 + 3, parietal 1, anterior rostral 1, posterior rostral 1, infraorbital 1 + 12-13 + 1, preorbital 2, otic 1, post-otic 1, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 2 + 4, mandibular 3 + 1, lateral mandibular 2-3.

Interhyal minute, cartilaginous. Basihyal subtriangular, width about 50 % length; basihyal cartilage about 25 % basihyal length. Six branchiostegal rays. Second pharyngobranchial teeth absent. Gill rakers of first branchial arch 1 + 7. Vomerine teeth absent. Ventral process of posttemporal absent. Total vertebrae 30-31.

**Coloration in life:** Male: Side of body metallic blue or greenish blue; four to five longitudinal rows of red dots on anterior half of flank, and red chevron-like oblique bars with vertex anteriorly

directed on posterior half of flank; dark blue humeral blotch. Dorsum light brown. Venter white. Side of head metallic greenish blue with small red spots; infraorbital region yellow. Jaws black. Iris brown, anterior and posterior portion green. Dorsal fin light blue with red bars on basal and posterior zones, red on anterior and distal portions; sometimes pale yellow anterior margin. Anal fin light blue with grey dots on basal and posterior portions; narrow dark reddish grey distal stripe. Upper two-thirds of caudal fin light red with transverse rows of small blue spots, lower third greenish blue; narrow dark reddish grey ventral stripe. Pectoral fin hyaline. Pelvic fin light blue with dark reddish grey anterior margin.

Female: Side of body light grey with small dark purplish brown spots arranged both in overlapped longitudinal and oblique rows; dark grey humeral blotch; dark chromatophores concentrated on longitudinal zone between flank and dorsum, often forming short transverse dark brown bars when fish exposed to strong sunlight. Dorsum light brown. Venter white. Side of head pale blue with small dark brown spots; infraorbital region pale yellow. Jaws black. Iris brown. Dorsal fin pale yellow on basal and posterior portions, light purplish grey on distal and anterior portions. Anal fin pale yellow to pale pink, basal portion light blue; distal margin dark grey. Caudal fin pale yellow with dark brown bars on upper two-thirds of fin. Pectoral fin hyaline. Pelvic fin pale yellow with dark grey anterior margin.

### Distribution

River basins close to the right bank of rio Amazonas mouth (Fig. 19).

### Habitat

Margins of clear water streams with moderate current, sand bottom, at depth of about 20-40 cm (Fig. 29).

### *Rivulus dibaphus* Myers, 1927

(Figs 30-32; Table II)

*Rivulus dibaphus* Myers, 1927: 121 (type locality: Igarapé do Ajamuri, Lower Amazon [corrected by S. O. Kullander in Huber 1991: 70 as Ajamuri or Agamuri, a beach in Lago Grande at mouth of rio Maicuru, just east of Santarém, Pará, Brazil]; lectotype: CAS 44214, designated by Huber 1992: 184).

*R. geayi* (non *R. geayi* Vaillant); Huber, 1991: 69-70 (equivocal synonymy).



Fig. 29. Brazil: Pará: Primavera; clear water stream, habitat of *Rivulus strigatus*. Photo by W. J. E. M. Costa.

## Material examined

Brazil: Estado do Pará: CAS 44214, lectotype; CAS 44215, 6; Igarapé do Ajamuri, Santarém; C. Ternetz, Jul. 1924. UFRJ 6283, 10; UFRJ 6284, 6 (c&cs); UFRJ 6285, 4; stream 5 km S of Alter do Chão, Santarém, 2°33'1.3"S 54°57'21.1"W; W. J. E. M. Costa, R. Paiva & D. Almeida, 14 Jun. 2004. UFRJ 6286, 2; stream tributary to rio Tapajós, Porto Novo, Belterra, 2°37'45.9"S 54°58'41.7"W; W. J. E. M. Costa, R. Paiva & D. Almeida, 14 Jun. 2004. UFRJ 6286, 7; stream tributary to rio Tapajós, near Porto Novo, Belterra, 2°37'54.0"S 54°58'19.6"W; W. J. E. M. Costa, R. Paiva & D. Almeida, 14 Jun. 2004. INPA 2370, 8 (1c&c); igarapé do Patenós, rio Trombetas basin; J. Zuanon & E. Ferreira, 2 Dec. 1988.

## Diagnosis

Distinguished from all other congeners by the combination of the following features: anterior portion of trunk slightly deeper than wide, jaws short,



Fig. 30. *Rivulus dibaphus*, UFRJ 6284, male, 24.8 mm SL (one day after collection); Brazil: Pará: Santarém. Photo by W. J. E. M. Costa.



Fig. 31. *Rivulus dibaphus*, UFRJ 6284, male, 22.3 mm SL (one day after collection); Brazil: Pará: Santarém. Photo by W. J. E. M. Costa.



Fig. 32. *Rivulus dibaphus*, UFRJ 6284, female, 21.8 mm SL (one day after collection); Brazil: Pará: Santarém. Photo by W. J. E. M. Costa.

snout blunt, tip of anal fin slightly pointed in male, caudal fin subtruncate in male, pelvic-fin tip reaching the anterior portion of the anal-fin base in male, dorsal-fin origin on vertical between base of 7<sup>th</sup> and 8<sup>th</sup> anal-fin rays, dorsal-fin rays 9-10, anal-fin rays 12-13, frontal squamation E-patterned, frontal scales arranged circularly, canal preopercular short and opened, contact organs on flank scales in male, longitudinal series of scales 30-32, gill rakers of first branchial arch 1 + 9, longitudinal rows of red spots on anterior portion of flank and red chevron-like oblique bars on posterior portion of flank in male, jaws black, and no black spot on dorsal portion of caudal-fin.

## Description

Morphometric data appear in Table II. Largest specimen, a male 26.5 mm SL. Dorsal profile slightly convex from snout to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile weakly convex from lower jaw to end of anal-fin base, about straight on caudal peduncle. Body slender, subcylindrical anteriorly, slightly deeper than wide, to compressed posteriorly. Greatest body depth at vertical just in front to pelvic-fin base. Jaws short, snout blunt.

Tip of dorsal and anal fins slightly pointed in male, rounded in female. Caudal fin subtruncate in male, rounded in female. Pectoral fin rounded, posterior margin reaching vertical at about 75-90 % length between pectoral-fin and pelvic-fin bases. Pelvic fin elliptical, tip reaching between base of 2<sup>nd</sup> and 3<sup>rd</sup> anal-fin rays in male, between urogenital papilla and base of 2<sup>nd</sup> anal-fin ray in female. Pelvic-fin bases medially in contact. Dorsal-fin origin on vertical between base of 7<sup>th</sup> and 8<sup>th</sup> anal-fin rays, and between neural spines of 16<sup>th</sup> and 18<sup>th</sup> vertebrae. Anal-fin origin between pleural ribs of 13<sup>th</sup> and 14<sup>th</sup> vertebrae. Dorsal-fin rays 9-10; anal-fin rays 12-13; caudal-fin rays 28-31; pectoral-fin rays 14-15; pelvic-fin rays 6-7.

Scales small, cycloid. Body and head entirely scaled, except anterior ventral surface of head. Body squamation extending over anterior 30 % of caudal-fin base; no scales on dorsal and anal-fin bases. Frontal squamation E-patterned; E-scales not overlapping medially; scales arranged in regular circular pattern around A-scale without exposed margins. Longitudinal series of scales 30-32; transverse series of scales 7; scale rows around caudal peduncle 16. Contact organ on each scale of midventral portion of flank in male.

Cephalic neuromasts: supraorbital 3 + 3, parietal 1, anterior rostral 1, posterior rostral 1, infraorbital 1 + 12-16 + 1, preorbital 2-3, otic 1, post-otic 1, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 2 + 4, mandibular 3 + 1, lateral mandibular 2-3.

Interhyal minute, cartilaginous. Basihyal subtriangular, width about 45% length; basihyal cartilage about 25% basihyal length. Six branchiostegal rays. Second pharyngobranchial teeth absent. Gill rakers of first branchial arch 1 + 9. Vomerine teeth absent. Ventral process of posttemporal absent. Total vertebrae 30-31.

**Coloration in life:** Male: Side of body metallic blue, bluish black on caudal peduncle; four to five longitudinal rows of red dots on anterior half of flank, and red chevron-like oblique bars with vertex anteriorly directed on posterior half of flank; dark blue humeral blotch. Dorsum light brown. Venter white. Side of head metallic greenish blue with small red spots; infraorbital region yellow. Jaws black. Iris brown, anterior and posterior portion green. Dorsal fin light blue with dark red reticulation. Anal fin light blue to pale yellow on distal portion, with grey dots or short bars on basal

and posterior portions; narrow dark reddish grey distal stripe. Caudal fin pale blue with five or six dark red bars not extending to ventralmost portion of fin; usually black ventral stripe. Pectoral fin hyaline. Pelvic fin light blue with dark reddish grey anterior margin.

Female: Side of body light grey with small dark reddish brown spots arranged both in overlapped longitudinal and oblique rows, often alternating with bright greenish blue small spots; dark grey humeral blotch; dark chromatophores concentrated on longitudinal zone between flank and dorsum, often forming short transverse dark brown bars when fish exposed to strong sunlight. Dorsum light brown. Venter white. Side of head pale blue with small dark brown spots; infraorbital region pale yellow. Jaws black. Iris brown. Dorsal fin pale yellow with grey dots. Anal fin pale yellow, basal portion light blue; distal margin dark grey. Caudal fin pale yellow with dark brown dots on upper two thirds of fin. Pectoral fin hyaline. Pelvic fin pale yellow with dark grey anterior margin.

### Distribution

Lower Tapajós and lower Trombetas river basins, and adjacent areas in eastern Amazonas river basin (Fig. 19).

### Habitat

Margins of clear water streams with moderate current, sand bottom, at depths of about 20-40 cm (Fig. 33).

### *Owiye*, new subgenus

Type species: *Rivulus amanapira* Costa, 2004.

### Diagnosis

Distinguished from all other subgenera of *Rivulus* in having the following apomorphic features: absence of dermosphenotic (3.1), frontal scales transversely arranged (79.0) (Fig. 34A), frontal squamation S-patterned (80.4; also occurring in *Anablepsoides*) (Fig. 34A), and a transverse stripe through chin (98.2; also occurring in *Anablepsoides*).

### Etymology

*Owiye* is the popular name used by Tucanos Indians from the upper rio Negro, Brazil, for *R. amanapira* (Costa 2004f). This name had already been reported by Wallace (2002) in notes made during his journey to the Amazon (1850-1852). Gender masculine.



Fig. 33. Brazil: Pará: Santarém. clear water stream, habitat of *Rivulus dibaphus*. Photo by W. J. E. M. Costa.

### Included species

*Rivulus altivelis* Huber, 1992, *R. amanapira* Costa, 2004, *R. kirovskyi* Costa, 2004, *R. rectocaudatus* Fels & de Rham, 1981, *R. romeri* Costa, 2003, *R. tecminae* Thomerson, Nico & Taphorn, 1992, *R. uakti* Costa, 2004 and *R. uatuman* Costa, 2004.

### Distribution

Amazonas and upper Orinoco river basins, in Venezuela, Colombia, Brazil and Peru.

### *Rivulus romeri* Costa, 2003

*Rivulus romeri* Costa, 2003a (type locality: brook tributary to Igarapé Iauiri, about 0°14.31'N, 68°03.48'W, which is a tributary of the Uaupés river, itself a tributary of the Negro river, Amazonian basin, Amazonas, Brazil; holotype: MCP 29751).

### Material examined

Brazil: Estado do Amazonas: MCP 29751, holotype; MCP 29752, 1 paratype; UFRJ 5447, 2 paratypes; UFRJ 5448, 4 paratypes (c&s); brook tributary to Igarapé Iauiri, a tributary of the Uaupés river, itself a tributary of the Negro river, Amazonian basin; U. Römer, 21 Feb. 1995.

### Diagnosis

Distinguished from all other congeners by the combination of the following features: anterior portion of trunk slightly deeper than wide, jaws short, snout blunt, tip of anal fin pointed in male, caudal fin rounded in male, pelvic-fin tip reaching urogenital papilla in male, dorsal-fin origin on vertical between base of 6th and 8th anal-fin rays, dorsal-fin rays 7-8,

anal-fin rays 9-10, frontal squamation S-patterned, frontal scales arranged transversely, canal preopercular absent, contact organs absent, longitudinal series of scales 29-30, gill rakers of first branchial arch 1 + 6, longitudinal rows of red dots on flank in male, transverse dark brown bar through the chin, and no distinctive black spot on dorsal portion of caudal-fin.

### Distribution

Upper rio Negro drainage (Fig. 10).

### Habitat

Shallow pools within dense forest (U. Römer, pers. comm.).

### *Rivulus kirovskyi* Costa, 2004

*Rivulus kirovskyi* Costa, 2004d: 10 (type locality: Reserva Ducke, temporary pools near Igarapé Acará, lower rio Negro drainage, rio Amazonas basin, about 3°0'S 60°30'W, Manaus, Estado do Amazonas, Brazil; holotype: UFRJ 5935 [transferred to INPA]).

*Rivulus duckensis* Hrbek, de Deus & Farias, 2004: 571 (Reserva Adolpho Ducke, rivulet emptying into Igarapé Barro Branco, Manaus, Amazonas, Brazil, 2°53'S 59°58'W; holotype: INPA 21444).

### Material examined

Brazil: Estado do Amazonas: UFRJ 5935, holotype; UFRJ 5936, 1 paratype (c&s); Reserva Ducke, temporary pools near Igarapé Acará, lower rio Negro drainage, rio Amazonas basin, Manaus; A. Kirovsky, 22 Feb. 1996. UFRJ 5937, 1 paratype, (c&s); UFRJ 5938, 1 paratype; same locality and collector, 25 Jan. 1996. UFRJ 5939, 2 paratypes; same locality

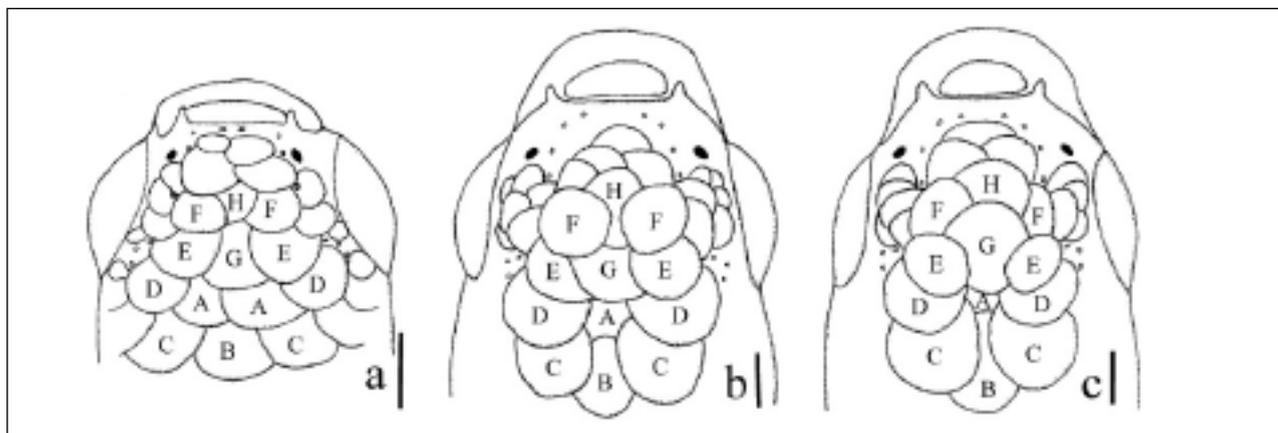


Fig. 34. Diagrammatic representation of the frontal squamation patterns in the genus *Rivulus*: A. *R. romeri*; B. *R. litteratus*; C. *R. scalaris*. Scale bar = 1 mm.

and collector, 1 Feb. 1996. INPA 1850, 2 paratypes; same locality; J. Zuanon, 22 Nov. 1986.

### Diagnosis

Distinguished from all other congeners by the combination of the following features: anterior portion of trunk slightly wider than deep, jaws short, snout blunt, tip of anal fin rounded in male, caudal fin rounded in male, pelvic-fin tip reaching anterior portion of anal-fin base in male, dorsal-fin origin on vertical between base of 8th and 9th anal-fin rays, dorsal-fin rays 6-7, anal-fin rays 9-10, frontal squamation S-patterned, frontal scales arranged transversely, canal preopercular absent, contact organs on flank scales in male, longitudinal series of scales 32, gill rakers of first branchial arch 1 + 7, transverse black bar through chin, and no black spot on dorsal portion of caudal-fin.

### Distribution

Middle rio Amazonas basin (Fig. 23).

### Habitat

Shallow pools in forest (A. Kirovsky, pers. comm.)

### *Rivulus uatuman* Costa, 2004

*Rivulus uatuman* Costa, 2004e: 2 (type locality: Balbina, temporary pool near stream close to Rio Uatumã, rio Amazonas basin, 1°56'19.6"S 59°59'27.30.6"W, altitude 43 m, Estado do Amazonas, Brazil; holotype: UFRJ 6022).

### Material examined

Brazil: Estado do Amazonas: UFRJ 6022, holotype; UFRJ 6023, 3 paratypes; UFRJ 6024, 2 paratypes (c&s); Balbina, temporary pool near stream close to Rio Uatumã, rio Amazonas basin altitude 43 m); W. J. E. M. Costa, R. Paiva and D. Ramos, 12 Jun. 2004.

### Diagnosis

Distinguished from all other congeners by the



Fig. 35. *Rivulus uatuman*, UFRJ 6022, male, holotype, 16.6 mm SL (one day after collection); Brazil: Amazonas: Balbina. Photo by W. J. E. M. Costa.



Fig. 36. Brazil: Amazonas: Balbina; temporary swamp within forest, the habitat of *Rivulus uatuman*. Photo by W. J. E. M. Costa.

combination of the following features: anterior portion of trunk slightly deeper than wide, jaws short, snout blunt, tip of anal fin rounded in male, caudal fin rounded in male, pelvic-fin tip reaching anterior portion of anal-fin base in male, dorsal-fin origin on vertical through base of the last anal-fin ray or slightly posterior to it, dorsal-fin rays 6-7, anal-fin rays 9-10, frontal squamation S-patterned, frontal scales arranged transversely, canal preopercular absent, contact organs on flank scales in male, longitudinal series of scales 31-33, gill rakers of first branchial arch 1 + 6, longitudinal rows of red dots on flank in male, transverse dark brown bar through the chin, and no distinctive black spot on dorsal portion of caudal fin. Also distinguished from all other species of *Owiyeye* by having unique colour patterns of unpaired fins in male, consisting of dorsal fin dark grey on basal portion and bright yellow on distal portion, and caudal fin dark grey with white posterior margin (Fig. 35).

### Distribution

Middle rio Amazonas basin (Fig. 23).

### Habitat

Isolated shallow temporary pools within forest, bottom litter, and water dark tea coloured (Fig. 36).

### *Rivulus uakti* Costa, 2004

*Rivulus uakti* Costa, 2004f: 2 (type locality: São Gabriel da Cachoeira, stream near Igarapé Iá, km 9.4 of the road São Gabriel da Cachoeira to Cucuí, upper rio Negro drainage, rio Amazonas basin, 0°3'51.1"S 66°59'46.9"W, altitude 99 m, Estado do Amazonas, Brazil; holotype: UFRJ 5925).