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Taxonomy of the plesiolebiasine killifish genera *Pituna*, *Plesiolebias* and *Maratecoara* (Teleostei: Cyprinodontiformes: Rivulidae), with descriptions of nine new species

WILSON J. E. M. COSTA

Laboratório de Ictiologia Geral e Aplicada, Departamento de Zoologia, Universidade Federal do Rio de Janeiro, Caixa Postal 68049, CEP 21944-970, Rio de Janeiro, Brasil. E-mail: wcosta@acd.ufrj.br

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Abstract

The seasonal plesiolebiasine killifish genera *Pituna* Costa, *Plesiolebias* Costa, and *Maratecoara* Costa, endemic to central and northeastern Brazil, are revised. A key is provided for the identification of plesiolebiasine genera, and keys are also included for species of the three revised genera. Six species are recognized in *Pituna*: *P. brevirostrata* **n. sp.** from the rio Paranaíba drainage, rio Paraná basin; *P. poranga* Costa from the rio Araguaia basin; *P. compacta* Myers from the rio Tocantins basin; *P. schindleri* **n. sp.** from the rio Parnaíba basin; *P. obliquoseriata* **n. sp.** from the rio das Mortes drainage; and *P. xinguensis* Costa & Nielsen **n. sp.** from the rio Xingu basin. Four new species of *Plesiolebias* are described, complementing a recent revision of the genus (Costa, 1998c): *P. fragilis* **n. sp.**, from the middle rio Araguaia basin; *P. altamira* Costa & Nielsen **n. sp.**, from the rio Xingu basin; *P. filamentosus* Costa & Brasil **n. sp.**, from the rio Tocantins floodplains; and *P. canabravensis* Costa & Nielsen **n. sp.**, from the rio Canabrava floodplains, rio Tocantins basin. Three species are recognized in *Maratecoara*: *M. lacortei* (Lazara), from the Araguaia–das Mortes basin; *M. formosa* Costa & Brasil, from the middle rio Tocantins floodplains; and *M. splendida* **n. sp.** from the rio Canabrava floodplains, rio Tocantins basin.

Key words: Killifishes, *Pituna*, *Plesiolebias*, *Maratecoara*, Neotropical, Systematics, new species

Resumo

Os gêneros de plesiolebiasíneos sazonais *Pituna* Costa, *Plesiolebias* Costa e *Maratecoara* Costa, endêmicos do centro e nordeste do Brasil, são revisados. É fornecida uma chave para a identificação de gêneros plesiolebiasíneos e chaves também são incluídas para espécies dos três gêneros revisados. Seis espécies são reconhecidas em *Pituna*: *P. brevirostrata* **sp. nov.** da drenagem do rio Paranaíba, bacia do rio Paraná, *P. poranga* Costa da bacia do rio Araguaia, *P. compacta* Myers da bacia do rio Tocantins, *P. schindleri* **sp. nov.** da bacia do rio Parnaíba, *P. obliquoseriata* **sp. nov.** da drenagem do rio das Mortes e *P. xinguensis* Costa & Nielsen **sp. nov.** da bacia do rio Xingu. Quatro novas espécies de *Plesiolebias* são descritas, complementando-se uma recente revisão do gênero (Costa, 1998c): *P. fragilis* **sp. nov.** da bacia do médio rio Araguaia, *P. altamira* Costa & Nielsen **sp. nov.** da bacia do rio Xingu, *P. filamentosus* Costa & Brasil **sp. nov.** da várzea do rio Tocantins e *P. canabravensis* Costa & Nielsen **sp. nov.** da várzea do rio Canabrava, bacia do rio Tocantins. Três espécies são reconhecidas em *Maratecoara*: *M. lacortei* (Lazara) da bacia Araguaia–das Mortes, *M. formosa* Costa & Brasil da várzea do médio rio Tocantins e *M. splendida* **sp. nov.** da várzea do rio Canabrava, bacia do rio Tocantins.

Introduction

The Plesiolebiasini (*sens.* Costa, 2004) is a well corroborated clade of Neotropical seasonal killifishes, whose recognition is supported both by morphological (Costa, 1998a) and genetic data (Murphy *et al.*, 1999; Hrbek & Larson, 1999). It includes the following genera (number of valid species according to Costa, 2003, appear in parentheses): *Maratecoara* Costa (2), *Papiliolebias* Costa (1), *Pituna* Costa (2), *Plesiolebias* Costa (4), and *Stenolebias* Costa (2). Species of *Pituna*, *Plesiolebias* and *Maratecoara* are often found in the same biotopes in the Araguaia and Tocantins river basins, but *Pituna* also occurs in the rio Paranaíba basin and *Plesiolebias* is in the rio Paraguay basin. *Pituna* and *Plesiolebias* are also present in the rio Xingu basin (*e. g.*, Costa, 1998a, 1998b, 2003; present paper). The remaining two plesiolebiasine genera, *Papiliolebias* and *Stenolebias*, are endemic to the rio Paraguay basin, in the Chaco (Paraguay, Bolivia and Argentina) and the Brazilian Pantanal, respectively (*e. g.*, Costa, 2003).

Plesiolebiasines are seasonal fishes, inhabiting temporary freshwater biotopes formed during the rainy season (October–April) and which are completely dry during part of the year (June–September). In southern Amazonian tributaries, plesiolebiasines exhibit a noteworthy evolutionary radiation, involving both morphological and ecological features. Species of *Pituna* are slender, usually found only in the peripheral shallowest parts of pools, about 100 mm deep or less. *Plesiolebias* comprises small species, in which the maximum adult size often does not surpass 20 mm SL, and typically lives in mid-water, usually close to aquatic vegetation.

Maratecoara includes deep-bodied species, in which males have long unpaired fins and anterodorsal trunk profile strongly convex. It is collected near the bottom of pools (Costa, 1998a).

Pituna was first erected to include a single species, *P. poranga* Costa, from the rio Araguaia basin, central Brazil (Costa, 1989a). Subsequently, Costa (1991a) examined the type specimens of *Rivulus compactus* Myers, from the rio Tocantins basin (also in central Brazil), and reported that they were similar to *P. poranga.* He consequently transferred *R. compactus* to *Pituna*. However, Costa (1991a) did not provide characters for distinguishing *P. compacta* and *P. poranga,* due to the poor condition of the three small female specimens in the type series of *P. compacta,* but noted that females of *P. compacta* have isolated spots on the flanks, while females of *P. poranga* have flank spots fused to form a distinct color pattern.

Additional collections of *Pituna* were made from the Araguaia-Tocantins River basin, making possible a first revision of the genus, which included, for the first time, data on osteology and frontal squamation pattern (Costa, 1998b). However, based upon similarities of most morphological features (except for significant variation of female color patterns among different populations), Costa (1998b) considered *P. poranga* to be a synonym of *P. compacta*, and *Pituna* thus a monotypic genus.

Plesiolebias Costa includes four valid species: *P. aruana* (Lazara), from the rio Araguaia basin; *P. glaucopterus* (Costa & Lacerda), from the rio Paraguay basin; *P. lacerdai* Costa, from the rio das Mortes floodplains; and *P. xavantei* (Costa, Lacerda & Tanizaki), from the rio Tocantins basin (Costa, 1998c). All species were described after 1986, and the genus was recently revised (Costa, 1998c). In this revision, the geographic distributions of some species were expanded, based on samples containing small, poorly preserved specimens. For example, *P. lacerdai*, first known only from the rio das Mortes floodplains, was recorded from an area of the middle rio Araguaia basin near ilha do Bananal; and *P. aruana*, previously known from localities along the rio Araguaia floodplains, was recorded from the middle rio Tocantins basin.

Maratecoara comprises *M. lacortei* (Lazara), from the middle rio Araguaia basin, and *M. formosa* Costa & Brasil, from the rio Tocantins basin (Costa, 1995a). Both species were known from few specimens and available descriptions are limited (Lazara, 1991; Costa, 1995a, 1995b).

Recent additional collections from poorly sampled areas, examination of live and preserved fully-developed adult specimens (not available in previous studies), and the study of new morphological characters provide an opportunity to further clarify the systematics of the genera *Pituna*, *Plesiolebias* and *Maratecoara*, as presented here.

Material and methods

Measurements and counts follow Costa (1995b). In *Maratecoara*, caudal-fin length is measured from caudal fin base to posterior tip of caudal fin, excluding filaments. Measurements are presented as percentages of standard length (SL), except for those related to head morphology, which are expressed as percentages of head length. Fin-ray counts include all elements. Number of vertebrae, gill-rakers, and caudal-fin rays were recorded only from cleared and stained specimens. The compound caudal centrum was counted as a single element. Osteological preparations were made according to Taylor and Van Dyke (1985). The abbreviation "c&s" after catalog number means that all species of the lot were cleared and stained for bone and cartilage. Terminology for frontal squamation follows Hoedeman (1958), and for cephalic neuromast series follows Costa (2001). Interruptions in sections of neuromasts series are indicated by "+". Material is deposited in the following institutions: California Academy of Sciences, San Francisco (CAS); Museu de Ciências e Tecnologia da Pontifícia Universidade Católica, Porto Alegre (MCP); Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro (MNRJ); Museu de Zoologia, Universidade de São Paulo, São Paulo (MZUSP); and Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro (UFRJ).

Tribe Plesiolebiasini Costa

Diagnosis. Members of the Plesiolebiasini are distinguished from all other rivulids by the following unique features: rostral cartilage with concave anterior edge (Costa, 1998a), short ventral process of the angulo-articular (Costa, 1998a), mesopterygoid and autopalatine not overlapping (Costa, 1998a), first epibranchial bent (Costa, 1995a), and surface of chorion covered by hooks.

Remarks. The present taxonomic accounts focus on the genera *Pituna*, *Plesiolebias*, and *Maratecoara*. The monotypic genus *Papiliolebias*, endemic to the Chaco, was revised by Costa (1998c). The two species of *Stenolebias*, *S. damascenoi* (Costa) and *S. bellus* Costa, both endemic to the Brazilian Pantanal, are still known only from the few specimens comprising their type series (Costa, 1991b, 1995a, 1995b).

Key to species of the tribe Plesiolebiasini

1a. Scales extending onto anterior 40–50 % of caudal fin in males; pectoral-fin rays 14–15; caudal fin dark brown or dark bluish brown in males; humeral spot metallic blue or metallic green in males 2
1b. Scales extending onto anterior 25–30 % of caudal fin in males; pectoral-fin rays 11–13; caudal fin never darkly colored in males; humeral spot absent in males 3
2a. Dorsal-fin rays 8–11; anal-fin rays 13–16; pelvic-fin rays 7; dorsal and anal fins pointed in males; flank dark brown with oblique rows of small golden spots on flanks in males; distal portion of dorsal fin red in males ..... *Pituna* Costa
2b. Dorsal-fin rays 11–13; anal-fin rays 17–20; pelvic-fin rays 9; dorsal and anal fins rounded in males; flanks golden, with oblique dark brown lines in males; no red pigmentation on dorsal fin in males ..... *Papiliolebias* Costa
3a. Dorsal and anal fins rounded in males; frontal squamation G-patterned ..... *Plesiolebias* Costa
3b. Dorsal and anal fins pointed in males; frontal squamation F-patterned 4
4a. Males with following features: dorsal and anal fins long, tips posteriorly surpassing posterior margin of caudal fin; caudal fin lanceolate, tip with two filamentous rays; opercular membrane with blue iridescence, long, extending onto anterior portion of pectoral fin; flanks metallic blue, with orangish golden spots ..... *Maratecoara* Costa
4b. Males with following features: dorsal and anal fins short, tips not reaching caudal-fin base; caudal fin rounded and without filaments; opercular membrane hyaline, short, not reaching pectoral-fin base; flanks gray, with faint golden or greenish blue iridescence, and without spots ..... *Stenolebias* Costa

***Pituna* Costa**

Pituna Costa, 1989a: 225 (type species: *Pituna poranga* Costa, by original designation).

Diagnosis. Distinguished from all other genera of the Plesiolebiasini in possessing dark brown flanks, with oblique rows of golden spots in males (*vs.* never a similar color pattern). *Pituna* may also be distinguished by the following combination of characters: body squamation extending onto anterior 40–50 % of caudal fin in males (*vs.* 25–30 %), pectoral-fin rays 14–15 (*vs.* 11–13), caudal fin dark brown in males (*vs.* caudal fin never darkly colored in males), humeral spot metallic blue in males (*vs.* humeral spot absent), dorsal-fin rays 8–11 (*vs.* 11–13), anal-fin rays 13–16 (*vs.* 17–20), pelvic-fin rays 7 (*vs.* 8–9), dorsal and anal fins pointed in males (*vs.* rounded); distal portion of dorsal fin red in males (*vs.* not distinctively colored).

Distribution. Xingu, Araguaia, Tocantins, Paranaiba, and Paraná river basins, Brazil (Fig. 1).

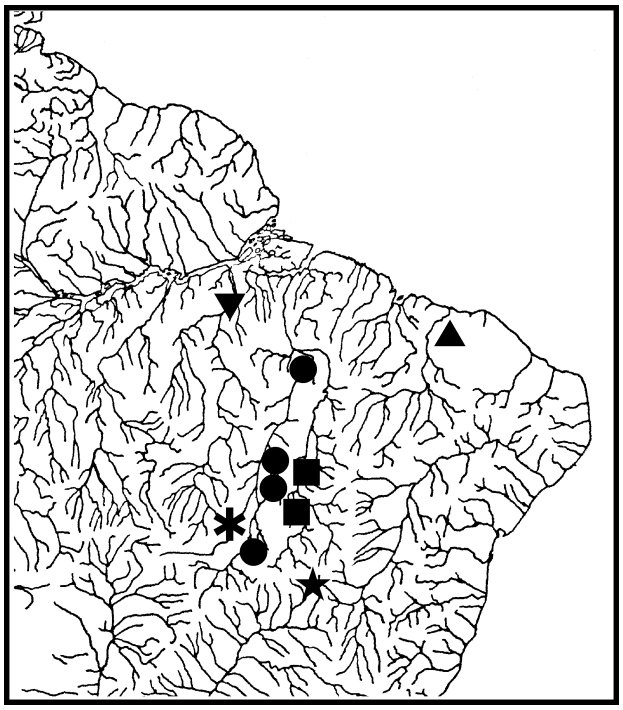

FIGURE 1. Geographic distribution of the genus *Pituna*. Triangle = *P. schindleri*; inverted triangle = *P. xinguensis*; star = *P. brevirostrata*; dots = *P. poranga*; square = *P. compacta*; asterisk = *P. obliquoseriata*. One symbol may represent more than one collecting site.

Key to species of the genus *Pituna*

1a. Scales in longitudinal series 25-29; pectoral fin with vertical rows of small dark gray spots or dark gray bars in males; frontal squamation F-patterned; anterior section of supraorbital series of neuromasts continuous 2

1b. Scales in longitudinal series 23-24; pectoral fin without dark marks; frontal squamation D-patterned; anterior section of supraorbital series of neuromasts interrupted..... *P. brevirostrata*, new species

2a. Dark marks on flank mainly longitudinally arranged in females 3

2b. Dark marks on flank mainly obliquely or irregularly arranged in females 4

3a. Body depth 21.3–24.6 % SL in males and 18.1–23.8 % SL in females; caudal peduncle depth 15.5–17.1 % SL in males and 14.7–15.7 % SL in females; head depth 69.4–75.4 % SL in males and 65.2–68.1 % SL in females; 4–5 bars or transverse rows of spots on the pectoral fin in males..... *P. poranga* Costa

3b. Body depth 24.6–27.2 % SL in males and 24.1–26.3 % SL in females; caudal peduncle depth 17.6–19.5 % SL in males and 15.6–17.9 % SL in females; head depth 74.9–80.7 % SL in males and 71.8–77.1 % SL in females; 7–8 bars or transverse rows of spots on the pectoral fin in males..... *P. compacta* (Myers)

4a. Dark marks obliquely arranged on flanks in females; 1 + 1+ 13–17 + 1 infraorbital neuromasts; 2–4 teeth on 2nd pharyngobranchial 5

4b. Dark marks irregularly arranged on flanks in females; 1 + 1+ 17–21 + 1 infraorbital neuromasts; 4–7 teeth on 2nd pharyngobranchial ..... *P. schindleri*, new species

5a. Oblique rows of dark brown dots never forming bars on flank in female; caudal-fin rays 28–31 .... *P. obliquoseriata*, new species

5b. Oblique rows of dark brown dots coalesced to form oblique bars; caudal-fin rays 26–27..... ..... *P. xinguensis* Costa & Nielsen, new species

***Pituna brevirostrata*, new species**
(Figs. 2–3)

Material examined. Holotype: UFRJ 6427 (male, 24.2 mm SL); Brazil: Estado de Goiás: Goiânia, rio Meia Ponte floodplains, rio Paranaíba drainage, rio Paraná basin, 16°38'29.8"S, 49°15'28.4"W, altitude about 750 m; F. O. Pereira, R. S. Roque & L. A. Costa Filho, 22 June 2006.

Paratypes: Brazil: Estado de Goiás. UFRJ 6428 (3 males, 17.5–21.5 mm SL; 3 females, 21.4–27.6 mm SL); UFRJ 6429 (2 males, 20.7–26.2 mm SL; 3 females, 23.0–25.3 mm SL) (c&s); MCP 40496 (1 male, 21.1 mm SL; 1 female, 21.4 mm SL); all paraypes collected with holotype.

FIGURE 2. *Pituna brevirostrata*, UFRJ 6427, male holotype, 24.2 mm SL (one week after collection); Brazil: Goiás: Goiânia. Photo by W. J. E. M. Costa.

FIGURE 3. *Pituna brevirostrata*, UFRJ 6428, female paratype, female, 23.1 mm SL (one week after collection); Brazil: Goiás: Goiânia. Photo by W. J. E. M. Costa.

Diagnosis. *Pituna brevirostrata* is distinguished from all congeners by the following unique features: 23–24 scales in longitudinal series (*vs.* 25–29), pectoral fin without dark marks (*vs.* with vertical rows of small dark gray spots or dark gray bars in males), frontal squamation D-patterned (*vs.* F-patterned), anterior section of supraorbital series of neuromasts interrupted (*vs.* continuous) and 25 vertebrae (*vs.* 27–29).

TABLE 1. Morphometric data for species of the genus *Pituna*.

	P. brevirostrata		*P. poranga*	
	males (n = 5)	females (n = 5)	males (n = 10)	females (n = 7)
Standard length (mm)	17.5–24.2	21.4–27.6	27.9–32.6	23.3–29.6
Percentages of standard length				
Body depth	25.8–27.7	25.2–25.7	21.3–24.6	18.1–23.8
Caudal peduncle depth	15.9–17.8	14.8–16.2	15.5–17.1	14.7–15.7
Pre-dorsal length	70.8–76.9	73.0–77.5	74.9–78.3	76.7–79.3
Pre-pelvic length	52.1–56.4	53.8–58.5	52.3–55.7	54.4–57.2
Length of dorsal-fin base	12.9–16.1	10.0–13.2	8.9–11.3	8.0–9.9
Length of anal-fin base	22.9–26.6	17.6–21.2	20.3–22.7	18.9–21.2
Caudal-fin length	38.8–41.6	36.3–38.6	36.3–38.7	37.2–39.6
Pectoral-fin length	23.6–26.0	22.2–24.5	22.6–26.1	23.3–25.8
Pelvic-fin length	14.1–18.2	11.9–13.8	12.7–14.9	12.5–13.9
Head length	34.5–35.2	31.6–34.0	29.0–31.7	29.2–32.4
Percentages of head length				
Head depth	74.0–80.4	71.7–79.9	69.4–75.4	65.2–68.1
Head width	69.2–76.5	73.0–79.4	70.3–75.4	69.2–74.8
Snout length	9.4–12.5	10.2–12.0	12.0–13.7	11.9–13.5
Lower jaw length	14.4–17.0	12.8–16.3	18.1–20.3	15.1–19.0
Eye diameter	34.2–35.9	32.1–34.9	29.4–33.2	31.3–35.1

(continued).

	P. compacta		*P. schindleri*	
	males (n = 5)	females (n = 4)	males (n = 10)	females (n = 10)
Standard length (mm)	27.1–39.7	22.2–35.8	30.5–36.5	25.7–31.4
Percentages of standard length				
Body depth	24.6–27.2	24.1–26.3	25.2–27.2	24.7–26.1
Caudal peduncle depth	17.6–19.5	15.6–17.9	16.8–18.0	15.0–16.5
Pre-dorsal length	77.8–79.9	77.8–82.0	76.0–78.5	77.1–80.3
Pre-pelvic length	51.8–56.7	52.9–56.5	52.7–54.8	53.8–56.0
Length of dorsal-fin base	9.5–11.2	8.0–11.1	9.4–11.8	8.9–10.5
Length of anal-fin base	21.4–22.9	19.0–21.3	22.6–24.3	19.0–21.0
Caudal-fin length	35.7–38.1	38.1–42.4	36.1–40.0	36.2–39.3
Pectoral-fin length	24.2–26.4	25.6–28.2	24.1–25.7	24.2–24.8
Pelvic-fin length	12.3–16.8	13.1–14.4	14.2–15.9	12.1–13.5
Head length	29.2–32.0	30.5–31.4	29.8–31.5	29.2–31.1
Percentages of head length				
Head depth	74.9–80.7	71.8–77.1	75.5–81.8	71.0–78.8
Head width	72.8–79.3	70.0–77.1	72.2–77.1	74.8–76.5
Snout length	11.9–13.9	11.5–13.6	11.8–13.5	12.3–14.5
Lower jaw length	17.6–19.5	16.0–19.4	17.6–21.5	16.7–19.7
Eye diameter	28.6–31.5	29.7–33.7	28.0–30.2	29.7–31.9

(continued).

	P. obliquoseriata		*P. xinguensis*	
	males (n = 8)	females (n = 6)	males (n = 2)	females (n = 2)
Standard length (mm)	27.4–37.5	22.1–29.2	26.5–28.6	25.2–30.1
Percentages of standard length				
Body depth	23.6–25.8	23.8–25.2	23.9–24.3	24.0–24.6
Caudal peduncle depth	15.7–18.0	15.7–16.6	16.2–16.3	13.5–15.2
Pre-dorsal length	76.6–79.1	77.4–78.7	75.8–77.2	77.4–79.1
Pre-pelvic length	52.6–55.1	53.6–55.8	52.6–53.2	54.9–55.8
Length of dorsal-fin base	9.7–11.0	9.2–10.2	10.6–11.5	9.5–9.6
Length of anal-fin base	21.1–23.6	18.9–20.6	23.4–23.8	20.0–20.1
Caudal-fin length	37.5–41.5	39.0–42.8	38.5	–
Pectoral-fin length	24.1–27.6	22.8–26.2	22.1–24.0	25.5
Pelvic-fin length	14.6–17.3	12.7–14.6	14.5–16.3	13.1–13.3
Head length	29.6–31.2	30.1–31.0	30.6–31.4	29.7–30.1
Percentages of head length				
Head depth	71.4–75.0	69.9–72.6	68.3–68.7	71.0–73.5
Head width	70.5–76.4	71.5–76.0	69.0–71.8	73.4–73.8
Snout length	12.8–14.3	12.3–14.0	13.4–13.9	13.5–13.9
Lower jaw length	17.8–21.9	15.9–18.5	18.7–18.9	16.6–17.9
Eye diameter	27.2–33.1	30.9–34.8	30.2–32.6	30.7–31.6

Description. Morphometric data appear in Table 1. Largest male examined 26.2 mm SL; largest female examined 27.6 mm SL. Dorsal profile slightly convex from snout to end of dorsal-fin base, approximately straight to slightly concave on caudal peduncle. Ventral profile gently convex from lower jaw to anal-fin origin, nearly straight along caudal peduncle. Body slender, subcylindrical, slightly deeper than wide, greatest body depth at level of pelvic-fin base. Jaws short, snout blunt.

Dorsal and anal fins pointed in both sexes, longer and often with filamentous tip reaching to vertical through base of caudal fin in males. Caudal fin rounded. Pectoral fin rounded, its posterior margin reaching vertical between pelvic-fin base and anus in males, through pelvic-fin base in females. Pelvic fin short, slightly pointed in males, elliptical in females; tip of pelvic fin reaching between base of 1st to 4th anal-fin rays in males, and between urogenital papilla and base of 1st anal-fin ray in females. Pelvic-fin bases medially in close proximity. Dorsal-fin origin at vertical through base of 8th or 9th anal-fin rays, between neural spines of vertebrae 14 and 15. Anal-fin origin between pleural ribs of vertebrae 11 and 13. Dorsal-fin rays 10–11; anal-fin rays 14–16; caudal-fin rays 24–25; pectoral-fin rays 15; pelvic-fin rays 7.

Scales large, cycloid. Body and head entirely scaled, except on anteroventral surface of head. No scales on dorsal and anal-fin bases. Scales extending onto anterior 40 % of caudal fin. Frontal squamation D-patterned, frontal scales circularly arranged around A-scale without free margins; E-scales not overlapping; row of scales anterior to H-scale; supraorbital scales 6. Longitudinal series of scales 23–24; transverse series of scales 7; scale rows around caudal peduncle 16. Three contact organs on posterior margin of each scale of flank and opercular region. No contact organs on fin rays.

Cephalic neuromasts: supraorbital 1–2 + 3–4 + 4–5, parietal 2, anterior rostral 1, posterior rostral 1, infraorbital 1 + 10–15 + 1, preorbital 4, otic 1, post-otic 1, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 8–10, mandibular 7, lateral mandibular 4–5, paramandibular 1. One neuromast per scale of lateral line. Two to four neuromasts on caudal-fin base.

Basihyal subtriangular, greatest width about 60 % of length; basihyal cartilage about 25 % of total length of basihyal. Six branchiostegal rays. Second pharyngobranchial teeth 2. Gill-rakers on first branchial arch 1 + 7. Vomerine teeth 2. Dermosphenotic present. Ventral process of posttemporal absent. Total vertebrae 25.

Coloration. Males. Sides of body dark brown to purplish brown, with oblique rows of small metallic blue to golden spots; dark metallic blue blotch on humeral region. Dorsum light brown. Venter light gray. Sides of head dark brown, opercle pale golden; dark gray to black infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws pink. Iris yellowish brown, with black bar through center of eye. Exposed part of branchiostegal membranes dark gray. Dorsal fin golden, with 4–5 dark brown narrow bars on basal and posterior portion of fin; distal portion of median rays red. Anal fin dark brown, basal portion black, with row of 5–6 white to yellow vertically elongated spots along fin base and posterior margin; transverse rows of pale blue or pale yellow spots on subdistal region. Caudal fin dark gray, with transverse rows of small blue spots, often fused to form bars. Pectoral fins light reddish hyaline. Pelvic fins dark gray, with pale yellow spots.

Females. Sides of head and trunk light gray, sometimes with oblique rows of brown dots on dorsal portion of flank and caudal peduncle. Dorsum light brown. Venter light gray. Opercular region pale golden. Dark gray infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws light brown. Iris yellow, with dark brown bar through center of eye. Unpaired fins hyaline, with faint small brown spots on basal portion. ,Paired fins hyaline.

Etymology. From the Latin *brevirostrata* (with short snout), referring to the short snout contrasting with the big eyes of the new species.

Distribution and habitat. Known only from the type locality, a temporary lagoon in the rio Meia Ponte floodplains, city of Goiânia, Goiás, central Brazil (Fig. 1).

***Pituna poranga* Costa**
(Figs. 4–5)

Pituna poranga Costa, 1989a: 226 (type locality: Aruanã, Estado de Goiás, Brazil [about 15°00'S 51°00' W]; holotype: MZUSP 38511).

Material examined. Brazil: Estado de Goiás: rio Araguaia basin: MZUSP 38511 (male holotype, 28.1 mm SL); MZUSP 38510 (1 paratype [c&s]); MZUSP 38509 (1 paratype [c&s]); MNRJ 11388 (1 paratype), Aruanã; S. Valério, 1986. UFRJ 6394 (1), swamp close to road GO-173, about 25 km N from Aruanã, 14º49'10.0"S 50º58'36.4"W, altitude 255 m; W. J. E. M. Costa, C. P. Bove, J. Paz & A. Oliveira, 13 Apr. 2006. UFRJ 6395 (1), swamp close to road GO-173, about 5 km S from Aruanã, 14º59'34.7"S 51º05'31.2"W, altitude 265 m; W. J. E. M. Costa, C. P. Bove & J. Paz, 12 Apr. 2006. UFRJ 6396 (3), swamp close to road GO-173, Aruanã, 14º44'38.8"S 50º56'34.8"W, altitude 255 m; W. J. E. M. Costa, C. P. Bove, J. Paz & A. Oliveira, 13 Apr. 2006. UFRJ 3540 (13), temporary pool 4 km E of rio Araguaia, road to Peixe; W. J. E. M. Costa, G. C. Brasil. M. I. Landim & C. Moreira, 16 Feb. 1996. Estado do Tocantins: UFRJ 3563 (27); UFRJ 3564 (4 [c&s]), temporary lagoon near Barreira do Piqui; W. J. E. M. Costa, G. C. Brasil. M. I. Landim & C. Moreira, 15 Feb. 1996. MZUSP 45222 (28), rio Água Fria, Praia Alta 2 farm, road Araguaçu-Barreira do Piqui, 27 km N from Araguaçu; F. C. T. Lima, 21–26 Feb. 1993. UFRJ 5265 (4), ilha do Bananal; D. Almeida & R. D'Arrigo, 20 Feb. 1999. UFRJ 6397 (11), temporary pool in rio Formoso floodplains, road BR-242, 11º47'31.6"S 49º45'54.7"W; W. J. E. M. Costa, C. P. Bove, J. Paz & A. Oliveira, 15 Apr. 2006. Estado do Pará: UFRJ 3934 (9); UFRJ 3935 (3 [c&s]), pool 50 m from rio Araguaia, Vila de Santa Cruz, São Geraldo do Araguaia; C. Moreira & B. Milanez, 16 Jan. 1996.

Diagnosis. Differs from all other congeners by the following combination of characters: 25–29 scales in longitudinal series (*vs.* 23–24), pectoral fin with vertical rows of small dark gray spots or dark gray bars in males (*vs.* pectoral fin without dark marks), frontal squamation F-patterned (*vs.* D-patterned), anterior section

of supraorbital series of neuromasts continuous (*vs.* interrupted), dark marks on flank mainly longitudinally arranged in females (*vs.* mainly obliquely or irregularly arranged), body depth 21.3–24.6 % SL in males and 18.1–23.8 % SL in females (*vs.* body depth 24.6–27.2 % SL in males and 24.1–26.3 % SL in females), caudal peduncle depth 15.5–17.1 % SL in males and 14.7–15.7 % SL in females (*vs.* caudal peduncle depth 17.6–19.5 % SL in males and 15.6–17.9 % SL in females), head depth 69.4–75.4 % SL in males and 65.2–68.1 % SL in females (*vs.* head depth 74.9–80.7 % SL in males and 71.8–77.1 % SL in females) and 4–5 bars or transverse rows of spots on pectoral fins in males (*vs.* 7–8).

FIGURE 4. *Pituna poranga*, UFRJ 6394, male, 30.3 mm SL (some hours after collection); Brazil: Goiás: Aruanã. Photo by W. J. E. M. Costa.

FIGURE 5. *Pituna poranga*, UFRJ 6395, female, 28.0 mm SL (some hours after collection); Brazil: Goiás: Aruanã. Photo by W. J. E. M. Costa.

Description. Morphometric data appear in Table 1. Largest male examined 32.6 mm SL; largest female examined 28.0 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 anal-fin origin, nearly straight along caudal peduncle. Body slender, subcylindrical, slightly deeper than wide, greatest body depth at level of pelvic-fin base. Jaws short, snout blunt.

Dorsal and anal fins pointed in both sexes, longer and often with filamentous tip reaching to vertical through base of caudal fin in males. Caudal fin rounded. Pectoral fins rounded, its posterior margin reaching vertical between pelvic-fin base and anus in males, through pelvic-fin base in females. Pelvic fin short,

slightly pointed in males, elliptical in females; tip of each pelvic fin reaching between base of 1st and 3rd anal-fin rays in males, and base of 1st anal-fin ray in females. Pelvic-fin bases medially in close proximity. Dorsal-fin origin at vertical through base of 10th or 11th anal-fin rays, between neural spines of vertebrae 18 and 20. Anal-fin origin between pleural ribs of vertebrae 12 and 14. Dorsal-fin rays 8–10; anal-fin rays 14–16; caudal-fin rays 25–28; pectoral-fin rays 14–15; pelvic-fin rays 7.

Scales large, cycloid. Body and head entirely scaled, except on anteroventral surface of head. No scales on dorsal and anal-fin bases. Scales extending onto anterior 45–50 % of caudal fin. Frontal squamation F-patterned, frontal scales circularly arranged around A-scale without free margins; E-scales not overlapping; row of scales anterior to H-scale; supraorbital scales 5–7. Longitudinal series of scales 26–28; transverse series of scales 7–8; scale rows around caudal peduncle 16. Three to five contact organs on posterior margin of each scale of flank and opercular region. No contact organs on fin rays.

Cephalic neuromasts: supraorbital 5–7 + 4–5, parietal 2, anterior rostral 1, posterior rostral 1, infraorbital 1 + 1 + 17 + 1, preorbital 4–5, otic 1, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 3, preopercular 10, mandibular 9–11, lateral mandibular 3–4, paramandibular 1. One neuromast per scale of lateral line. Two neuromasts on caudal-fin base.

Basihyal subtriangular, greatest width about 55 % of length; basihyal cartilage about 30 % of total length of basihyal. Six branchiostegal rays. Second pharyngobranchial teeth 2–3. Gill-rakers on first branchial arch 1 + 9. Vomerine teeth 1–2. Dermosphenotic present. Ventral process of posttemporal vestigial or absent. Total vertebrae 28–29.

Coloration. Males. Sides of body dark brown to purplish brown, with oblique rows of small metallic blue to golden spots; dark metallic blue blotch on humeral region. Dorsum light brown. Venter light gray. Sides of head light blue to greenish golden, scale borders brown; dark gray to black infraorbital bar, adjacent to narrow preorbital light bluish gray bar. Jaws dark brown. Iris yellow, with dark brown bar through center of eye. Exposed part of branchiostegal membrane dark gray. Dorsal fin bright blue, distal portion of median rays red, posterior portion of fin yellow with 4–5 short brown bars. Anal fin dark brown, reddish brown on distal portion, dark gray on distal margin; row of 6–7 yellow spots along fin base and posterior margin; sometimes one or two transverse rows of pale blue or pale yellow spots on subdistal region. Caudal fin dark purplish brown, sometimes with transverse row of pale small blue spots. Pectoral fins light blue, with 4–5 transverse rows of dark gray to black spots, usually coalesced to form bars. Pelvic fins orangish brown with pale yellow spots on basal portion.

Females. Sides of head and trunk light gray with small brown spots, mostly horizontally arranged, often coalesced to form stripes with oblique extensions. Dorsum light brown. Venter light gray. Opercular region pale greenish golden. Dark gray infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws brown. Iris yellow, with dark brown bar through center of eye. Unpaired fins hyaline, with faint small brown spots on basal portion. Paired fins hyaline.

Distribution and habitat. Temporary swamps of middle rio Araguaia basin, Goiás and Tocantins, Brazil (Fig. 1), usually in open areas of savanna vegetation.

***Pituna compacta* (Myers)**
(Figs. 6–7)

Rivulus compactus Myers, 1927: 120 (type locality: shallow lake, Donna Francisquinha, Porto Nacional, rio Tocantins, Goays [now Estado do Tocantins], Brazil [about 11°20'S 48°20'W]; lectotype: CAS 40707, designated by Huber, 1992: 157).

Material examined. Brazil: Estado do Tocantins: rio Tocantins basin: CAS 40707 (lectotype, female, 25.5 mm SL); Dona Francisquinha, Porto Nacional; C. Ternetz, 16 Feb. 1924. UFRJ 2101 (11), temporary lagoon

close to rio Dona Francisquinha, Porto Nacional; W. J. E. M. Costa, G. C. Brasil & C. Campinha, 16 Feb. 1994. UFRJ 2099 (29); UFRJ 2115 (2 [c&s]), temporary lagoon near rio Tocantins, Brejinho de Nazaré; W. J. E. M. Costa, G. C. Brasil & C. Campinha, 16-16 Feb. 1994. UFRJ 6391 (2); UFRJ 6392 (2 [c&s]), temporary swamp 2 km from rio Canabrava, rio Santa Tereza drainage, rio Tocantins basin, road TO-373 12 km from the road BR-153, 12º29'46.3"S 49º0'50.7"W, altitude 292 m; W. J. E. M. Costa, C. P. Bove, J. Paz & A. Oliveira, 16 Apr. 2006. UFRJ 3797, (2), 10 km of Salvação, Alvorada; D. T. B. Nielsen, A. Carletto & A. de Luca, 5 Apr. 1996. UFRJ 5118 (1), pool near Peixe; G. C. Brasil, 20 Apr. 2000. UFRJ 4090 (4), pool near left bank of rio Tocantins, Itaguatins; G. C. Brasil, 20 Apr. 1997.

FIGURE 6. *Pituna compacta*, UFRJ 6391, male, 39.7 mm SL (some hours after collection); Brazil: Tocantins: rio Canabrava floodplains. Photo by W. J. E. M. Costa.

FIGURE 7. *Pituna compacta*, UFRJ 6391, female, 35.8 mm SL (some hours after collection); Brazil: Tocantins: rio Canabrava floodplains. Photo by W. J. E. M. Costa.

Diagnosis. Distinguished from all congeners by the following combination of characters: 25–29 scales in longitudinal series (*vs.* 23–24), pectoral fin with vertical rows of small dark gray spots or dark gray bars in males (*vs.* pectoral fin without dark marks), frontal squamation F-patterned (*vs.* D-patterned), anterior section of supraorbital series of neuromasts continuous (*vs.* interrupted), dark marks on flank mainly longitudinally arranged in females (*vs.* mainly obliquely or irregularly arranged), body depth 24.6–27.2 % SL in males and 24.1–26.3 % SL in females (*vs.* 21.3–24.6 % SL in males and 18.1–23.8 % SL in females), caudal peduncle depth 17.6–19.5 % SL in males and 15.6–17.9 % SL in females (*vs.* 15.5–17.1 % SL in males and 14.7–15.7 % SL in females), head depth 74.9–80.7 % SL in males and 71.8–77.1 % SL in females (*vs.* 69.4–75.4 % SL in males and 65.2–68.1 % SL in females), and 7–8 bars or transverse rows of spots on pectoral fins in males (*vs.* 4–5).

Description. Morphometric data appear in Table 1. Largest male examined 39.7 mm SL; largest female examined 35.8 mm SL. Dorsal profile slightly convex from snout to end of dorsal-fin base, about straight on caudal peduncle. Ventral profile gently convex from lower jaw to anal-fin origin, approximately straight to

end of caudal peduncle. Body slender, subcylindrical, slightly deeper than wide, greatest body depth at level of pelvic-fin base. Jaws short, snout blunt.

Dorsal and anal fins pointed in both sexes, longer and often with filamentous tip reaching to vertical through base of caudal fin in males. Caudal fin rounded. Pectoral fins rounded, posterior margin of each fin reaching vertical through anus in males, between pelvic-fin base and anus in females. Pelvic fins short, slightly pointed in males, elliptical in females; tip of each pelvic fin reaching between base of 2nd and 4th anal-fin rays in males, and base of 1st anal-fin ray in females. Pelvic-fin bases medially in close proximity. Dorsal-fin origin at vertical through base of 10th or 11th anal-fin rays, between neural spines of vertebrae 18 and 20. Anal-fin origin between pleural ribs of vertebrae 12 and 14. Dorsal-fin rays 8–10; anal-fin rays 14–16; caudal-fin rays 26–28; pectoral-fin rays 14–15; pelvic-fin rays 7.

Scales large, cycloid. Body and head entirely scaled, except on anteroventral surface of head. No scales on dorsal and anal-fin bases. Scales extending onto anterior 45 % of caudal fin. Frontal squamation F-patterned, frontal scales circularly arranged around A-scale without free margins; E-scales not overlapping; row of scales anterior to H-scale; supraorbital scales 5–7. Longitudinal series of scales 26–27; transverse series of scales 7–8; scale rows around caudal peduncle 16. Three to five contact organs on posterior margin of each scale of flanks and opercular region. No contact organs on fin rays.

Cephalic neuromasts: supraorbital 6 + 5–6, parietal 1–2, anterior rostral 1, posterior rostral 1, infraorbital 1 + 1 + 16 + 1, preorbital 5, otic 1, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 1–2, preopercular 11–12, mandibular 8–9, lateral mandibular 3, paramandibular 1. One neuromast per scale of lateral line. Two neuromasts on caudal-fin base.

Basihyal subtriangular, greatest width about 55 % of length; basihyal cartilage about 35 % of total length of basihyal. Six branchiostegal rays. Second pharyngobranchial teeth 3. Gill-rakers on first branchial arch 1 + 8–9. Vomerine teeth 1–3. Dermosphenotic present. Ventral process of posttemporal vestigial or absent. Total vertebrae 28–29.

Coloration. Males. Sides of body reddish brown, with oblique rows of small golden spots; vertically elongated, dark metallic blue blotch on humeral region. Dorsum light brown. Venter light gray. Sides of head greenish golden, scale borders reddish brown; dark gray to black infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws reddish brown. Iris yellow with dark brown bar through center of eye. Exposed parts of branchiostegal membranes dark gray. Dorsal fin bright blue, distal portion of median rays red; 5–6 brown bars on posterior edge of fin. Anal fin orangish brown, with transverse rows of faint yellow spots, to dark brown with 7 short yellow bars on basal and posterior portions; distal margin dark gray to black. Caudal fin purplish brown, with transverse rows of small pale blue spots. Pectoral fins light blue, with 7–8 transverse rows of dark gray to black spots, often coalesced to form bars. Pelvic fins orangish brown, with pale yellow spots on basal portion.

Females. Sides of head and trunk light gray, with small brown spots, irregular and simultaneously arranged in horizontal and oblique rows. Dorsum light brown. Venter light gray. Opercular region pale greenish golden. Dark gray infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws brown. Iris yellow, with dark brown bar through center of eye. Unpaired fins hyaline, with faint small brown spots. Paired fins hyaline.

Distribution and habitat. Temporary pools of the middle rio Tocantins basin (Fig. 1), in typical savannah environments.

***Pituna schindleri*, new species**
(Figs. 8–9)

Material examined. Holotype. UFRJ 6399 (male, 34.5 mm SL); Brazil: Estado do Piauí, road BR-343, 26 km

NW from Campo Maior, rio Corrente drainage, rio Parnaíba basin, about 4°30'S, 42°00'W; W. J. E. M. Costa, A. C. Bacellar, F. Pupo & E. Araujo, 10 May 1999.

Paratypes. Brazil: Estado do Piauí, rio Corrente drainage, rio Parnaíba basin: UFRJ 4879 (21 males, 26.2–36.5 mm SL, 25 females, 23.1–31.4 mm SL); MCP 40497 (3 males, 31.3–33.9 mm SL, 3 females, 27.2–29.8 mm SL); UFRJ 5547 (4 males, 29.1–40.1 mm SL, 4 females, 29.9–32.3 mm SL [c&s]), collected with holotype. UFRJ 5548 (1 female, 44.8 mm SL), temporary lagoon near Campo Maior; temporary lagoon near Campo Maior; same collectors and date as holotype. UFRJ 4592 (3 males, 25.7–32.1 mm SL; 3 females, 22.6–33.0 mm SL), road PI-110, between Barras and Batalha; I. Schindler, 6 April 1994.

FIGURE 8. *Pituna schindleri*, UFRJ 6398, male holotype, 34.5 mm SL (one day after collection); Brazil: Piauí: rio Corrente drainage. Photo by W. J. E. M. Costa.

FIGURE 9. *Pituna schindleri*, UFRJ 4879, female paratype, 29.4 mm SL (one day after collection); Brazil: Piauí: rio Corrente drainage. Photo by W. J. E. M. Costa.

Diagnosis. *Pituna schindleri* differs from all other congeners in having more teeth on the second pharyngobranchial (4–7 *vs.* 2–3) and more neuromasts in the infraorbital series (1 + 1+ 17–21 + 1 *vs.* 1 + 1 + 10–17 + 1). Also distinguished from all other species of the genus by the following combination of characters: 25–29 scales in longitudinal series (*vs.* 23–24), pectoral fin with vertical rows of small dark gray spots or dark gray bars in males (*vs.* pectoral fin without dark marks), frontal squamation F-patterned (*vs.* D-patterned), anterior section of supraorbital series of neuromasts continuous (*vs.* interrupted), dark marks on flank mainly longitudinally arranged in females (*vs.* mainly obliquely or irregularly arranged), and dark marks irregularly arranged on flank in females (*vs.* regularly arranged).

Description. Morphometric data appear in Table 2. Largest male examined 40.1 mm SL; largest female examined 44.8 mm SL. Dorsal profile slightly convex from snout to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile gently convex from lower jaw to anal-fin origin, nearly straight along caudal peduncle. Body slender, subcylindrical, slightly deeper than wide, greatest body depth at level of pelvic-fin base. Jaws short, snout blunt.

TABLE 2. Morphometric data for four new species of the genus *Plesiolebias*.

	P. fragilis		*P. altamira*	
	males (n = 5)	females (n = 5)	males (n = 2)	females (n = 2)
Standard length (mm)	14.0–19.7	15.0–20.2	17.1–17.5	16.6–18.1
Percentages of standard length				
Body depth	23.2–25.4	22.6–25.7	24.8–25.6	23.0–26.0
Caudal peduncle depth	12.0–14.9	11.9–14.0	14.1–14.5	13.1–13.9
Pre-dorsal length	55.6–57.3	57.5–60.0	59.5–61.7	62.5–63.5
Pre-pelvic length	44.2–48.2	46.7–49.2	45.0–46.4	46.3–46.9
Length of dorsal-fin base	12.3–15.8	11.3–14.3	16.1–16.8	16.5
Length of anal-fin base	19.7–23.0	17.8–20.4	23.2–24.9	20.6–21.1
Caudal-fin length	37.8–44.0	36.1–38.6	40.2–42.0	44.9–46.0
Pectoral-fin length	18.9–23.6	20.9–21.1	22.0–25.6	20.9–22.3
Pelvic-fin length	18.6–25.7	12.3–14.4	26.8–29.3	12.8–15.4
Head length	28.1–33.8	27.3–29.8	30.1–31.0	28.2–29.4
Percentages of head length				
Head depth	64.9–74.0	67.6–77.1	74.3–75.1	71.6–76.3
Head width	54.5–57.0	57.2–59.0	62.5–63.9	63.3–65.4
Snout length	13.3–16.2	12.9–14.9	13.3–14.2	14.7–14.9
Lower jaw length	11.8–13.3	11.0–14.0	14.4–15.1	13.2–13.4
Eye diameter	39.2–41.9	38.6–41.4	40.3–41.1	40.9–45.1

(continued).

	P. filamentosus		*P. canabravensis*	
	males (n = 5)	females (n = 5)	males (n = 11)	females (n = 10)
Standard length (mm)	16.7–18.9	16.8–17.5	15.4–19.5	15.9–18.3
Percentages of standard length				
Body depth	28.6–30.8	26.4–29.3	25.2–31.5	27.0–29.6
Caudal peduncle depth	15.2–17.1	13.7–15.8	14.8–17.8	15.1–16.3
Pre-dorsal length	63.0–64.7	65.1–66.3	66.2–70.1	67.6–70.1
Pre-pelvic length	44.8–49.6	47.0–51.8	49.2–53.1	48.9–53.8
Length of dorsal-fin base	15.0–17.4	13.8–16.3	11.9–14.3	10.9–13.2
Length of anal-fin base	25.1–27.1	21.7–24.0	21.8–26.5	20.1–23.5
Caudal-fin length	41.7–46.8	40.3–46.7	37.4–41.9	36.1–42.0
Pectoral-fin length	23.4–26.5	20.1–23.3	23.0–25.1	19.3–22.6
Pelvic-fin length	28.6–40.0	14.7–16.8	13.3–16.4	13.3–14.8
Head length	30.3–33.5	29.8–32.3	29.6–34.8	30.4–32.3
Percentages of head length				
Head depth	81.0–84.1	74.7–82.2	76.8–82.7	75.5–82.4
Head width	56.6–60.3	59.2–61.9	57.7–61.1	59.3–63.4
Snout length	12.8–14.8	12.6–14.9	12.2–15.8	11.8–13.5
Lower jaw length	12.4–14.8	11.5–13.8	11.6–15.2	11.4–13.6
Eye diameter	38.6–41.9	39.1–42.7	36.7–43.2	38.7–42.8

Dorsal and anal fins pointed in both sexes, longer and often with filamentous tip reaching to vertical through caudal-fin base in males. Caudal fin rounded. Pectoral fins rounded, the posterior margin reaching vertical between pelvic-fin base and anus in males, and through pelvic-fin base in females. Pelvic fins short, slightly pointed in males, elliptical in females; tip of each pelvic fin reaching between base of 2nd and 3rd anal-fin rays in males, and base of 1st anal-fin ray in females. Pelvic-fin bases in close proximity medially. Dorsal-fin origin on vertical through base of 9th or 10th anal-fin rays, between neural spines of vertebrae 18 and 20. Anal-fin origin between pleural ribs of vertebrae 12 and 13. Dorsal-fin rays 8–9; anal-fin rays 13–15; caudal-fin rays 26–28; pectoral-fin rays 14–15; pelvic-fin rays 7–8.

Scales large, cycloid. Body and head entirely scaled, except on anteroventral surface of head. No scales on dorsal and anal-fin bases. Scales extending onto anterior 45–50 % of caudal fin. Frontal squamation F-patterned, frontal scales circularly arranged around A-scale without free margins; E-scales not overlapping; row of scales anterior to H-scale; supraorbital scales 7–8. Longitudinal series of scales 25–26; transverse series of scales 7; scale rows around caudal peduncle 16. Three to five contact organs on posterior margin of each scale of flank. No contact organs on fin rays.

Cephalic neuromasts: supraorbital 5–7 + 4–5, parietal 1–2, anterior rostral 1, posterior rostral 1, infraorbital 1 + 1 + 17–21 + 1, preorbital 5–6, otic 1, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 8–9, mandibular 9–10, lateral mandibular 3–5, paramandibular 1. One neuromast per scale of lateral line. Two neuromasts on caudal-fin base.

Basihyal subtriangular, greatest width about 60 % of length; basihyal cartilage about 40 % of total length of basihyal. Six branchiostegal rays. Second pharyngobranchial teeth 4–7. Gill-rakers on first branchial arch 1 + 8. Vomerine teeth 2–3. Dermosphenotic present. Ventral process of posttemporal vestigial. Total vertebrae 27–29.

Coloration. Males. Sides of body purplish brown with oblique rows of small greenish golden spots; metallic blue blotch on humeral region. Dorsum light brown. Venter light gray. Sides of head light greenish golden, scale borders purplish brown; dark gray to black infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws purplish brown. Iris orangish yellow, with dark brown bar through center of eye. Exposed parts of branchiostegal membranes dark gray. Dorsal fin bright greenish blue, distal portion of median rays red, posterior portion of fin yellow with 4–5 short brown bars. Anal fin dark brown, orangish brown on distal portion; row of 7–8 yellow spots along fin base and posterior margin; sometimes one or two transverse rows of pale yellow on subdistal region. Caudal fin dark purplish brown with transverse rows of small pale blue spots. Pectoral fins light blue, with 5–7 transverse rows of dark gray to black spots. Pelvic fins orangish brown, with pale yellow spots on basal portion.

Females. Sides of head and trunk light gray, with dark brown dots irregularly arranged or scarcely arranged in oblique rows. Dorsum light brown. Venter light gray. Opercular region pale greenish golden. Dark gray infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws gray. Iris yellow, with dark brown bar through center of eye. Unpaired fins hyaline, with faint small brown spots on basal portion. Paired fins hyaline.

Etymology. Named in honor of Ingo Schindler, the first collector of the species.

Distribution and habitat. Seasonal pools in the lower rio Parnaíba basin, northeastern Brazil (Fig. 1), in savannah area.

***Pituna obliquoseriata*, new species**
(Fig. 10)

Pituna compacta non P. compacta (Myers); Costa, 1998b: 142 (misidentification).

Material examined. Holotype. UFRJ 6398 (male, 36.6 mm SL); Brazil: Estado de Mato Grosso, road MT-326, 15–16 km from the right bank of rio das Mortes, rio Araguaia basin, about 14°00'S, 51°40'W; W. J. E. M. Costa, G. C. Brasil, M. I. Landim & C. Moreira, 16 Feb. 1996.

Paratypes. Brazil: Estado de Mato Grosso: UFRJ 3543 (5 males, 27.4–30.8 mm SL, 7 females, 20.5–29.2 mm SL); UFRJ 3545 (1 male, 29.8 mm SL, 2 females, 21.8–27.6 mm SL [c&s]); MCP 40498 (1 male, 28.2 mm SL, 2 females, 23.3–24.2 mm SL); collected with holotype. UFRJ 247 (3 males, 29.8–37.5 mm SL, 18 females, 17.1–25.3 mm SL); UFRJ 294 (1 male, 36.7 mm SL); same locality; G. C. Brasil *et al.*, Jan. 1988.

FIGURE 10. *Pituna obliquoseriata*, UFRJ 6398, male holotype, 36.6 mm SL, above, UFRJ 3543, female paratype, 29.4 mm SL; Brazil: Mato Grosso: rio das Mortes floodplains. Photo by W. J. E. M. Costa.

Diagnosis. Distinguished from all congeners in having more caudal-fin rays (28–31 *vs.* 24–28). It is also distinguished from all other species of the genus by the following combination of characters: 25–29 scales in longitudinal series (*vs.* 23–24), pectoral fins with vertical rows of small dark gray spots or dark gray bars in males (*vs.* pectoral fin without dark marks), frontal squamation F-patterned (*vs.* D-patterned), anterior section of supraorbital series of neuromasts continuous (*vs.* interrupted), dark marks on flanks mainly obliquely arranged in females (*vs.* mainly longitudinally or irregularly arranged), 1 + 1+ 13–17 + 1 infraorbital neuromasts (*vs.* 1 + 1+ 17–21 + 1), and oblique rows of dark brown dots never forming bars on flank in females (*vs.* forming oblique bars).

Description. Morphometric data appear in Table 1. Largest male examined 37.5 mm SL; largest female examined 29.2 mm SL. Dorsal profile weakly convex from snout to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile gently convex from lower jaw to anal-fin origin, nearly straight along caudal peduncle. Body slender, subcylindrical, slightly deeper than wide, greatest body depth at level of pelvic-fin base. Jaws short, snout blunt.

Dorsal and anal fins pointed in both sexes, longer and each often with filamentous tip reaching to vertical through middle of caudal fin in males. Caudal fin rounded. Pectoral fins rounded, their posterior margin reaching vertical between pelvic-fin base and anus in males, through pelvic-fin base in females. Pelvic fins short, slightly pointed in males, elliptical in females; tip of each pelvic fin reaching between base of 1st and 3rd anal-fin rays in males, and base of 1st anal-fin ray in females. Pelvic-fin bases in close proximity medially. Dorsal-fin origin at vertical through base of 9th or 10th anal-fin rays, between neural spines of vertebrae 18 and 20. Anal-fin origin between pleural ribs of vertebrae 12 and 14. Dorsal-fin rays 9–10; anal-fin rays 13–15; caudal-fin rays 28–31; pectoral-fin rays 15–16; pelvic-fin rays 7.

Scales large, cycloid. Body and head entirely scaled, except on anteroventral surface of head. No scales on dorsal and anal-fin bases. Scales extending onto anterior 45–50 % of caudal fin. Frontal squamation F-patterned, frontal scales circularly arranged around A-scale, without free margins; E-scales not overlapping; row of scales anterior to H-scale; supraorbital scales 7–9. Longitudinal series of scales 27–29; transverse series of scales 8; scale rows around caudal peduncle 16. Three to five contact organs on posterior margin of each scale of flank. No contact organs on fin rays.

Cephalic neuromasts: supraorbital 6–7 + 4–5, parietal 2, anterior rostral 1, posterior rostral 1, infraorbital 1 + 1 + 15–17 + 1, preorbital 4, otic 1, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 10, mandibular 9, lateral mandibular 4, paramandibular 1. One neuromast per scale of lateral line. Two neuromasts on caudal-fin base.

Basihyal subtriangular, greatest width about 60 % of length; basihyal cartilage about 35 % of total length of basihyal. Six branchiostegal rays. Second pharyngobranchial teeth 3. Gill-rakers on first branchial arch 1 + 9. Vomerine teeth 2–4. Dermosphenotic present. Ventral process of posttemporal vestigial or absent. Total vertebrae 29.

Coloration. Males. Sides of body dark brown to purplish brown, with oblique rows of small greenish golden spots; dark metallic blue blotch on humeral region. Dorsum light brown. Venter light gray. Sides of head light greenish golden, scale borders brown; dark gray to black infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws dark brown. Iris yellow, with dark brown bar through center of eye. Exposed part of branchiostegal membranes dark gray. Dorsal fin bright greenish blue, distal portion of median rays red, posterior portion of fin yellow with 3–4 short brown bars. Anal fin dark brown, orangish brown on distal portion; row of 6–7 yellow spots along fin base and posterior margin; sometimes transverse row of pale blue on subdistal region. Caudal fin dark purplish brown. Pectoral fins light blue, with 6–8 transverse rows of dark gray to black spots, sometimes coalesced to form bars. Pelvic fins orangish brown, with pale yellow spots on basal portion.

Females. Sides of head and trunk light gray, with dark brown dots arranged in oblique rows, often forming chevron-like pattern with tip posteriorly directed. Dorsum light brown. Venter light gray. Opercular region pale greenish golden. Dark gray infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws brown. Iris yellow, with dark brown bar through center of eye. Unpaired fins hyaline, with faint small brown spots on basal portion. Paired fins hyaline.

Etymology. From the Latin *obliquus* (oblique) and *seriatus* (with series), referring to the oblique rows of dots on the flanks in females.

Distribution and habitat. Known only from the type locality, a temporary swamp near rio das Mortes, rio Araguaia basin, central Brazil (Fig. 1), in a savannah area.

Pituna xinguensis **Costa & Nielsen, new species**
(Figs. 11–12)

Material examined. Holotype. UFRJ 6400 (male, 28.6 mm SL); Brazil: Estado do Pará: temporary pool in island, rio Xingu, in front of Altamira, 3º13’34.6”S, 52°12’26.1”W, altitude 39m; J. L. Diniz, 5 May 2003.

Paratypes. UFRJ 6401 (1 female, 30.1 mm SL); UFRJ 6402 (1 male, 26.5 mm SL; 1 female, 25.2 mm SL [c&s]); collected with holotype.

Diagnosis. Distinguished from all other congeners by the following combined morphological features: 25–29 scales in longitudinal series (*vs.* 23–24), pectoral fins with vertical rows of small dark gray spots or dark gray bars in males (*vs.* pectoral fins without dark marks), frontal squamation F-patterned (*vs.* D-patterned), anterior section of supraorbital series of neuromasts continuous (*vs.* interrupted), dark marks on flanks mainly obliquely arranged in females (*vs.* mainly longitudinally or irregularly arranged), 1 + 1+ 17–21

+ 1 infraorbital neuromasts (*vs.* 1 + 1+ 13–17 + 1), caudal-fin rays 26–27 (*vs.* 28–31), and oblique rows of dark brown dots forming oblique bars on flanks in females (*vs.* never forming bars).

FIGURE 11. *Pituna xinguensis*, UFRJ 6400, male holotype, 28.6 mm SL (about one week after collection); Brazil: Pará: Altamira. Photo by W. J. E. M. Costa.

FIGURE 12. *Pituna xinguensis*, UFRJ 6401, female paratype, 30.1 mm SL (about one week after collection); Brazil: Pará: Altamira. Photo by W. J. E. M. Costa.

Description. Morphometric data appear in Table 2. Largest male examined 28.6 mm SL; largest female examined 30.1 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 anal-fin origin, nearly straight along caudal peduncle. Body slender, subcylindrical, slightly deeper than wide, greatest body depth at level of pelvic-fin base. Jaws short, snout blunt.

Dorsal and anal fins pointed in both sexes, but longer and reaching to vertical through caudal-fin base in males. Caudal fin rounded. Pectoral fins rounded, their posterior margin reaching vertical between pelvic-fin base and anus in males, through pelvic-fin base in females. Pelvic fins short, slightly pointed, tip reaching base of 5th anal-fin ray in males, and base of 3rd or 4th anal-fin ray in females. Pelvic-fin bases medially in close proximity. Dorsal-fin origin at vertical through base of 10th or 11th anal-fin rays, between neural spines of vertebrae 17 and 19. Anal-fin origin between pleural ribs of vertebrae 11 and 13. Dorsal-fin rays 9–10; anal-fin rays 14–15; caudal-fin rays 26–27; pectoral-fin rays 14–15; pelvic-fin rays 7.

Scales large, cycloid. Body and head entirely scaled, except on anteroventral surface of head. No scales on dorsal and anal-fin bases. Scales extending onto anterior 50 % of caudal fin. Frontal squamation F-patterned, frontal scales circularly arranged around A-scale without free margins; E-scales not overlapping; row of scales anterior to H-scale; supraorbital scales 6. Longitudinal series of scales 26; transverse series of scales 8; scale rows around caudal peduncle 16. Two or three contact organs on posterior margin of each scale of flank. No contact organs on fin rays.

Cephalic neuromasts: supraorbital 5–7 + 4–5, parietal 2, anterior rostral 1, posterior rostral 1, infraorbital

1 + 1 + 15 + 1, preorbital 3–4, otic 1–2, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 10, mandibular 8, lateral mandibular 3, paramandibular 1. One neuromast per scale of lateral line. Two neuromasts on caudal-fin base.

Basihyal subtriangular, greatest width about 55 % of length; basihyal cartilage about 35 % of total length of basihyal. Six branchiostegal rays. Second pharyngobranchial teeth 2. Gill-rakers on first branchial arch 1 + 9. Vomerine teeth 1. Dermosphenotic present. Ventral process of posttemporal short. Total vertebrae 28–29.

Coloration. Males. Sides of body reddish brown, with oblique rows of small golden spots; vertically elongated, metallic blue blotch on humeral region. Dorsum light brown. Venter light gray. Sides of head light greenish golden, scale borders purplish brown; dark gray to black infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws purplish brown. Iris orangish yellow, with dark brown bar through center of eye. Exposed part of branchiostegal membrane dark gray. Dorsal fin bright greenish blue, distal portion of median rays red, posterior portion of fin yellow, with 3 short orangish brown bars. Anal fin dark orangish brown, with row of 5–6 yellow spots along fin base and posterior margin, and two transverse rows of pale greenish yellow spots, sometimes fused to form stripes, on middle and subdistal portion of fin. Caudal fin dark brown. Pectoral fins hyaline, with 4–6 transverse series of alternating, small light greenish yellow and dark gray spots. Pelvic fins orangish brown, with pale yellow spots on basal portion.

Females. Sides of head and trunk light gray, with oblique rows of small dark brown spots, often coalesced to form oblique bars. Dorsum light brown. Venter light gray. Opercular region pale greenish golden. Dark gray infraorbital bar, adjacent to narrow preorbital light gray bar. Jaws dark gray. Iris yellow, with dark brown bar through center of eye. Unpaired fins hyaline, with faint small brown spots on basal portion. Paired fins hyaline.

Etymology. The name *xinguensis* is an allusion to the occurrence of the new species in the rio Xingu.

Distribution and habitat. Known only from the type locality, a temporary swamp on a rio Xingu island near Altamira (Fig. 1), Brazilian Amazonian forest.

Plesiolebias Costa

Plesiolebias Costa, 1989b: 193 (type species: *Cynolebias xavantei* Costa, Lacerda & Tanizaki, by original designation).

Diagnosis. Distinguished from all other genera of Plesiolebiasini by the following unique features: posterior process of quadrate and sympletic long (*vs.* short) (Costa, 1998a), interarcual cartilage absent (*vs.* present) (Costa, 1998a), rays of anterior portion of anal fin longer than posterior rays (*vs.* longer) (Costa, 1995a), and frontal squamation G-patterned (*vs.* F or D patterned) (Costa, 1998a).

Distribution. Southeastern Amazonian basin, including Xingu, Araguaia, and Tocantins river drainages, Brazil; and rio Paraguay basin, in northern Brazilian Pantanal (Fig. 13).

Remarks. The systematic accounts below should be viewed as a complement to the recent taxonomic revision of *Plesiolebias* (Costa, 1998c), where redescriptions of *P. xavantei*, *P. lacerdai*, *P. aruana*, and *P. glaucopterus* are included.

Key to species of the genus *Plesiolebias*

1a. Pelvic-fin rays 8–9; pelvic-fins each with a long filamentous ray in males; eye yellow in males; anterior portion of flank, at least, with oblique black bars in males; red stripe of anterior portion of flanks, when present, never anteriorly reaching orbit; basal portion of dorsal fin red in males; a black spot on posterior portion of anal fin in males, most prominent in preserved specimens. 2

1b. Pelvic-fin rays 7; pelvic-fins each without filamentous rays; eye bright green in males; never oblique black bars on flanks in males; red stripe of anterior portion of flanks always anteriorly reaching orbit; basal portion of dorsal fin with transverse rows of dark red and white spots in males; never a black spot on posterior portion of anal fin in males 6

2a(1a). Body depth 23.2–25.7 % SL in males, 23.0–26.0 % SL in females; sparse bright dots on flank in males; 3 white bars on basal portion of anal fin in males 3

2b(1a). Body depth 28.6–32.6 % SL in males, 26.4–30.3 % SL in females; oblique rows of bright dots on flanks of males; 4–5 white bars on basal portion of anal fin in males 4

3a(2a). No red mark on anterior portion of flanks in males; no black bar on preopercle; 5–7 oblique bars on flanks in females; 24–25 scales in longitudinal series ..... *P. fragilis*, new species

3b(2a). A red stripe on anterior portion of flanks in males; a black bar on preopercle; 8–9 oblique bars on flank in females; 22–23 scales in longitudinal series ..... *P. altamira* Costa & Nielsen, new species

4a(2b). Dorsal-fin origin on vertical between base of 3rd and 5th anal-fin rays; no red mark on anterodorsal portion of head in males ..... *P. lacerdai* Costa

4b(2b). Dorsal fin-origin on vertical between base of 5th and 8th anal-fin rays; red stripe on anterodorsal portion of head in males 5

5a(4b). Dorsal fin-origin at vertical between base of 5th and 6th anal-fin rays; 15–16 anal-fin rays; red pigmentation restricted to basal third of dorsal fin in males; small white spots on dorsal-fin base in males ..... *P. filamentosus* Costa & Brasil, new species

5b(4b). Dorsal fin-origin on vertical between base of 7th and 8th anal-fin rays; 17–18 anal-fin rays; red pigmentation extending to basal two thirds of dorsal fin in males; white bars on dorsal-fin base in males ..... *P. xavantei* (Costa, Lacerda & Tanizaki)

6a(1b). Dorsal-fin origin on vertical between base of 7th and 9th anal-fin rays; oblique rows of dark brown dots restricted to the median portion of flank, sometimes absent 7

6b(1b). Dorsal-fin origin on vertical through base of 5th or 6th anal-fin ray; dark brown dots and elongated spots on whole flank in females ..... *P. glaucopterus* (Costa & Lacerda)

7a(6a). Anal-fin base with white elongate spots in males; 1 + 27–31 + 1 infraorbital neuromasts ..... *P. canabravensis* Costa & Nielsen, new species

7b(6a). Anal-fin base with long curved bars in males, ventral tips anteriorly directed, often converging to a point on anterior margin of fin; 1 + 16–22 + 1 infraorbital neuromasts ..... *P. aruana* (Lazara)

***Plesiolebias fragilis*, new species**
(Figs. 14–15)

Plesiolebias lacerdai non P. lacerdai Costa; Costa, 1998a: 328 (misidentification).

Material examined. Holotype. UFRJ 6411 (male, 19.7 mm SL); Brazil: Estado do Tocantins: temporary pool in left rio Formoso floodplains, rio Javaés drainage, rio Araguaia basin, road BR-242, between Formoso do Araguaia and São João do Javaés, 11º47'31.6"S, 49º45'54.7"W; W. J. E. M. Costa, C. P. Bove, J. Paz & A. Oliveira, 15 April 2006.

Paratypes. Brazil: Estado do Tocantins: rio Araguaia basin: UFRJ 6412 (2 females, 20.1–20.7 mm SL); MCP 40499 (1 male, 19.6 mm SL, 1 female, 20.2 mm SL); collected with holotype. UFRJ 5262 (2 males, 15.7–16.0 mm SL, 2 females, 17.0–19.8 mm SL); UFRJ 5049 (2 males, 14.3–16.8 mm SL, 6 females, 14.2–16.0 mm SL [c&s]), Parque Nacional do Araguaia, ilha do Bananal; G. C. Brasil *et al.*, April 1999. UFRJ 3793 (1 male, 14.0 mm SL, 23 females, 15.1–18.3 mm SL); rio Formoso floodplains; D. T. B. Nielsen, A. Carletto & A. de Luca, 6 April 1996.

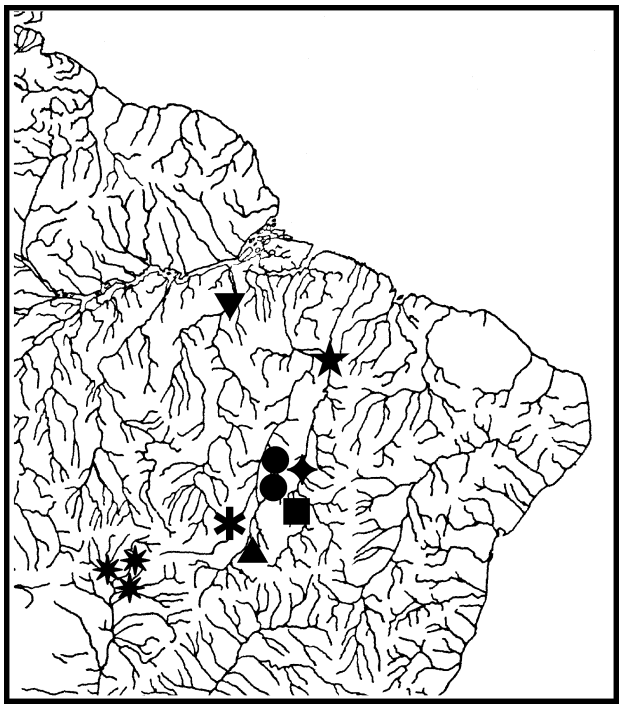

FIGURE 13. Geographic distribution of genus *Plesiolebias*. Triangle = *P. aruana*; inverted triangle = *P. altamira*; star = *P. filamentosus*; dots = *P. aruana* and *P. fragilis*; square = *P. canabravensis*; six-tip asterisk = *P. lacerdai*; eight-tip asterisk = *P. glaucopterus*; lozenge = *P. xavantei*. One symbol may represent more than one collecting site.

FIGURE 14. *Plesiolebias fragilis*, UFRJ 6411, male holotype, 19.7 mm SL; Brazil: Tocantins: Formoso do Araguaia (one day after collection). Photo by W. J. E. M. Costa.

Diagnosis. Distinguished from all other congeners by the following combination of characters: filamentous ray on pelvic fins in males (*vs.* filamentous ray absent); pelvic-fin rays 8 (*vs.* 7); eye yellow in males (*vs.* bright green); flank with oblique black bars in males (*vs.* black bars absent); no red stripe on anterior portion of flank in males (*vs.* red stripe present); basal portion of dorsal fin red in males (*vs.* with transverse rows of dark red and white spots); a black spot on posterior portion of anal fin in males (*vs.* black spot absent); body depth 23.3–25.4 % SL in males, 22.2–25.7 % SL in females (*vs.* 28.6–32.6 % SL in males, 26.4–30.3 % SL in females); sparse bright dots on flanks in males (*vs.* oblique rows of bright dots on flank); 3 white bars on basal portion of anal fin in males (*vs.* 4–5); no black bar on preopercle (*vs.* black bar present on preopercle); 5–7 oblique bars on flank in females (*vs.* 8–9); 24–25 scales in longitudinal series (*vs.* 22–23).

Description. Morphometric data appear in Table 3. Largest male examined 19.7 mm SL, largest female examined 20.2 mm SL. Dorsal profile slightly convex from snout to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile gently convex from lower jaw to end of anal-fin base, about straight on caudal peduncle. Body slender, compressed. Greatest body depth at level of pelvic-fin base. Jaws short, snout blunt.

TABLE 3. Morphometric data of species for the genus *Maratecoara*.

	M. lacortei		*M. formosa*	
	males (n = 10)	females (n = 10)	males (n = 4)	females (n = 3)
Standard length (mm)	25.9–33.4	22.8–26.4	24.8–28.5	20.4–22.3
Percentages of standard length				
Body depth	33.6–37.5	28.2–30.9	34.0–40.9	30.4–33.1
Caudal peduncle depth	17.9–21.4	15.1–17.6	19.0–20.8	17.1–17.7
Pre-dorsal length	61.0–68.1	63.0–67.4	63.5–65.7	64.4–65.8
Pre-pelvic length	47.2–50.9	51.1–53.1	49.1–52.0	50.6–51.3
Length of dorsal-fin base	17.0–19.3	13.6–15.8	17.2–19.0	14.9–16.5
Length of anal-fin base	24.1–26.8	19.3–21.7	22.7–27.5	20.3–22.2
Caudal-fin length	49.2–62.5	39.6–42.5	52.8	41.3
Pectoral-fin length	27.9–31.8	24.5–26.8	27.0	24.9
Pelvic-fin length	17.0–20.0	13.8–16.2	17.1	14.0
Head length	31.2–34.7	30.7–34.5	31.9–34.1	32.8–33.3
Percentages of head length				
Head depth	95.0–105.6	78.1–88.0	95.9–112.4	83.6–90.1
Head width	54.9–60.4	55.3–59.6	59.2–65.8	59.9–61.5
Snout length	12.9–15.0	12.5–14.8	12.9	13.4
Lower jaw length	13.0–14.7	11.9–15.1	15.4	13.1
Eye diameter	34.4–37.6	35.9–39.3	31.5–34.6	35.7–38.0

(continued).

	M. splendida	
	males (n = 8)	females (n = 8)
Standard length (mm)	24.6–31.9	21.7–25.1
Percentages of standard length		
Body depth	34.4–40.0	32.2–34.3
Caudal peduncle depth	18.6–21.6	17.0–18.4
Pre-dorsal length	64.0–67.2	65.0–69.2
Pre-pelvic length	48.4–52.2	50.7–53.8
Length of dorsal-fin base	15.0–19.6	13.9–15.5
Length of anal-fin base	21.7–27.2	20.8–21.9
Caudal-fin length	49.5–57.2	40.5–43.2
Pectoral-fin length	27.2–31.4	26.1–29.7
Pelvic-fin length	15.0–17.8	14.1–16.4
Head length	31.9–35.5	33.7–35.6
Percentages of head length		
Head depth	92.2–112.0	83.4–88.7
Head width	56.3–61.3	57.4–61.0
Snout length	12.9–15.8	13.1–14.2
Lower jaw length	13.2–16.2	13.5–15.2
Eye diameter	32.8–39.8	35.5–37.9

FIGURE 15. *Plesiolebias fragilis*, UFRJ 6412, female paratype, 20.7 mm SL; Brazil: Tocantins: Formoso do Araguaia (one day after collection). Photo by W. J. E. M. Costa.

Tip of both dorsal and anal fins rounded, without filaments. Caudal fin rounded. Pectoral fins elliptical, posterior margin reaching vertical through urogenital papilla and anal-fin origin in males, between pelvic-fin base and anus in females. Pelvic fins pointed in males, terminating in long filament, with tip reaching between base of 5th and 8th anal-fin rays; tip of each pelvic fin reaching base of 3rd anal-fin ray in females. Pelvic-fin bases medially united. Dorsal-fin origin on vertical between base of 1st and 3rd anal-fin rays, and between neural spines of 9th and 11th vertebrae. Anal-fin origin between pleural ribs of 8th and 9th vertebrae. Dorsal-fin rays 11–12; anal-fin rays 15–17; caudal-fin rays 23–25; pectoral-fin rays 12; pelvic-fin rays 8.

Scales large, cycloid. Body and head entirely scaled, except anterior ventral surface of head. Body squamation extending over anterior 25 % of caudal fin; no scales on dorsal and anal-fin bases. Frontal squamation G-patterned; E-scales overlapping medially; scales arranged in regular transverse pattern. Two supraorbital scales. Longitudinal series of scales 24–25; transverse series of scales 7; scale rows around caudal peduncle 12. One to three minute contact organs on posterior margin of each scale of ventral portion of flanks in males.

Cephalic neuromasts: supraorbital 6 + 2, parietal 2, anterior rostral 1, posterior rostral 1, infraorbital 1 + 23–25 + 1, preorbital 3–4, otic 1, post-otic 1, supratemporal 1, median opercular 1, ventral opercular 1, preopercular 2 + 9, mandibular 6, lateral mandibular 5. One neuromast on center of each scale of lateral line of trunk. Two neuromasts on caudal-fin base.

Basihyal narrow, longest width about 20 % of length; basihyal cartilage about 25 % of basihyal length. Five branchiostegal rays. Five teeth on second pharyngobranchial. Gill-rakers of first branchial arch 1 + 8. Vomerine teeth absent. Ventral process of posttemporal absent. Total vertebrae 23–25.

Coloration. Males: Sides of body gray with 6-8 bars, black and well defined on anterior two thirds of flank, reddish brown and diffuse on caudal peduncle region; few greenish blue dots scattered on flanks. Dorsum gray. Venter white, with transverse dark gray marks. Side of gray**,** opercular region pale greenish golden; short oblique black bars on dorsolateral portion of head posterior to orbit and short oblique black infraorbital bar. Jaws dark gray. Iris yellow, with black bar through center of eye. Dorsal fin red, distal portion hyaline; small white spot on middle of fin base, and short oblique white bar on posterior margin. Anal fin reddish black, with three short white bars on its basal half, anteriormost bar wider, often forming triangular mark, corresponding to fusion of two anteriormost bars of other species of *Plesiolebias*; faint light blue bar on posterior portion of fin; black blotch on posterior portion of fin visible only in preserved specimens. Caudal fin gray, with transverse rows of small light gray spots on basal region of fin. Pectoral fins hyaline. Pelvic fins black, with two white bars, anterior bar near anterior margin of fin and posterior bar on posterior margin.

Females: Sides of body light brownish gray, with 5-7 narrow oblique black bars. Dorsum light brownish

gray. Venter white. Sides of head gray, pale greenish yellow on opercle. Jaws gray. Iris pale yellow, with gray bar through center of eye. Fins hyaline.

Etymology. From the Latin *fragilis* (fragile), an allusion to the fragility of this tiny (*i. e.*, pygmy size) new species.

Distribution and habitat. *Plesiolebias fragilis* occurs in seasonal swamps of the middle rio Araguaia basin (Fig. 13), in the region of ilha do Bananal, Estado do Tocantins, Brazil. This is an area of transition between the savannas of central Brazil (Cerrado) and the Amazonian forest. Concentrated in these swamps are one of the richest known assemblages of sympatric seasonal rivulids (Costa, 1998a), with a total of seven species. Besides *P. fragilis*, the following species are found here: *Trigonectes rubromarginatus* Costa, *Simpsonichthys costai* (Lazara), *Simpsonichthys semiocellatus* (Costa & Nielsen), *Pituna poranga* Costa, *Maratecoara lacortei* (Lazara), and *Plesiolebias aruana* (Lazara).

Plesiolebias altamira Costa & Nielsen, new species
(Figs. 16–17)

Material examined. Holotype. UFRJ 6369 (male, 17.1 mm SL), Brazil: Estado do Pará: temporary pool in island, rio Xingu, in front of Altamira, 3º13'34.6"S, 52°12'26.1"W, altitude 39m; J. L. Diniz, 5 May 2003.

Paratypes. Brasil: Estado do Pará: UFRJ 6370 (1 female, 18.1 mm SL); UFRJ 6371 (1 male, 17.5 mm SL, 2 females, 15.0–16.6 mm SL [c&s]); collected with holotype.

FIGURE 16. *Plesiolebias altamira*, UFRJ 6369, male holotype, 17.1 mm SL (about one week after collection); Brazil: Pará: Altamira. Photo by W. J. E. M. Costa.

Diagnosis. Distinguished from all its congeners by the combination of the following characters: filamentous ray present on each pelvic fin in males (*vs.* filamentous ray absent); pelvic-fin rays 8 (*vs.* 7); eye yellow in males (*vs.* bright green); flank with oblique black bars in males (*vs.* black bars absent); red stripe on anterior portion of flank not anteriorly reaching orbit in males (*vs.* red stripe reaching orbit or absent); basal portion of dorsal fin red in males (*vs.* with transverse rows of dark red and white spots); a black spot on posterior portion of anal fin in males (*vs.* black spot absent); body depth 24.8–25.6 % SL in males, 23.0–26.0 % SL in females (*vs.* 28.6–32.6 % SL in males, 26.4–30.3 % SL in females); sparse bright dots on flank in males (*vs.* oblique rows of bright dots on flank); 3 white bars on basal portion of anal fin in males (*vs.* 4–5); a black bar on preopercle (*vs.* black bar absent); 8–9 oblique bars on flanks in females (*vs.* 5–7); 22–23 scales in longitudinal series (*vs.* 24–25).

Description. Morphometric data appear in Table 2. Largest male examined 17.5 mm SL, largest female 18.1 mm SL. Dorsal profile slightly convex from snout to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile gently convex from lower jaw to end of anal-fin base, nearly straight on caudal peduncle. Body moderately slender, compressed. Greatest body depth at level of pelvic-fin base. Jaws

short, snout blunt.

Tip of dorsal and anal fins rounded. Caudal fin rounded. Pectoral fins elliptical, posterior margin reaching vertical through base of 2nd anal-fin ray in males, through anus in females. Pelvic fins pointed in males, terminating in long filament, with tip reaching base of 9th anal-fin ray; tip of each pelvic fin reaching urogenital papilla in females. Pelvic-fin bases medially united. Dorsal-fin origin on vertical through base of 4th or 5th anal-fin ray, and between neural spines of 11th and 12th vertebrae. Anal-fin origin between pleural ribs of 9th and 11th vertebrae. Dorsal-fin rays 10–12; anal-fin rays 14–16; caudal-fin rays 23–25; pectoral-fin rays 12–13; pelvic-fin rays 8.

FIGURE 17. *Plesiolebias altamira*, UFRJ 6370, female paratype, 18.1 mm SL (about one week after collection); Brazil: Pará: Altamira. Photo by W. J. E. M. Costa.

Scales large, cycloid. Body and head entirely scaled, except on anterior ventral surface of head. Body squamation extending onto anterior 25 % of caudal fin; no scales on dorsal and anal-fin bases. Frontal squamation G-patterned; E-scales overlapping medially; scales arranged in regular transverse pattern. Two supraorbital scales. Longitudinal series of scales 22–23; transverse series of scales 8; scale rows around caudal peduncle 12. Three to five minute contact organs on posterior margin of each scale of ventral portion of flank in males.

Cephalic neuromasts: supraorbital 5–6 + 5, parietal 2, anterior rostral 1, posterior rostral 1, infraorbital 1 + 24–26 + 1, preorbital 2, otic 1, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 2 + 9, mandibular 7, lateral mandibular 2. One neuromast on center of each scale of lateral line of trunk. Two neuromasts on caudal-fin base.

Basihyal subtriangular, narrow, width about 30 % of length; basihyal cartilage about 20 % of basihyal length. Five branchiostegal rays. Four teeth on second pharyngobranchial. Gill-rakers of first branchial arch 1 + 8. One vomerine tooth. Ventral process of posttemporal absent. Total vertebrae 25-27.

Coloration. Males: Sides of body pale purplish gray, with 10–11 oblique dark gray to black bars, alternating with two rows of white dots on anterior half of flank and with single similar row on posterior portion of flanks; red spot extending between anterior part of dorsolateral region of trunk and posterior part of dorsolateral region of head. Dorsum light purplish brown. Venter pinkish white, with transverse dark gray marks. Sides of head pale pink, opercular region greenish golden; oblique black bar just posterior to orbit and another similar bar through preopercle; short oblique black infraorbital bar. Jaws dark gray. Iris yellow, with black bar through center of eye. Dorsal fin red, distal portion hyaline; small white spots on fin base. Anal fin black with three short white bars on its basal half, uniformly reddish black on distal half; faint light blue bar on posterior portion of fin. Caudal fin grayish hyaline, with transverse rows of small white spots, united to form narrow

bars on ventral portion of fin. Pectoral fins hyaline. Pelvic fins black, with two white bars, anterior bar near anterior margin of each fin and posterior bar on posterior margin.

Females: Sides of body light brownish gray, with 8–9 wide oblique gray bars. Dorsum light brown. Venter white. Sides of head light brown, pale greenish yellow on opercle. Jaws gray. Iris pale yellow, with gray bar through center of eye. Fins hyaline.

Etymology. The name *altamira* is an allusion to the occurrence of the new species near the city of Altamira, Brazilian Amazon.

Distribution and habitat. Known only from seasonal pools near the city of Altamira, rio Xingu drainage, rio Amazonas basin, Estado do Pará, Brazil (Fig. 13).

Plesiolebias filamentosus Costa & Brasil, new species
(Figs. 18–19)

Plesiolebias xavantei non P. xavantei (Costa, Lacerda & Tanizaki); Costa, 1998c: 330 (misidentification of specimens from Itaguatins, Tocantins, Brazil).

Material examined. Holotype. UFRJ 6367 (male, 18.3 mm SL); Brazil: Estado do Tocantins: Sampaio, temporary pool in rio Tocantins floodplains, about 1.5 km from the left river bank, 5°16’58”S, 47°53’30”W, altitude 102 m; G. C. Brasil, 3 June 2000.

Paratypes. Brasil: Estado do Tocantins: UFRJ 5135 (6 males, 16.7-19.6 mm SL, 7 females, 16.8-17.5 mm SL); UFRJ 6368 (3 males, 16.1-18.9 mm SL [c&s]); collected with holotype. UFRJ 4089, 3 males, 17.5-19.9 mm SL, 8 females, 16.9-20.7 mm SL; Itaguatins, temporary pool near left bank of rio Tocantins, about 5°30’S, 47°30’W, altitude about 130 m; G. C. Brasil, 20 Apr 1997.

FIGURE 18. *Plesiolebias filamentosus*, male, about 20 mm SL, not preserved; Brazil: Tocantins: Sampaio. Photo by G. C. Brasil.

Diagnosis. Distinguished from all its congeners by the following morphological features in combination: filamentous ray on each pelvic fin in males (*vs.* filamentous ray absent); pelvic-fin rays 8 (*vs.* 7); eye yellow in males (*vs.* bright green); flanks with oblique black bars in males (*vs.* black bars absent); red stripe on anterior portion of flanks not anteriorly reaching orbit in males (*vs.* red stripe reaching orbit or absent); basal portion of dorsal fin red in males (*vs.* with transverse rows of dark red and white spots); a black spot on posterior portion of anal fin in males (*vs.* black spot absent); body depth 28.6-30.8 % SL in males, 26.4-29.3 % SL in females (*vs.* 23.2–25.7 % SL in males, 23.0–26.0 % SL in females); oblique rows of bright dots on flank in males (*vs.* sparse bright dots on flank); 4 white bars on basal portion of anal fin in males (*vs.* 3); a black bar on preopercle (*vs.* black bar absent); dorsal fin-origin in vertical between base of 5th and 6th anal-fin rays (*vs.* between base of

3rd and 5th or between base of 7th and 8th anal-fin rays); 15–16 anal-fin rays (*vs.* 17–18); red pigmentation restricted to basal third of dorsal fin in males (*vs.* extending to basal two thirds of dorsal fin); small white spots on dorsal-fin base in males (*vs.* white bars).

FIGURE 19. *Plesiolebias filamentosus*, female, about 20 mm SL, not preserved; Brazil: Tocantins: Sampaio. Photo by G. C. Brasil.

Description. Morphometric data given in Table 2. Largest male examined 19.9 mm SL, largest female examined 20.7 mm SL. Dorsal profile slightly convex from snout to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile gently convex from lower jaw to end of anal-fin base, nearly straight on caudal peduncle. Body moderately slender, compressed. Greatest body depth at level of pelvic-fin base. Jaws short, snout blunt.

Tip of both dorsal and anal fins rounded. Caudal fin rounded. Pectoral fins elliptical, posterior margin reaching vertical through base of 2nd anal-fin ray in male, through anus in female. Pelvic fins pointed in males, terminating in long filament, with tip reaching between base of 10th and 13th anal-fin ray; tip of each pelvic fin reaching base of 2nd anal-fin ray in females. Pelvic-fin bases medially united. Dorsal-fin origin on vertical through base of 7th or 8th anal-fin ray, and between neural spines of 10th and 12th vertebrae. Anal-fin origin between pleural ribs of 9th and 11th vertebrae. Dorsal-fin rays 11–13; anal-fin rays 15–16; caudal-fin rays 23–25; pectoral-fin rays 12; pelvic-fin rays 8.

Scales large, cycloid. Body and head entirely scaled, except anterior ventral surface of head. Body squamation extending onto anterior 20 % of caudal fin; no scales on dorsal and anal-fin bases. Frontal squamation G-patterned; E-scales overlapping medially; scales arranged in regular transverse pattern. Two supraorbital scales. Longitudinal series of scales 23; transverse series of scales 8; scale rows around caudal peduncle 12. Three to five minute contact organs on posterior margin of each scale of ventral portion of flank in males.

Cephalic neuromasts: supraorbital 6 + 5, parietal 2, anterior rostral 1, posterior rostral 1, infraorbital 1 + 20–25 + 1, preorbital 3, otic 1, postotic 2, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 2 + 8–10, mandibular 4 + 2, lateral mandibular 2. One neuromast on center of each scale of lateral line of trunk. Two neuromasts on caudal-fin base.

Basihyal subtriangular, narrow, width about 30 % of length; basihyal cartilage about 30 % of basihyal length. Five branchiostegal rays. Five teeth on second pharyngobranchial. Gill-rakers of first branchial arch 1 + 8. No vomerine tooth. Ventral process of posttemporal minute or absent. Total vertebrae 24–25.

Coloration. Males: Sides of body pale pink, with 8–9 oblique dark purplish to black bars, alternating with two or three oblique rows of white dots on anterior half of flanks and with single similar row on posterior por-

tion of flanks; red stripe on anterior portion of laterodorsal region of trunk, between vertical through posterior margin of opercle and vertical just posterior to pelvic-fin base. Dorsum light purplish brown. Venter pinkish white, with transverse dark gray marks. Sides of head pale pink, with oblique dark gray oblique bars; opercular region golden with two dark gray to black bars, anterior bar adjacent to posterior orbital margin, posterior bar on preopercle, posterior edge on opercle black. Jaws pale pink. Iris yellow, with black bar through center of eye. Dorsal fin red on basal third, with three white dots on fin base, hyaline on distal two thirds. Anal fin reddish black, distal third dark gray with blue iridescence; four white oblique bars on basal two thirds of fin. Caudal fin grayish hyaline to reddish hyaline on basal portion, with transverse rows of faint light gray dots. Pectoral fins hyaline. Pelvic fins black, with two white bars, anterior bar near anterior margin of fin and posterior bar on posterior margin; blue iridescence on anterior margin of each fin.

Females: Sides of body light brownish gray, with 8–9 oblique rows of dark brown closely positioned dots. Dorsum light brown. Venter white. Sides of head light brown, pale greenish yellow on opercle. Jaws gray. Iris pale yellow, with gray bar through center of eye. Fins hyaline.

Distribution and habitat. Temporary pools in the southeastern portion of the Amazonian forest, middle rio Tocantins floodplains, between Itaguatins and Sampaio, Estado do Tocantins, Brazil (Fig. 13).

Etymology. From the Latin *filamentosus* (filamentous), an allusion to the long filamentous pelvic-fin ray in male.

Plesiolebias canabravensis **Costa & Nielsen, new species**
(Figs. 20–21)

Plesiolebias aruana non P. aruana (Lazara); Costa, 1998a: 325 (misidentification).

Material examined. Holotype. UFRJ 6424 (male, 17.6 mm SL); Brazil: Estado do Tocantins: temporary lagoon in left rio Canabrava floodplains, rio Santa Tereza drainage, rio Tocantins basin, road TO-373, between Alvorada and Peixe, 12º29'46.3"S, 49º0'50.7"W, altitude 292 m; W. J. E. M. Costa, C. P. Bove, J. Paz & A. Oliveira, 16 April 2006.

Paratypes. Brazil: Estado do Tocantins: rio Tocantins basin: UFRJ 6425 (10 males, 15.5–19.5 mm SL, 10 females, 15.9–18.3 mm SL); MCP 40500 (3 males, 16.0–17.2 mm SL, 3 females, 16.1–17.4 mm SL); collected with holotype. UFRJ 3801 (24 males, 13.2–15.2 mm SL, 31 females, 11.6–16.0 mm SL); UFRJ 4006 (4 males, 14.7–16.7 mm SL, 2 females, 13.5–15.2 mm SL [c&s]); same locality; D. T. B. Nielsen, A. Carletto & A. de Luca, 4 April 1996.

Diagnosis. Distinguished from all its congeners by the combined set of the following morphological features: no filamentous ray on each pelvic fin in males (*vs.* filamentous ray present); pelvic-fin rays 7 (*vs.* 8–9); eye bright green in males (*vs.* yellow); flank without oblique black bars in males (*vs.* black bars present); red stripe on anterior portion of flanks anteriorly reaching orbit in males (*vs.* red stripe not reaching orbit or absent); basal portion of dorsal fin with transverse rows of dark red and white spots in males (*vs.* red); no distinctive black spot on posterior portion of anal fin in males (*vs.* black spot present); dorsal-fin origin at vertical through base of 7th or 8th anal-fin rays (*vs.* in vertical between base of 5th or 6th anal-fin ray); oblique rows of dark brown dots restricted to the median portion of flanks, sometimes absent (*vs.* dark brown dots and elongated spots on whole flanks); anal-fin base with white elongate spots in males (*vs.* long curved bars, ventral tips anteriorly directed, often converging to a point on anterior margin of fin); 1 + 27–31 + 1 infra-orbital neuromasts (*vs.* 1 + 16–22 + 1).

Description. Morphometric data appear in Table 4. Largest male examined 19.5 mm SL, largest female examined 18.3 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, nearly

straight on caudal peduncle. Body slender, compressed. Greatest body depth at level of pelvic-fin base. Jaws short, snout blunt.

FIGURE 20. *Plesiolebias canabravensis*, male holotype, 17.6 mm SL, UFRJ 6424 (some hours after collection); Brazil: Tocantins: rio Canabrava floodplains. Photo by W. J. E. M. Costa.

FIGURE 21. *Plesiolebias canabravensis*, female paratype, 16.7 mm SL, UFRJ 6425 (some hours after collection); Brazil: Tocantins: rio Canabrava floodplains. Photo by W. J. E. M. Costa.

Tip of dorsal and anal fins rounded, without filaments. Caudal fin rounded. Pectoral fins elliptical, posterior margin reaching vertical between urogenital papilla and base of 2nd anal-fin ray in males, between anus and base 3rd anal-fin ray in females. Pelvic fins slightly pointed, without filaments; tip of each pelvic fin reaching base of 4th anal-fin ray in males, reaching anal-fin origin in females. Pelvic-fin bases in close proximity medially. Dorsal-fin origin on vertical between base of 7th and 8th anal-fin rays, and between neural spines of 13th and 14th vertebrae. Anal-fin origin between pleural ribs of 9th and 10th vertebrae. Dorsal-fin rays 9–10; anal-fin rays 14–16; caudal-fin rays 22–24; pectoral-fin rays 11–12; pelvic-fin rays 7.

Scales large, cycloid. Body and head entirely scaled, except anterior ventral surface of head. Body squamation extending over anterior 25 % of caudal fin; no scales on dorsal and anal-fin bases. Frontal squamation G-patterned; E-scales overlapping medially; scales arranged in regular transverse pattern. Two supraorbital scales. Longitudinal series of scales 23–24; transverse series of scales 7; scale rows around caudal peduncle 12. Three minute contact organs on posterior margin of each scale of ventral portion of flank in males.

Cephalic neuromasts: supraorbital 6 + 7, parietal 1, anterior rostral 1, posterior rostral 1, infraorbital 1 + 27–31 + 1, preorbital 4, otic 1, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 1, preopercular 2 + 10, mandibular 5 + 2, lateral mandibular 3. One neuromast on center of each scale of lateral line of trunk. Two neuromasts on caudal-fin base.

Basihyal narrow, longest width about 25 % of length; basihyal cartilage about 20 % of basihyal length. Five branchiostegal rays. Six or seven teeth on second pharyngobranchial. Gill-rakers of first branchial arch 1 + 7. Vomerine teeth absent. Ventral process of posttemporal absent. Total vertebrae 24–25.

Coloration. Males: Sides of body gray, with narrow, oblique orangish red bars, alternating with oblique series of small greenish blue spots. Broad orangish red stripe between dorsoposterior margin of orbit and point

in vertical through pelvic-fin base. Dorsum gray. Venter white. Sides of head and jaws gray, opercular region metallic green. Iris bright green, with dark gray bar through center of eye. Dorsal fin hyaline, with alternating transverse rows of dark red and light blue spots on basal two thirds of fin. Anal fin dark gray, with blue iridescence, with 5 white elongate spots on basal region, separated by dark reddish gray interspace. Caudal fin gray, with transverse rows of small dark red spots on basal half of fin. Pectoral fins hyaline. Pelvic fins gray, with dark red spot and small white spot on basal portion of fin.

Females: Sides of body light brownish gray, with oblique rows of dark brown dots on ventral portion of middle flank, sometimes inconspicuous. Dorsum light brownish gray. Venter white. Sides of head and jaws gray, pale greenish yellow on opercle. Iris pale yellow, with gray bar through center of eye. Fins hyaline.

Etymology. The name *canabravensis* refers to the occurrence of *P. canabravensis* in the rio Canabrava floodplains.

Distribution and habitat. *Plesiolebias canabravensis* is known only from a seasonal lagoon near rio Canabrava, rio Tocantins basin (Fig. 13), in a savannah region.

Maratecoara Costa

Maratecoara Costa, 1995a: 68 (type species: *Cynolebias lacortei* Lazara, by original designation).

Diagnosis. Distinguished from all other plesiolebiasine genera by the following unique features of males: dorsal and anal fins long, tips beyond posterior margin of caudal fin (*vs.* short, tips reaching between caudal peduncle and caudal-fin base); caudal fin lanceolate, tip with two or three filamentous rays (*vs.* caudal fin rounded and without filaments); opercular membranes with blue iridescence, long, extending on anterior portion of pectoral fins (*vs.* opercular membrane short and hyaline); and flanks metallic blue, with orangish golden spots (*vs.* never a similar color pattern).

Distribution. Das Mortes–Araguaia–Tocantins river basin, central Brazil (Fig. 22).

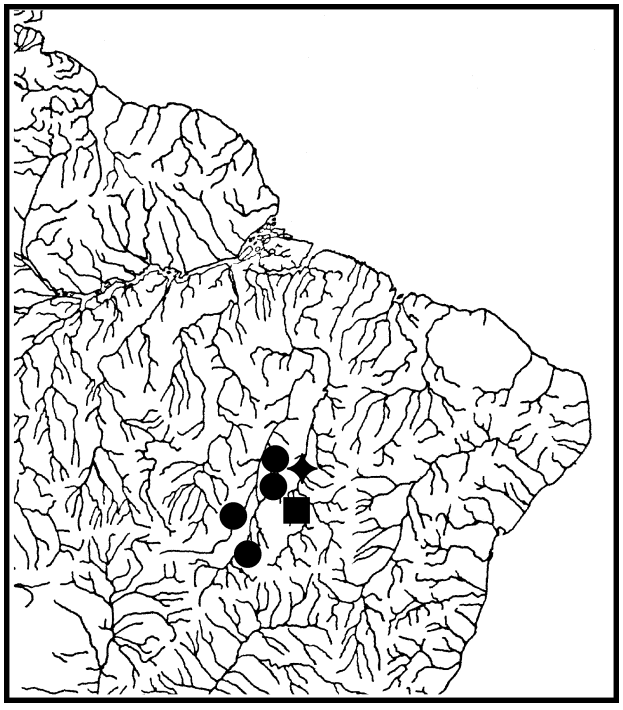

FIGURE 22. Geographic distribution of the genus *Maratecoara*. dots = *M. lacortei*; square = *M. splendida*; lozenge = *M. formosa*. One symbol may represent more than one collecting site.

Key to species of the genus *Maratecoara*

1a. 25–27 caudal-fin rays; anteroventral portion of flanks with three to five oblique orange bars; distal portion of anal fin without distinctive bright blue zone 2

1b. 27–30 caudal-fin rays; anteroventral portion of flanks with broad orange blotch just posterior to pectoral-fin insertion; distal portion of anal fin with broad bright blue zone in males ..... *M. lacortei*

2a. Scales extending onto dorsal and anal-fin bases in males; dorsal profile of head strongly concave in adult males; few pale orange spots on basal half of anal fin and flank region adjacent to anal fin, often absent; basal half of caudal fin with vertical rows of orange spots in males ..... *M. formosa*

2b. No scales on dorsal and anal-fin bases in males; dorsal profile of head straight to slightly concave in adult males; conspicuous orange spots on basal half of anal fin and flank region adjacent to anal fin; basal half of caudal fin with orange stripes parallel to fin rays in males ..... *M. splendida*

***Maratecoara lacortei* (Lazara)**
(Figs. 23–24)

Cynolebias lacartei Lazara, 1991: 141 (type locality: temporary pool, Aruana [Aruanã, road GO-173], Goias [Estado de Goiás], Brazil [14º57’0.5”S, 51º1’23.7”W, altitude 243 m]; holotype: MZUSP 38805).

FIGURE 23. *Maratecoara lacortei*, male, 28.8 mm SL, UFRJ 6406 (one day after collection); Brazil: Tocantins: rio Formoso floodplains. Photo by W. J. E. M. Costa.

Material examined. All material collected in the Araguaia-das Mortes basin. Brazil: Estado de Goiás: UFRJ 6417 (1); UFRJ 6418 (2, c&s); temporary lagoon, road GO-173, Aruanã, 14º57’0.5”S, 51º1’23.7”W; W. J. E. M. Costa, C. P. Bove, J. Paz & A. Oliveira, 13 Apr. 2006. Estado de Estado do Tocantins: UFRJ 6403 (26); UFRJ 6405 (8, c&s); UFRJ 6406 (3); temporary pool in rio Formoso floodplains, road BR-242, 11º47’31.6”S, 49º45’54.7”W; W. J. E. M. Costa, C. P. Bove, J. Paz & A. Oliveira, 15 Apr. 2006. UFRJ 3796 (22), same locality as UFRJ 6403; D. T. B. Nielsen, A. Carletto & A. de Luca, 6 Apr. 1996. UFRJ 5264 (21); Parque Nacional do Araguaia, ilha do Bananal; G. C. Brasil, D. Almeida & R. D’Arrigo, 20 Feb. 1999. UFRJ 3555

(2); UFRJ 3556 (1, c&s); temporary lagoon near Barreira do Pequi; W. J. E. M. Costa, M. I. Landim, G. C. Brasil & C. Moreira, 15 Feb. 1996. Estado de Mato Grosso: UFRJ 3551 (2), UFRJ 3542 (1, c&s); temporary lagoon 9 km E of rio das Mortes, road MT-326; W. J. E. M. Costa, M. I. Landim, G. C. Brasil & C. Moreira, 16 Feb. 1996. UFRJ 275 (1); UFRJ 1155 (2); MZUSP 41388 (1); MZUSP 41389 (4); MZUSP 41390 (3, c&s); same locality; G. C. Brasil *et al.*, Jan. 1988.

FIGURE 24. *Maratecoara lacortei*, female, 24.4 mm SL, UFRJ 6406 (one day after collection); Brazil: Tocantins: rio Formoso floodplains. Photo by W. J. E. M. Costa.

Diagnosis. Distinguished from all other species of the genus by the following unique morphological features: 27–30 caudal-fin rays (*vs.* 25–27), anteroventral portion of flanks with broad orange blotch just posterior to pectoral-fin insertion (*vs.* three to five oblique orange bars), and distal portion of anal fin with broad bright blue zone in males (*vs.* no distinctive bright blue zone). Also distinguished from congeners by the following characters in combination: no scales on dorsal and anal-fin bases (*vs.* scales extending onto dorsal and anal-fin bases in males); dorsal profile of head straight to slightly concave in adult males (*vs.* strongly concave); a few pale orange spots on basal half of anal fin and flank region adjacent to anal fin, these often absent (*vs.* always conspicuously spotted); and basal half of caudal fin with orange stripes parallel to fin rays in males (*vs.* with vertical rows of orange spots).

Description. Morphometric data appear in Table 3. Largest male examined 33.4 mm SL, largest female examined 30.6 mm SL. Dorsal profile straight to slightly concave on head, convex from nape to end of dorsal-fin base, approximately straight on caudal peduncle. Ventral profile gently convex from lower jaw to end of anal-fin base, nearly straight on caudal peduncle. Body deep, compressed. Greatest body depth at level of pelvic-fin base. Jaws short, snout slightly pointed.

Dorsal and anal fin long in males, pointed, terminating in long filamentous rays, tips surpassing posterior margin of caudal fin; dorsal and anal fins slightly pointed and short in females. Caudal fin lanceolate in males, with filamentous rays on posterior tip of fin; caudal fin rounded in females. Pectoral fins elliptical, posterior margin reaching vertical between base of 5th and 7th anal-fin rays in males, between urogenital papilla and anal-fin origin in females. Pelvic fins elliptical, without filaments; tip of each pelvic fin reaching between base of 5th and 6th anal-fin rays in males, reaching to between base of 3rd and 4th anal-fin rays in females. Pelvic-fin bases in close proximity medially. Dorsal-fin origin on vertical between base of 4th and 6th anal-fin rays, and between neural spines of 11th and 13th vertebrae. Anal-fin origin between pleural ribs of 10th and 11th vertebrae. Dorsal-fin rays 11–13; anal-fin rays 15–17; caudal-fin rays 27–30; pectoral-fin rays 13; pelvic-fin rays 8.

Scales large, cycloid. Body and head entirely scaled, except anterior ventral surface of head. Body squamation extending over anterior 25 % of caudal fin; no scales on dorsal and anal-fin bases. Frontal squamation F-patterned; E-scales not overlapping medially; scales arranged in regular transverse pattern. No scale ante-

rior to H-scale. Four supraorbital scales. Longitudinal series of scales 25–26; transverse series of scales 9–10; scale rows around caudal peduncle 16. Three to five contact organs on posterior margin of each scale on ventral portion of flanks in males.

Cephalic neuromasts: supraorbital 6–7 + 3–4, parietal 3, anterior rostral 1, posterior rostral 1, infraorbital 1 + 24–27 + 1, preorbital 4–6, otic 1, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 1, preopercular 15–16, mandibular 9–10, lateral mandibular 6. One neuromast on center of each scale of lateral line of trunk. Two neuromasts on caudal-fin base.

Basihyal narrow, longest width about 35 % of length; basihyal cartilage about 25 % of basihyal length. Six branchiostegal rays. Three to six teeth on second pharyngobranchial. Gill-rakers of first branchial arch 1 + 6–8. Two vomerine teeth. Ventral process of posttemporal absent. Total vertebrae 27–28.

Coloration. Males: Sides of body metallic blue to purplish blue above anal fin; two or three horizontal rows of small dark orange spots on anterodorsal portion of flank, often posteriorly fused to form stripes; large orange blotch on anteroventral portion of flanks just posterior to pectoral fin insertion; one horizontal row of reddish orange spots (sometimes forming stripe) on lateral midline of caudal peduncle. Dorsum light brown. Venter white. Sides of head metallic blue, with small orange spots; dark gray to black infraorbital bar and triangular, dark orange supraorbital bar. Jaws orange. Iris bright green, with black bar through center of eye. Dorsal fin metallic blue, with rays orange to red on distal portion. Anal fin pale orange, with blue iridescence to light blue on basal portion, sometimes with faint orange spots on subproximal portion; broad bright blue zone on distal portion of fin. Caudal fin metallic blue, with orange stripes parallel to fin rays, two basal stripes shortly extending on caudal peduncle; anterior part of dorsal and ventral margins of fin red. Pectoral fins hyaline. Pelvic fins metallic blue, with orange spots.

Females: Sides of body light brownish gray, with longitudinal rows of pale brown dots on dorsal portion of flank. Dorsum light brownish gray. Venter white. Sides of head and jaws gray, pale greenish yellow or pale blue on opercle; dark gray infraorbital bar. Iris yellow, with dark gray bar through center of eye. Fins hyaline.

Distribution and habitat. Seasonal swamps, lagoons and pools in the Araguaia–das Mortes river basin, (Fig. 22), in typical savannah areas or transitional regions between savanna and the Amazonian forest.

Maratecoara formosa Costa & Brasil
(Figs. 25–26)

Maratecoara formosa Costa & Brasil *in* Costa: 1995a: 69 (type locality: temporary pool in Brejinho de Nazaré, about 10°59'S, 48°38'W, Estado do Tocantins, Brazil; holotype: MNRJ 12521).

Material examined. Brazil: Estado do Tocantins, rio Tocantins basin: MNRJ 12521 (male holotype, 28.5 mm SL); MNRJ 12522 (2 paratypes); MZUSP 46081 (2 paratypes); UFRJ 2112 (4 paratypes); UFRJ 2111 (4 paratypes [c&s]); temporary pool in Brejinho de Nazaré, about 10°59'S, 48°38'W; W. J. E. M. Costa, G. C. Brasil & C. Campinha, 15 Feb. 1994.

Diagnosis. Distinguished from all other congeners by the following unique morphological features: body scales extending onto dorsal and anal-fin bases in males (*vs.* no scales on dorsal and anal-fin bases), dorsal profile of head strongly concave in adult males (*vs.* straight to slightly concave), and basal half of caudal fin with vertical rows of orange spots in males (*vs.* orange stripes parallel to fin rays). It is also distinguished from congeners by the following characters in combination: 25–26 caudal-fin rays (*vs.* 27–30), anteroventral portion of flank with four or five oblique orange bars (*vs.* broad orange blotch just posterior to pectoral-fin insertion), no distinctive bright blue zone on distal portion of anal fin (*vs.* broad bright blue zone in males), and a few pale orange spots on basal half of anal fin and flank region adjacent to anal fin, these often absent (*vs.* always conspicuously spotted).

FIGURE 25. *Maratecoara formosa*, male paratype, 27.5 mm SL, UFRJ 2112 (some minutes after collection); Brazil: Tocantins: Brejinho de Nazaré. Photo by W. J. E. M. Costa.

FIGURE 26. *Maratecoara formosa*, female paratype, 22.3 mm SL, UFRJ 2112 (some minutes after collection); Brazil: Tocantins: Brejinho de Nazaré. Photo by W. J. E. M. Costa.

Description. Morphometric data appear in Table 3. Largest male examined 28.5 mm SL, largest female examined 22.3 mm SL. Dorsal profile strongly concave on head, convex from nape to end of dorsal-fin base, nearly straight on caudal peduncle. Ventral profile slightly convex from lower jaw to end of anal-fin base, approximately straight on caudal peduncle. Body deep, compressed. Greatest body depth at level of pelvic-fin base. Jaws short, snout slightly pointed.

Dorsal and anal fin long in males, pointed, terminating in long filamentous rays, tips surpassing posterior margin of caudal fin; dorsal and anal fins slightly pointed and short in females. Caudal fin lanceolate in males, with filamentous rays on posterior tip of fin; caudal fin rounded in females. Pectoral fins elliptical, posterior

margin reaching vertical between base of 4th and 5th anal-fin rays in males, between urogenital papilla and anal-fin origin in females. Pelvic fins elliptical, without filaments; tip of each pelvic fin reaching base of 4th anal-fin ray in males, reaching between base of 1st and 2nd anal-fin rays in females. Pelvic-fin bases medially in close proximity. Dorsal-fin origin on vertical between base of 4th and 5th anal-fin rays, and between neural spines of 11th and 12th vertebrae. Anal-fin origin between pleural ribs of 10th and 11th vertebrae. Dorsal-fin rays 11–14; anal-fin rays 15–18; caudal-fin rays 25–26; pectoral-fin rays 13; pelvic-fin rays 8.

Scales large, cycloid. Body and head entirely scaled, except on anterior ventral surface of head. Body scales extending over anterior 30 % of caudal fin; and onto middle of dorsal and anal-fin bases. Frontal squamation F-patterned; E-scales not overlapping medially; scales arranged in regular transverse pattern. No scale anterior to H-scale. Four supraorbital scales. Longitudinal series of scales 25–27; transverse series of scales 9; scale rows around caudal peduncle 16. Three to five contact organs on posterior margin of each scale of ventral portion of flanks in males.

Cephalic neuromasts: supraorbital 6–7 + 4, parietal 3, anterior rostral 1, posterior rostral 1, infraorbital 1 + 20–22 + 1, preorbital 5, otic 1, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 2, preopercular 14–16, mandibular 8–10, lateral mandibular 5. One neuromast on center of each scale of lateral line of trunk. Two neuromasts on caudal-fin base.

Basihyal narrow, longest width about 35 % of length; basihyal cartilage about 25 % basihyal length. Six branchiostegal rays. Three or four teeth on second pharyngobranchial. Gill-rakers of first branchial arch 1 + 6–8. Four or five vomerine teeth. Ventral process of posttemporal absent. Total vertebrae 26–27.

Coloration. Males: Sides of body metallic blue, with three horizontal rows of small dark orange spots on anterodorsal portion of flank; narrow oblique bars along ventral two thirds of flanks, first four or five bars orange, posterior bars pale purple; and purple stripe on lateral midline of caudal peduncle. Dorsum light brown. Venter white. Sides of head metallic blue, with small orange reticulation; dark gray to black infraorbital bar and triangular, dark orange supraorbital bar. Jaws orange. Iris bright green, with dark gray bar through center of eye. Dorsal fin metallic blue, transverse series of orange spots on basal portion, and rays orange to red on distal portion. Anal fin pale orange, with blue iridescence to light blue on basal portion, sometimes with faint orange spots on sub-basal portion. Caudal fin metallic blue, with transverse rows of dark orange spots on basal half and dark orange stripes parallel to fin rays on distal half of fin; anterior part of dorsal and ventral margins of fin red. Pectoral fins hyaline. Pelvic fins metallic blue, with orange spots.

Females: Sides of body light brownish gray, with longitudinal rows of pale brown dots. Dorsum light brownish gray. Venter white. Sides of head and jaws gray, pale greenish yellow or pale blue on opercle; dark gray infraorbital bar. Iris yellow, with gray bar through center of eye. Fins hyaline.

Distribution and habitat. Seasonal lagoons in the middle rio Tocantins floodplains, (Fig. 22), in a typical savannah area.

***Maratecoara splendida*, new species**
(Figs. 27–28)

Material examined. Holotype. UFRJ 6431 (male, 27.8 mm SL); Brazil: Estado do Tocantins: temporary lagoon pool in left rio Canabrava floodplains, rio Santa Tereza drainage, rio Tocantins basin, road TO-373, between Alvorada and Peixe, 12º29'46.3"S, 49º0'50.7"W, altitude 292 m; W. J. E. M. Costa, C. P. Bove, J. Paz & A. Oliveira, 16 April 2006.

Paratypes. Brazil: Estado do Tocantins: rio Tocantins basin: UFRJ 6432 (4 males, 24.6–31.9 mm SL, 5 females, 22.9–25.1 mm SL); UFRJ 6433 (2 males, 28.1–30.0 mm SL, 2 females, 21.7–23.2 mm SL); MCP 40501 (1 male, 27.7 mm SL, 1 female, 24.2 mm SL); collected with holotype.

Diagnosis. Distinguished from all other species of *Maratecoara* in having a distinct color pattern, consist-

ing of conspicuous orange spots on basal half of anal fin and flank region adjacent to anal fin (*vs.* few pale orange spots, these often absent). *Maratecoara splendida* is also distinguished from congeners by the following combination of characters: no scales on dorsal and anal-fin bases (*vs.* body squamation extending onto dorsal and anal-fin bases in males), dorsal profile of head straight to slightly concave in adult males (*vs.* strongly concave), basal half of caudal fin with orange stripes parallel to fin rays in males (*vs.* vertical rows of orange spots), anteroventral portion of flank with three or four oblique orange bars (*vs.* broad orange blotch just posterior to pectoral-fin insertion), and no distinctive bright blue zone on distal portion of anal fin (*vs.* broad bright blue zone in males).

FIGURE 27. *Maratecoara splendida*, male holotype, 27.8 mm SL, UFRJ 6431 (some hours after collection); Brazil: Tocantins: rio Canabrava floodplains. Photo by W. J. E. M. Costa.

FIGURE 28. *Maratecoara splendida*, female paratype, 24.4 mm SL, UFRJ 6432 (some hours after collection); Brazil: Tocantins: rio Canabrava floodplains. Photo by W. J. E. M. Costa.

Description. Morphometric data appear in Table 3. Largest male examined 31.9 mm SL, largest female examined 25.1 mm SL. Dorsal profile straight to gently concave on head, convex from nape to end of dorsal-fin base, nearly straight on caudal peduncle. Ventral profile weakly convex from lower jaw to end of anal-fin base, nearly straight on caudal peduncle. Body deep, compressed. Greatest body depth at level of pelvic-fin base. Jaws short, snout slightly pointed.

Dorsal and anal fin long in males, pointed, terminating in long filamentous rays, tips surpassing posterior margin of caudal fin; dorsal and anal fins slightly pointed and short in females. Caudal fin lanceolate in males, with filamentous rays on posterior tip of fin; caudal fin rounded in females. Pectoral fins elliptical, posterior

margin reaching vertical between base of 4th and 6th anal-fin rays in males, between urogenital papilla and anal-fin origin in females. Pelvic fins elliptical, without filaments; tip of each pelvic fin reaching between base of 4th and 6th anal-fin rays in males, reaching to base of 2nd anal-fin ray in females. Pelvic-fin bases in close proximity medially. Dorsal-fin origin on vertical between base of 3rd and 5th anal-fin rays, and between neural spines of 12th and 13th vertebrae. Anal-fin origin between pleural ribs of 10th and 12th vertebrae. Dorsal-fin rays 11–13; anal-fin rays 15–17; caudal-fin rays 25–27; pectoral-fin rays 13; pelvic-fin rays 8.

Scales large, cycloid. Body and head entirely scaled, except anterior ventral surface of head. Body scales extending over anterior 25 % of caudal fin; no scales on dorsal and anal-fin bases. Frontal squamation F-patterned; E-scales not overlapping medially; scales arranged in regular transverse pattern. No scale anterior to H-scale. Four to five supraorbital scales. Longitudinal series of scales 24–26; transverse series of scales 9; scale rows around caudal peduncle 16. Three to five contact organs on posterior margin of each scale of ventral portion of flank in males.

Cephalic neuromasts: supraorbital 6–8 + 3–4, parietal 3, anterior rostral 1, posterior rostral 1, infraorbital 1 + 20–22 + 1, preorbital 4–5, otic 1, post-otic 2, supratemporal 1, median opercular 1, ventral opercular 1–2, preopercular 13–14, mandibular 7–10, lateral mandibular 5. One neuromast on center of each scale of lateral line of trunk. Two neuromasts on caudal-fin base.

Basihyal narrow, longest width about 45 % of length; basihyal cartilage about 30 % of basihyal length. Six branchiostegal rays. Four teeth on second pharyngobranchial. Gill-rakers of first branchial arch 1 + 6. One vomerine tooth. Ventral process of posttemporal absent. Total vertebrae 27.

Coloration. Males: Sides of body metallic blue to purplish blue above anal fin, with small orange spots arranged in three horizontal rows on anterodorsal portion of flanks, three horizontal rows on caudal peduncle narrow, and three or four bars on anteroventral portion of flank. Dorsum light brown. Venter white. Sides of head metallic blue, with small orange spots; black infraorbital bar and triangular, dark brown supraorbital bar. Jaws orange. Iris bright green, with black bar through center of eye. Dorsal fin metallic blue, with transverse rows of orange spots or transverse stripes on basal half of fin, distal portion of rays red, filaments dark brown. Anal fin metallic blue, with round orange spots on basal half of fin and distal portion of rays orange. Caudal fin metallic blue, with orange stripes parallel to fin rays. Pectoral fins hyaline. Pelvic fins metallic blue, with orange spots.

Females: Sides of body light brownish gray, with longitudinal rows of pale brown dots. Dorsum light brownish gray. Venter white. Sides of head and jaws gray, pale greenish yellow or pale blue on opercle; dark gray infraorbital bar. Iris yellow, with gray bar through center of eye. Fins hyaline.

Etymology. From the Latin *splendida* (splendid), in allusion to the brilliant colors in males of the species.

Distribution and habitat. *Maratecoara splendida* is known only from the type locality, a seasonal lagoon near rio Canabrava, rio Tocantins basin (Fig. 22), in a savannah region.

Discussion

The present study indicates that the genera *Pituna*, *Plesiolebias* and *Maratecoara* are more diverse and widespread in central and northeastern Brazil than previously recorded (*e. g.*, Costa, 1998a, 1998b, 1998c). In addition, species in the three genera have congruent distributions, suggesting the existence of biogeographic patterns constituting areas of endemism determined by historical factors. However, phylogenetic hypotheses among species of these genera, which would be useful to erect hypotheses of biogeography, are not included here because the intra-generic plesiolebiasine relationships are still controversial. *Pituna* is hypothesized to be sister to the other plesiolebiasines, based on morphology (Costa, 1998a), but according to molecular data, *Plesiolebias* would be the sister group to a clade comprising at least *Pituna* plus *Maratecoara* (Murphy *et al.*, 1999) or containing *Pituna* plus *Maratecoara* plus *Papiliolebias* (Hrbek & Larson, 1999). Furthermore, both

morphological (Costa, 1998a) and molecular (Hrbek & Larson, 1999) studies have resulted in ambiguous hypotheses concerning the phylogenetic position of plesiolebiasines among rivulids. Each of these available plesiolebiasine tree topologies could drastically affect polarization of character states within genera, making possible opposite interpretations on character evolution. It would therefore be necessary to re-evaluate phylogenetic relationships among all plesiolebiasines, which is in progress but is not the aim of the present study. The discussion below focuses only on relevant aspects of the taxonomy.

FIGURE 29. *Plesiolebias lacerdai*, UFRJ 3547, male topotype, 18.4 mm SL; Brazil: Mato Grosso: rio das Mortes floodplains (some minutes after collection). Photo by W. J. E. M. Costa.

Monophyly of *Pituna* has been defined by the following synapomorphic features: 1) fourth pectoral radial expanded ventrally; 2) anal fin elongate and pointed in males; 3) flank and unpaired fins darkly pigmented in females; 4) bright red pigmentation on the distal portion of dorsal fin in males; 5) a green and red stripe on the distal margin of the anal fin in males; and, 6) black spots on the pectoral fin in males (Costa, 1998a). However, none of these conditions are uniquely diagnostic of *Pituna*, since character states 1, 2, 3, and 4 occur in other plesiolebiasines, and character states 5 and 6 do not occur in all species of *Pituna*. However, the color pattern on the flanks in males of all species of *Pituna* (*i. e.*, dark brown with light blue to golden small spots), is unique among plesiolebiasines, thus providing a uniquely diagnostic feature.

Pituna poranga was formerly placed in the synonymy of *P. compacta* by Costa (1998b), in part because *P. poranga* was known only from females and juvenile specimens. Examination of larger collections of both nomina has shown that *P. poranga* is a valid species, and differs from *P. compacta* in having a less robust and more slender body (for values see the key above). In addition, these species differ in details of color pattern: there are four or five bars or transverse rows of spots on the pectoral fin in males of *P. poranga*, instead of the seven or eight rows found in *P. compacta*; and the dark marks on the flanks in females are usually coalesced in *P. poranga* to form a color pattern distinct from those of all other congeners (Fig. 4).

Pituna obliquoseriata was first identified as *P. compacta* by Costa (1998b). However, *P. obliquoseriata* is distinguished from both *P. compacta* and *P. poranga*, the two other congeners inhabiting the same composite biogeographic area (*i. e.*, the das Mortes–Araguaia–Tocantins river basin), by the former having more caudal-fin rays (28–31 *vs.* 25–28), a distinct flank color pattern in females (dark brown dots arranged in oblique rows, *vs.* small dark brown spots mainly arranged in longitudinal rows).

Costa (1998a) divided *Plesiolebias* into two groups (*i. e.*, clades A and B). The first one (clade A), comprising *P. glaucopterus* (from the rio Paraguay basin) and *P. aruana* (from the rio Araguaia basin), was diag-

nosed by two derived conditions: a reduced number of pectoral fins (usually 11–12) and a black zone on the anterior portion of the anal fin in males. However, neither character seems to be useful for diagnosing either clade, since some species of clade B may have twelve pectoral-fin rays and the black zone is not always found among specimens of clade A. On the other hand, species of clade A also may be diagnosed by their possession of bright green eyes in males, a derived condition also occurring in *Maratecoara*, and a red stripe on the anterior part of the flanks that extends to the orbit in males, a condition not found elsewhere among rivulids. *Plesiolebias canabravensis* should be considered a member of this clade, since it shares these diagnostic features.

The second group of *Plesiolebias* (clade B), according to Costa (1998c), includes *P. xavantei* from the rio Tocantins basin and *P. lacerdai* from the rio das Mortes basin, and is diagnosed by eight synapomorphies: supraoccipital long, contacting first neural spine; second proximal radial of dorsal fin between neural spines of vertebrae 9–13; filamentous ray on tip of pelvic fins in males; dark dots coalesced to form oblique stripes on flank in females; black oblique bar on preopercle in males; basal half of dorsal fin intensely pigmented with red in males; oblique black bars on anterior portion of flank in males; and melanophores concentrated on posterior portion of anal fin in males. *Plesiolebias fragilis*, *P. altamira* and *P. filamentosus* possess the synapomorphies of clade B, except that the black bar on the preopercle is absent in *P. fragilis*.

Three of the four new species of *Plesiolebias* herein described were formerly misidentified (Costa, 1998c). *Plesiolebias fragilis* was first identified as *P. lacerdai*, which is also a miniature species (Costa, 1998c) occurring in the same hydrographic basin (Fig. 30). However, they may be easily distinguished by several body and head measurements: body depth (23.3–25.4 % SL in males and 22.2–25.7 % SL in females of *P. fragilis*, *vs.* 28.6–31.4 % SL in males and 28.0–30.0 % SL in females of *P. lacerdai*); head depth (64.9–74.0 % of head length in males and 67.6–77.1 % SL in females of *P. fragilis*, *vs.* 75.6–85.8 % of head length in males and 73.9–83.7 % of head length in females of *P. lacerdai*). They may also be distinguished by male color patterns (compare Figs. 14 and 29), including the presence of three white bars on the basal portion of the anal fin in male *P. fragilis* (*vs.* four bars in *P. lacerdai*). The anteriormost anal-fin bar of *P. fragilis* seems to correspond to a fusion of the two anteriormost bars of *P. lacerdai*. In addition, in *P. fragilis* there are few bright greenish dots scattered on flank in males, in contrast to numerous dots arranged in oblique rows in *P. lacerdai*, and diffuse bars on the caudal peduncle side in males, instead of well-defined bars as in *P. lacerdai*.

Plesiolebias filamentosus was first identified as *P. xavantei* (Costa, 1998a), which is endemic to the same river basin (*i. e.*, rio Tocantins), although separated by about 600 km (Fig. 13). Both species share a similar flank color pattern and the presence of a long black filament on the tip of each pelvic fin in males, but *P. filamentosus* may be distinguished from *P. xavantei* by the posterior position of the dorsal-fin origin (dorsal fin-origin at vertical between base of 5th and 6th anal-fin rays, *vs.* between base of 7th and 8th anal-fin rays in *P. xavantei*), fewer anal-fin rays (15–16 *vs.* 17–18), and a distinct color pattern of the male dorsal fin (red pigmentation restricted to basal third of fin and dorsal-fin base, with small white spots, *vs.* red pigmentation extending to basal two thirds of fin and dorsal-fin base with white bars). In addition, *P. filamentosus* seems to be a smaller species, reaching about 20 mm SL, even in individuals kept in aquaria by G. C. Brasil (pers. com.), but which were not preserved for study, whereas *Plesiolebias xavantei* reaches about 30 mm SL (Costa *et al.*, 1988; Costa, 1998a). In addition, the geographic range of *P. filamentosus* is within the Amazonian forest, altitude about 100–130 m, whereas the habitat of *P. xavantei* is in the Cerrado, a savannah region located at an altitude about 210–250 m.

Plesiolebias canabravensis, from the middle rio Tocantins basin, was first identified as *P. aruana* (Costa, 1998c), a species known only from the middle rio Araguaia basin (Fig. 13). Although the geographic range of both species are in adjacent regions, they are physically separated by hills bordering the Araguaia and Tocantins river basins. *Plesiolebias canabravensis* differs from *P. aruana* in having an anal-fin base with white elongate spots in males (*vs.* long curved bars, ventral tips anteriorly directed, often converging to a point on anterior margin of fin); 1 + 27–31 + 1 infra-orbital neuromasts (*vs.* 1 + 16–22 + 1), and a dorsal-fin origin between the neural spines of vertebrae 13 and 14 (*vs.* between neural spines of vertebrae 12 and 13).

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