

## Two New Species of the Neotropical Catfish Genus *Lepthoplosternum* (Ostariophysi: Siluriformes: Callichthyidae)

ROBERTO E. REIS AND CÍNTIA C. KAEFER

Two new species of the callichthyid catfish genus *Lepthoplosternum* are described from the Amazon region. *Lepthoplosternum stellatum* is described from a tributary of Lago Tefé, Amazonas, Brazil, and it is diagnosed from other *Lepthoplosternum* species by a unique combination of characters: lower lip with pointed, crenulate, triangular fleshy projections lateral to the medial notch, caudal peduncle comparatively shallow (15.7–18.9% SL), and dorsal fin usually with one unbranched and seven branched rays. *Lepthoplosternum ucumara* is described from the Pacaya-Samiria National Reserve in the lower Ucayali River, Loreto, Peru, and can be diagnosed from other *Lepthoplosternum* species by the following unique combination of characters: lower lip with short, rounded projections, caudal peduncle comparatively shallow (15.2–17.7% SL), and dorsal fin with two unbranched and six branched rays. The distribution of *Lepthoplosternum altamazonicum* is extended to include the varzea floodplains of the Solimões River and its tributaries in Brazil. A key to species of *Lepthoplosternum* is also included.

Duas novas espécies de tamoatás do gênero *Lepthoplosternum* são descritas da região amazônica. *Lepthoplosternum stellatum* é descrita de um tributário do lago Tefé próximo a Tefé, Estado do Amazonas, Brasil, sendo diagnosticada das outras espécies de *Lepthoplosternum* pela combinação única de lábio inferior com projeções triangulares, pontiagudas e crenuladas, laterais à fenda medial, pedúnculo caudal comparativamente baixo (15.7–18.9% SL), e nadadeira dorsal usualmente com um raio simples e sete ramificados. *Lepthoplosternum ucumara* é descrita da Reserva Nacional Pacaya-Samiria, no baixo rio Ucayali, Loreto, Peru, e pode ser diagnosticada dos outros *Lepthoplosternum* pela combinação única de lábio inferior com projeções curtas e arredondadas, laterais à fenda medial, pedúnculo caudal comparativamente baixo (15.2–17.7% SL) e nadadeira dorsal com dois raios simples e seis ramificados. A distribuição de *Lepthoplosternum altamazonicum* é ampliada para incluir as áreas de várzea do rio Solimões e seus tributários no Brasil. Uma chave para as espécies de *Lepthoplosternum* é também incluída.

THE genus *Lepthoplosternum* Reis, 1997 comprises six species including the two new species described in this paper. *Lepthoplosternum* is widely distributed in cis-Andean South America south of the Rio Orinoco basin. *Lepthoplosternum pectorale* (Boulenger, 1895) is from the Rio Paraguay, *L. altamazonicum* Reis, 1997 is known only from the upper Amazon basin in Peru and Brazil, *L. beni* Reis, 1997 is from the upper Rio Madeira basin in Bolivia and Peru, and *L. tordilho* Reis, 1997 is from the lower Rio Jacui drainage in southern Brazil. *Lepthoplosternum* species usually inhabit lentic or slow flowing water bodies and are often associated with marginal or floating vegetation.

*Lepthoplosternum* species are the smallest callichthyines (maximum standard length 60.3 mm) and are easily recognized by two synapomorphies: lower lip with deep medial notch and small, additional lateral notch, forming fleshy projections on each side (Fig. 1) and a single

unbranched ray preceding the branched ones on the anal fin (Reis, 1997). *Lepthoplosternum* is relatively basal among callichthyines, being sister to the clade comprising *Megalechis* Reis, 1997 + *Dianema* Cope, 1871 + *Hoplosternum* Gill, 1858. *Callichthys* Scopoli, 1777 is the most basal genus in the subfamily (Reis, 1998a). However, Shimabukuro-Dias et al. (2004) recently found different relationships among callichthyine genera based on mitochondrial DNA data. According to that study, *Dianema* + *Hoplosternum* form the most basal clade, and *Callichthys* is sister to *Lepthoplosternum* + *Megalechis*; however, *Lepthoplosternum* was not monophyletic. Relationships among species of *Lepthoplosternum* were studied by Reis (1998b), who found that *L. pectorale* and *L. beni* are sister-species, *L. tordilho* is sister to them, and *L. altamazonicum* is the most basal species.

During the course of an expedition of the Ucumara Project in the Pacaya-Samiria National

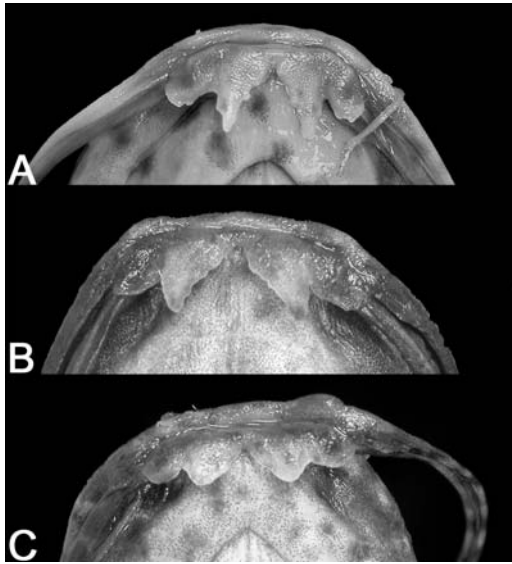


Fig. 1. Lower lip of *Lepthoplosternum*. (A) *L. stellatum*, MCP 30651, 38.0 mm SL. (B) *L. altamazonicum*, MCP 34559, 58.2 mm SL. (C) *L. ucumara* MCP 34560, 42.9 mm SL.

Reserve, in the lower Rio Ucayali of Peru, we collected part of the specimens described below. The other significant portion of the specimens studied in this paper was collected by William Crampton during his work in the Mamirauá Institute and were brought by him to our attention. The objectives of this paper are to describe two new species of *Lepthoplosternum* and to document their phylogenetic relationships.

#### MATERIALS AND METHODS

Specimens examined in this study belong to institutions whose abbreviations are listed in Leviton et al. (1985), except for Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos (MUSM). Measurements and counts in this paper follow Reis (1997), with the addition of the length of the second dorsal-fin ray. Length of the maxillary barbel was quantified by counting to which plate of the lower lateral series it reaches when stretched along the body. Specimens cleared and stained for bone and cartilage were prepared by the methods of Taylor and Van Dyke (1985). Geographic descriptors and names of localities of Peru and Brazil are cited in Spanish and Portuguese, respectively. In the list of type specimens, museum abbreviation and catalog number are followed by the number of specimens in each lot and the range of standard length. The number of specimens included for

the morphometric comparisons in Table 1, if any, follows the total number of specimens, in parentheses.

#### *Lepthoplosternum stellatum*, new species

##### Figure 2

*Holotype*.—MCP 35599, male, 45.1 mm SL, Brazil, Amazonas, Tefé, Igarapé Repartimento, tributary of Lago Tefé, 1.5 km downstream from bridge on Tefé-Agrovila road, 03°24'28"S, 64°44'10"W, W. Crampton, Sept. 1999.

*Paratypes*.—MCP 30651, 6 + 1 CS (6), 19.1–43.0 mm SL; UF 146223, 4 (2), 13.8–45.8, collected with the holotype.

*Diagnosis*.—*Lepthoplosternum stellatum* is not diagnosed by autapomorphic features at present, but can be distinguished from all congeners by the following unique combination of characters: lower lip with pointed, crenulate, triangular fleshy projections lateral to the medial notch (Fig. 1A; vs. lower lip with short, rounded projections lateral to the medial notch); caudal peduncle comparatively shallow (15.7–18.9% SL vs. caudal peduncle comparatively deep [20.2–24.5% SL]); and dorsal fin usually with one unbranched and seven branched rays (vs. dorsal fin with two unbranched and six branched rays).

It can be further distinguished from *Lepthoplosternum beni*, *L. tordilho*, and *L. pectorale* by its smaller head depth (18.7–21.3% SL vs. 21.6–23.3, 24.3–26.4, and 21.3–23.3% SL, respectively); from *L. altamazonicum* by its shorter first dorsal-fin ray (14.5–19.5% SL vs. 19.4–27.9% SL); and from *L. ucumara* by longer maxillary barbels (reaching lower lateral series plate 18–24 vs. 13–15).

*Description*.—Morphometric data summarized in Table 1. Body elongate; trunk and caudal peduncle progressively more compressed towards caudal fin. Body profile between snout and dorsal-fin origin straight to slightly convex.

Head depressed; snout rounded in dorsal view. Mouth slightly inferior; lower lip laminar with deep medial notch and small, additional lateral notch forming pointed, crenulate, triangular fleshy projections lateral to the medial notch. Maxillary barbel reaching lower lateral series plate 18–24. Opercle partially exposed, interopercle covered by skin. Eyes small, dorsolaterally placed.

Coracoids exposed on ventral surface, covered by skin anteromedially and meeting each other anteriorly in mature males. Upper lateral series

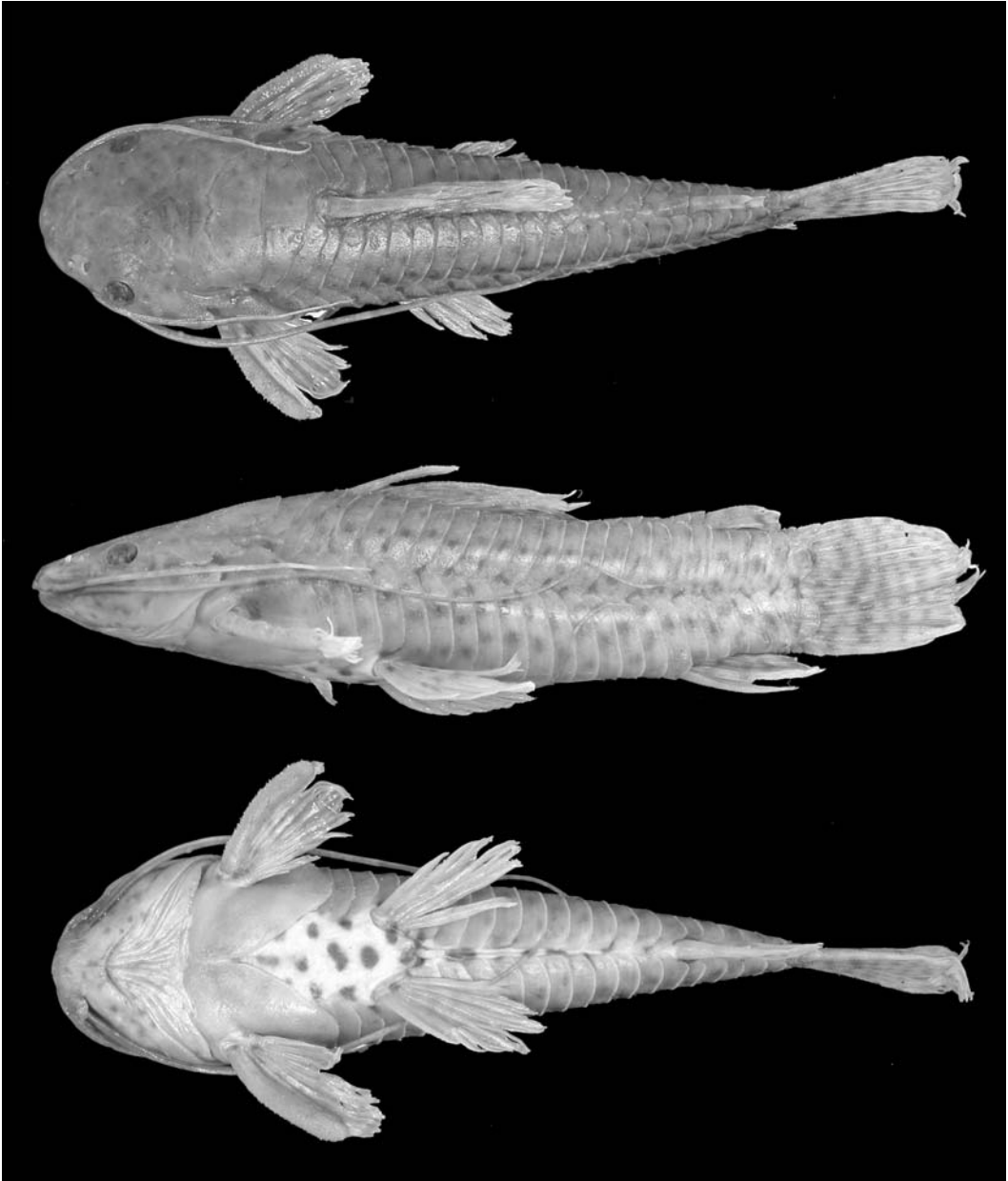


Fig. 2. Holotype of *Lephthoplosternum stellatum*, MCP 35599, 45.1 mm SL, male, Igarapé Repartimento, tributary of Lago Tefé, 1.5 km downstream from village entrance, 03°24'28"S, 64°44'10"W, Tefé, Amazonas, Brazil.

with 25–27 plates, 20–23 in lower series. Six or seven azygous plates between dorsal and adipose fins. Lateral line sensory canal reduced; fourth plate in upper lateral series bearing last pore.

Dorsal fin with delicate spine, about half length of longest branched ray; spine followed by seven branched rays; sometimes first soft ray also unbranched. Pectoral fin with one spine and

8–9 branched rays; spine with stronger odontodes anteriorly and small retrorse hooks posteriorly. Pectoral spine of nuptial males thickened but not elongated. Pelvic fin inserted below fourth and fifth plate of lower lateral series; posterior margin rounded; first ray unbranched, its length about two-thirds length of longest ray, followed by five branched rays. Anal fin with one

TABLE 1. DESCRIPTIVE MORPHOMETRICS AND MERISTICS OF *Lepthoplosternum stellatum* AND *L. ucumara*. Values are given for the holotypes and ranges given for the remaining specimens. SD = standard deviation.

Character	<i>Lepthoplosternum stellatum</i> (n = 9)					<i>Lepthoplosternum ucumara</i> (n = 10)				
	Holotype	Min	Max	Mean	SD	Holotype	Min	Max	Mean	SD
Standard length (mm)	45.1	30.5	45.8	40.4	4.7	45.5	32.0	45.5	38.7	3.8
Percent of standard length										
Depth of body	25.6	23.6	27.0	25.3	1.2	23.2	23.2	26.9	25.2	1.2
Predorsal distance	41.3	40.1	42.9	41.4	0.9	41.9	40.2	45.6	43.1	1.6
Prepelvic distance	26.9	25.5	28.6	27.0	0.8	25.6	25.6	28.9	27.3	1.2
Prealanal distance	86.4	82.0	89.0	84.3	2.2	82.6	79.1	85.7	82.5	1.7
Preadipose distance	90.1	87.6	93.3	89.9	1.7	87.5	87.5	92.6	89.1	1.5
Length of dorsal-fin spine	18.4	14.5	19.5	17.1	1.6	15.1	13.7	17.5	15.5	1.2
Length of second dorsal ray	26.1	20.1	26.1	23.6	2.3	21.6	21.5	24.5	22.8	1.2
Length of anal-fin spine	20.0	13.5	21.2	19.2	2.5	19.9	17.4	25.7	20.4	2.3
Length of adipose-fin spine	8.8	7.4	10.3	8.6	1.1	7.9	7.5	11.2	9.7	1.2
Depth of caudal peduncle	17.0	15.7	18.9	17.7	1.0	15.2	15.2	17.7	16.8	0.6
Dorsal to adipose distance	50.8	48.2	51.4	49.8	1.0	48.0	43.7	52.7	48.8	2.6
Length of dorsal-fin base	19.1	17.8	21.9	19.7	1.1	19.0	19.0	23.1	20.9	1.4
Maximum cleithral width	27.2	26.2	29.5	27.4	1.1	25.5	25.5	28.8	26.8	1.1
Head length	25.6	24.9	28.9	26.4	1.3	26.4	26.4	30.2	28.6	1.3
Percent of head length										
Head depth	78.1	70.6	79.1	75.9	3.0	75.3	69.1	75.5	72.7	2.5
Least interorbital distance	70.3	64.1	73.3	69.6	2.9	67.5	62.6	71.9	65.9	2.6
Horizontal orbit diameter	16.2	14.5	19.1	16.7	1.6	15.2	14.5	16.5	15.2	0.6
Snout length	54.8	45.6	55.8	50.5	3.8	43.8	43.8	50.3	47.4	2.1
Counts										
Upper series lateral plates	26	25	27	26	0.5	26	25	26	25.5	0.5
Lower series lateral plates	22	20	23	22.1	1.0	23	22	23	22.3	0.5
Preadipose azygous plates	7	6	7	6.7	0.5	6	6	8	6.4	0.7
Plates along dorsal-fin base	8	7	8	7.8	0.4	7	7	9	7.8	0.7
Plates adipose-caudal fins	6	4	6	4.9	0.6	5	5	6	5.3	0.5
Barbel reaching lower plate	21	18	24	20.9	1.9	13	13	15	13.7	0.8

unbranched ray, well ossified but not pungent, and five branched rays. Adipose fin with pungent, depressible spine. Caudal fin emarginated to slightly rounded posteriorly.

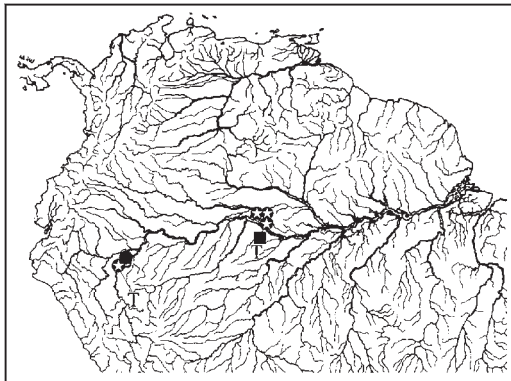


Fig. 3. Distribution of *Lepthoplosternum* in Northwestern South America. Dots: *L. altamazonicum*; Stars: *L. ucumara*; Square: *L. stellatum*. One symbol may represent more than one lot or locality.

*Coloration in alcohol.*—Ground color of head, trunk, and fins yellowish to light brown, pale tan to whitish ventrally. Entire body, including fins and skin of underparts of head and abdomen covered with small dark brown, roundish dots. Darker punctuations on caudal fin arranged in inconspicuous, sinuous vertical lines. Smallest specimen examined (13.8 mm SL) with color pattern similar to that found in adults, but with comparatively larger and less numerous darker dots.

*Distribution.*—*Lepthoplosternum stellatum* is so far known from the type locality only, the Igarapé Repartimento, a tributary of the mouthbay lake, Lago Tefé, some 6 km south of the town of Tefé, Amazonas, Brazil (Fig. 3).

*Ecology.*—Type locality is a stream, permanently flowing and well oxygenated.

*Etymology.*—The specific epithet of *Lepthoplosternum stellatum* is from the Latin adjective *stellatus*,

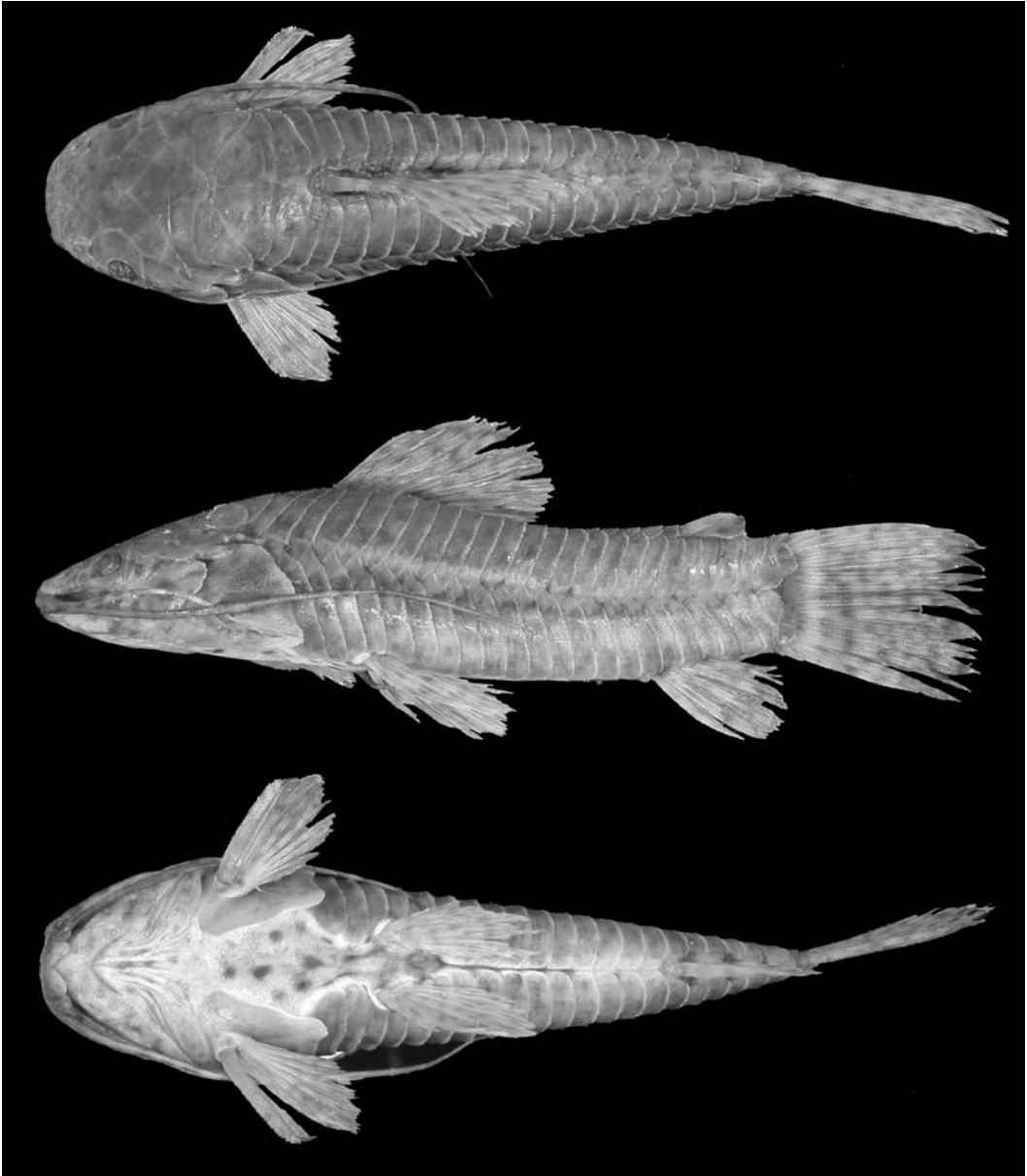


Fig. 4. Holotype of *Lethoplosternum ucamara*, MUSM 23000, 45.5 mm SL, female, small creek into Cocha Zapote, tributary to Río Pacaya, Pacaya-Samiria National Reserve, Río Ucayali drainage, Loreto, Peru.

meaning starred, spotted, in allusion to the color pattern.

***Lethoplosternum ucamara*, new species**

Figure 4

*Holotype*.—MUSM 23000, female, 45.5 mm SL, Peru, Loreto, Pacaya-Samiria National Reserve, Río Ucayali drainage, small creek into cocha

Zapote, tributary to Río Pacaya, 05°20'16"S, 74°29'10"W, J. Albert, W. Crampton, R. Reis, H. Ortega, and N. Lovejoy, 20 Sept. 2002.

*Paratypes*.—MCP 34560, 3 (1), 22.1–42.9 mm SL; MUSM 23001, 2, 25.7–33.4 mm SL; UF 146222, 2 (1), 29.6–36.9 mm SL, collected with the holotype. MCP 29316, 2 + 1 CS (3), 38.1–38.4 mm SL, Brazil, Amazonas, Alvarães, channel of Lago Mamirauá, 03°06'40"S, 64°47'52"W, W. Cramp-

ton, 12 April 2001. MCP 29318, 2 + 1 CS (3), 32.0–41.5 mm SL, Brazil, Amazonas, Alvarães, channel of Lago Mamirauá at mouth of Lago Maratinin, 03°03'59"S, 64°49'19"W, W. Crampton, 12 April 2001. MCP 29329, 1 (1), 37.8 mm SL, Brazil, Amazonas, Alvarães, Lago Juruazinho, a tributary lake to Lago Mamirauá, 03°02'35"S, 64°51'01"W, W. Crampton, 15 May 1998. MCP 29582, 1 (1), 40.8 mm SL, Brazil, Amazonas, Alvarães, Lago Secretário, 5 km SW from village Boca do Mamirauá, 03°06'44"S, 64°48'01"W, W. Crampton, 9 March 2001.

*Diagnosis.*—*Lepthoplosternum ucamara* is not diagnosed by autapomorphic features at present, but can be distinguished from all congeners by the following unique combination of characters: lower lip with short, rounded projections lateral to the medial notch (Fig. 1C; vs. lower lip with pointed, crenulate, triangular fleshy projections lateral to the medial notch); caudal peduncle comparatively shallow (15.2–17.7% SL vs. caudal peduncle comparatively deep [20.2–24.5% SL]); and dorsal fin with two unbranched and six branched rays (vs. dorsal fin with one unbranched and seven branched rays).

It can be further distinguished from *Lepthoplosternum beni*, *L. tordilho*, and *L. pectorale* by its smaller head depth (19.9–21.8% SL vs. 21.6–23.3, 24.3–26.4, and 21.3–23.3% SL respectively); from *L. altamazonicum* by its shorter first dorsal-fin ray (13.7–17.5% SL vs. 19.4–27.9% SL); and from *L. stellatum* by the shorter maxillary barbels (reaching lower lateral series plate 13–15 vs. 18–24).

*Description.*—Morphometric data summarized in Table 1. Body elongate; trunk and caudal peduncle progressively more compressed towards caudal fin. Body profile between snout and dorsal-fin origin slightly convex.

Head depressed; snout rounded in dorsal view. Mouth slightly inferior; lower lip laminar with deep medial notch and small, additional lateral notch, forming small, rounded fleshy projection lateral to the medial notch; maxillary barbel reaching lower lateral series plate 13–15. Opercle partially exposed, interopercle covered by skin. Eyes small, dorsolaterally placed.

Coracoids exposed on ventral surface, covered by skin anteromedially; not meeting each other in one mature male examined (MCP 29582). Upper lateral series with 24–25 plates, 20–22 in lower series. Five to seven azygous plates between dorsal and adipose fins. Lateral line sensory canal reduced; fourth, rarely fifth, plate in upper lateral series bearing last pore.

Dorsal fin with delicate spine, about half length of longest branched ray; spine followed

by one unbranched and six branched rays. Pectoral fin with one spine and 8–9 branched rays; spine with stronger odontodes anteriorly and small retrorse hooks posteriorly. Pectoral spine of nuptial male thickened but not elongated. Pelvic fin inserted below third to fifth plate of lower lateral series; posterior margin rounded; first ray unbranched, about two-thirds length of longest ray, followed by five branched rays. Anal fin with one unbranched ray, well ossified but not pungent, and five branched rays. Adipose fin with pungent, depressible spine. Caudal fin emarginated to slightly rounded posteriorly.

*Coloration in alcohol.*—Ground color of head and trunk brown; pale tan or light brown ventrally. Fins light brown to yellowish. Body and fins covered with small dark brown, roundish dots; more conspicuous on abdomen and fins; inconspicuous on dorsum of head and body and on flanks. End of caudal peduncle with concentration of dark chromatophores forming dark band at base of caudal fin. Darker punctuations on caudal fin arranged in sinuous vertical lines. Smallest specimen examined (22.8 mm SL) with color pattern similar to that found in adults, but with comparatively larger and less numerous darker dots.

*Distribution.*—*Lepthoplosternum ucamara* is known from the Pacaya-Samiria National Reserve in the lower Rio Ucayali in Peru and from the area of confluence of the Rio Solimões and Rio Japurá in Brazil (Fig. 3). It is thus very likely that this species occurs at intermediate whitewater floodplain localities along much of the upper Amazon.

*Ecology.*—All specimens were collected in lakes or lake channels within dense marginal or floating vegetation, sometimes with hypoxic conditions. The holotype was captured in a small vegetation-choked and almost dried out channel connecting cocha Zapote, a small floodplain lake, to a larger permanent channel.

*Etymology.*—*Lepthoplosternum ucamara* is named after the U.S. National Sciences Foundation funded Project Ucamara, conducted in Peru during 1999–2004. Named also for the geological term Ucamara depression describing the low-lying reaches of the Ucayali and Marañon rivers caused by subsidence in the Upper Amazon foreland basin.

#### DISCUSSION

Based on additional specimens examined, the distribution of *Lepthoplosternum altamazonicum* is

herein extended to include the area of the confluence of the Rio Solimões and Rio Japurá in Brazil (Fig. 3), suggesting that this species is widespread in whitewater floodplains of the upper Amazon where it occurs sympatrically and syntopically with *L. ucumara*.

The phylogenetic relationships of the new species were investigated but we were unable to find additional anatomical characters to enhance the phylogeny of Reis (1998b). Both *Lepthoplosternum ucumara* and *L. stellatum* share with *L. tordilho*, *L. pectorale*, and *L. beni* the absence of odontodes on the second infraorbital bone (present only in *L. altamazonicum*; character 1.1 of Reis, 1998b). Also, both new species share with *L. pectorale* and *L. beni* a rod-like shaped second basibranchial (character 3.1), but not the more robust, anteriorly blunt interopercle (character 4.1) which is synapomorphic to *L. pectorale* + *L. beni*. According to this distribution of shared character states, both new species can be hypothesized to form a partially unresolved polytomy with *L. pectorale* and *L. beni*, which are sister-species to each other. *Lepthoplosternum tordilho* is sister to these four species and *L. altamazonicum* is the most basal species.

#### KEY TO THE SPECIES OF *Lepthoplosternum*

- 1a. Lower lip with pointed, crenulate, triangular fleshy projections, lateral to the medial notch (Fig. 1A, B) ..... 2
- 1b. Lower lip with rounded fleshy projections lateral to the medial notch (Fig. 1C) ..... 3
- 2a. Caudal peduncle comparatively shallow (15.7–18.9% SL); body and fins light, covered with many small, dark brown dots ..... *L. stellatum*, new species  
(Middle Rio Amazonas in Tefé area)
- 2b. Caudal peduncle comparatively deep (19.3–23.8% SL); body and fins dark, with darker dots especially on fins .....  
..... *L. altamazonicum*  
(Upper and middle Rio Amazonas)
- 3a. Dorsal fin with one unbranched and seven branched rays; skin of belly and ventral portion of head with dark brown dots ..... 4
- 3b. Dorsal fin with two unbranched and six branched rays (rarely i+7 or ii+7 in *L. tordilho*); skin of belly and ventral portion of head with or without dots ..... 5
- 4a. Body comparatively wide (cleithral width 28.3–30.3% SL); maxillary barbel reaching lower series lateral plate 8–15; dorsal lateral series of plates 24–25 ..... *L. beni*  
(Upper Rio Madeira basin)
- 4b. Body comparatively narrow (cleithral width 25.9–28.0% SL); maxillary barbel reaching lower series lateral plate 16–17; dorsal lateral series of plates 25–26 .....  
..... *L. pectorale*  
(Rio Paraguay basin)
- 5a. Caudal peduncle comparatively shallow (15.2–17.7% SL); ventral lateral series of plates 22–23; skin of belly and ventral portion of head with dark brown dots .....  
..... *L. ucumara*, new species  
(Upper and middle Rio Amazonas)
- 5b. Caudal peduncle comparatively deep (20.2–24.5% SL); ventral lateral series of plates 20–21; skin of belly and ventral portion of head with scattered chromatophores, not forming dots ..... *L. tordilho*  
(Laguna dos Patos system, southern Brazil)

#### MATERIAL EXAMINED

Comparative material examined (in addition to specimens cited in Reis, 1997) are:

*Lepthoplosternum altamazonicum*. Brazil, Amazonas, Alvarães: MCP 29317 (1), Lago Maratinin, a tributary to Lago Mamirauá, 03°04'00"S, 64°50'17"W, 4 June 1998. MCP 29319 (1), Lago Juruazinho, a tributary lake to Lago Mamirauá, 03°02'35"S, 64°51'01"W, 27 April 1994. MCP 29320 (1), channel of Lago Rato, tributary to Lago Mamirauá, 03°02'58"S, 64°51'31"W, 21 May 1998. MCP 29321 (1), channel of Lago Sapucaia, a tributary to Lago Mamirauá, 03°04'07"S, 64°48'32"W, 30 April 1998. MCP 29322 (1), channel of Lago Rato, tributary to Lago Mamirauá, 03°02'58"S, 64°51'31"W, 14 May 1998. MCP 29323 (1), Lago Secretário, 5 km SW from village Boca do Mamirauá, 03°06'44"S, 64°48'01"W, 9 March 2001. MCP 29324 (2), Lago Samaumeirinha, tributary to Lago Jará, 02°48'26"S, 65°04'33"W, 11 Nov. 1994. MCP 29325 (4), Lago Arauaé, tributary to Lago Mamirauá, 03°02'52"S, 64°50'05"W, 10 June 1997. MCP 29326 (1), Lago Secretário, 5 km SW from village Boca do Mamirauá, 03°06'44"S, 64°48'01"W, 18 May 1998. MCP 29327 (5), Lago Geraldo, tributary to Lago Mamirauá, 03°06'57"S, 64°49'10"W, 29 May 1998. MCP 29328 (2), Lago Juruá Grande, a tributary to Lago Mamirauá, 03°01'51"S, 64°51'07"W, 21 May 1998. MCP 34561 (3), channel of Lago Mamirauá, 03°06'40"S, 64°47'52"W, 12 April 2001. MCP 34562 (1), channel of Lago Mamirauá at mouth of Lago Maratinin, 03°03'59"S, 64°49'19"W, 12 April 2001. Peru, Loreto, Pacaya-Samiria National Reserve: MCP 26197 (1), caño Yarina, ca. 200 m

from Guard Station 2, Rio Pacaya, 05°20'53"S, 74°30'18"W, 3 Aug. 2000. MCP 34573 (1), creek into cocha Yarina, tributary to Rio Pacaya, 05°22'12"S, 74°30'49"W, 18 Sept. 2002. MCP 34559 (29), MUSM 23002 (6), and UF 126102 (5), small creek into cocha Zapote, tributary to Rio Pacaya, 05°20'16"S, 74°29'10"W, 20 Sept. 2002. UF 126339 (1), Rio Pacaya, near Guard Station 2, 19 Sept. 2002.

*Lepthoplosternum pectorale*. Brazil: MCP 35593 (1), Ribeirão Figueira, ca. 4 km S of road BR-070, Poconé, Mato Grosso, 15°58'03"S, 56°55'24"W, 10 July 2004.

*Lepthoplosternum tordilho*. Brazil, Rio Grande do Sul: MCP 19244 (1), Porto Alegre, Lago Guaíba at Ponta da Cadê, 30°01'09"S, 51°15'32"W, 2 July 1996. MCP 20221 (1), Eldorado do Sul, arroio Passo dos Carros, on road between Guaíba and road BR 290, 30°05'55"S, 51°23'15"W, 29 Aug. 1997. MCP 21164 (3), Eldorado do Sul, creek on road BR 290, 30°02'36"S, 51°20'56"W, 19 Aug. 1998. MCP 29383 (2), Eldorado do Sul, creek on road to Guaíba City, ca. 1 km N from road BR 290, 30°02'39"S, 51°26'07"W, 15 April 2002.

#### ACKNOWLEDGMENTS

We are much indebted to the entire team of the Proyecto Ucamara for sharing field work during three expeditions in Peru, especially J. Albert, W. Crampton, H. Ortega, and L. Verdi. W. Crampton also provided the Brazilian specimens of the new species, collected during his stay in the Tefé area while working in the Mamirauá Institute (collecting permit IBAMA # 0492/99-12). The fieldwork associated with this paper was supported by the Ucamara Project (NSF-DEB 0215388), CNPq grants 380602/96-2, and 381597/97-0 to W. Crampton for research in Brazil and a sub-award from the All Catfish Species Inventory (NSF-DEB 0315963). The

authors are partially financed by CNPq (CCK, Pronex # 661058/1997-2 and RER, process # 305344/87-0).

#### LITERATURE CITED

- LEVITON, A. E., R. H. GIBBS, JR., E. HEAL, AND C. E. DAWSON. 1985. Standards in herpetology and ichthyology: part I. Standard symbolic codes for institutional resource collections in herpetology and ichthyology. *Copeia* 1985:802–832.
- REIS, R. E. 1997. Revision of the Neotropical catfish genus *Hoplosternum* (Ostariophysi: Siluriformes: Callichthyidae), with the descriptions of two new genera and three new species. *Ichthyol. Explor. Freshwaters* 7:299–326.
- . 1998a. Anatomy and phylogenetic analysis of the Neotropical callichthyid catfish (Ostariophysi, Siluriformes). *Zool. J. Linn. Soc.* 124:105–168.
- . 1998b. Systematics, biogeography, and the fossil record of the Callichthyidae: a review of the available data, p. 351–362. *In: Phylogeny and Classification of Neotropical Fishes*. L. R. Malabarba, R. E. Reis, R. P. Vari, Z. M. Lucena, and C. A. S. Lucena (eds.). Edipucrs, Porto Alegre, Brazil.
- SHIMABUKURO-DIAS, C., C. OLIVEIRA, R. E. REIS, AND F. FORESTI. 2004. Molecular phylogeny of the armored catfish family Callichthyidae (Ostariophysi, Siluriformes). *Mol. Phylogenet. Evol.* 32:152–163.
- TAYLOR, W. R., AND G. C. VAN DYKE. 1985. Revised procedures for staining and clearing small fishes and other vertebrates for bone and cartilage study. *Cybium* 9:107–119.
- LABORATÓRIO DE ICTIOLOGIA, PONTIFÍCIA UNIVERSIDADE CATÓLICA DO RIO GRANDE DO SUL, P.O. BOX 1429, 90619-900 PORTO ALEGRE, RS, BRAZIL. E-mail: (RER) reis@puccrs.br. Send reprint requests to RER. Submitted: 19 Oct. 2004. Accepted: 19 June 2005. Section editor: J. W. Armbruster.