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## THREE NEW SPECIES OF THE CHARACID GENUS *CYNOPOTAMUS* VALENCIENNES, 1849, WITH REMARKS ON THE REMAINING SPECIES (PISCES, CHARACIFORMES)

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### ABSTRACT

Three new species of *Cynopotamus* Valenciennes, 1849 are described, *C. gouldingi* n. sp., *C. juruena* n. sp. and *C. tocan-  
tinsensis* n. sp. New diagnoses and synonymies are provided for most species of this genus as a consequence of the results  
from a study of recently collected specimens. A revised key to all valid species is presented.

### INTRODUCTION

Three new species of *Cynopotamus* were recently collected from major tributaries of the Amazon river system. Descriptions and data, obtained from recently collected specimens of the remaining species of *Cynopotamus*, provide additional characters diagnostic for the species recognized by Menezes (1976).

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Neotropical Lowland Research Program, coordinated by Dr. W. Ronald Heyer.

### METHODS AND MATERIAL

The specimens examined in this study are deposited in the Museu de Zoologia da Universidade de São Paulo, São Paulo (MZUSP), the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM), and the Instituut voor Taxonomische Zoölogie (Zoölogisch Museum), Amsterdam (ZMA).

Counts and measurements are those described by Fink & Weitzman (1974). All morphometric values are expressed as a percentage of standard length (SL) except for subunits of the head which are expressed as a percentage of head length. Data from Menezes (1976) are included in the diagnoses and synonymies of previously recognized species. References per-

Table I. Meristics of the new species of *Cynopotamus*.

	<i>C. juruena</i>				<i>C. gouldingi</i>				<i>C. tocantinensis</i>			
	N	Range	Mean	S	N	Range	Mean	S	N	Range	Mean	S
Anal-fin rays	5	35-36	35.8	0.19	33	38-45	41.2	0.32	36	36-40	38.1	0.21
Pectoral-fin rays	5	14-15	14.2	0.19	37	13-16	14.8	0.16	37	12-15	13.7	0.11
Gill-rakers	5	6	6	—	37	6-7	6.2	0.07	37	6-7	6.6	0.08
Lateral line scales	5	85-90	87.0	0.89	35	102-114	106.7	0.51	26	94-105	100.5	0.56
Scale rows above lateral line	5	17-18	17.8	0.19	37	29-31	29.5	0.10	34	23-25	24.6	0.09
Scale rows below lateral line	5	16-17	16.6	0.24	37	27-30	27.9	0.13	37	22-24	22.7	0.11
Scale rows around caud. peduncle	4	26-29	27.7	0.56	37	35-38	36.2	0.14	26	30-33	32.0	0.15
Maxillary teeth	5	40-57	49.4	3.14	36	52-62	57.0	0.45	36	46-67	56.1	0.71
Posterior dentary teeth	5	25-30	27.4	0.92	37	27-35	30.3	0.35	36	24-35	29.6	0.44

Table II. Morphometrics of the new species of *Cynopotamus*. L<sub>1</sub> and L<sub>2</sub> represent respectively the lower and upper confidence limits of the mean, respectively.

	<i>C. juruena</i>				<i>C. gouldingi</i>				<i>C. tocantinensis</i>						
	N	Range	Mean	N	Range	Mean	L <sub>1</sub>	L <sub>2</sub>	S	N	Range	Mean	L <sub>1</sub>	L <sub>2</sub>	S
Standard length	5	71.8-85.0	78.1	37	135.0-165.0	151.5			1.46	37	82.0-210.0	152.6			3.61
Body depth	5	28.7-32.3	30.3	35	31.2- 38.4	36.2	36.10	36.29		37	30.8- 40.4	35.8	35.74	35.93	
Snout to dorsal-fin origin	5	49.7-51.3	50.6	37	49.3- 54.9	51.6	51.52	51.67		37	46.0- 55.2	51.1	50.98	51.18	
Snout to pectoral-fin origin	5	28.4-32.1	30.1	37	27.8- 30.7	28.9	28.92	28.99		37	27.6- 32.0	29.6	29.61	29.71	
Snout to pelvic-fin origin	5	38.2-41.8	40.2	37	38.4- 43.8	41.3	41.23	41.37		37	39.0- 44.7	41.9	41.82	41.97	
Snout to anal-fin origin	5	53.4-56.5	54.4	37	53.0- 60.5	57.0	56.90	57.10		37	55.2- 62.4	58.7	58.66	58.86	
Caudal peduncle depth	5	8.1- 8.7	8.4	37	7.9- 9.0	8.53	8.51	8.54		37	7.4- 9.1	8.31	8.29	8.33	
Pectoral-fin length	5	18.8-19.7	19.2	37	17.6- 21.4	19.8	19.73	19.82		34	17.4- 21.5	19.3	19.26	19.38	
Pelvic-fin length	5	18.2-19.4	18.7	32	14.5- 18.8	16.7	16.63	16.76		36	15.3- 19.2	16.9	16.92	17.02	
Dorsal-fin base length	5	12.2-13.5	12.8	37	11.2- 14.3	12.5	12.44	12.53		37	11.2- 13.5	12.6	12.64	12.70	
Dorsal-fin depth	5	26.6-30.0	28.1	35	24.4- 28.9	25.9	25.90	26.01		21	22.3- 27.2	25.3	25.17	25.46	
Anal-fin base length	5	39.7-40.8	40.2	36	36.7- 44.4	40.0	39.95	40.12		37	34.2- 40.0	37.6	37.52	37.68	
Anal-fin depth	5	17.8-19.3	18.7	—	—	—	—	—		10	13.3- 18.0	15.0	14.77	15.37	
Eye to dorsal-fin origin	5	34.9-36.4	35.5	37	37.5- 42.4	40.1	40.08	40.19		37	35.8- 42.8	39.1	39.06	39.22	
Dorsal-fin origin to caudal fin origin	5	52.6-55.2	53.6	37	52.5- 58.8	55.0	54.91	55.09		37	51.8- 58.4	54.4	54.38	54.51	
Head length	5	28.6-29.5	29.1	37	26.4- 31.7	28.6	28.59	28.72		37	26.2- 30.0	28.8	28.73	28.82	
Orbital diameter	5	32.0-34.7	33.3	37	25.0- 29.7	27.3	27.23	27.36		37	27.0- 33.3	29.7	29.63	29.82	
Interorbital distance	5	25.2-27.0	26.0	37	26.8- 32.6	29.5	29.46	29.61		37	26.8- 34.1	30.1	30.07	30.26	
Upper jaw length	5	65.3-70.0	68.2	37	68.8- 78.3	72.2	72.11	72.32		37	67.5- 79.5	73.1	72.94	73.21	

taining to the synonymies of those species are not repeated in this paper. Meristics and morphometrics are presented in Tables I and II.

## SYSTEMATIC DESCRIPTIONS

### *Cynopotamus gouldingi* n. sp. (fig. 1)

*Material examined.*—MZUSP 35474 (holotype, female, 152.0 mm SL), collected in Rio

Madeira at Calama, Territory of Rondônia, Brazil, June 1980 by Michael Goulding; —MZUSP 34316 (26 paratypes, 135.0-165.0); USNM 278962 (5 paratypes, 138.0-162.0); ZMA 119.460 (3 paratypes, 158.0-160.0), all collected at the same locality as holotype from March through August 1980 by Michael Goulding.

*Diagnosis.* *Cynopotamus gouldingi* n. sp. and *C. magdalenae* (Steindachner, 1878) with 29 or more horizontal scale rows between dorsal-fin

origin and lateral line. *C. magdalenae* distinguished from *C. gouldingi* in having more anal-fin rays (49-51 instead of 38-45) and more lateral-line scales (125 or more instead of 102-114). *Cynopotamus venezuelae* (Schultz, 1944) and *C. bipunctatus* Pellegrin, 1909 with up to 29 horizontal scale rows above lateral line, but former differs from *C. gouldingi* by lower number of maxillary teeth (42-49 versus 52-62) and latter by high number of anal-fin rays (47-49 versus 38-45). All the remaining species of *Cynopotamus* with 28 or fewer horizontal scale rows above lateral line.

*Description.* Body relatively large (135.0-165.0 mm SL) and deep. Dorsal body profile concave at nape, rising abruptly at supraoccipital region, becoming strongly convex from this point to dorsal-fin origin and slightly convex from dorsal-fin termination to caudal peduncle. Snout conical, equal to or slightly longer than orbital diameter; lower jaw included in upper when mouth fully closed. Premaxilla with one canine tooth anteriorly followed by 6-9 small conical teeth and another canine about equal size as anterior one; internally with 2 conical teeth smaller than anterior canines but slightly longer than conical teeth of external row. Maxilla with 52-62 small conical teeth along its ventral edge. Dentary with 4 spaced teeth anteriorly of which third is a large canine. First and fourth canines about same size. Second a small conical tooth. Anterior and slightly internal to first canine is a small conical tooth; posteriorly on dentary there is a row of 27-35 close-set conical teeth.

Ctenoid scales relatively small; lateral line with 102-114 perforated scales; 29-31 horizontal scale rows above lateral line, 27-30 below; scale sheath along base of anal fin anteriorly thick and formed by 5 or 6 overlapping rows of scales.

Dorsal fin ii,9 in all specimens, its origin midway between snout tip and caudal-fin base. Anal fin with 4 or 5 unbranched rays followed by 38-45 branched rays, its origin along vertical line through base of dorsal-fin's sixth or seventh branched ray. Pectoral fins with 1 unbranched ray and 13-16 branched rays, tip of longest rays

almost reaching middle of pelvic fin's length. Pelvic fins i,7, distal tip reaching beyond anus almost to anal-fin origin.

*Colour in alcohol.* Pale brown, a little darker dorsally; a silvery stripe along body midline, darker above and terminating in a dark blotch at caudal base; a nearly circular black blotch about size of eye on humeral region; a faint dark middorsal blotch at tip of supraoccipital spine; a dark stripe along upper edge of lower jaw. All fins pale with scattered dark chromatophores, especially on distal parts of dorsal, anal and caudal fins.

*Distribution.* Known only from the middle Rio Madeira, below the first major rapids.

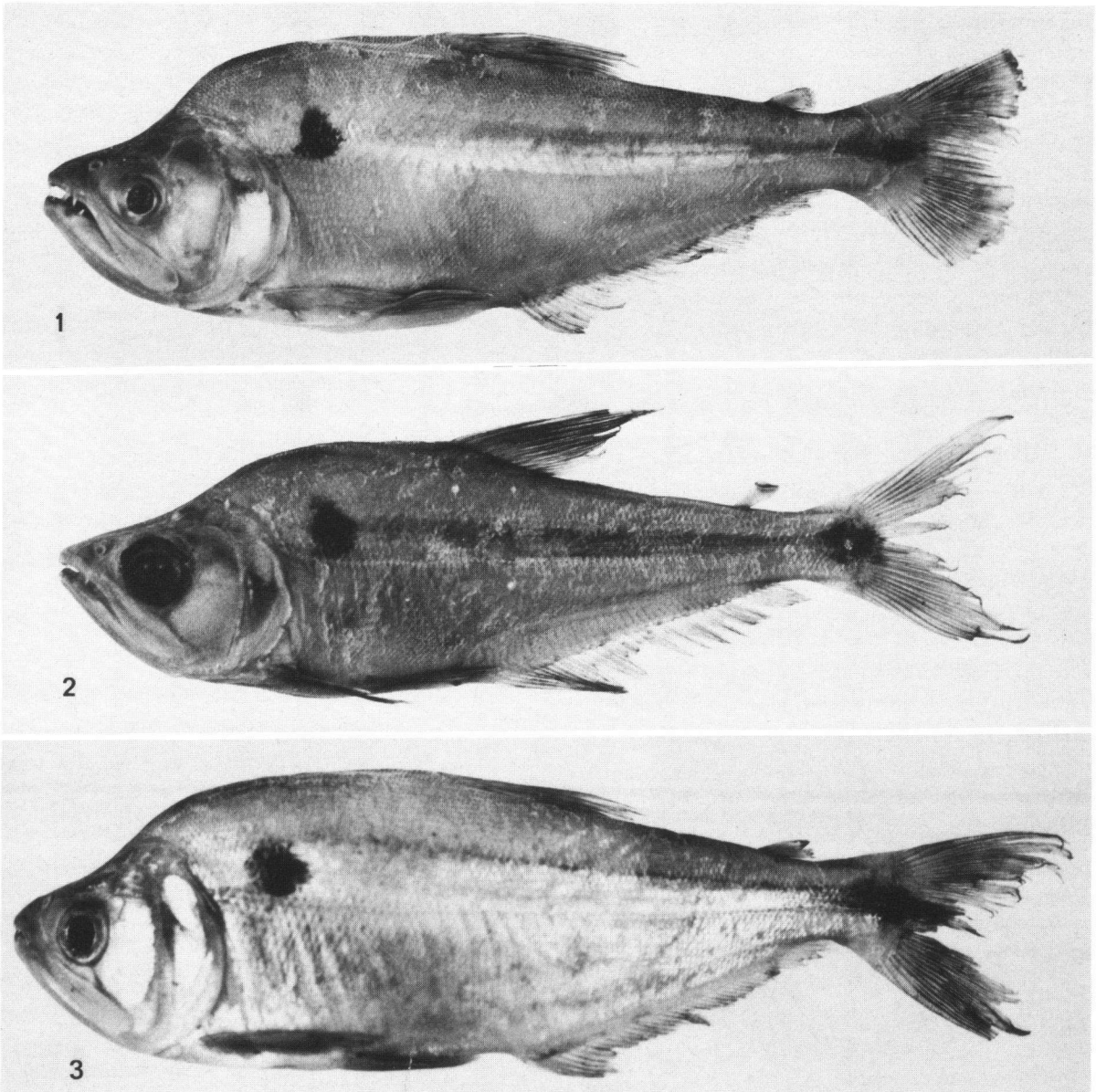
*Etymology.* Named in honor of Dr. Michael Goulding, who collected most of the specimens used in this work, and in recognition of his contribution to ichthyology in Brazil.

#### ***Cynopotamus juruena* n. sp.** (fig. 2)

*Material examined.* — MZUSP 35475 (holotype, 85.0 mm SL), collected in the upper Rio Juruena, State of Mato Grosso, Brazil, 19 July 1962 by H. Schultz; — MZUSP 35476 (paratype, 74.5); ZMA 119.461 (paratype, 83.7); USNM 194279 (paratype, 71.0), all collected with holotype; — USNM 194296 (paratype, 80.0), collected at same locality as holotype, 22 July 1962 by H. Schultz.

*Diagnosis.* Only species of *Cynopotamus* with 80-90 scales in lateral line and 17-18 horizontal scale rows above lateral line. Remaining species of *Cynopotamus* with 91 or more scales along lateral line and 20 or more scale rows above lateral line. In addition, *C. juruena* with fewer scale rows around caudal peduncle, fewer horizontal scale rows below lateral line and fewer anal-fin rays (Table I).

*Description.* Body small (71.0-85.0 mm SL), not very deep. Dorsal body profile concave at nape, rising and becoming convex from supraoccipital region to posterior end of dorsal-fin base; very slightly convex from this point to caudal peduncle; ventral body profile as in previous species. Snout conical, equal to or



Figs. 1-3. — Fig. 1. *Cynopotamus gouldingi* n. sp., MZUSP 35474, SL 152.0 mm, holotype, female. Fig. 2. *Cynopotamus juruena* n. sp., MZUSP 35476, SL 74.5 mm, paratype. Fig. 3. *Cynopotamus tocantinensis* n. sp., MZUSP 35492, SL 154.0 mm, holotype, male.

slightly shorter than orbital diameter; lower jaw slightly shorter than upper when mouth is closed. Composition, shape and size of teeth on premaxilla and dentary as in *C. gouldingi*. Row of small conical teeth between two premaxillary canines with 6-7 teeth; posterior row of close-set small conical teeth on dentary with 25-29 teeth. Maxilla with 45-47 small conical teeth.

Ctenoid scales relatively large; lateral line with 85-90 scales; 17-18 horizontal scale rows above lateral line, 16-17 below; scale sheath along base of anal fin not well developed, formed by two overlapping rows of scales anteriorly and only one row posteriorly which extends back to about middle of anal-fin base.

Dorsal fin ii,9 in all specimens, its origin

midway between snout tip and caudal-fin base. Anal fin with 4 or 5 unbranched rays and 35-36 branched rays, its origin along vertical line through base of second or third branched ray of dorsal fin. Pectoral fins with 1 unbranched and 14-15 branched rays, longest rays reaching middle of pelvic fins. Pelvic fins i,7, distal tip reaching a little beyond origin of anal fin.

*Colour in alcohol.* General colour as in *C. gouldingi* but humeral black blotch smaller than orbital diameter and dark blotch at tip of supraoccipital spine absent.

*Distribution.* Known only from its type locality.

*Etymology.* Named after Rio Juruena, the river where the type material was collected.

### ***Cynopotamus tocantinensis* n. sp.** (fig. 3)

*Cynopotamus argenteus* (non Valenciennes, 1837); Castelnau, 1855: 74 (Rio Araguaia; listed).

*Cynopotamus amazonus* (non Günther, 1868); Menezes, 1976: 22 (in part; only specimens from Rio Tocantins basin).

*Material examined.* — MZUSP 35492 (holotype, male, 154.0 mm SL), collected in Igarapé Pojuca, Rio Itacaiunas, Serra dos Carajás, State of Pará, Brazil, 16 October 1983 by Michael Goulding; — MZUSP 33435 (8 paratypes, 132.0-185.0), collected with holotype; — MZUSP 34319 (14 paratypes, 133.0-210.0), USNM 278984 (5 paratypes, 135.0-168.0), ZMA 119.462 (3 paratypes, 125.0-168.0), collected in Rio Itacaiunas, Serra dos Carajás, State of Pará, Brazil, April 1983 by Michael Goulding; MZUSP 10416 (paratype, 125.0), collected in Igarapé do Onze, MZUSP 10417 (paratype, 130.0), collected in Igarapé do Cinco, both tributaries of Rio Tocantins, State of Pará, Brazil, 22 September 1970 by a team of Expedição Permanente da Amazônia (EPA); — MZUSP 10418 (paratype, 143.0), collected in Igarapé do Limão, tributary of Rio Tocantins in Baião, State of Pará, Brazil, 9 September 1970 by a team of EPA; MZUSP 10419 (paratype, 82.0 mm), collected in Rio Araguaia, Aruanã, State of Goiás, Brazil, 19

September 1966 by Heraldo A. Britski & P. E. Vanzolini; — MZUSP 26542 (paratype, 150.0), collected in Rio Vermelho, tributary of Rio Araguaia, State of Goiás, Brazil; MZUSP 26525 (paratype, 185.0), collected in Rio Resende, tributary of Rio Vermelho, 10 km from Buenolândia, State of Goiás, Brazil, 7-13 December 1981 by J. C. Garavello, A. Copriva & L. L. Ferreira.

*Diagnosis.* *Cynopotamus tocantinensis* and *C. argenteus* (Valenciennes, 1837) both have 22-24 horizontal scale rows below lateral line, but latter may be readily recognized by having more anal-fin rays (46-53) than former (36-40). *C. kincaidi* (Schultz, 1950) and *C. amazonus* (Günther, 1868) also with number of scale rows below lateral line within the range of *C. tocantinensis*, but their number of horizontal scale rows above lateral line (25-28) significantly higher than that of *C. tocantinensis* (23-25). *Cynopotamus bipunctatus* Pellegrin, 1909 with 24-28 scale rows below lateral line but number of anal-fin rays considerably higher (47-49) than those of *C. tocantinensis* (36-40).

Anal-fin spines of males of this species not found in specimens of other two new species described in this paper. Similar spines present also on anal fin of males of *C. amazonus* (Günther, 1868), *C. venezuelae* (Schultz, 1944), *C. atratoensis* (Eigenmann, 1907) and *C. esse-quiensis* (Eigenmann, 1912), but these species differ from *C. tocantinensis* in other characters (compare diagnoses of the respective species).

*Description.* Body large (82.0-210.0 mm SL) and deep. Dorsal and ventral body profile as in *C. gouldingi*. Snout conical, equal to orbital diameter in small to medium-sized specimens, larger than orbital diameter in specimens larger than 170 mm; lower jaw included when mouth is closed, leaving premaxillary teeth outside mouth. Composition, shape and size of premaxillary and dentary teeth as in *C. gouldingi*. Tooth row between anterior and posterior premaxillary canines with 6-9 small conical teeth. Dentary with 24-35 small conical teeth posteriorly. Maxilla with 46-67 teeth.

Ctenoid scales relatively small; lateral line with 94-105 perforated scales; 23-25 horizontal

scale rows above lateral line, 22-24 below. Base of anal fin covered by 4 overlapping rows of scales anteriorly, 2-3 along middle and one posteriorly.

Dorsal fin ii,9 in all specimens, its origin a little closer to caudal-fin base than to tip of snout. Anal fin with 4 or 5 unbranched rays and 36-40 branched rays, its origin along vertical through base of fourth or fifth branched dorsal-fin ray; spines present on anal-fin rays of males; in one specimen (132.0 mm SL) spines present on first thirteen branched rays only on posterior part of each ray; number of spines on each ray varies from 7 on third to 3 on thirteenth branched ray. Pectoral fins with 1 unbranched and 12-15 branched rays, longest rays reaching beyond origin but not middle length of pelvic fin. Pelvic fins with 1 unbranched and 7 branched rays, distal tip reaching origin of anal fin; no spines on pelvic-fin rays.

*Colour in alcohol.* As in *C. gouldingi*.

*Distribution.* Apparently restricted to the basin formed by the Tocantins and Araguaia rivers and their tributaries.

*Etymology.* Named after Rio Tocantins, one of the major rivers from which the type material was collected.

## REMARKS ON THE REMAINING SPECIES OF *CYNOPOTAMUS*

Examination of all the species of *Cynopotamus* collected since the revision of this genus by Menezes (1976) and reexamination of the material previously studied, allowed a better definition of all species. This revealed that new diagnoses, synonymies, and geographic distributions were necessary for most species. These data and a revised key to all valid species are presented below.

### *Cynopotamus amazonus* (Günther, 1868)

*Anacyrtus* (*Cynopotamus*) *amazonum* Günther, 1868: 481 (type locality: Xeberos, Department of Loreto in a tributary of Río Huallaga, Peru; holotype and paratypes examined).

*Cynopotamus amazonum*; Eigenmann & Eigenmann, 1891: 58 (listed).

*Cynopotamus amazonus*; Fowler, 1945: 163 (Jeberos, Peru; listed); — Géry & Vu-Tân-Tuê, 1963: 241 (diagnosis in key); — Menezes, 1976: 28 (synonymy; description; distribution).

*Charax amazonum*; Eigenmann, 1910: 445 (listed).

*Cyrtocharax amazonus*; Fowler, 1950: 310 (synonymy; distribution).

*Cyrtocharax amazonum*; Schultz, 1950: 62 (diagnosis; distribution).

*Anacyrtus limaesquamis* Cope, 1878: 686 (type locality: Pebas, Peru); — Eigenmann & Eigenmann, 1891: 57 (listed); — Boulenger, 1898: 426 (Rio Juruá; listed).

*Cyrtocharax limaesquamis*; Fowler, 1907: 454 (redescription); — 1945: 162 (Pebas, Contamana); — 1950: 311 (synonymy; distribution).

*Charax limaesquamis*; Eigenmann & Ogle, 1907: 33 (in part; only specimen No. 44835; incorrect identification); — Eigenmann, 1910: 444 (listed); — La Monte, 1935: 8 (Rio Juruá; listed).

*Cynopotamus limaesquamis*; Pellegrin, 1909: 150 (Tefé, Tonantins; listed).

*Material examined* (6 specimens). — Río Amazonas, Iquitos, Department of Loreto, Peru (3); Río Ucayali, Province Col. Portillo, Department of Ucayali, Peru (2); Igarapé Boa Vista, left bank of Rio Içá, Amazonas, Brazil (1).

*Diagnosis.* Dorsal fin ii,9; anal iv-v,36-39; pectoral i,14-15; 100-109 perforated scales in lateral line; 25-28 horizontal scale rows above lateral line; 23-25 horizontal scale rows below lateral line; 34-35 scale rows around caudal peduncle; 39-56 maxillary teeth; 18-32 posterior dentary teeth.

*Distribution.* Peruvian Amazon and tributaries of the upper Solimões River.

### *Cynopotamus argenteus* (Valenciennes, 1837)

*Hydrocyon argenteum* Valenciennes, 1837 (plate),

- (type locality: America Meridionalis [Buenos Aires, Rio de la Plata])
- Hydrocyon argenteus*; Valenciennes, 1847: 9 (text).
- Xiphorampus argenteus*; Müller & Troschel, 1845: 18 (listed).
- Cynopotamus argenteus*; Valenciennes, 1849: 317 (Rio de la Plata, Buenos Aires; description); — Eigenmann & Eigenmann, 1891: 58 (listed); — Eigenmann & Ogle, 1907: 32 (Paraguay; listed); — Devincenzi & Legrand, 1940 (figure); — Devincenzi & Teague, 1942: 72 (Rio Uruguay medio; description); — Schultz, 1950: 67 (listed); — Fowler, 1950: 308 (synonymy; distribution); — Ringuet & Aramburu, 1961: 32 (listed); — Géry & Vu-Tân-Tuê, 1963: 241 (diagnosis in key); — Ringuet, Aramburu & Aramburu, 1967: 141 (description; distribution); — Menezes, 1976: 22 (synonymy; description; distribution).
- Anacyrtus argenteus*; Günther, 1864: 348 (description).
- Anacyrtus (Cynopotamus) argenteus*; Steindachner, 1879: 21 (description).
- Charax argentea*; Bertoni, 1914: 13 (listed); — 1936: 56 (listed).
- Charax argenteus*; Pozzi, 1945: 257 (Río de la Plata, Río Parana, Río Paraguay); — Achenbach & Bonetto, 1957: 7 (Parana medio).
- Characinus squamosus* Eigenmann & Kennedy, 1903: 525 (type locality: Laguna Pasito, Paraguay).
- Charax squamosus*; Eigenmann & Ogle, 1907: 33 (listed); — Eigenmann, McAtee & Ward, 1907: 143 (Bahia Negra, Paraguay); — Eigenmann, 1910: 445 (listed).
- Charax squamosa*; Bertoni, 1914: 13 (listed); — 1939: 56 (listed).
- Cyrtocharax squamosus*; Schultz, 1950: 60 (diagnosis); — Fowler, 1950: 312 (synonymy; distribution); — Aramburu, 1957: 87 (Buenos Aires; diagnosis); — Ringuet & Aramburu, 1961: 32 (listed); — Bonetto, Pignalberi & Cordiviola, 1965: 143 (listed); — Ringuet, Aramburu & Aramburu, 1967: 144 (description); — Oldani, 1978: 34 (description; synonymy; development).
- Charax caliurus* Eigenmann, McAtee & Ward, 1907: 142 (type locality: Laguna Pasito, Paraguay).
- Charax caliura*; Eigenmann, 1910: 445 (listed); — Bertoni, 1914: 13 (listed); — 1939: 56 (listed).
- Cyrtocharax calliurus*; Schultz, 1950: 60 (diagnosis); — Fowler, 1950: 331 (synonymy; distribution).
- Cynopotamus (Cynopotamus) calliurus*; Géry & Vu-Tân-Tuê, 1963: 241 (diagnosis in key).
- Eucynopotamus magdalenae* (non Steindachner, 1878); Bertoni, 1939: 56 (Paraguay; listed).
- Material examined* (3 specimens).— Lagoa “La Tina” near Santa Fe, Argentina (1); Lagoa “La Matadora” near Santa Fe, Argentina (1); Isla “Los Sapos” near Santa Fe, Argentina (1).
- Diagnosis.* Dorsal fin ii,10; anal iv-v,46-53; pectoral i,13-15; 106-112 perforated scales in lateral line; 24-26 horizontal scale rows above lateral line; 22-24 horizontal scale rows below lateral line; 30-33 scale rows around caudal peduncle; 49-55 maxillary teeth; 23-28 posterior dentary teeth.
- Note.* Oldani (1978) demonstrated that the peculiar coloration described by Menezes (1976) to characterize *Cynopotamus caliurus* (Eigenmann, McAtee & Ward) is a juvenile colour phase and he considered this species synonymous with *Cyrtocharax squamosus* (= *Cynopotamus argenteus*). The remarkable ontogenetic colour change of *C. argenteus* so far has not been observed in any other species of *Cynopotamus*.
- Distribution.* Paraguay, lower Paraná and Uruguay rivers. This species is sympatric with *C. kincaidi* (Schultz, 1950) in the Paraguay river.
- Cynopotamus bipunctatus* Pellegrin, 1909**
- Cynopotamus bipunctatus* Pellegrin, 1909: 12 (type locality: mouth of Río Suripa, Venezuela); —

Géry & Vu-Tân-Tuê, 1963: 150 (redescription of holotype); — Menezes, 1976: 31 (synonymy; description; distribution).

*Cyrtocharax bipunctatus*; Schultz, 1950: 62 (listed).

*Cynopotamus (Hybocharax) bipunctatus*; Géry & Vu-Tân-Tuê, 1963: 241 (diagnosis in key); — Mago-Leccia, 1970: 70 (listed).

*Material examined* (5 specimens). — Río Apure, San Fernando de Apure, Venezuela (2); Río Masparro, Libertad, State Barinas, Venezuela (3).

*Diagnosis.* Dorsal fin ii,9; anal iv-v,46-49; pectoral i,14-15; 104-112 perforated scales in lateral line; 26-29 horizontal scale rows above lateral line; 24-28 horizontal scale rows below lateral line; 35-38 scale rows around caudal peduncle; 45-55 maxillary teeth; 24-28 posterior dentary teeth.

*Distribution.* Orinoco river basin in Venezuela.

**Cynopotamus essequibensis** Eigenmann, 1912

*Cynopotamus essequibensis* Eigenmann, 1912: 403 (type locality: Potaro Landing, Guyana); — Boeseman, 1952: 191 (Surinam river; listed); — Géry & Vu-Tân-Tuê, 1963: 242 (diagnosis in key); — Lowe, 1964: 142 (Essequibo river; listed); — Menezes, 1976: 30 (synonymy; description; distribution).

*Cyrtocharax magdalenae essequibensis*; Schultz, 1944: 302 (diagnosis in key); — 1950: 63 (Kartabo, Guyana).

*Cynopotamus amazonus* (non Günther, 1868); Menezes, 1976: 28 (in part; only specimens MZUSP 10413 and 10414 from Igarapé do Pau-Roxo, tributary of Rio Uraricoera, Territory of Roraima, Brazil).

*Material examined* (3 specimens). — Rio Cupixi, Amapá, Brazil.

*Diagnosis.* Dorsal fin ii,9; anal iv-v,36-43;

pectoral i,14-15; 91-100 perforated scales in lateral line; 20-23 horizontal scale rows above lateral line; 17-21 horizontal scale rows below lateral line; 28-29 scale rows around caudal peduncle; 49-55 maxillary teeth; 28-35 posterior dentary teeth.

*Distribution.* Rivers of Guyana, French Guiana and Surinam, Rio Branco basin in Roraima and Rio Araguari basin in Amapá, Brazil.

**Cynopotamus kincaidi** (Schultz, 1950)

*Charax limaesquamis* (non Cope, 1878); Eigenmann & Ogle, 1907: 33 (in part; only specimen No. 1694; incorrect identification).

*Cyrtocharax kincaidi* Schultz, 1950: 60 (type locality: Paraguay).

*Cynopotamus (Cynopotamus) kincaidi*; Géry & Vu-Tân-Tuê, 1963: 241 (diagnosis in key).

*Cynopotamus kincaidi*; Menezes, 1976: 26 (synonymy; description; distribution).

*Material examined* (39 specimens). — Rio Cuiabá, Santo Antônio do Leverger, Mato Grosso, Brazil (14); Rio Coxipó, Cuiabá, Mato Grosso, Brazil (2); Barra do Rio Aricó, Município de Santo Antônio do Leverger, Mato Grosso, Brazil (15); Rio Paraná, below Sete Quedas, Paraná, Brazil (8).

*Diagnosis.* Dorsal fin ii,9; anal iv-v,39-44; pectoral i,13-15; 98-109 perforated scales in lateral line; 25-28 horizontal scale rows above lateral line; 23-26 horizontal scale rows below lateral line; 32-35 scale rows around caudal peduncle; 38-63 maxillary teeth; 17-34 posterior dentary teeth.

*Distribution.* Recorded so far from the Paraguay and lower Paraná river basins.

KEY TO THE SPECIES OF  
*CYNOPOTAMUS*

1. Dorsal fin ii,10; anal fin iv-v, 46-53 rays (Paraguay, lower Paraná and Uruguay rivers).....



- ..... *C. argenteus*  
Dorsal fin ii,9 (very rarely ii,10)..... 2
2. Lateral line with 85-90 perforated scales;  
17-18 horizontal scale rows above lateral  
line (upper Juruena, Mato Grosso, Brazil)  
..... *C. juruena*  
Lateral line with 91-125 perforated scales;  
20-31 horizontal scale rows above lateral  
line ..... 3
3. 17-21 horizontal scale rows below lateral  
line (rivers of Guyana, French Guiana and  
Surinam and Rio Branco basin, Roraima  
and Araguari basin, Amapá, Brazil).....  
..... *C. essequibensis*  
22-30 horizontal scale rows below lateral  
line ..... 4
4. 23-25 horizontal scale rows above lateral  
line (Tocantins and Araguaia river basins,  
Brazil)..... *C. tocantinensis*  
25-30 horizontal scale rows above lateral  
line ..... 5
5. Anal fin with iv-v,49-51 rays; lateral line  
with 125 or more perforated scales  
(Magdalena and Cauca river basins, Co-  
lombia)..... *C. magdalenae*  
Anal fin with iv-v,36-49 rays; lateral line  
with 98-121 perforated scales ..... 6
6. Anal fin with iv-v,47-49 rays (Orinoco  
river basin, Venezuela)..... *C. bipunctatus*  
Anal fin with iv-v,36-47 rays ..... 7
7. 29-31 horizontal scale rows above lateral  
line (Rio Madeira basin, Brazil) .....  
..... *C. gouldingi*  
25-29 horizontal scale rows above lateral  
line ..... 8
8. Anal fin with iv-v,36-39 rays (Peruvian  
Amazon and tributaries of the upper  
Solimões river in Brazil)..... *C. amazonis*  
Anal fin with iv-v,39-47 rays ..... 9
9. Lateral line with 98-109 perforated scales;  
pectoral fin with i,13-15 rays; anal fin with  
iv-v,39-44 rays (Paraguay and lower  
Paraná rivers, Brazil)..... *C. kincaidi*  
Lateral line with 110-121 perforated scales;  
pectoral fin with i,15-17 rays ..... 10
10. Anal fin with iv-v, 45-47 rays; lateral line  
with 110-115 perforated scales; 29-31  
horizontal scale rows below lateral line  
(Atrato river basin, Colombia) .....  
..... *C. atratoensis*  
Anal fin with iv-v, 40-46 rays; lateral line  
with 110-121 perforated scales; 25-28  
horizontal scale rows (Maracaibo basin,  
Venezuela)..... *C. venezuelae*

## REFERENCES

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