

Papéis Avulsos de Zoologia

MUSEU DE ZOOLOGIA DA UNIVERSIDADE DE SÃO PAULO

ISSN 0031-1049

PAPÉIS AVULSOS Zool., 38(10): 171-186

11.X.1993

DESCRIPTION OF A NEW SPECIES OF THE GENUS *LYSTROPHIS* COPE AND A REVALIDATION OF *LYSTROPHIS PULCHER* (JAN, 1863) (SERPENTES; COLUBRIDAE)

G. J. SCROCCHI
F. B. CRUZ

ABSTRACT

A revision of the complex formerly known as Lystrophis semicinctus was carried out. Results show that this complex is composed by L. semicinctus (D., B. and D.), L. pulcher (Jan) and a new taxon described here. Distribution of the three forms and a key for the species of the genus are given.

INTRODUCTION

The genus *Lystrophis* Cope, 1885, is distributed from central Argentina to Southeastern Brazil, including Bolivia, Paraguay and Uruguay (Peters & Orejas Miranda, 1986).

In the past, the species of this genus have been included in *Heterodon* on the basis of external similarity, in particular the shape of the rostral scale. Cope (1885) characterized *Lystrophis* based on dorsal scales, anal plate and distribution.

During a revision of the genus with intent to analyze it phylogenetically, we found three different taxa included under the name *Lystrophis semicinctus*.

The complex presently known as *Lystrophis semicinctus* is distributed in southwestern Brazil, Bolivia, Paraguay and Argentina (Rio Negro, Neuquén, La Pampa, Mendoza, Buenos Aires, San Luis, Córdoba, Santa Fé, Entre Ríos, Corrientes, La Rioja, Catamarca, Santiago del Estero, Tucumán, Chaco, Salta, Formosa and Jujuy provinces) (Boulenger, 1894; Koslowski, 1898; Serié, 1921, 1936; Amaral, 1930, 1935; Orejas Miranda 1966; Abalos and Mischis, 1975; Peters and Orejas Miranda 1986; Cei, 1986; Bergna and Alvarez, 1990; Williams and Francini 1991).

The aim of this study is to clarify the status of this complex and describe a new species from the states of Mato Grosso and Mato Grosso do Sul, Brazil.

G. J. Scrocchi and F. B. Cruz, Instituto de Herpetología, Fundación Miguel Lillo. Miguel Lillo 251 - 4000 Tucumán, República Argentina.

Recebido para publicação em 19/04/1993.

MATERIALS AND METHODS

The list of individuals studied is presented in the description of each species. The acronyms used for the Museums are:

CHC: Colección Herpetológica de la Facultad de Ciencias Naturales de Corrientes, Argentina.

CHINM: Instituto Nacional de Microbiología "Carlos G. Malbrán". (The collection is nowadays deposited in the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia").

FML: Fundación Miguel Lillo, Tucumán, Argentina.

IBH: Instituto Butantã, São Paulo, Brazil.

LyMAV: Laboratório y Museo de Animales Venenosos, Facultad de Ciencias Médicas - La Plata, Argentina.

LP: Museo Provincial de la Pampa, La Pampa, Argentina.

MACN: Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Argentina.

Unfortunately a large number of specimens were not catalogued until the present; they are cited MACN without number.

MLP: Facultad de Ciencias Naturales y Museo de la Plata, Argentina.

MZUSP: Museu de Zoologia, Universidade de São Paulo, São Paulo, Brasil.

UNRC-DCN-ZV: Facultad de Ciencias Naturales - Universidad Nacional de Río Cuarto, Córdoba, Argentina.

UNSL: Facultad de Ciencias Naturales - Universidad Nacional de San Luis, San Luis, Argentina.

We used standard methods for the study of ophidian taxonomy. Ventral scales were counted according to Dowling (1951). Terminal spines were not considered in subcaudals counts. Scale measurements were taken with vernier calipers (0.02 mm), while body measurements were taken with a ruler.

The following data were taken: Snout-vent length: from the tip of rostral scale to the distal portion of the anal plate; tail length: from the distal portion of the anal plate to the tip of the tail; head length: from the tip of rostral scale to the posterior point of the mandible; rostral width: the ventral edges of the scale at its maximum width; dorsal length of rostral: from the tip of the scale to the suture with the prefrontal scales; frontal length: the maximum measure from edge to edge; frontal width: from the sutures of the scale at the widest place.

Other characters taken were: contact between prefrontal scales; presence or absence of internasal scale; state of nasals; number of preocular scales; number of postocular scales; temporal formula; number of supralabials including which of them were in contact with the eyes; number of infralabials and which of them were in contact with chin-shields; number of dorsal scales lines at neck, mid-body and back; number of ventral scales; number of subcaudal scales and number of pairs of black bands on body and tail.

Hemipenial characterization follows Dowling & Savage (1960) and Myers & Campbell (1981).

RESULTS

In Argentina and Bolivia there exist two taxa that up until now have been identified as *Lystrophis semicinctus*. They are the original taxon described by Duméril, Bibron and Duméril, 1854, and *Lystrophis pulcher*, described by Jan, 1863 as *Heterodon pulcher*. This later species was included as synonym of the former by Boulenger, 1894.

The two forms are easily recognizable by their coloration: *Lystrophis semicinctus* is predominantly yellowish, the pale areas between the black areas have the same width at all their

Table 1. Characters that show variation in paratypes of *Lystrophis matogrossensis*, sp. nov. When more than one value is given for a specimen, the first is the left side and the second is the right. Frontal groove: Y present, N absent. Subcaudal scales: e entire, d divided.

Species	Sex	Frontal groove	Temp	Supralab	Infralab	Dorsal	Vent	Subcaudals	(Pairs of back rings in body)	(Pairs of back rings in tail)
IBH 10406	M	Y	1+2	8(4-5)	11(1-5)	21-21-17	135	2d+4e+27d+1	14	3
IBH 14182	M	N	1+2	8(4-5)	10(1-4)	21-21-17	134	-----	10	2
IBH 14204	M	Y	1+2	8(4-5)	10(1-4)	-----	138	32+1	11	3
IBH 14553	M	Y	1+2	8(4-5)	10(1-4)	21-21-17	131	28+1	10	2
IBH 15654	M	Y	1+2	8(4-5)	10(1-5)	21-21-17	128	6e+5d+1e+22d+1	12	3
IBH 15655	M	Y	1+2	8(4-5)	10(1-4)	21-21-19	128	13e+1d+4e+11d+1	13	3
IBH 15710	M	Y	1+2	8(4-5)	10(1-5)	21-21-17	129	6e+22d+1	14	3
IBH 24571	M	N	1+3	8(4-5)	10(1-4)	21-21-17	131	7e+21d+1	9	2
IBH 25620	M	N	1+2	8(4-5)	10(1-5)	-----	-----	-----	-----	-----
IBH 31926	M	Y	1+3	8(4-5)	10(1-4)	21-21-17	135	6e+25d+1	11	2
MZUSP10105	M	-	1+2	8(4-5)	11(1-4)	21-21-19	137	1d+7e+21d+1	9	3
IBH 05119	F	Y	1+2	8(4-5)	10(1-4)	21-21-19	136	27+1	11	2 1/2
IBH 08305	F	Y	1+3	8(4-5)	10(1-4)	21-21-17	122	25+1	10	2
IBH 10408	F	Y	1+3	8(4-5)	10(1-4)	21-21-17	131	1d+4e+22d+1	11	3
IBH 14271	F	Y	1+3	8(4-5)	10(1-4)	21-21-17	136	26+1	13	2
IBH 14277	F	Y	1+2	8(4-5)	10(1-4)	-----	129	24+1	12	2
IBH 14565	F	Y	1+2	9(5)	11(1-4)	21-21-17	136	27+1	10	2
IBH 14605	F	Y	1+2	8(4-5)	10(1-4)	21-21-17	136	26+1	10	2
IBH 15614	F	Y	1+2	8(4-5)	10(1-4)	21-21-17	135	1d+5e+1d+1e+24d+1	12	2
IBH 20640	F	Y	1+2	8(4-5)	10(1-4)	21-21-17	133	3e+23d+1	12	2
IBH 20894	F	Y	1+2	8(4-5)	10(1-4)	21-21-17	135	1d+8e+16d+1	15	3
IBH 22824	F	N	1+2	7(3-4)	10(1-4)	21-21-17	131	2d+5e+26d+1	13	2
IBH 23040	F	Y	1+2	8(4-5)	9(1-4)	21-21-17	135	23+1	11	2
IBH 23892	F	Y	1+2	8(4-5)	10(1-4)	21-21-17	125	-----	10	---
IBH 24572	F	Y	1+2	8(4)	10(1-4)	21-21-17	128	25+1	10	2
IBH 25618	F	Y	1+3	8(4-5)	11(1-4)	21-21-17	136	6e+20d+1	12	2 1/2
IBH 27773	F	N	1+2	8(4-5)	10(1-4)	-----	129	3d+10e+14d+1	11	2
IBH 28684	F	Y	1+2	8(4-5)	10(1-4)	21-21-17	133	22+1	10	2
IBH 29961	F	Y	1+2	8(4-5)	10(1-4)	21-21-17	134	26+1	10	2
IBH 30270	F	Y	1+2	8(4)	11(1-4)	21-21-17	134	3d+5e+16d+1	12	2
IBH 30515	F	Y	1+3	8(4-5)	11(1-4)	21-21-17	135	26+1	11	2
IBH 30661	F	Y	1+2	8(4-5)	10(1-4)	21-21-17	141	27+1	10	1 1/2
IBH 31091	F	Y	1+2	8(4-5)	11(1-4)	21-21-17	141	2d+6e+17d+1	13	1 1/2
IBH 31941	F	Y	1+2	8(4)	12(1-4)	21-21-17	138	7(4)	11	2
MZUSP10244	F	-	1+2	8(4-5)	10(1-4)	21-21-17	136	21+1	11	2
MZUSP10245	F	Y	1+2	8(4-5)	10(1-4)	21-21-17	138	24+1	12	2
MZUSP10246	F	N	1+2	8(4-5)	10(1-4)	21-21-19	137	-----	12	2
IBH 10067	?	Y	1+2	8(4-5)	10(1-4)	21-21-17	132	28+1	15	2 1/2
IBH 30990	?	Y	1+2	8(4-5)	10(1-4)	23-21-19	124	28+1	13	2 1/2
IBH 31189	?	Y	1+2	8(4-5)	11(1-4)	21-21-17	126	26+1	13	3
MZUSP10247	?	Y	1+2	8(4-5)	11(1-4)	21-21-17	137	23+1	11	2

Table 2. Comparison among the three species treated in this paper. Characters marked with (*) are those of the majority of exemplars in females of *L. matogrossensis*; sp. nov. are the characters of the holotype.

SPECIES CHARACTERS	<i>L. semicinctus</i>		<i>L. pulcher</i>		<i>L. matogrossensis</i>	
	M	F	M	F	M	F
Preoculars	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2
Postoculars	1 - 2	1 - 3	2	1 - 2	1 - 2	1 - 3
Temporals	1 + 2*	1 + 2* 1 + 3	1 + 2* 1 + 3 1 + 2 + 3	1 + 2* 1 + 3 1 + 2 + 3 2 + 2 2 + 3	0 + 2 1 + 2* 1 + 3	1 + 2* 1 + 3
Supralabials	8(4 - 5)*	8 (5) 8 (6) 9(4 - 5)*	8(4 - 5)* 8(4 - 6) 9(4 - 5) 9(4 - 6) 9(5 - 6)	7 (3 - 4) 8 (4) 8 (5) 8(4 - 5)* 8(4 - 6) 9 (4) 9(4 - 5) 9(5 - 6)	8 (4) 8(4 - 5)*	7 (4) 7 (3 - 4) 8 (4) 8(4 - 5)* 9 (5)
Infralabials	9(1 - 4) 10(1 - 4)* 10(1 - 5)	9(1 - 3) 9(1 - 5) 10(1 - 4)* 10(1 - 5) 11(1 - 5)	8(1 - 3) 9(1 - 4) 10(1 - 4)* 10(1 - 5) 11(1 - 4) 11(1 - 5)	9(1 - 4) 10(1 - 4)* 10(1 - 5) 11(1 - 4) 11(1 - 5)	10(1 - 4)* 10(1 - 5) 11(1 - 4) 11(1 - 5)	9(1 - 4) 10(1 - 4)* 11(1 - 4) 12(1 - 4)
Ventrals	147-166	152-171	151-168	153-167	128-138	122-141
Subcaudals	29-35	22-37	28-37	22-34	26-34	21-33
Dorsals	21-21-17	21-21-17	19-19-17 21-21-17 23-21-17	21-21-17	21-21-17 21-21-19	21-21-17 21-21-19
Pairs of black bands on body	16 - 22	14 - 20	8 - 11	8 - 12	9 - 14	10 - 15
Pairs of black bands on tail	2 - 4 1/2	2 - 3 1/2	1 - 2 1/2	1 - 2	2 - 3	1 1/2 - 2

extension, even in mature adults. The number of black annuli present on the back range from 14 to 22 pairs on the back and on the tail from 2 to 4 1/2 pairs.

Lystrophis pulcher is more blackish in coloration than *L. semicinctus*. The pale areas are white, not yellowish as in *L. semicinctus*. Juveniles have white bands with equal width throughout their extension. During ontogeny, the black areas expand and hence the white areas are reduced to rhomboid spots on the dorsal portion of the trunk. The number of black annuli varies from 7 to 12 pairs on the body and from 1 to 2 1/2 pairs on the tail.

The differentiation in color is related to the distribution as shown in Map 1.

The description of *Heterodon semicinctus* was based on two syntypes (Muséum National d'Histoire Naturelle, Paris, number 1209 and number 3634). Thanks to the invaluable attention of H. Zaher at the Museum, we have the scutellation and coloration data, and slides from the syntypes. Number 3634 has 18 pairs of black bands on its back and number 1209 has 14 pairs.

The original description of *H. pulcher* was based on three individuals from Bolivia; however the author described the coloration of only two of the three. The first mentioned has 11 pairs of black annuli on its back; on this individual we based our revalidation. The other individual has 15 pairs of black bands and belongs to *L. semicinctus*. Unfortunately we do not know where the type material is deposited and Jan (1863) did not mention any locality other than Bolivia.

***Lystrophis semicinctus* (Duméril, Bibron and Duméril, 1854)**

Heterodon semicinctus Duméril, Bibron and Duméril, 1854. *Erp. Gen.* VII: 774.

Heterodon pulcher Jan. 1863. *Arch. Zool. Anat. Phys.* II: 224. (partim).

Lystrophis semicinctus weiseri Müller, 1928. *Zool. Anz.* 77: 72.

Robust snake with short tail and head not distinct from the body. Rostral well developed, keeled dorsally and shovel-like; length/width ratio: 0.8 - 1.3. Internasal scales separated by the postero-dorsal portion of the rostral. Prefrontals generally separated by an antefrontal shield in most exemplars; few individuals do not possess antefrontal. Frontal as long as broad. One preocular and two postoculars. One loreal. Temporals 1 + 2. Eight supralabials, fourth and fifth entering the orbit. Ten infralabials, the first to the fourth in contact with the first pair of chin shields. 147 to 171 ventrals. Anal divided. 22 to 37 subcaudals. Dorsals in 21-21-17 rows.

Coloration: black annuli in 14 to 22 pairs on the back and 2 to 4 1/2 on the tail; pale areas as described above (plate 1).

Snout-vent length/head length: 16.00 - 24.00. Snout-vent length/tail length: 7.5 - 10.5.

The characters given are those of the majority of the individuals examined; the variation observed is presented in Table 2, compared with the other two species considered.

Distribution: the localities of the analyzed material are shown on Map 1. This species occurs in Buenos Aires, Catamarca, Córdoba, Entre Ríos, La Pampa, La Rioja, Mendoza, Neuquén, Río Negro, San Luis and Tucumán Provinces in Argentina and in the western part of Bolivia.

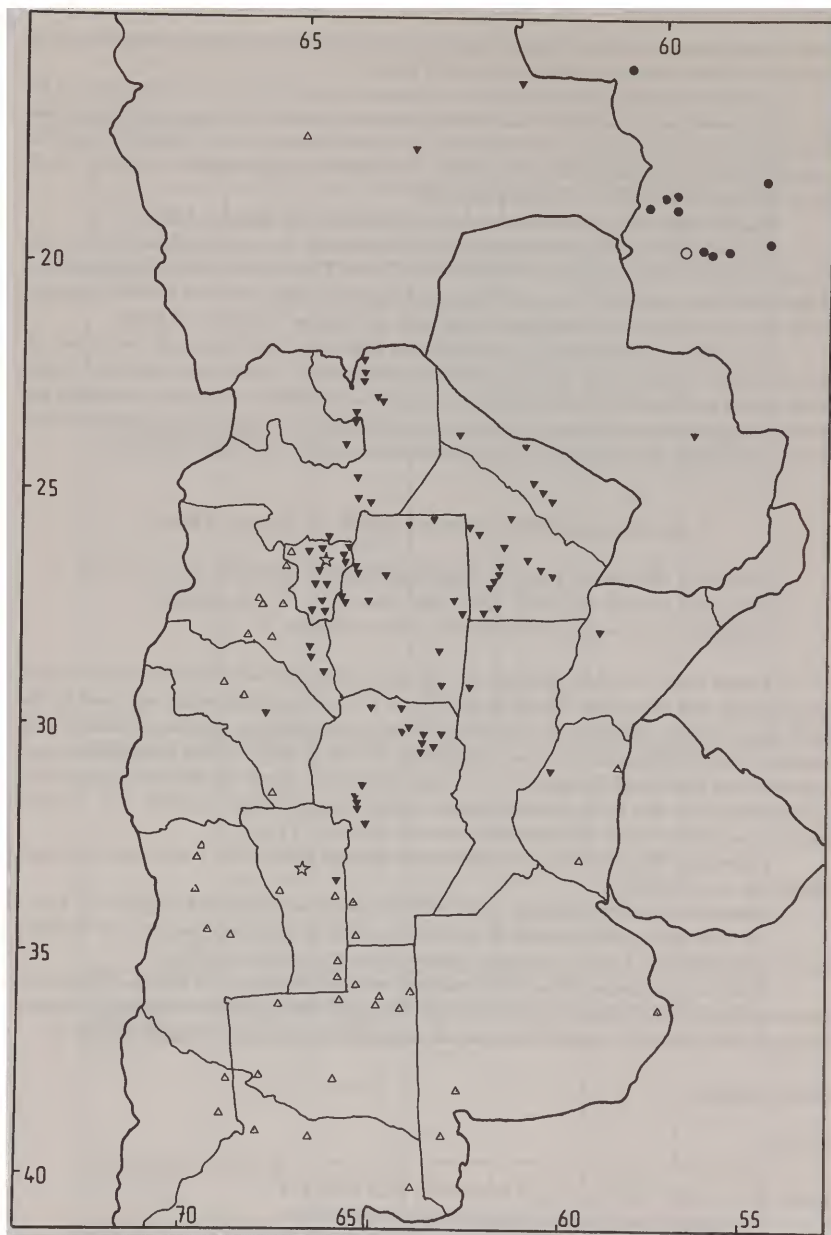
Materials Examined:

ARGENTINA

Buenos Aires: Dept. Villarino: Mayor Buratovich MLP (JW) 142.

Dept. Gral. Lavalle: Salinas Chicas MACN 3236.

Dept. Tornquist: Chasicó MACN (5024) 27461



Map 1, distribution of the taxa considered: open triangles, *L. semicinctus*; black triangles, *L. pulcher*; stars, contact localities of *L. semicinctus* and *L. pulcher*; black dots, *L. matogrossensis*, sp. nov.; open circle, type locality of *L. matogrossensis*, sp. nov

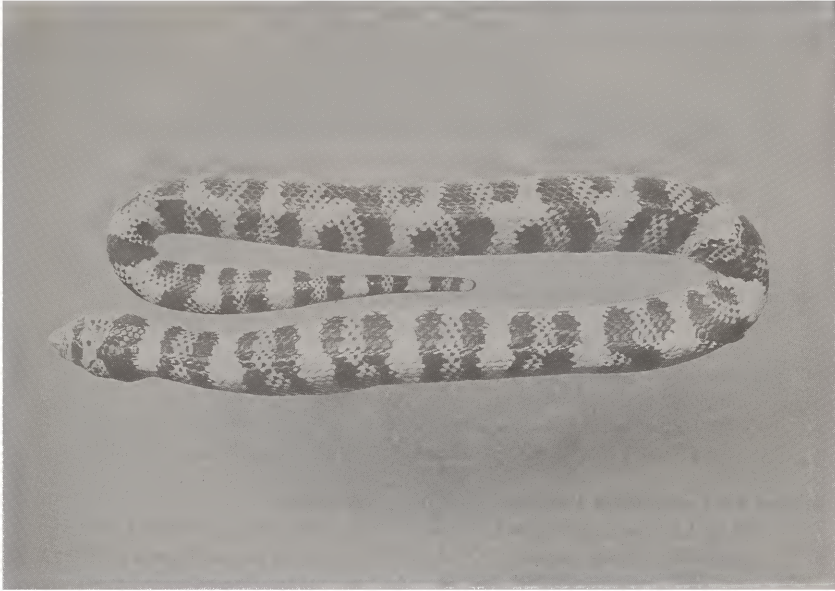


Plate 1, Dorsal view and color pattern of *L. semicinctus*. Specimen FML 01782 from Ñacuñan, Dept. Santa Rosa, Mendoza, Argentina.

Catamarca: MLP (JW) 145.

- Dept. Andalgalá: Huasán MLP (JW) 292. Puesto Rio Blanco - Andalgalá FML 01672.
- Dept. Belén: Belén FML 00471. Cóndor Huasi FML 01681.
- Dept. Pomán: Siján CHINM 1725 - 1897.
- Dept. Santa María: Valle de Santa María FML 0511.
- Dept. Tinogasta: Tinogasta FML 01545 MACN 2278.

Córdoba: MACN 2378

- Dept. Gral. Roca: Huinca Renancó UNSL 0035. La Penca CHINM 2048 - 3325 - 3328.
- Dept. Rio Cuarto: Paunero MACN 2570.

Entre Rios: Dept. Concordia: Concordia CHINM 2515.

- Dept. Gualeguay: Gualeguay LyMAV 165.

La Pampa: Dept. Atreucó: Doblás MACN (4793) 24751.

- Dept. Capital: Santa Rosa LP f88 (94) - f94 (100).
- Dept. Conelo: Conelo MACN 1056 - 1446 - 1390.
- Dept. Lihué Calel: PN Lihué Calel MACN 32254.
- Dept. Loventué: Victorica LP f 92 (132).
- Dept. Loventué: MACN 1307.
- Dept. Puelén: 25 de Mayo LP f91 (132).
- Dept. Toay: Toay LP f89 - f90 (93) - f93 (95).
- Santa Isabel: IBH 33721.

- La Rioja: Dept. Chilecito: Chilecito MLP (JW) 302 - 306.
 Dept. Gral. Lamadrid: Villa Castelli MACN 1567
 Dept. R. V. Peñaloza: Mascasín MACN 2705.
- Mendoza: Dept. Las Heras: Mendoza FML 01267 - 01558.
 El Alpero, Las Heras IBH 33722.
 Dept. Maipú: Cacheuta MACN 8857.
 Dept. San Rafael: San Rafael IBH 33723 to 33727.
 Dept. San Carlos: Vilucó MLP (JW) 257 - 260.
 Dept. Santa Rosa: Ñacuñan FML 01782.
- Neuquén: Dept. Confluencia: Portezuelo Grande CHINM 2718.
 Dept. Pehuenches: Rincón de los Sauces LyMAV 208.
- Rio Negro: Aguada Cecilio MACN (5202) 28317. Francisco Taboada MACN 1888.
 Dept. A. Alsina: Sauce Blanco - Isla Tehuel Malal MLP (JW) 258.
 Dept. Avellaneda: Estancia Bellochio MLP (JW) 147. Chelforó CHINM 526.
 Dept. Gral. Roca: Cnel. J.J. Gomez MACN 2055. Paso Córdoba MACN 2818.
- San Luis: San Luis CHINM 3566. Ruta a Beazley UNSL 0134.
 Dept. La Capital: Vivero de la Provincia UNSL 0066. Beazley CHINM 2335.
 Dept. Gob. Dupuy: Bagual FCN 9 MACN 3643. Arizona Ea. Las Taperas CHINM 3377
 - 2270. Arizona CHINM 3375.
 Dept. Gral. Pedernera: Las Isletas MACN 211.
- Tucumán: Dept. Tafi del Valle: Ruinas de Quilmes FML 01706.
 Dept. Trancas: El Cadillal FML 00446.
- BOLIVIA
- Cochabamba: Chimoré FML 00158.

***Lystrophis pulcher* (Jan, 1863)**

Heterodon pulcher Jan 1863, Arch. Zool. Anat. Fisiol. 2:222.

Lystrophis semicinctus, Boulenger 1894, Cat. Snakes Brit. Mus. 2:153 (partim).

Robust snake with short tail and head not distinct from the body: rostral well developed. keeled dorsally and shovel-like; length/width ratio: 0.9 - 1.5. Internasal scales separated by the postero-dorsal portion of the rostral. Prefrontals generally separated by an antefrontal shield in most exemplars; few individuals do not present antefrontal. Frontal as long as broad or slightly broader than longer. One preocular and two postoculars. One loreal. Temporals 1 + 2. Eight supralabials, the fourth and fifth entering the orbit. Ten infralabials, the first to the fourth in contact with the first pair of chin shields. 151 to 168 ventrals. Anal divided. 22 to 37 subcaudals. Dorsals in 21-21-17 rows.

Coloration: black annuli in 8 to 12 pairs on the back and 1 to 2 1/2 on the tail; pale areas as described above (plate 2).

Snout-vent length/head length: 15.00 - 26.5 Snout-vent length/tail length: 5.5 - 10.00.

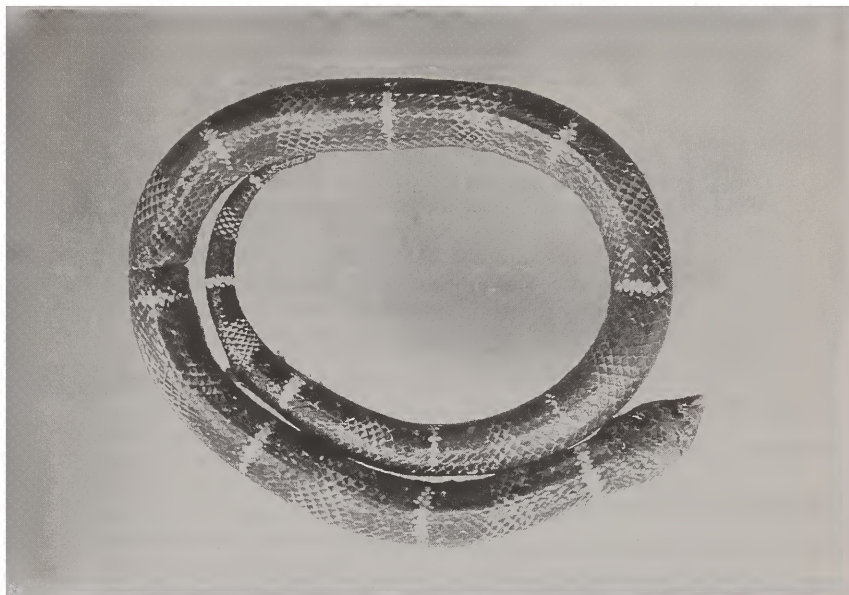


Plate 2, dorsal view and color pattern of *L. pulcher*. Specimen FML 02073 from Joaquin V. González, Dept. Anta, Salta, Argentina.

The characters given are those of the majority of the individuals examined; the variation observed is presented in Table 2 compared with the other two species considered.

Distribution: the localities of the analyzed material are shown on Map 1. This species occurs in Jujuy, Salta, Catamarca, Tucumán, Santiago del Estero, Formosa, Chaco, Córdoba, San Luis, Entre Ríos and Corrientes provinces in Argentina, in the east of Bolivia and the south of Paraguay.

Material Examined:

ARGENTINA

Catamarca: Catamarca MACN 592.

Dept. Ancasti: Icaño CHINM 1595 - 1705.

Dept. Capital: Finca Chacabuco FML 00509.

Dept. Fray M. Esquiú: Pomancillo MACN 1715.

Chaco: Chaco MACN 153. Fortín Las Chuñas MACN.

Dept. Almirante Brown: Concepción del Bermejo CHINM 2492 - 2603. Los Frentones MACN. Pampa del Infierno CHINM 2306.

Dept. Com. Fernández: Pcia. Roque Saenz Peña MACN 987 (3 ejes.) - CHINM 3327.

Dept. 12 de Octubre: Charata CHINM 3465. Gral. Pinedo MACN. Las Breñas MACN.

Dept. Fray J. Santa María de Oro: Santa Sylvina MACN.

Dept. Gral. Belgrano: Corzuela MACN.

Dept. Gral. Güemes: J.J. Castelli MACN (3 exemplars).

Dept. Mayor L.J. Fontana: Cnel Du Graty CHINM 1758.
 Dept. Quitilipi: Quitilipi MACN (3 exemplars).
 Dept. 25 de Mayo: Machagai MACN.

Córdoba: Costa Alegre LyMAV 164. Sierra Totoral MACN 9873.
 Dept. Calamuchita: Los Cóndores MACN.
 Dept. Colón: Villa Allende MACN.
 Dept. Punilla: Tanti Viejo MLP (JW) 261. Biale Massé MACN 2275. Cosquín MACN 1497.
 Dept. Río Primero: Villa Fontana CHINM 3399. Maquinista Gallini MACN (3 exemplars). El Suncho, Via Obispo Trejo MACN. Obispo Trejo MACN (2 exemplars).
 Dept. Río Seco: Candelaria Norte CHINM 2483 MACN.
 Dept. San Justo: Miramar MACN.
 Dept. Sobremonte: Chuña Huasi CHINM 3501 - 3502.
 Dept. Tulumba: Las Arrias MACN (2 exemplars). San José de La Dormida CHINM 2355.

Corrientes: Dept. San Roque: San Roque CHC 280.

Entre Ríos: Dept. La Paz: Alcaraz CHINM 1434.

Formosa: Dept. Matacos: Ingeniero Juárez FML 00541.
 Dept. Patiño: Ibarreta MACN. Las Lomitas CHINM 1625 - 3407. Las Lomitas, Fortin Soledad MACN (2 exemplars). Nuevo Pilcomayo FML 00239. Pozo del Tigre MACN (4 exemplars).

Jujuy: Jujuy MACN 693
 Dept. Ledesma: Ledesma MLP (JW) 259. Yuto FML 01102. MACN.

La Rioja: La Candelaria CHINM 3550.
 Dept. Chemical: Without any more data MACN.
 Dept. Chilecito: Without any more data CHINM 2055. Vichigasta MACN 1575.

Salta: San Martín FML 00475
 Dept. Anta: El Quebrachal MACN, Joaquín V. González FML 02068 - 02069 - 02071 - 02073 - 02074. Finca Pozo Largo 8 km al S de Joaquín V. González FML 02067 - 02070 - 02072. Palermo MACN 1144.
 Dept. Candelaria: Estación Ruiz de Los Llanos FML 00328.
 Dept. Cerrillos: Partido La Candelaria FML 01420.
 Dept. Orán: Urundel FML 00014 - MACN.
 Dept. San Martín: Cnel. Cornejo MACN (4 exemplars). Estación Dragones CHINM 3518. Hickmann FML 00424 (2 exemplars) - 01099. Quebrada de Acambuco, 7 km al W del Dique Itiyuro FML 01077. Tartagal MACN 24971 MACN.

San Luis: Río Grande UNSL 0078. San Luis CHINM 3374 - 3554. San Francisco UNSL 0182.
 Dept. Gral. Pedernera: Villa Mercedes UNRC-DCN-ZV 838.
 Dept. La Capital: Various localities in San Luis city and neighborhoods UNSL 0047 - 0069 - 0070 - 0084 - 0147 - 0164 - 0171 - 0180.

Santa Fé: Dept. 9 de Julio: Tostado MACN 308 (3 exemplars) MACN.

Santiago del Estero: El Fisco CHINM 3523, Otumpa CHINM 3326 - 2328 MACN (2 exemplars).
 Santiago del Estero MACN 693.
 Dept. Aguirre: Pinto MACN.
 Dept. Copo: Monte Quemado CHC 649.
 Dept. Figueroa: Caspi Corral FML 01429.
 Dept. Gral. Taboada: Tacañitas MACN 1401 - 1349.
 Dept. Guasayán: San Pedro de Guasayán FML 00048 - 01440.
 Dept. Jimenez: Isca Yacu CNWL 23 - 28. Pozo Hondo FML 01056.
 Dept. Matará: Campo del Cielo MACN.
 Dept. Moreno: Girardet MACN 1400.
 Dept. Río Hondo: Termas de Río Hondo FML 00770 - 01965.
 Dept. Pellegrini: Villa Nueva Esperanza FML 001695.
 Dept. Robles: Beltrán MLP (JW) 340.

Tucumán: Dept. Bella Vista: Bella Vista FML 00925.
 Dept. Burreyacú: Cerro del Cajón FML 00170. Estación Benjamin Aráoz FML 00943.
 Dept. Capital: Villa Guillermina FML 00318 (2 exemplars)
 Dept. Cruz Alta: Las Cejas FML 01241.
 Dept. La Cocha: La Cocha MACN; Los Molles, La Cocha CHINM 1799.
 Dept. Leales: Estancia La Princesa FML 01370. Santa Rosa de Leales FML 01310.
 Dept. Monteros: Monteros FML 01201.
 Dept. Tafi Viejo: Tafi Viejo.
 Dept. Trancas: FML 01357. Arroyo Las Breas FML 00357. El Cadillal FML 00305,
 MACN. Rodeo Grande FML 00993. San Pedro de Colalao FML 00393. Tapia FML
 01052.

Bolivia: Dept. Santa Cruz: Santa Cruz de la Sierra IBH 18511-18514. San Ignacio de Velazco
 IBH19482.

Paraguay: Dept. San Pedro: Carumbé FML 00634.

***Lystrophis matogrossensis*, sp. nov.**

(plate 3, 4a and 4b)

DIAGNOSIS

Lystrophis matogrossensis differs from all other species in the genus by the following combination of characters: Dorsal scales at midbody in 21 rows; tip of the tail rounded, not pointed; dorsal coloration rings forming a pattern: red, black, white, black, red; black rings in 9 to 15 pairs. Ventral scales ranging from 122 to 141.

Holotype. IBH 53544. Female. Miranda, Mato Grosso do Sul, Brasil.

Paratypes

Mato Grosso: Cáceres; Female IBH 23040.

Mato Grosso do Sul: Duque Estrada; Females IBH 14565 - 14605. Fazenda Bom Jesus do Taquari, Pantanal; Female IBH 23892. Agachi; Males IBH 14204 - 14553. Females IBH 14271 - 14277. Aquidauana; Males IBH 14182 - 15710, MZUSP 10105. Females IBH 15614 - 20640 - 20894,

MZUSP 10244 - 10245 - 10246. Sex unknown MZUSP 10247. Campo Grande; Males IBH 15654 - 15655. Female IBH 28684. Corumbá; Females IBH 05119 - 22824. Fazenda São Gonzalo, Pantanal, Rio Taquari, 150 km de Coxim, Corumbá; Male IBH 24571. Females IBH 24572 - 31091. Fazenda Santa Isabel, Coxim; Female IBH 27773. Miranda; Male IBH 31926. Females IBH 29961 - 30270 - 30515 - 30661 - 31941. Sex unknown IBH 30990 - 31189. Nhecolândia; Female 08305. Porto Esperança; Male 10406. Female 10408. Taunay; Males IBH 25620-13523. Female IBH 25618. Sex unknown IRH 10067.

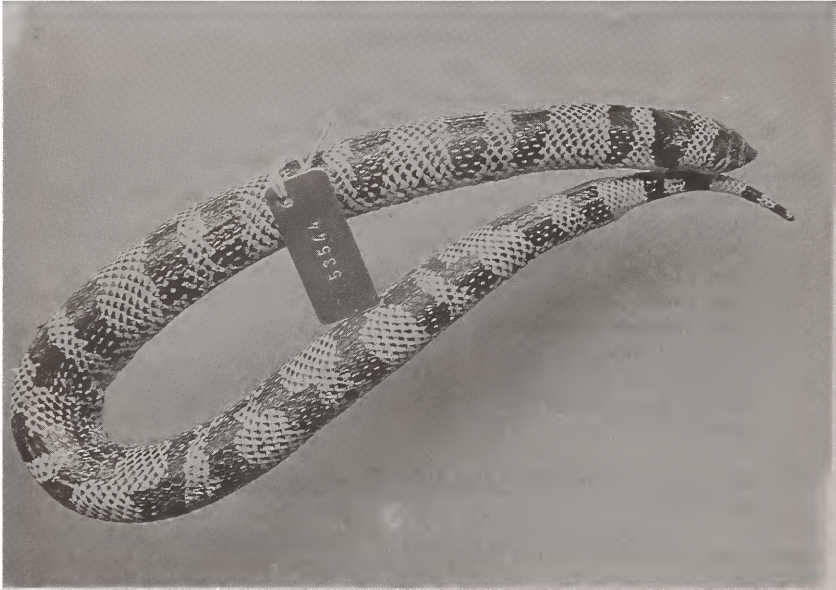
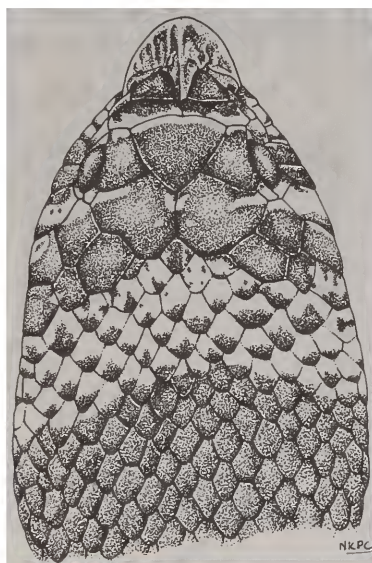


Plate 3, dorsal view and color pattern of the holotype of *L. matogrossensis*, sp. nov., female IBH 53544 from Miranda, Mato Grosso do Sul, Brazil.

Description of the holotype (plate 3): a medium size female, with subcylindrical body and short tail. Head small, not distinct from the body. Rostral dorsally keeled and shovel-like, length/width ratio: 1.14, Internasals subtriangular, small, separated by the dorsal projection of rostral. Irregular prefrontals, in contact behind the rostral, without antefrontal scale. Frontal as long as broad, length/width ratio: 1.02; with a groove from the half of the anterior side to approximately the center of scale. Eight supralabials, the fourth and fifth entering the eye. Nasals divided. One loreal. One preocular. Two postoculars. Temporals 1+2. Ten infralabials, the first four in contact with the first pair of chinshields. Dorsal scales in 21-21-17 rows. 137 ventrals. Subcaudals: the first divided, second to fifth entire, sixth to 28th divided plus one rounded. Head length: 21,2 mm. Snout-vent length: 389 mm. Tail length: 52 mm.

Coloration: Head dorsally black (plate 4a), with two white bands; the first follows the frontal-prefrontals and prefrontal-supraocular sutures, expanding into loreals and posterior part of nasals and reaching the three first supralabials. The second band follows the first temporal-postocular suture, expanding on the lateral side of parietals and is interrupted on the dorsum. At the point

between the parietals the band is represented by a spot between the parietals and the frontal and directly behind this spot there also exist two small white spots. Supralabials variegated with white. Ventrally the head (plate 4b) is almost white, with small black spots on the posterior edge of first four infralabials and external edges of first chinshields. Red, white and black bands on dorsum. The black bands are in pairs, with a white band between them. Each pair of black bands is separated from the other by a red area. The scales in the red and white areas have a free black tip; these black spots are smaller in the central dorsal white areas. The scales in the lateral portion of black areas are spotted with white in the center. Ten pairs of black bands; the first six and the tenth regularly disposed, the seventh to ninth mixed in the right side and the pattern is not regular. There are two pairs of black bands on the tail and the tip is black. The pattern of the dorsum is continued on the ventral surface of tail. Belly white. There are three black bands in the first part of the ventral surface. Posteriorly there are lateral irregular black blotches alternating on both sides and fused in the midventral area forming a continuous black area.



a



b

Plate 4, a: dorsal view of the head of the holotype of *L. matogrossensis*, sp. nov; b: ventral view.

VARIATION OF THE PARATYPES

Rostral length/width ratio: from 1.0 to 1.4. Prefrontals in contact behind the rostral, without antefrontal scale in nearly 50% of individuals. Frontal length/width ratio from 0.75 to 1.2. Postoculars are 2 - 2 in all paratypes except the female IBH 08305 which shows three postoculars in both sides of the head, and female IBH 31941 that has three on the right side. Preoculars are 1 - 1 in all the paratypes, with the exception of females MZUSP 10244 and IBH 31091, and IBH 30661 with 2 - 2 and male IBH 31926 and females IBH 15614 and IBH 14277 that have two on one side

of head. All paratypes have nasals divided, one loreal and anal divided.

The snout-vent/head ratio varies from 13.0 to 22.0 and snout-vent/tail ratio from 5.5 to 9.8.

There is no evidence of sexual dimorphism.

Table 1 shows other characters in all paratypes.

The coloration pattern shows a distinctive character: the lateral side of black annuli is spotted with white. This does not occur in *Lystrophis semicinctus* and *L. pulcher* (plate 1, 2 and 3).

HEMIPENIS:

Paratype IBH 13523 has an everted hemipenis (plate 5). The form is similar to that of hemipenis of *L. dorbignyi* illustrated on Orejas Miranda (1966) and of *L. semicinctus* (sensu lato) figured in Vellard (1946). Hemipenis bilobed, not differentiated in basal and distal portions. Sulcus spermaticus bifurcated and centrifugal. The hemipenis completely covered by small spines regularly. Basally and laterally spines are larger and more dispersed. The area between the branches of the sulcus spermaticus has larger spines than those that cover the surface and smaller than those in the basal part of hemipenis. The organ does not have any basal ornamentation.

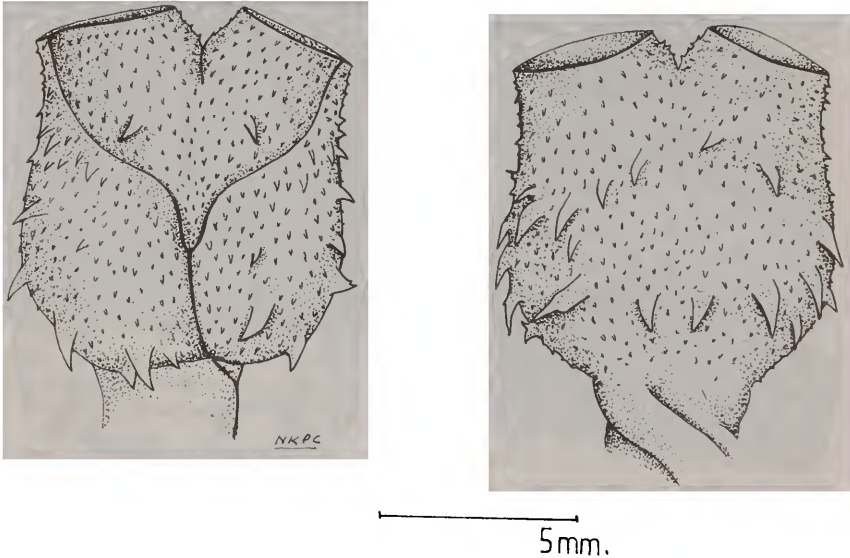


Plate 5, Hemipenis of paratype IBH 13523 of *L. matogrossensis*, sp. nov. from Taunay, Mato Grosso do Sul, Brazil.

CONCLUSIONS

The distribution of *Lystrophis pulcher* in Argentina is restricted to the Chacoan region (Cabrera & Willink, 1980), while *L. semicinctus* occupies the surrounding areas of Monte, Espinal and Pampeana. According to the available data, these species seem to have a liner area of contact along the border of the Chacoan region. At the moment we have found only two localities where both species are sympatric: suburbs of San Luis and El Cadillal, Tucumán (see Map 1).

With the revalidation of *Lystrophis pulcher* and description of *Lystrophis matogrossensis* sp. nov., there are now six species within the genus.

The data given by Hoge, Cordeiro & Romano (1975), to externally differentiate *L. nattereri* and *L. histricus* are insufficient, but until more detailed studies are done, we only can use these characters. Using the characters of previous keys given by Orejas Miranda (1966), Peters & Orejas Miranda (1986); Hoge, Cordeiro & Romano (1975) and the characterizations of species studied here, it is possible to devise the following key:

KEY FOR THE SPECIES OF THE GENUS *LYSTROPHIS*

1. a. Dorsal scales in 19 rows..... 2
- b. Dorsal scales in 21 rows..... 3
2. a. Dorsal coloration of narrow black bands with red spaces between them. Females with 32-36 bands on the body..... *L. histricus*
- b. Dorsal coloration of wide brownish or ashen bands, without red spaces between them. Females with 15 - 29 bands on the body..... *L. nattereri*
3. a. Tip of tail rounded. Dorsal coloration of rings, black, yellow, red or black, white, black, red. Only ventral surface of tail with red; ventral surface of body with different amounts of black from completely black to almost whitish or yellowish without spots, but never with red..... 4
- b. Tip of tail pointed. Dorsal coloration of subcircular blotches or irregular transverse bands usually bordered by yellow. Venter with equal amounts of red and black..... *L. dorbignyi*
4. a. Ventral scales fewer than 141..... *L. matogrossensis*, sp. nov.
- b. Ventral scales more than 147..... 5
5. a. Dorsal coloration in black, yellow, black, red bands. 14 to 22 pairs of black bands on the body *L. semicinctus*
- b. Dorsal coloration in black, white, black, red bands. 7 to 12 pairs of black bands on the body *L. pulcher*

ACKNOWLEDGEMENTS

We acknowledge specially the attention of our friend H. Zaher for collecting the data of the syntypes from MNHN Paris. We would like to acknowledge the curators and assistants from the Museums that sent us their material and/or hosted us during our visit to their collections. U. Montero for helping us taking some data. R. Laurent, E. Lavilla, and F. Lobo for making helpful comments on the manuscript. J. Fontaine kindly made the English revision of this manuscript.

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