

Description of the females of *Oxysoma itambezinho* Ramírez and *Monapia tandil* Ramírez, and their effects on the generic relationships of Gayennini (Araneae, Anyphaenidae, Amaurobioidinae)

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Abstract

The females of *Oxysoma itambezinho* Ramírez and *Monapia tandil* Ramírez are described for the first time, and new observations are added to a previous dataset for phylogenetic analysis. *Oxysoma itambezinho* differs from other *Oxysoma* species by the presence of unmodified copulatory ducts, not encircling the spermathecae. *Monapia tandil* resembles some *Monapia* species by the presence of a posteriorly directed pouch on the median epigynal field, unlike its sister species, *M. vittata*. The resulting phylogenetic trees are the same as previously obtained, but these instances of homoplasy decreased the support for some groups inside *Oxysoma* and *Monapia*.

Key words: Anyphaenidae, taxonomy, cladistics, South America

Introduction

Anyphaenidae is a family of cursorial spiders, most diversified in the New World, and especially in South America. In a recent contribution, Ramírez (2003) presented a revision and a phylogenetic analysis of the subfamily Amaurobioidinae at the generic level. In that study, the South American genera *Oxysoma* Nicolet, *Tasata* Simon, *Phidyle* Simon, and *Monapia* Simon, all belonging to the tribe Gayennini, are grouped in a monophyletic but weakly supported clade. Most characters in favor of such a grouping come from the females displaying spinose metatarsi, involving a series of strongly homoplastic characters representing e.g., the presense/absence of individual macrosetae (Ramírez 2003: 37, fig. 4, table 18). The relationships among these genera, and among the species of *Tasata* and *Oxysoma* are also weakly supported. The low values of indices such as Bremer support (Bremer 1994), and resampling measures derived from jackknifing (Goloboff et al. 2003),

all suggest that the groupings may easily change with the addition of new data. In this contribution we describe the females of *Oxysoma itambezinho* Ramírez and *Monapia tandil* Ramírez, incorporating the new observations to the phylogenetic dataset presented by Ramírez (2003).

Material and methods

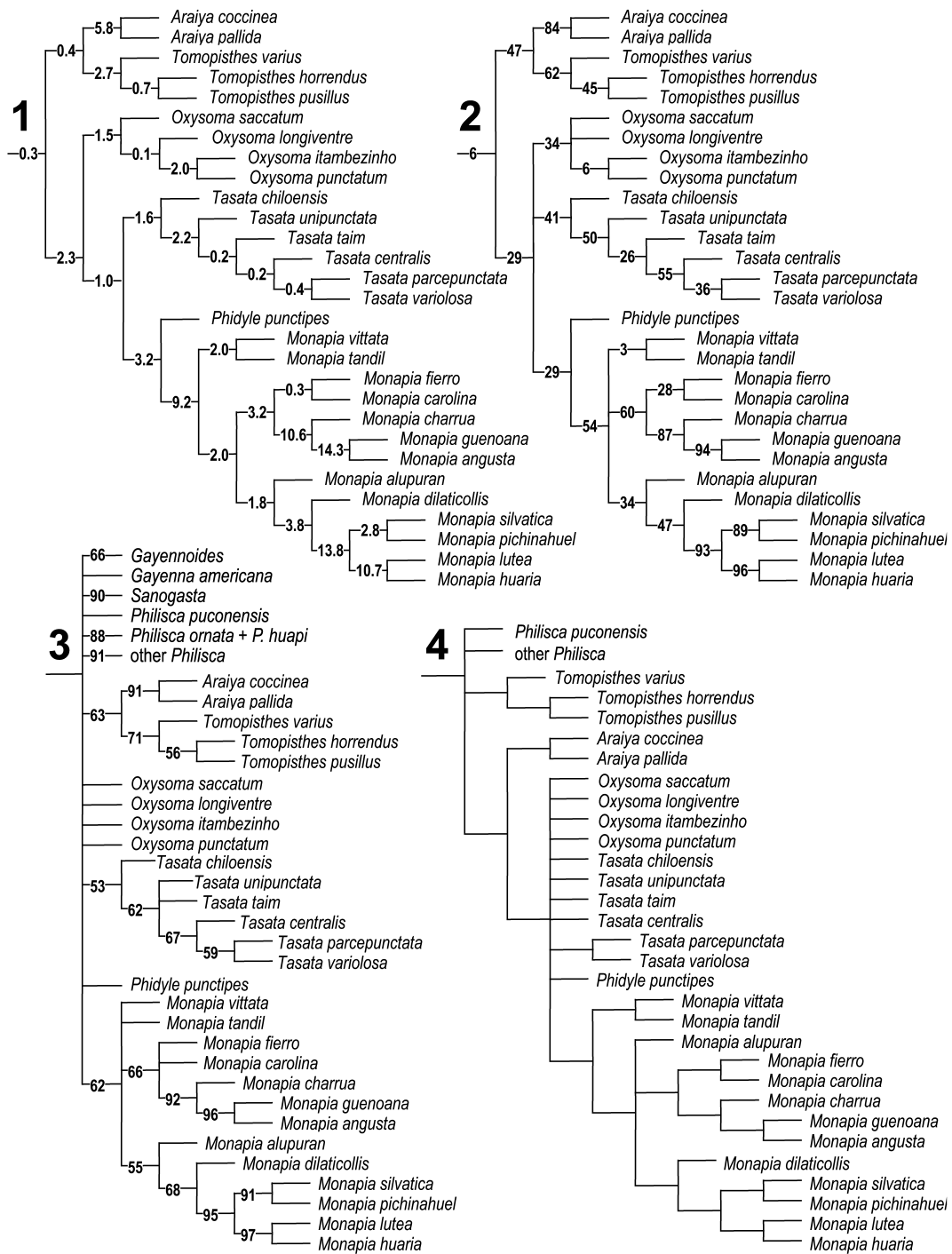
The specimens examined for this study belong to the Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires (MACN-Ar; Cristina Scioscia), and Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ; Adriano Kury).

Measurements are in millimeters, and the format of descriptions follows that of Ramírez (2003). Abbreviations for eyes are: AME, anterior median; ALE, anterior lateral; PME, posterior median; PLE, posterior lateral. The cladistic analysis was conducted with the same parameters and search strategies as in Ramírez (2003), using implied weights with Pee-Wee, and equal weights with NONA (Goloboff 1993b, 1997).

The complete vectors of character scorings for *Oxysoma itambezinho* and *Monapia tandil* are listed in Table 1. The changes respect to Ramírez (2003) are: Scoring of female characters 29–31, and 100–128; corrected scorings of character 44 (inapplicable, the RTA is missing), character 33 for *M. tandil*, and character 77 for *O. itambezinho* (inapplicable, the primary conductor is missing); *O. itambezinho* is variable for characters 1 and 77, and *M. tandil* is variable for characters 161, 182, and 190. We analyzed the updated dataset with the same parameters of implied weighting against homoplasy (Goloboff 1993a), and estimated indices of group support using identical strategies as in Ramírez (2003). We also included the results obtained under equal weights. Figs. 1–4 show the sector of the resulting trees including the genera *Oxysoma*, *Monapia*, and close relatives (other sectors of the trees are the same as in Ramírez 2003). The implied weighting analysis produced the same

TABLE 1. Scorings of *Oxysoma itambezinho* and *Monapia tandil* for phylogenetic analysis. Polymorphic entries noted as: a = [01]; g = [24]; i = [34]. Characters and states are described in Ramírez (2003); internal steps due to intraspecific variation increased by one step in characters 1 (total 5 internal steps), 161 (25), 182 (22), and 190 (18).

	0	10	20	30	40	50	60
<i>O. itambezinho</i>							
<i>M. tandil</i>							
	1a0011a010	1101001000	1100000000	001100000?	?00??00100	0010001000	10000101i?
	1000000010	0100011100	1100000000	001000?00?	?00??00100	0010001000	10000101g?
	70	80	90	100	110	120	130
<i>O. itambezinho</i>							
<i>M. tandil</i>							
	0010000?02	02??101010	?00?101600	0000100000	0000001000	0010100001	0001110101
	0000010012	0?0?010110	0001101600	0000101011	0000001000	0010100010	0001110101
	140	150	160	170	180	190	
<i>O. itambezinho</i>							
<i>M. tandil</i>							
	0011111111	111a111100	1011111001	0011011111	0111111111	1111111111	
	0011111111	1110111100	1a11111100	0111111111	11a1111111	a111111111	



FIGURES 1–4. Phylogenetic trees and branch support indices of a sector of the analysis of amau-robiodine genera, showing *Monapia*, *Oxysoma*, and outgroups. 1, implied weighting tree, with Bremer support values on branches; 2, jackknifing tree with frequency differences on branches; 3, jackknifing tree with absolute frequencies on branches; 4, equal weights consensus tree.

two trees obtained by Ramírez (2003), with $Fit = 3554.9$. A slightly different list of synapomorphies was obtained, and the differences are listed on Table 2. The equal weights analysis (Fig. 4) produced many trees of 2896 steps (we swapped up to 20,000 trees) and the consensus is less resolved than that found in Ramírez (2003).

TABLE 2. List of synapomorphies that differ from those found by Ramírez (2003).

Oxysoma longiventre + *O. itambezinho* + *O. punctatum*

dark ventral stripe (1): absent → present

Oxysoma itambezinho

posterior eye row strongly procurved (13): absent → present

cymbial retrolateral basal notch (52): absent → present

C2 membrane area prolateral to canal (86): absent → present

CD *Oxysoma* type (121): present → absent

ducts AB (123): long → short

spines on chelicerae (129): absent → present

spine metatarsus IIIr d1 x x (174): present → absent

Oxysoma punctatum

male chelicerae (17): strong → smaller

sclerotized triangle to MA (63): absent → present

wide membrane separating C2 (80): absent → present

lateral lobes (110): separate → fused with suture

spine tibia IIIv r1 x x (161): absent → present

spine metatarsus IIIp x 1 x (172): present → absent

spine metatarsus IIIr x 1 x (175): present → absent

All *Monapia* except *M. tandil* + *M. vittata*

shape of PMA (68): *Philisca* type, or bifid → slender

base C2(r) (91): thick → wide and thin

Monapia tandil

scopulae anterior tibiae (33): present → absent

apex C1 close MA (78): absent → present

pouch in median depression (109): absent → present

spine patella IIIr d1 (158): present → absent

Results and Discussion

The genus *Oxysoma* currently includes four South American species. Three of the species come from the temperate forests in Chile and Argentina, whereas *O. itambezinho* is known from Araucaria forests in the highlands of southeastern Brazil. Due to its isolated distribution and divergent morphology, *O. itambezinho* is of special phylogenetic interest. Recently, we discovered a male of *O. itambezinho*, as well as a conspecific female. The female of *O. itambezinho* differs from other *Oxysoma* species in presenting a more direct course of the copulatory ducts, not encircling the spherical spermathecae (Fig. 7). In that

respect, *O. itambezinho* resembles other amaurobioidine genera such as *Tasata*, although the females of this genus display a wider anterior pouch on the epigynal median field. This homoplasy is reflected in the decrease of support values for *Oxysoma* and its internal groups in the present re-analysis (compare Figs. 1–3 with Ramírez 2003: figs. 6–7). In the consensus of the equal weights analysis (Fig. 4) both *Oxysoma* and *Tasata* are collapsed, differing from the results of Ramírez (2003), who obtained, under equal weights, *O. itambezinho* included in *Tasata*, sister to the atypical Chilean species *Tasata chiloensis* Ramírez.

The genus *Monapia* includes thirteen species, all from Chilean temperate forests, and grasslands of southern South America (Ramírez 1995, 1999, 2003). *Monapia tandil* is known from only one male specimen from the Sierra de Tandil, in Buenos Aires grasslands. A female was recently collected from the same area, close to the entrance of a shallow cave. The female was considered to be conspecific with the holotype male on the grounds of their somatic resemblance (eye and macrosetae patterns, body design) and sympatry. This species and its sister *M. vittata* (Simon) form a basal clade, sister to all other *Monapia* species. As in other *Monapia*, *M. tandil* has a depressed epigyne median field, and an anterior pouch that is continued at the sides in a transverse slit. Unexpectedly, *M. tandil* exhibits a posteriorly-facing pouch in the median depression of the epigyne (character 109 in Ramírez 2003) as in most members of a clade of *Monapia* with spinose forelegs (a similar pouch is present in *M. carolina* Ramírez, *M. fierro* Ramírez, and *M. guenoana* Ramírez). This homoplasy is reflected in the decrease of support values of some groups inside *Monapia*, especially in the clade (*M. vittata* + *M. tandil*) (Fig. 2).

Systematics

Oxysoma itambezinho Ramírez

(Figs. 5–7)

Oxysoma itambezinho Ramirez, 2003: 225 (male holotype from Itaimbézinho, Cambará do Sul, Rio Grande do Sul, Brazil, deposited in MCTP 1653, not re-examined).

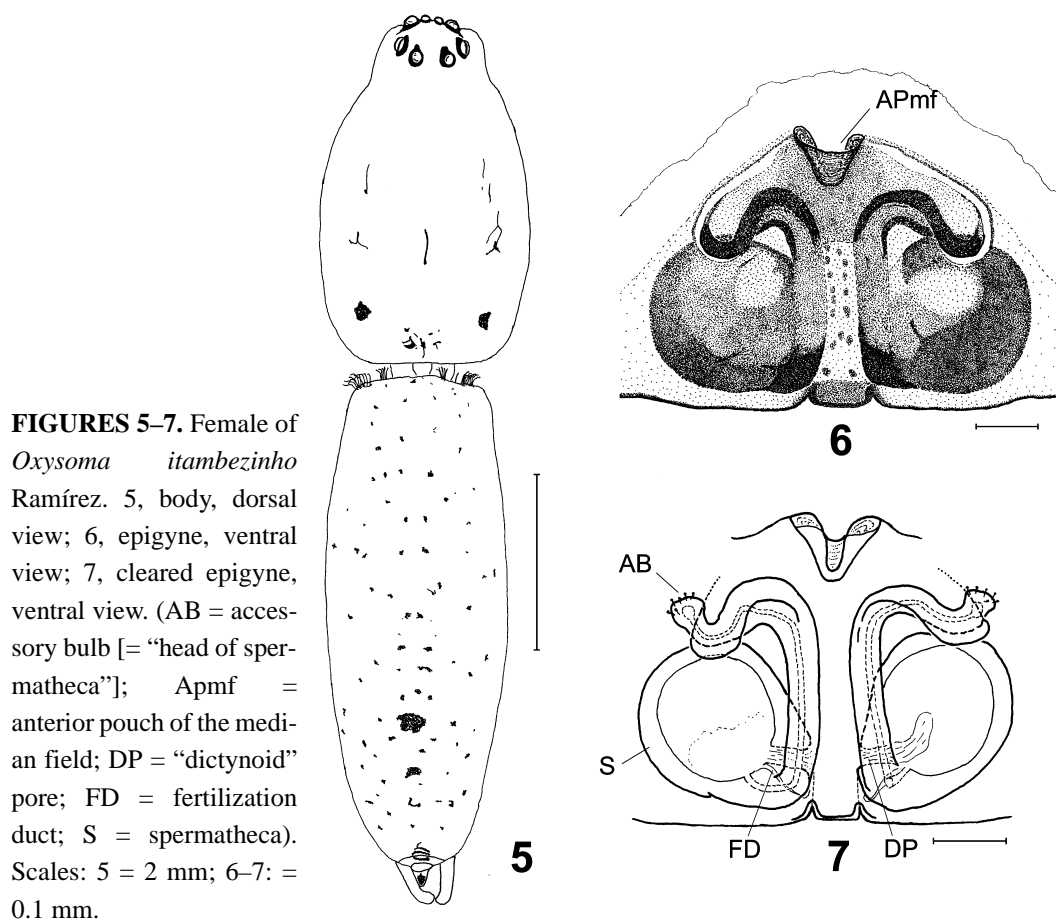
Note: The female was identified by the presence of an anterior spine on the chelicerae, and its occurrence in sympatry with a male of *O. itambezinho*. These specimens originate from Itatiaia, Rio de Janeiro state, approximately 900 kilometers from the type locality in Rio Grande do Sul. Both localities are part of the Brazilian Atlantic Highlands.

Diagnosis: The female of *O. itambezinho* resembles those of some *Tasata*, *Oxysoma* and *Monapia* species in the presence of a pale, elongate body and a pattern of small dark dots, but can be distinguished by the combination of a strong spine on the anterior face of the chelicerae and by the characteristic course of the copulatory ducts (Fig. 7).

Description of female: Total length 9.37. Carapace length 3.80, width 2.42. Eyes, AME 0.10, ALE 0.18, PME 0.14, PLE 0.16. Chelicerae small with an anterior spine close

to the base, three teeth on promargin, two on retromargin. Sternum length 2.12, width 1.28. Legs long and thin, length of tibia/metatarsus: I, 4.72/3.84, II, 4.64/3.76, III, missing, IV 4.85/4.60. Spines: Leg I, femur d 1-1-1, p and r 0-d1-d1; tibia v 2-2-2, p and r 1-1; metatarsus v 2bas, p and r 0-1-0-1, d 0-p1-2. II, femur d 1-1-1, p 0-d1-d1-d1, r 0-d1-d1; tibia v 2-2-2, p d1-d1, r 0-1; metatarsus v 2bas, p 1-0, r 0-1-0-1, d 0-p1-0-2. III, missing. IV, femur d 1-1-1, p d1ap, r 0-d1-d1; tibia v 2-2-2, p and r 1-1, d r1-0-1-0; metatarsus v 2-2-1, p and r d1-1-1, d 0-p1-2. Abdomen length 5.82, width: 1.94, distance spiracle-epigastrium 2.20, spiracle-spinnerets 1.52. Color (Fig. 5): Light brown with brownish pattern on carapace. Abdomen pale with dark dots and a few dark spots. Legs yellowish-brown with some dark spots and dots. Sternum pale. Venter pale with a few dark dots, line of small dark spots at each side, from epigastrium to tracheal spiracle and at the end of the abdomen. Epigynum (Figs. 6–7): Anterior pouch small, lateral lobes separated. Median field not depressed. Copulatory ducts thin and sinuous. Spermathecae spherical.

Material examined: BRAZIL: Rio de Janeiro: Itatiaia, no date, Ricoleta Silva (MNRJ 41481), labeled “*Gayenna micropunctata* M. L.”, presumably by Mello-Leitão.

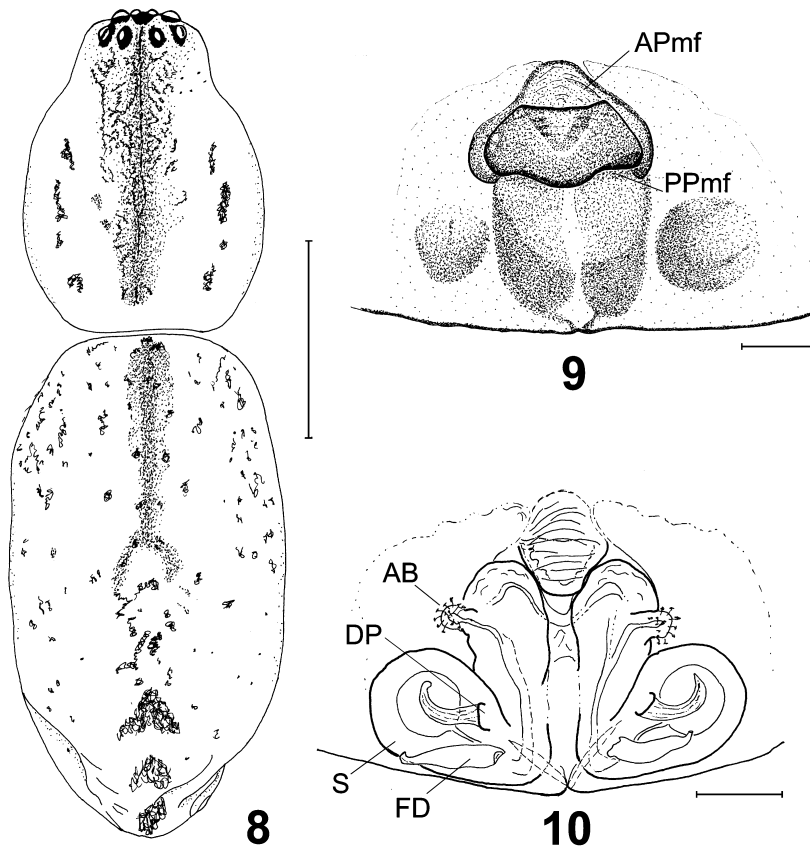


***Monapia tandil* Ramírez**
(Figs. 8–10)

Monapia tandil Ramírez, 1999: 429 (male holotype from Tandil, Buenos Aires Province, Argentina, deposited in MACN 9583, re-examined); 2003: 248.

Note: The female was not collected together with a male, but was identified as *M. tandil* by its somatic resemblance (eyes and macrosetae patterns, body design), and because it was collected in the same area as the single male thus far known of this species.

Diagnosis: This species is closest to *M. vittata*. In both species, the AME are notably smaller than the ALE. The females are easily distinguished by the trapezoidal, large anteriorly elevated area of the epigynal median field, and by the anterior transversal pocket with a single median lumen.



FIGURES 8–10. Female of *Monapia tandil* Ramírez. 8, body, dorsal view; 9, epigyne, ventral view; 10, cleared epigyne, dorsal view. (AB = accessory bulb [= “head of spermatheca”]; Apmf = anterior pouch of the median field; DP = “dictynoid” pore; FD = fertilization duct; PPmf = posterior pouch of the median field; S = spermatheca). Scales: 8 = 2 mm; 9–10 = 0.1 mm.

Description of female: Total length 7.45. Carapace length 3.00, width 2.30. Eyes, AME 0.08, ALE 0.14, PME 0.12, PLE 0.14. Chelicerae with three teeth on promargin, two

on retromargin. Sternum length 1.58, width 1.18. Length of tibiae/metatarsus: I 3.60/1.70, II 2.80/1.38, III 2.05/0.86, IV 3.00/1.30. Spines: Leg I, femur, d 1-1-1, p 0-(d1-1), r 0-d1-d1; tibia v 2-2-2, p and r d1-1; metatarsus v 2 bas, p and r 1-0, d0-p1-2. II = I. III, femur = I, tibia v 2-2-2, p and r d1-1, d r1-0-1-0, metatarsus v 2-p1-2, p and r d1-1-1, d 0-p1-2. IV, femur d1-1-1, p and r 0-d1-d1, patella r d1, tibia = III, metatarsus v 2-2-2, p and r d1-1-1, d 0-p1-2. Abdomen length 4.40, width 2.40, distance spiracle-epigastrium 3.70, spiracle-spinnerets 0.60. Color: Light brown with brown pattern on carapace and abdomen (Fig. 8). Legs with brown dots on coxae and femur; tibia, tarsus and metatarsus darker. Sternum light brown, venter light brown with dark lateral lines. Epigyne (Figs. 8, 9) with large anterior transversal pouch, with unpaired median lumen. Anterior part of median field prominent, posterior part well depressed, containing the copulatory openings, covered by hardened secretion plug. Lateral lobes separated. Copulatory ducts thick, leading to spherical spermathecae.

Material examined: ARGENTINA: Buenos Aires Province: Tandil, Estancia Santa Marina, Barker, nr. Caverna Oscura, October 1999, Grupo Espeleológico Argentino (MACN-Ar 10506).

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