

## New lyssomanine and hisponine jumping spiders from Africa (Araneae: Salticidae)

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### Abstract

Three new species of salticid spider from Africa are described and illustrated. These are *Goleba lyra*, new species, a lyssomanine from Madagascar, *Massagris schisma*, new species, a hisponine from South Africa, and *Tomocyrrba andasibe*, new species, a hisponine from Madagascar.

**Key words:** Araneae, Salticidae, *Goleba*, *Massagris*, *Tomocyrrba*, Hisponinae, Lyssomaninae, jumping spider, new species

### Introduction

Outside of the Salticoida, the most speciose clade of salticid spiders, are several basal groups: the lyssomanines, spartaeines, lapsiines and hisponines (Maddison & Hedin, 2003; Maddison & Needham, 2006). In this paper we describe three new species of basal salticids that have been used in recent molecular work by Maddison & Needham (2006). One is a lyssomanine, a species of *Goleba* Wanless from Madagascar. The other two are hisponines, a species of *Massagris* Simon from South Africa and a species of *Tomocyrrba* Simon from Madagascar.

### Methods

Specimens were examined under both dissecting microscopes and a compound microscope with reflected light. Drawings were made with a drawing tube on a Nikon ME

600L compound microscope.

Terminology is standard for Araneae. All measurements are given in millimeters. Carapace length was measured from the base of the anterior median eyes not including the lenses to the rear margin of the carapace medially. Epigyna were cleared in a solution of potassium hydroxide (KOH), transferred to water and temporarily mounted for drawing. The following abbreviations are used: ALE—anterior lateral eyes; AME—anterior median eyes; PLE—posterior lateral eyes; PME—posterior median eyes (the "small eyes").

Abbreviations for collections: CAS—California Academy of Sciences (C. Griswold); UBC-SEM—Spencer Entomological Museum of the University of British Columbia (K. Needham).

## Species descriptions

### Lyssomaninae Blackwall

Maddison & Needham (2006) present evidence that this group is polyphyletic or paraphyletic, with *Goleba* (and perhaps the other Old World genera) belonging apart from *Lyssomanes* Hentz. Nonetheless we retain *Goleba* with the lyssomanines until the Old World genera are better studied. *Goleba* was revised by Wanless (1980); an additional species was described by Szüts (2001).

### *Goleba lyra* Maddison & Zhang, new species

Figs. 1–7

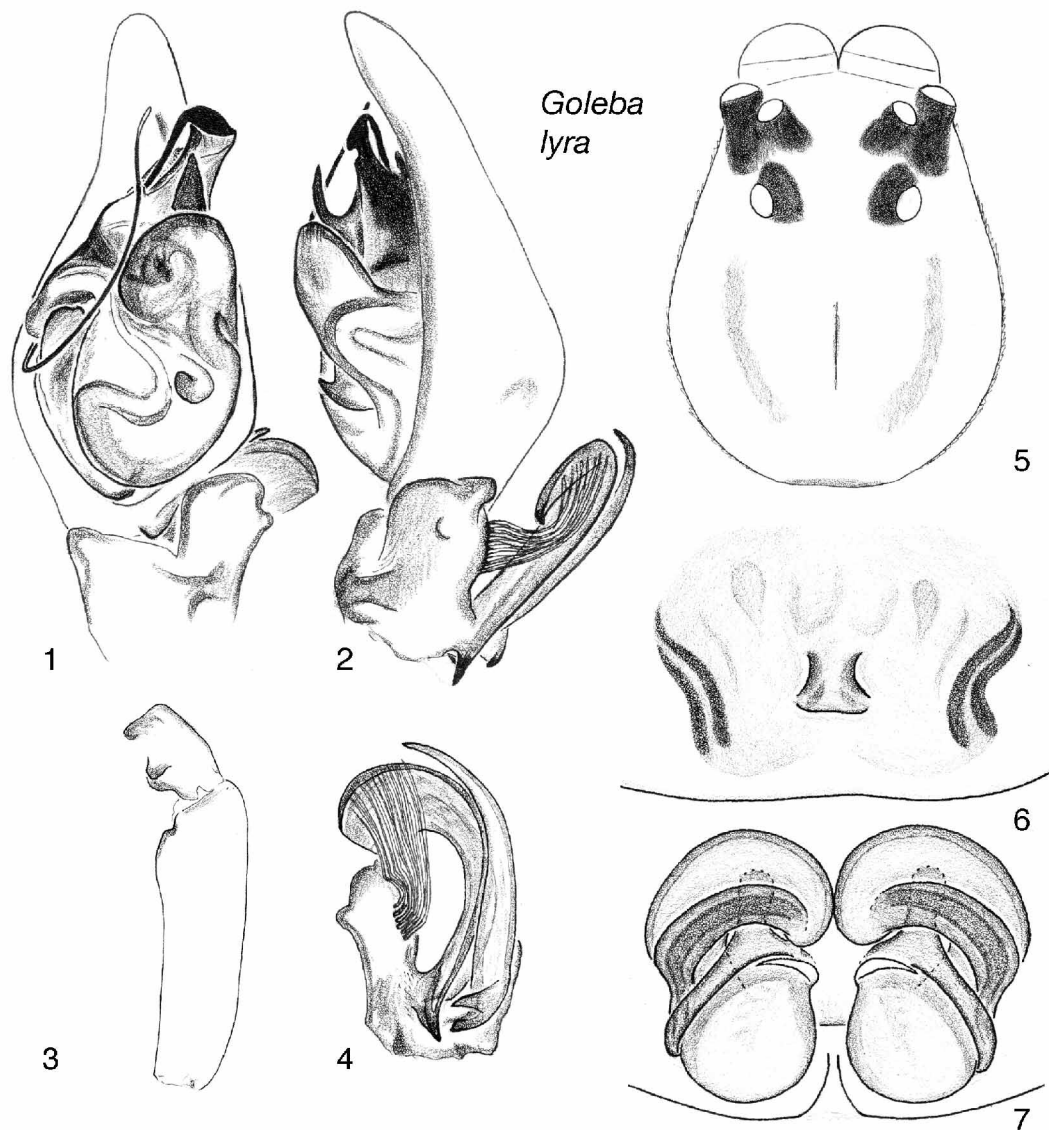
**Type material.** Holotype male in CAS from Madagascar with label:

MADAGASCAR: Fianarantsoa: Forêt d'Analalava, 29.6 km 280° W Ranohira 22°35'30"S, 45°7'42"E, el 700 m 1–5 ii 2003, dry forest on sandy soil, Fisher, Griswold et al., BLF7390 CASENT 9005863. Paratypes: 8 males and 4 females, same data as holotype. One paratype was used for molecular data by Maddison & Needham (2006; DNA voucher d051).

**Etymology.** The name refers to the delicate curved tibial apophyses in the male palp, which frame a series of parallel setae, giving the appearance of a harp (Fig. 4).

**Diagnosis.** Easily distinguished from other *Goleba* by the distally arising embolus, the long, curved tibial apophyses in the male, and the long copulatory ducts in the female. The form of the embolus and epigynum suggest a relationship to *Goleba puella* (Simon) (Wanless, 1980) and *G. jocquei* Szüts. The embolus has only one loop (from distal to proximal and back, in contrast to *G. puella*, from proximal to distal to proximal to distal),

and the epigynal openings are offset anteriorly compared to *G. puella*. The epigynal openings are smaller and the spermathecae more coiled than in *G. jocquei* (Sziüts, 2001).



**FIGURES 1–7.** *Goleba lyra*. 1. Left palpus of male holotype, ventral. 2. Left palpus of male holotype, retrolateral; 3. Femur and patella of left palpus of paratype, retrolateral; 4. Tibia of left palpus of holotype showing apophyses, oblique view dorsal-retrolateral; 5. Male carapace; 6. female epigynum, ventral; 7. female epigynum, dorsal.

**Description.** Male. Total length 5.3–5.6. Holotype total length 5.4: carapace 2.3 long, 1.7 wide, 1.1 high; abdomen 3.0 long, 1.0 wide. Carapace pale yellow with two yellow brown bands from PLEs to posterior thoracic margin (Fig. 5). Clypeus and lateral margins of carapace with orange scales. Eyes with black surrounds except AMEs. Eye sizes: AME

0.56, ALE 0.23, PME 0.18, PLE 0.20. First eye row 1.06 wide, second eye row 1.25 wide, third eye row 0.83 wide, fourth eye row 0.86 wide, eye area 0.83 long. Clypeus height 0.26. Chelicerae pale yellow, promargin with three teeth, retromargin with three teeth and three denticles. Endites, labium and sternum pale yellow. Sternum with a few hairs. Legs amber, lacking annulations. Spination of leg I: metatarsus v 2-2-2, p 1-0-1, r 1-0-1, d 0-1-0; tibia v 2-2-2, p 1-0-1, r 0-1-1, d 1-1-1; patella p 0-1-0, r 0-1-0; femur p 0-1-1, r 1-1-1, d 1-1-1. Measurements of palp and legs: palp 2.7; leg I 10.0, II 9.7, III 8.9, IV 9.3. Leg formula: 1243. Abdomen long, oval and pale yellow, anterior margin with long brown setae, dorsum with a few orange scales. Palp (Figs. 1–4): Embolus long and thread-like, arising distally on palpal bulb; retrolateral tibial apophysis broad and short, with a row of long setae on dorsal surface; one of the dorsal tibial apophysis long and wide, with distal part strongly curved; the other dorsal apophysis long and thin. The femur of the palp has a subtle protuberance ventrally (Fig. 3).

Female. Total length 6.0–6.4. A female total length 6.0: carapace 2.3 long, 1.9 wide, 1.1 high; abdomen 3.7 long, 2.1 wide. Carapace paler than male, lacking yellow brown bands and marginal orange scales, clypeus with white scales, eye region with white and orange scales. Other characters similar to those of male. Eye sizes: AME 0.53, ALE 0.23, PME 0.17, PLE 0.20. First eye row 1.02 wide, second eye row 1.25 wide, third eye row 0.86 wide, fourth eye row 0.89 wide, eye area 0.79 long. Clypeus height 0.30. Spination of leg I: metatarsi v 2-2-2, p 1-0-1, r 1-0-1, d 0-1-0; tibiae v 2-4-0, p 1-0-1, r 0-1-1, d 1-1-1; patellae p 0-1-0, r 0-1-0; femora p 0-1-1, r 1-1-1, d 1-1-1. Measurements of legs: I 8.6, II 8.5, III 7.9, IV 9.2. Leg formula: 4123. Epigynum (Figs. 6–7): Openings at lateral sides of median septum. Copulatory ducts long and convoluted with a pair of round sacs near openings. Copulatory ducts exit into an anterior nephroid portion of the spermatheca which proceeds posteriorly to a bulbous portion. No gland-like tubules (Wanless, 1980: 248) were found.

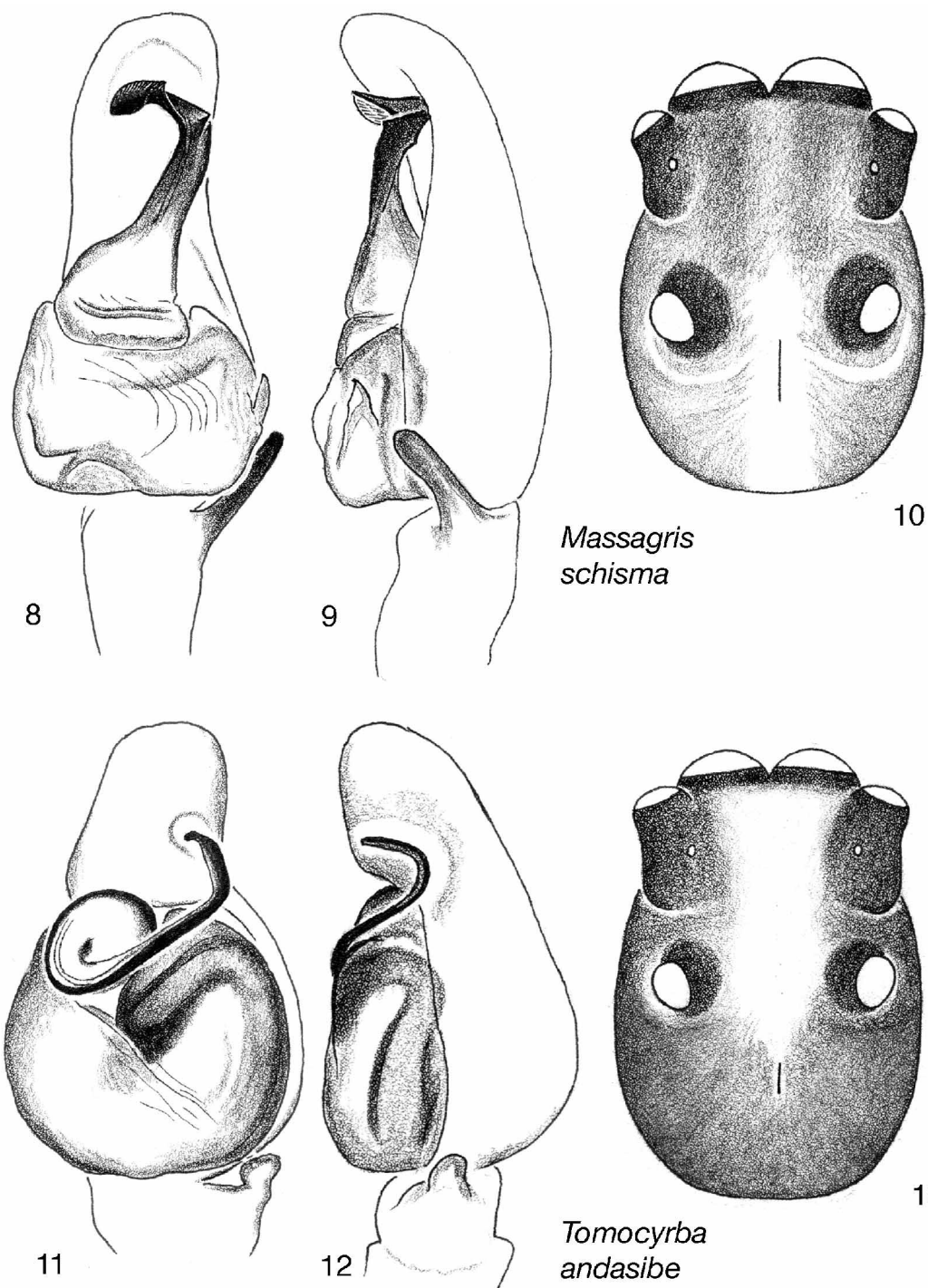
### Hisponinae Simon

This group includes three extant genera (*Hispo* Simon, *Massagris* Simon and *Tomocyriba* Simon) and two fossil genera (*Gorgopsina* Petrunkevitch and *Prolinus* Petrunkevitch). Its members are united by a strong constriction behind the PME (Wanless, 1981). The group is also supported by molecular data (Maddison & Needham, 2006). *Massagris* was revised by Wesołowska (1993); *Tomocyriba* by Prószyński & Żabka (1983).

### *Massagris schisma* Maddison & Zhang, new species

Figs. 8–10

**Type material.** Holotype male in UBC-SEM from South Africa with label:



**FIGURES 8–13.** *Massagris schisma* 8. Left palpus of male holotype, ventral; 9. Left palpus of male holotype, retrolateral; 10. carapace of male. *Tomocyriba andasibe* 11. Left palpus of male paratype (DNA voucher specimen d127), ventral; 12. left palpus of male paratype (voucher d127), retrolateral; 13. carapace of male holotype.

SOUTH AFRICA: Northern Cape, Oorlogskloof Nature Reserve. 14 April 2001. G. Binford. Several legs of the holotype were used for molecular data by Maddison & Needham (2006; DNA voucher d081).

**Etymology.** The name refers to the deep cleft behind the PME.

**Diagnosis.** Distinguished from others of the genus by the long undivided embolus.

**Description.** Male. Holotype total length 4.0: carapace 2.2 long, 1.6 wide, 1.0 high; abdomen 1.8 long, 1.3 wide. Carapace (Fig. 10) red brown with a yellow patch from PLEs to posterior thoracic margin, eyes with dark surrounds, clypeus and eye region with pale setae. Fovea relatively long. Eye sizes: AME 0.50, ALE 0.27, PME 0.08, PLE 0.30. First eye row 1.50 wide, second eye row 1.10 wide, third eye row 1.38 wide, eye area 1.33 long. Clypeus height 0.08. Chelicerae red brown, promargin with four teeth, retromargin with one tooth and three denticles. Endites and labium reddish brown. Sternum light amber. Legs pale yellow with grayish brown annulations. Spination of leg I: metatarsi v 2-0-0; tibiae v 2-2-2; femora d 0-2-3. Measurements of palp and legs: palp 2.0; leg I 5.3, II 4.3, III 4.2, IV 4.6. Leg formula: 1423. Abdomen oval and pale yellow, with black and white setae; dorsum with many irregular grey streaks laterally, two grey spots at anterior center, two arcs and some white speckles at posterior end; venter with a wide grey band in the middle. Spinnerets amber. Palp (Figs. 8,9): Embolus long and curved distally with a beak-like process at the angle; tegulum with median apophysis at retrolateral center; tibial apophysis long and finger-like.

***Tomocyriba andasibe* Maddison & Zhang, new species**

Figs. 11–13

**Type material.** Holotype male in CAS from Madagascar with label:

MADAGASCAR: Prov. Toamasina Res. Analamazaotra, Parc National Andasibe, 23 road km E Moramanga 18°56'38.2"S, 048°25'03.2"E, elev. 960m rain forest 16–18.i.2003 C. Griswold, D. Silva, D. Andriamalala General collecting, night BLF7994 CASENT 9005649. Paratype: 1 male, same data as holotype. Several legs of the paratype was used for molecular data by Maddison & Needham (2006; DNA voucher d127).

**Diagnosis.** Distinguished from the similar *T. kikuyu* Prószyński & Żabka (1983) by the round tegulum and less coiled embolus.

**Etymology.** Named for the type locality.

**Description.** Male. Total length 2.7–2.8. Holotype total length 2.8: carapace 1.5 long, 1.1

wide, 0.9 high; abdomen 1.4 long, 1.2 wide. Carapace (Fig. 13) dark red brown with some dark brown irregular streaks and a yellow patch from AMEs to fovea; clypeus and eye region with black and white setae. Fovea short. Eye sizes: AME 0.35, ALE 0.20, PME 0.05, PLE 0.18. First eye row 0.95 wide, second eye row 0.63 wide, third eye row 0.85 wide, eye area 0.83 long. Clypeus height 0.07. Chelicerae red brown, central front slightly depressed, promargin with three small and one bicuspid teeth, retromargin with one bicuspid tooth. Endites and labium grayish brown. Sternum brownish. Coxa, trochanter and femur of leg I brownish; other segments and legs pale yellow. Spination of leg I: metatarsi v 2-0-0; tibiae v 2-0-2; femora d 0-0-1. Measurements of palp and legs: palp 1.5; leg I 2.9, II 2.3, III 2.5, IV 3.0. Leg formula: 4132. Abdomen oval, dorsum with one central and three pairs of lateral brown patches, as well as many white speckles, lateral and posterior abdomen dark, venter and spinnerets pale yellow. Palp (Figs. 11, 12): Embolus long and slightly coiled, tibial apophysis short.

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