

The genus *Lycosoides* Lucas, 1846 in the Maghreb region, with the description of five new species (Araneae: Agelenidae)

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Abstract

North African species of the genus *Lycosoides* Lucas, 1846 are revised. Five new species are described: *L. incisofemoralis* Bosmans, **sp. n.** (♂♀) from Algeria, *L. kabyliana* Bosmans, **sp. n.** (♂♀) from Algeria, *L. murphyorum* Bosmans, **sp. n.** (♂♀) from Morocco, *L. robertsi* Bosmans, **sp. n.** (♂) from Tunisia, and *L. saiss* Bosmans, **sp. n.** (♂♀) from Morocco. Previously unknown sexes are first described for two species: *L. leprieuri* (Simon, 1875) from Algeria (♀) and *L. parva* (Denis, 1954) from Morocco (♂). One synonym is proposed: *Lycosoides subfasciata* (Simon, 1870) with *L. flavomaculata* (Lucas, 1843), **syn. n.** An identification key to all *Lycosoides* species of the Maghreb is provided. A complicated shape of the palpal conductor, with distinct dorsal and ventral branches, appears to be an important diagnostic character for the genus *Lycosoides*.

Keywords: Algeria • description • Morocco • North Africa • revision

Introduction

The genus *Lycosoides* Lucas, 1846 was erected to accommodate six Algerian species: *L. algerica* Lucas, 1846, *L. digitalis* Lucas, 1846, *L. flavomaculata* Lucas, 1846 (type species), *L. pallipes* Lucas, 1846, *L. rufipes* Lucas, 1846, and *L. rufithorax* Lucas, 1846. However, these species happened either to be invalid, or to belong to different spider families. Actually, *L. flavomaculata* is the only valid species belonging to the genus. *L. rufipes* is now considered a junior synonym of *L. coarctata* (Simon, 1875), and *L. algerica* of *Zoropsis spinimana* Dufour, 1820. Three species, *L. digi-*

talis, *L. pallipes*, and *L. rufithorax*, were declared *nomina dubia* by de Blauwe (1980), because the types could not be traced in the Muséum d'Histoire naturelle de Paris, and none of the species was provided with illustrations of the copulatory organs.

Several species were described later, all in the genus *Textrix* Sundevall, 1833. In 1870, Simon described *Textrix subfasciata* Simon, 1870 from Morocco and *T. variegata* Simon, 1870 from Morocco and Gibraltar. Later, Denis (1954) described three more *Textrix* species from Morocco: *T. crassivulva* Denis, 1954, *T. parva* Denis, 1954, and *T. instabilis* Denis, 1954. In an important contribution, Murphy & Murphy (1978) redescribed several species from Morocco and provided the first description of the male of *L. crassivulva*.

De Blauwe (1980) revised all the Mediterranean *Textrix* s. l., describing also *Textrix caparti*. Only the female was described and the species was argued to be misidentified as *T. flavomaculata* in the past.

In his important work on the *Classification of the Cribellate Spiders and Some Allied Families*, Lehtinen (1967) redefined the genus *Textrix* and revalidated the genus *Lycosoides*; since then, all the aforementioned species have been assigned to the latter genus. He also divided it into three groups: the *coarctata* group to also include *L. variegata*, the *flavomaculata* group to include *L. digitalis*, *L. parva*, and *L. subfasciata*, and the *variegata* group to also include *L. instabilis*.

To date, 10 *Lycosoides* species have been described worldwide (World Spider Catalog 2022), of which nine occur in the Maghreb. The tenth species, *L. lehtineni* Marusik & Guseinov, 2003, occurs in Azerbaijan.

The aims of the present paper are: 1) to redescribe all the *Lycosoides* species of the Maghreb, 2) to describe five new species, and 3) to present new distribution data for all species.

Material and methods

The spiders studied in this revision were mainly obtained by the senior author (RB) during his stay in Algeria for four years, and also during several collecting trips to Morocco and Tunisia. The materials collected by Y. Alioua, S. Benhalima, N. Bouragba, O. Kherbouche-Abrous, B. Lips, S. Moutaouakil, and J. Van Keer have also been used. The position and elevation of collecting localities were recorded based on: <http://geonames.org>.

Species were examined using a Nikon SMZ1270 stereo microscope. Details of male palps and female epigynes were studied by means of an Olympus CH-2 microscope, with a drawing tube. Left palps are illustrated. Somatic measurements were made with a scaled eye piece in the stereo microscope and are expressed in mm and presented in the format minimum–maximum. Male palps were detached and transferred to glycerol for examination under the microscope. Female epigynes were excised using sharpened needles. These were then transferred to clove oil for

examination under the microscope. Later, palps and epigynes were returned to 70% ethanol.

Abbreviations: Copulatory organs: A = atrium, C = conductor, CD = copulatory duct, CDB = conductor, dorsal branch, CVB = conductor, ventral branch, DEP = dorsal part of epigynal plate, DPT = dorsal patellar tubercle, DTT = dorsal tibial tubercle, E = embolus, EP = epigynal plate, MP = median plate, RPA = retrolateral patellar apophysis, RTA = retrolateral tibial apophysis, S = septum, Sp = spermatheca, T = tegulum, TMC = transverse membranous connection. Eyes: AME, ALE, PME, PLE = anterior median, anterior lateral, posterior median and posterior lateral eyes. Legs: Fe = femur, Pa = patella, Ti = tibia, Mt = metatarsus, Ta = tarsus. Collector: RB = Robert Bosmans.

The type material is deposited in the following museums: BMNH = British Museum of Natural History, London, UK; IZPAN = Instytut Zoologiczny, Polska Akademia Nauk, Poland; MNHN = Muséum d'Histoire naturelle de Paris, France; NRS = Naturhistoriska Riksmuseet Stockholm, Sweden; RBINS = Royal Belgian Institute for Natural Sciences, Brussels, Belgium. Non-type materials are also shared between the following private collections: CJVK = Collection of Johan Van Keer, Belgium; COA = Collection of Ourida Kherbouche-Arous, Algeria; CRB = Collection of Robert Bosmans, Belgium; CSB = Collection of Souâd Benhalima, Morocco; CSL: Collection of Sylvain Lecigne, France; CYA = Collection Youcef Alioua, Algeria.

Lycosoides Lucas, 1846

Type species: Lycosoides flavomaculata Lucas, 1846 from Algeria.

Species	Total length	Carapace length	Carapace width
Males			
<i>coarctata</i>	7.2–12.9	3.00–5.50	2.00–3.90
<i>crassivulva</i>	11.8	5.50	3.80
<i>flavomaculata</i>	4.3–9.0	2.05–4.50	1.55–3.72
<i>incisofemoralis</i>	5.5–8.9	2.00–3.70	1.30–2.35
<i>instabilis</i>	7.7	3.21	2.19
<i>kabyliana</i>	4.4–5.0	2.08–2.36	1.36–1.68
<i>leprieuri</i>	4.2–5.7	2.00–2.90	1.30–2.05
<i>murphyorum</i>	3.4–3.4	1.15–1.40	1.35–1.40
<i>parva</i>	4.8–4.9	2.37–2.51	1.52–1.72
<i>robertsi</i>	6.2	2.71	1.75
<i>saiss</i>	8.7–10.8	4.12–5.28	2.64–3.52
<i>variegata</i>	6.2	3.21	1.92
Females			
<i>coarctata</i>	4.9–14.5	2.40–5.80	1.10–3.90
<i>crassivulva</i>	11.8–12.3	3.65–5.50	2.31–3.30
<i>flavomaculata</i>	5.1–12.0	2.61–4.46	1.71–3.72
<i>incisofemoralis</i>	6.5–8.5	2.15–5.00	1.45–3.00
<i>instabilis</i>	5.5–10.0	2.24–4.10	1.49–2.31
<i>kabyliana</i>	6.4–7.1	2.60–2.95	1.70–2.21
<i>leprieuri</i>	5.1–7.5	1.95–3.30	1.30–2.10
<i>murphyorum</i>	4.9–6.6	2.87–3.33	1.62–2.01
<i>parva</i>	3.8–4.8	1.70–2.20	1.10–1.43
<i>saiss</i>	8.4	3.85	2.46
<i>variegata</i>	5.80–13.3	3.10–6.00	1.90–4.00

Table 1: Variation in body sizes of *Lycosoides* species from the Maghreb.

Diagnosis: The external characteristics are generally similar to those of *Textrix*, the genus also having elongated spinnerets. The two differ in the following characters: *Textrix* males have no patellar apophysis and a simple conductor, while *Lycosoides* species have apophyses or tubercles on the palpal patella and a conductor complex with dorsal and ventral branches. The females of *Textrix* have a slightly raised postero-median portion of the heart-shaped epigyne (Lehtinen 1967; Bolzern, Burckhardt & Hänggi 2013), while the epigynes of *Lycosoides* species have a distinct atrium.

Diagnostic characters of *Lycosoides* species

Size: The variation in sizes for the species from the Maghreb is given Table 1. Species appear to have overlapping sizes, so none of them can be identified by the size only.

Colouration: Colouration is variable in most species and often influenced by the habitat type. An identification cannot be based on it, and can only be used for confirmation. Some species have a distinct pair of abdominal pale spots, but in old specimens these could completely disappear.

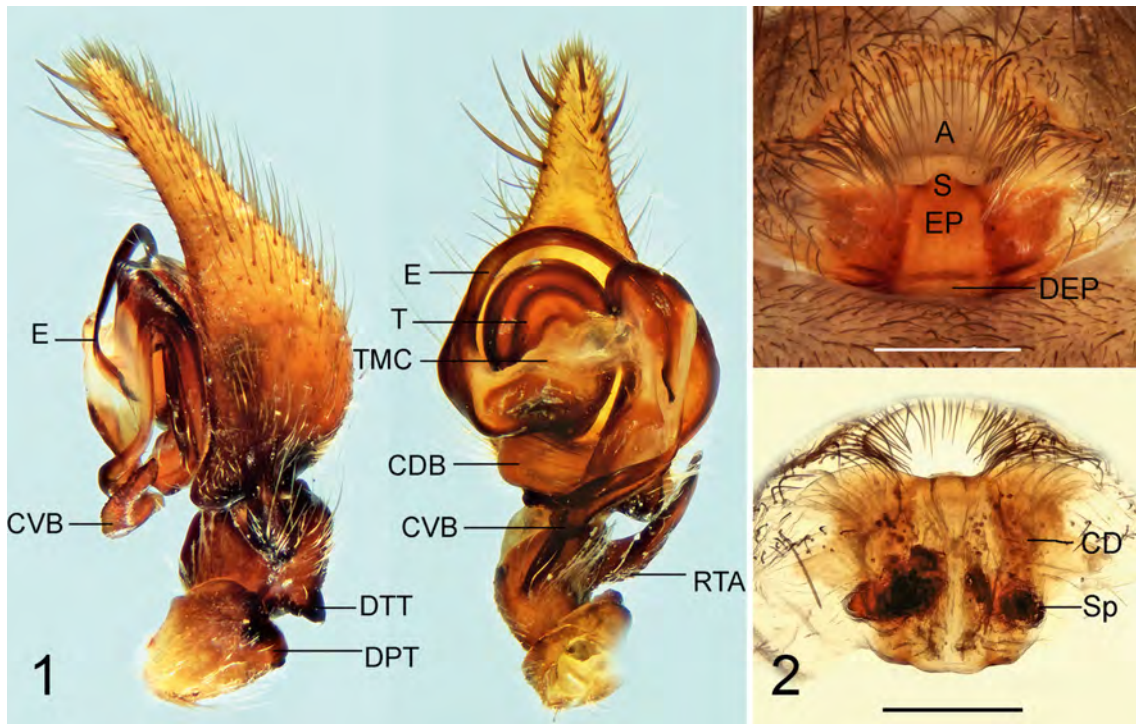
Spination: All leg podomeres except the tarsi carry numerous spines. No diagnostic differences have been found in the studied species.

Chelicerae: Basal pattern is 3 promarginal and 3 retromarginal teeth in the fang groove, except in *L. leprieuri*, *L. murphyorum*, and *L. parva*.

Copulatory organs: Morphological characters of the male and female copulatory organs are the most important diagnostic characters, as in most other spiders (see Figs. 1–2). The nomenclature of morphological terms follows Bolzern, Burckhardt & Hänggi (2013) as developed for the genus *Tegenaria* Latreille, 1804, except for the term spermatheca which is used instead of receptacula.

Diagnostic characters in *Lycosoides* males can be found not only in the bulb, but also in apophyses, a degree of sclerotization and incisions of femur, patella and tibia. All species have diagnostic characters on the tibia, many also on patellae and one also on the femur. The cymbium has a basal retrolateral knob. The bulb carries the tegulum (T), embolus (E), and conductor (C). No diagnostic characters were found in the tegulum. The embolus originates at the prolateral side of the bulb (at 9–11 o'clock), as in other Agelenidae. It is thread- or ribbon-like and semi-circular, the tip can be of a species-specific shape. While the tegulum and the embolus are easily recognizable, the conductor has a very complicated structure, compared to other Agelenidae. It originates from the basal part of the embolus as a membranous, transversal process, being divided anterolaterally into a dorsal branch (CDB) and a ventral branch (CVB), both continuing in posterior direction and best seen in pro- and/or retrolateral views; both branches can bear species-specific structures.

In females, the shape of epigyne is decisive for identification. Externally, the epigyne has a median plate of variable



Figs. 1–2: **1** male palp of *Lycosoides saiss* Bosmans, sp. n. in retrolateral and ventral views; **2** epigyne and vulva of *L. variegata* (Simon, 1870) in ventral and dorsal views. A = atrium; CD = copulatory ducts; CDB = conductor, dorsal branch; CVB = conductor, ventral branch; DEP = dorsal part of epigynal plate; DPT = dorsal patellar tubercle; DTT = dorsal tibial tubercle; E = embolus; EP = epigynal plate; RTA = retrolateral tibial apophysis; S = septum; Sp = spermatheca; T = tegulum; TMC = transverse membranous connection. Scale bars = 0.2 mm (2).

size and shape (Fig. 2, EP); this plate is incised anteriorly by an atrium (A) of variable size, shape and position; the plate has a dorsal extension into the abdomen (DEP) and when the epigyne is bulging, the plate can look much larger, which complicates identification; in the atrium there is a postero-median septum (S) with the copulatory openings at each side of it. Sometimes the epigyne is poorly sclerotized and limits of the atrium and the postero-median plate are hardly visible, which also complicates identification. The vulva is complex and often difficult to clear, probably because much of the studied material was collected with formaldehyde. Copulatory ducts (CD) are difficult to distinguish and the connections to the spermathecae (S) are complicated and not fully understood. The spermathecae are generally rather small and can have a species-specific distinct position.

Key to *Lycosoides* species of the Maghreb

Males

- 1 Distal part of palpal femur with a retrolateral sclerotized fork-shaped incision (Fig. 38, FI) *incisofemoralis*
- Distal part of palpal femur without incision 2
- 2 Palpal patella with three tubercles, 2 dorsal and 1 retrolateral (Figs. 59, 61); embolus long, forming 2/3 of a circle (Fig. 60)..... *kabyliana*
- Palpal patella at most with one tubercle (Figs. 6, 17, 27, 38, 49, 69, 78, 89, 98, 106, 115); embolus shorter, forming half a circle (Figs. 7, 18, 28)..... 3

- 3 Tip of tibial apophysis with a thorn (Figs. 99, 101, RTA)..... *robertsi*
- Tip of tibial apophysis without thorn 4
- 4 Tip of tibial apophysis thread-like (Figs. 89, 92, RTA) ..
..... *parva*
- Tip of tibial apophysis not thread-like 5
- 5 Patella with distinct apophysis (Fig. 27, 71)..... 6
- Patella without apophysis, at most with a small tubercle (Figs. 6, 17, 49, 109)..... 7
- 6 Patella with thick, terminally incised apophysis, not pointed (Figs. 27, 31, RPA)..... *flavomaculata*
- Patella with slender, terminally pointed apophysis (Fig. 71, RPA)..... *leprieuri*
- 7 Tibia with a minute dorsal tooth (Fig. 81, RTA).....
..... *murphyorum*
- Tibia with well-developed pointed apophysis (Figs. 6, 18, 50, 107, 116) 8
- 8 Conductor tip with subterminal white, recurved process (Fig. 10, RP)..... *coarctata*
- Conductor tip without such process (Figs. 18, 50, 107, 117) 9
- 9 Tibia dorsally with a triangular tubercle (Fig. 106); embolus with subterminal twist (Fig. 107) *saiss*
- Tibia dorsally with a rounded tubercle (Figs. 16, 49, 115); embolus without subterminal twist (Figs. 18, 50, 117) 10
- 10 Legs annulated (Figs. 35, 36)..... *instabilis*
- Legs not annulated (Figs. 14–15, 113–114)..... 11

- 11 Bulbus wider than long, with very wide conductor (Fig. 117) *variegata*
 – Bulbus longer than wide, conductor less prominent (Fig. 18) *crassivulva*

Females (unknown in *L. robertsi*)

- 1 Epigynal atrium transverse, 3–4× wider than long (Figs. 11, 21) 2
 – Epigynal atrium slightly longer than wide (Figs. 32, 43, 53, 63, 73, 83, 93, 110, 120) 3
 2 Spermathecae small, separated by more than 5 diameters (Fig. 13) *coarctata*
 – Spermathecae larger, separated by 3 diameters (Fig. 23) *crassivulva*
 3 Epigynal atrium much longer than wide (Figs. 43, 83) 4
 – Epigynal atrium not longer than wide (Figs. 32, 53, 63, 73, 93, 110, 120) 5
 4 Spermathecae large, separated by less than 2 diameters; fertilization ducts prominent, having an oblique position (Figs. 44–45) *incisofemoralis*
 – Spermathecae smaller, separated by more than 2 diameters; fertilization ducts not prominent, having a transverse position (Figs. 84–85) *murphyorum*
 5 Atrium sickle-shaped (Fig. 73) *leprieuri*
 – Atrium not sickle-shaped (Figs. 32, 53, 63, 93, 110, 120) 6
 6 Atrium diamond-shaped, nearly touching the epigastric groove (Fig. 63) *kabyliana*
 – Atrium not diamond-shaped, having a more anterior position (Figs. 32, 53, 110, 120) 7
 7 Atrium very small, quadrangular, only posterior margin sclerotized; spermathecae having a posterolateral position (Figs. 93–95) *parva*
 – Atrium larger and of another form; spermathecae in a different position (Figs. 32–34, 53–55, 110–112, 120–122) 8
 8 Atrium oval or rounded, with semi-circular anterior margin (Figs. 110, 120) 9
 – Atrium rectangular or quadrangular, with anterior margin more angular (Figs. 32, 53) 10
 9 Atrium rectangular to quadrangular (Fig. 110) *saiss*
 – Atrium reversed trapezoid (Fig. 120) *variegata*
 10 Atrium wider than long; spermathecae touching epigastric groove (Figs. 32–34) *flavomaculata*
 – Atrium as wide as long; spermathecae not touching epigastric groove (Figs. 53–55) *instabilis*

Survey of species

Lycosoides caparti (de Blauwe, 1980)

Textrix caparti De Blauwe, 1980: 9, figs. 10–12 (♀)
Lycosoides caparti: Brignoli 1983: 700.

Types: Holotype ♀ (MNHN), taken by de Blauwe from tube 523, with numerous specimens identified by Simon as *L. flavomaculata*; type locality: Algeria, Morocco. Paratypes: 6♀ (MNHN), 2♀ (ISRNB), together with the holotype.

Remarks: The exact type locality is uncertain, due to the presence of several data labels in the tube 523; see also below, under *L. flavomaculata*. Simon usually put all specimens identified as a certain species but collected from different regions in the same vial. The only certainty is that they are from the Maghreb: Morocco (Tanger, Fès), Algeria (Aïn Sefra, Birin, Biskra, Boghari, Bou Saada, Djelfa, El Bayadh (= Géryville), El Khroub, Le Kreider, Djebel Mahadid, Mecheria, Nemours, Tlemcen) or Tunisia (Matmata). It is unknown from which of these localities the type series was taken; most of these localities also concern *L. flavomaculata*, one or more *L. caparti*.

Distribution: Uncertain: Morocco and/or Algeria and Tunisia.

Lycosoides coarctata (Dufour, 1831) (Figs. 3–13, 123)

Aranea coarctata Dufour, 1831: 358, pl. 10, fig. 1 ♀.

Lycosoides rufipes Lucas, 1846: 124, pl. 4, fig. 5 (♂♀).

Textrix coarctata: Pavesi (1880): 338 (cit.); Simon (1875): 125 (♂♀; syn. of *L. rufipes*); Simon (1885): 28 (cit.); Simon (1899): 94 (cit.); Simon (1937): 1014, 1042, figs. 1572–1573 (♂♀); Caporiacco (1934): 140 (cit.); de Blauwe (1980): 15, figs. 18–22 (♂♀).

Lycosoides coarctata Lehtinen (1967): 245, fig. 241 (transferred from *Textrix*); Brignoli (1977): 17 (cit.); Murphy & Murphy (1978): 254, figs. 5–6, 9, 11 (♂♀); Levy (1996): 108, figs. 96–100 (♂♀).

Types: Female syntype(s) of *Aranea coarctata* from Spain, probably lost (Levy 1996). The neotype ♂ (IZPAN) of *L. coarctata* from “Palestine” was designated by De Blauwe (1980). A female from the French Pyrénées, which was also selected as “neotype” by De Blauwe (op. cit.), is of no taxonomic value since the neotype is to be a unique specimen.

Other material: ALGERIA: Aïn Defla: 1♀ (CRB), Khemis Miliana, 36°15'44"N 2°13'5"E, 295 m, stones in grassland, 17 April 1987, RB. Alger: 4♀ (CRB), Beaulieu, 36°43'0"N 3°10'0"E, 50 m, in garden, 08 June 1989, RB; 1♀ (CRB), same locality, 5 July 1989, RB; 1♂, 1♀ (CRB), same locality, 10 October 1989, RB; 1♀ (CRB), Ben Aknoun, Sidi M'Barek, Oued El Roumen, 36°44'26"N 3°00'3"E, 200 m, stones along Oued El Roumen, 20 April 1989, RB; 1♂ (CRB), Les Eucalyptus, 36°39'N 3°9'E, 35 m, pitfall traps in wasteland, 29 October 1989, RB; 1♀ (CRB), same locality, 06 April 1990, RB; 2♂ (CRB), Hydra, 36°45'47"N 3°3'2"E, 200 m, in crevice of wall, 26 October 1989, RB; 3♂ (CRB), Kouba, 36°43'32"N 3°5'36"E, 50 m, in and around house, November 1987, RB. Annaba: 3♀ (CRB), Chetaïbi, 37°3'58"N 7°22'49"E, 810 m, stones in grassland, 01 March 1990, RB. Batna: 2♀ (CRB), Azem forest, Chaab, 35°44'21"N 6°27'01"E, 1070 m, under stones, 03 November 2020, Y. Alioua. Bejaia: 4♀ (CRB),



Figs. 3–13: *Lycosoides coarctata* (Dufour, 1831). **3** male, dorsal view; **4** female, dorsal view; **5** same, ventral view; **6** male palp, retrolateral view; **7** same; ventral view; **8** same, prolateral view; **9** male palpal tibia, dorsal view; **10** conductor, ventral view; **11** epigyne; **12** vulva, ventral view; **13** same, dorsal view. RP = recurved membranous process on distal part of conductor. Scale bars = 1 mm (1–3), 0.5 mm (6–8, 12–13), 0.2 mm (9–10).

Col de Talmetz, 36°41'0"N 4°43'0"E, 825 m, litter in small *Quercus suber* forest, 20 October 1988, RB; 1♀ (CRB), Tichy, 36°40'0"N 5°10'0"E, 5 m, grassland in dunes, 17 April 1982, RB. Bouira: 3♀ (CRB), 10 km N of Bouira, 36°30'N 3°52'E, 530 m, stones in grassland, 27 February–01 March 1990, RB. Constantine: 1♀ (CRB), Aïn Sissaoui, 36°21'N 6°37'2"E, 550 m, wet grassland along Oued Boumerzouk, 22 November 1989, RB. Guelma: 1♂, 1♀ (CRB), Hammam Meskoutine, 36°27'36"N 7°16'15"E, 420 m, stones in grassland, 02 November 1989; 1♀ (CRB), same locality, 28 February 1990, RB. Skikda: 10♀ (CRB), Bouchata, 36°47'0"N 6°46'0"E, 400 m, stones in grassland, 12 March 1990, RB. Souk Ahras: 1♂, 2♀ (CRB), N. Bou

Hadjar, Barrage de l'Oued Cheffia, 36°37'0"N 8°2'0"E, 250 m, stones along lake, 22 November 1989; 1♀ (CRB), same locality, pitfall traps in *Pistacea* shrub, 28 February–01 March 1990, RB. Tizi Ouzou: 1♀ (CRB), 5 km E of Tizi Ouzou, 36°43'1"N 4°2'59"E, 180 m, in grassland on a wet slope, 25 January–1 March 1990, RB. MOROCCO: Fès-Meknès: 7♀ (CJVK), S. Azrou, 33°26'17"N 5°13'14"W, 1450 m, litter and stones in dense *Quercus ilex* forest, 07 February 1996, J. Van Keer. Guelmim-Oued Noun: 6♀ (CRB), Tarhiijt, 29°03'36"N 9°24'36"W, stones and litter in palm yard, 13 February 2007, RB. Oriental: 1♀ (CRB), Aïn Guettara SW, 33°53'59"N 3°23'26"W, 650 m, stones in steppe, 30 May 2018, RB; 1♀ (CRB), Aïn Sfa, 34°44'58"N

2°9'8"W, 650 m, stones in steppe, 24 May 2018, RB; 1♂, 2♀ (CRB), Aïn Sfa, near cave Kaf, 34°46'39"N 2°8'51"W, 650 m, stones along river, 24 May 2018, RB; 1♀ (CRB), Debdou S., 33°57'31"N 3°2'26"W, 1550 m, stones in *Quercus ilex* forest, stones near spring, 31 May 2018, RB; 1♀ (CRB), Nador, Trifa forest, 35°19'23"N 2°58'59"W, 200 m, stones in mixed *Eucalyptus-Pinus* forest, 27 May 2018, RB; 1♀ (CRB), Aïn Almou, road to Maison Forestière, 34°49'53"N 2°9'8"W, 995 m, stones in *Pinus* plantation, May 2018, RB; 3♀ (CRB), Tafoughalt N., 34°49'53"N 2°24'36"W, 600 m, stones in mixed *Pinus-Thuja* forest, May 2018, RB; 1♀ (CRB), Zegzel-Tafoughalt road, 34°48'56"N 2°24'6"W, 700 m, stones in *Pinus* forest, 26 May 2018, RB. Souss-Massa: 6♀ (CRB), Anza, 3 km N. Agadir, 30°28'0"N 8°20'0"W, 50 m, stones in *Euphorbia* shrub, 03 February 1996, RB; 2♀ (CRB), Immouzèr Ida Outanane S., Paradise valley, 30°35'0"N 9°30'0"W, stones in Arganier steppe, 8 February 2007, RB; 1♀ (CRB), Tagmoute N., Tagadirt, 30°36'36"N 9°16'48"W, 735 m, litter in palm yard, 14 February 2007, RB. TUNISIA. Ariana: 8♀ (CRB), Kalaat Landaluz, 37°02'51"N 10°06'20"E, 2 m, pitfall traps in salt marsh, March–April 2020, A. Boubakri. Bizerte: 2♀ (CRB), Ichgeul National Park, 37°8'20"N 9°41'45"E, 15 m, stones in grassland, 25 January 1995, RB; 3♀ (CRB), Utique, 37°03'53"N 10°03'05"E, 5 m, litter in *Euphorbia* hedge, 29 January 2003, RB. Gabes: 4♀ (CRB), Zarat, 33°40'0"N 10°21'0"E, 30 m, litter in oasis, 19 December 2000, RB. Gafsa: 1♀ (CRB), Senef S., Djebel Biada, 34°24'44"N 9°13'56"E, 1100 m, stones in steppe, 09 May 2006, RB. Jendouba: 2♀ (CRB), Aïn Sbaa E, near Oued Titria, 36°40'0"N 8°45'0"E, 200 m, stones in *Quercus suber* forest, 28 February 2005, RB; 1♀ (CRB), Ghardimaou W., 36°27'27"N 8°24'54"E, 250 m, stones in grassland, 05 March 2005, RB; 1♀ (CRB), Tabarka W., 36°57'16"N 8°45'29"E, 50 m, stones in dune shrub, 07 March 2005, RB; 5♀ (CRB), Tabarka, 36°57'16"N 8°45'29"E, 100 m, stones on slopes to castle, 07 March 2005, RB. Le Kef: 1♀ (CRB), Kalaat Es Senam, 35°45'0"N 8°23'0"E, 650 m, 10 May 2006, RB. Nabeul: 1♀ (CRB), Hammamet NE, 36°24'57"N 10°39'43"E, 15 m, stones in olive groove, 31 January 2003, RB; 4♀ (CRB), Kerkouana S., 36°56'47"N 11°05'57"E, 10 m, litter in *Pinus* forest, 26 January 2003, RB; 1♀ (CRB), Korba, 36°36'52"N 10°53'21"E, 1 m, stones bordering salt marsh, 31 January 2003, RB; 1♀ (CRB), Somaa, 36°31'41"N 10°45'22"E, 140 m, stones in *Pinus* plantation, 31 January 2003, RB; 5♀ (CRB), Tazerka, 36°38'30"N 10°54'34"E, 1 m, litter in salt marsh, 28 January 2003, RB; 5♀ (CRB), North of Zaouïet el Megaiz, 36°56'41"N 10°51'53"E, 75 m, stones in *Pinus* forest, 28 January 2003, RB. Sousse: 1♀ (CRB), Hergla S., 36°12'28"N 10°11'44"E, 5 m, litter in salt marsh, 4 January 1995, RB. Zaghuan: 1♂, 6♀ (CRB), Djebel Zaghuan, 36°21'52"N 10°14'47"E, 500 m, stones in *Pinus halepensis* forest, 24 January 1995, RB; 5♀ (CRB), Djebel Ressas, 36°36'24"N 10°19'19"E, 140 m, stones in olive groove, 28 January 2003, RB. FRANCE: Pyrénées-Orientales: 3♂, 22♀ (MNHN), Banyuls, 42°28'54"N 3°7'41"E, April 1909, no collector name. ITALY: Puglia: 3♀ (CRB), Isola Tremiti,

San Nicola, 42°7'0"N 15°31'0"E, under stones, 08 June 2002, RB. PORTUGAL: Algarve: 2♀ (CRB), Albufeira, 37°5'7"N 8°15'27"W, 01–09 March 1992, P. Poot; 2♀ (CRB), Barragem de Alcoutim, 37°28'0"N 7°28'0"W, marshy area below the dam, 16 February 2006, RB; 5♀ (CRB), Barragem do Arade, 37°18'0"N 8°17'0"W, stones in *Pinus* forest, 16 February 2006, RB; 1♀ (CRB), Barragem de Beliche, 37°16'0"N 7°30'0"W, marshy area below the dam, 18 February 2006, RB; 3♀ (CRB), Ribeira de Algibre, 37°11'0"N 8°5'0"W, 105 m, stones in olive yard, 17 February 2006, RB; 1♀ (CRB), Santa Estêvão N., Moinhas de Rocha waterfall, 37°7'0"N 7°43'W, 100 m, herbs bordering fields, 19 February 2006, RB; 1♀ (CRB), Tavira E., Ribeira do Almargem, stones near river, 37°7'0"N 7°39'0"W, 5 m, 19 February 2006, RB. SPAIN: Islas Canarias: 2♀ (CRB), Gran Canaria: Cruz de Tejada S., Llanos de Lapel, 28°20'N 16°51'W, 1515 m, stones in *Pinus* forest, 03 April 2010, RB. Mallorca: 1♀ (CRB), Deià, 39°44'53"N 2°38'53"E, 185 m, stones at border of river, 04 March 2005, K. De Smet. Málaga: 1♀ (CRB), between Coin and Mijas, 36°34'33"N 4°51'17"W, 315 m, pitfall traps in degraded *Quercus* forest, April 1998–April 1999, RB; 2♀ (CRB), Pizarra, 36°45'55"N 4°42'30"W, 170 m, stones in grassland, 17 December 1997, RB.

Previous records: ALGERIA: Alger: Alger region, 36°43'N 3°05'E (Lucas 1846; Simon 1899). Constantine: Constantine, 36°21'54"N 6°36'53"E (Lucas 1846). Djelfa: Takersan, 34°24'44"N 2°54'16"E (Simon 1899). El Tarf: El Kala, 36°53'44"N 8°26'36"E (Lucas 1846). LIBYA: Darnah: Darnah, 32°46'01"N 22°38'12"E (as Derna; Caporiacco 1934). Misratah: Misratah, 32°22'31"N 15°05'33"E (Rizzardi 1896). Shahat: Cyrene, 32°49'40"N 21°51'44"E (Brignoli 1977). Tripoli: Tripoli, 32°53'15"N 13°11'14"E (Simon 1908). Unknown locality: Sahanta (Brignoli 1977). TUNISIA: Ben Arous: Mohammedia, 36°40'28"N 10°09'23"E (Pavesi 1880). Bizerte: Sidi-Abdul-Vached (unknown locality near Tunis) (Pavesi 1880). Gabès: Gabès, 33°52'53"N 10°05'54"E (Simon 1885). Jendouba: Tabarka, 36°57'16"N 8°45'29"E (Simon 1908). Kairouan: Kairouan, 35°40'N 10°05'E (Simon 1885). Tunis: Hammam Lif, 33°27'07"N 9°48'07"E (Pavesi 1884); Tunis, N36°49'08" E10°09'57" (Pavesi 1884). Zaghuan: Djebel Ressas, N36°36'24" E10°19'19" (Simon 1885). EGYPT: Alexandria: Alexandria, 31°12'06"N 29°54'57"E (Pickard-Cambridge 1876).

Diagnosis: The species *L. coarctata* and *L. crassivulva* strongly resemble each other because both have non-annulated legs. The males of *L. coarctata* differ in the presence of a white, recurved process near the tip of the conductor (Fig. 10, RP), and the dorsally rounded palpal tibia, which is angular in *L. crassivulva*. The females can be separated from those of *L. crassivulva* by the more pronounced median septum (Figs. 11, 21). In the cleared epigynes, differences are more evident. In *L. coarctata*, the spermathecae are separated by more than 5 diameters, having a posterolateral position, while in *L. crassivulva* the spermathecae are separated by about 3 diameters, having a much more central position (Figs. 13, 23).



Figs. 14–23: *Lycosoides crassivulva* (Denis, 1954). **14** male, dorsal view; **15** female, dorsal view; **16** same, ventral view; **17** male palp, retrolateral view; **18** same; ventral view; **19** same, dorsal view; **20** palpal tibia, retrolateral view, **21** epigyne; **22** vulva, ventral view; **23** same, dorsal view. Scale bars = 3 mm (14–16), 0.5 mm (14–19, 22–23), 0.2 mm (20).

Distribution: From Spain to Turkey and from Morocco to Israel (Fig. 123).

Description: Measurements: Male ($n = 19$): total length 7.2–12.9; carapace 3.0–5.5 long, 2.0–3.9 wide. Female, ($n = 20$): total length 4.9–14.5; carapace 2.4–5.8 long, 1.1–3.9 wide. Colouration: Carapace orange-brown, thoracic part darker; sternum yellowish brown with darker margins; legs uniformly yellowish brown; abdomen variable, dorsally greyish brown mottled with grey, paler with four chevrons on posterior part, venter grey-brown, darker towards the spinnerets; spinnerets pale grey-brown. Male palp (Figs. 6–10): patella dorsally with black tubercle, retrolaterally with some black denticles; tibia with ventral crest and a large, curved dorso-retrolateral apophysis, with short, broad base (Fig. 9) and longer distal part pointed in retrolateral

direction; conductor raising at embolar base and turning upwards with a semi-membranous sclerite, then split into a dorsal and ventral branch; dorsal branch anteriorly, rounded, passing in posterior direction under the ventral branch, terminally rounded; ventral branch an oblique sclerite, distally split into a prolateral and a retrolateral part, terminally converging, with truncate tip and with typical recurved subterminal membranous process (Fig. 10, RP). Epigyne/vulva (Figs. 11–13): epigynal plate reversed trapezoid; atrium wide, transverse with rounded, poorly marked anterior margin, posteriorly with broad septum of the epigynal plate; spermathecae close to the posterior margin, small, separated by five times their diameter.

***Lycosoides crassivulva* (Denis, 1954)** (Figs. 14–23, 124)

Textrix crassivulva Denis, 1954: 142, fig. 20 (♀); Denis (1956): 28 (cit.); de Blauwe (1980): 5, figs. 4–5 (♀).

Lycosoides coarctata; Brignoli (1977): 16 (synonymy with *crassivulva* rejected).

Lycosoides crassivulva: Lehtinen (1967): 245 (transferred from *Textrix*); Murphy & Murphy (1978): 254, figs. 1–2, 7, 10.

Types: Three ♀ syntypes (MNHN), MOROCCO: Marrakech-Safi, High Atlas, Aghbalou de l'Ourika, 31°40'N 6°43'W, 2025 m, 27 March 1952, J. Gattefossé.

Other material: MOROCCO: Guelmim-Oued Noun: 2♂, 6♀ (CRB), Tarhijjt, 29°3'36"N 9°24'36"W, 560 m, litter and stones in palm yard, 13 February 2007, RB. Marrakech-Safi: 2♀ (CRB), Amizmiz, 31°13'27"N 8°15'02"W, 07 February 1962, J. Malhomme); 1♀ (CSL), Oukaimeden, 31°13'40"N 7°49'18"W, 2334 m, in forest, 19 March 2021, S. Moutaouakil; 2♀ (CSL), 31°14'34"N 7°49'00"W, 2047 m, in forest, 19 March 2021, S. Moutaouakil; 1♀ (CSL), N31°14'32" W7°48'53", 2089 m, in forest, 19 March 2021, S. Moutaouakil; 2♀ (CSB), My Brahim, Plateau du Kik, 31°16'56"N 8°02'01"W, 1315 m, 29 April 1962, J. Malhomme. Souss-Massa: 5♀ (CJVK), Anza, 3 km N. Agadir, 30°28'0"N 8°20'0"W, 50 m, stones in *Euphorbia* shrub, 03 February 1996, J. Van Keer; 5♀ (CRB), between Aoulouz and Taliouine, 30°34'35"N 8°1'53"W, 600 m, stones in Arganier steppe, 4 February 1996, RB; 1♀ (CRB), Sebte-Guerdane, 30°23'15"N 9°1'24"W, 200 m, stones along cultivated fields, 04 February 1996, RB.

Previous records: MOROCCO: Marrakech-Safi: Aghbalou de l'Ourika, 31°40'N 6°43'W, 2025 m (type locality; Denis 1954; De Blauwe 1980). Souss-Massa: between Tamanar and Agadir, 30°59'N 9°41'W (Denis 1956); 8 km N of Agadir, 30°29'N 9°40'W (Murphy & Murphy 1978).

Diagnosis: See above under *L. coarctata*.

Distribution: South of Morocco (Fig. 124).

Description: Measurements: Male (n = 1): total length 11.8; carapace 5.49 long, 3.82 wide. Female (n = 6): total length 11.8–12.3; carapace 3.65–5.48 long, 2.31–3.30 wide. Colouration (Figs. 14–16): carapace with cephalic part dull red, darker around the eyes, thoracic part lighter; chelicerae dark red; sternum reddish brown; darker at margin; legs uniformly yellow-brown; abdomen dorsally dull brown, some specimens with up to four paired chevrons; anterior spinnerets brown, other spinnerets lighter. Male palp (Figs. 17–20): patella with a small, black, antero-dorsal tubercle and with two small retrolateral teeth; tibia with a ventral crest, a strong dorsal angularity and a large, dorso-retrolateral apophysis, with short, laterally directed base and elongated, sabre-like distal part; dorsal branch of conductor semi-circular, distal part grooved with rounded tip; ventral branch of conductor a large, oblique sclerite, consisting of a rectangular, terminally truncate dorsal part and a slender bipartite ventral part crossing the dorsal part; embolus forming half a circle, at its base twisted. Epigyne/vulva (Figs. 21–23): similar to that of *L. coarctata*. Differences are clear when the vulvae of both species are compared: *L. crassivulva* has a smaller chitinous plate and the spermathecae

small, separated by three times their diameter, in *L. coarctata* by more than five diameters.

***Lycosoides flavomaculata* Lucas, 1846** (Figs. 24–34, 125)

Lycosoides flavo-maculata Lucas, 1846: 124, pl. 4, fig. 2 (♂♀).

Textrix subfasciata Simon, 1870: 290 (♀); Denis (1954): 141, figs. 17–19 (♂); de Blauwe (1980): 40, figs. 57–62 (♂♀). **syn. n.**

Textrix flavomaculata: Simon (1875): 122 (♂♀); Simon (1937): 1015, 1043, figs. 1574–1575 (♂♀); Benoit (1974): 997 (cit.); Brignoli (1977): 16 (probable syn. of *L. subfasciata*); de Blauwe (1980): 22, figs. 29–34 (♂♀).

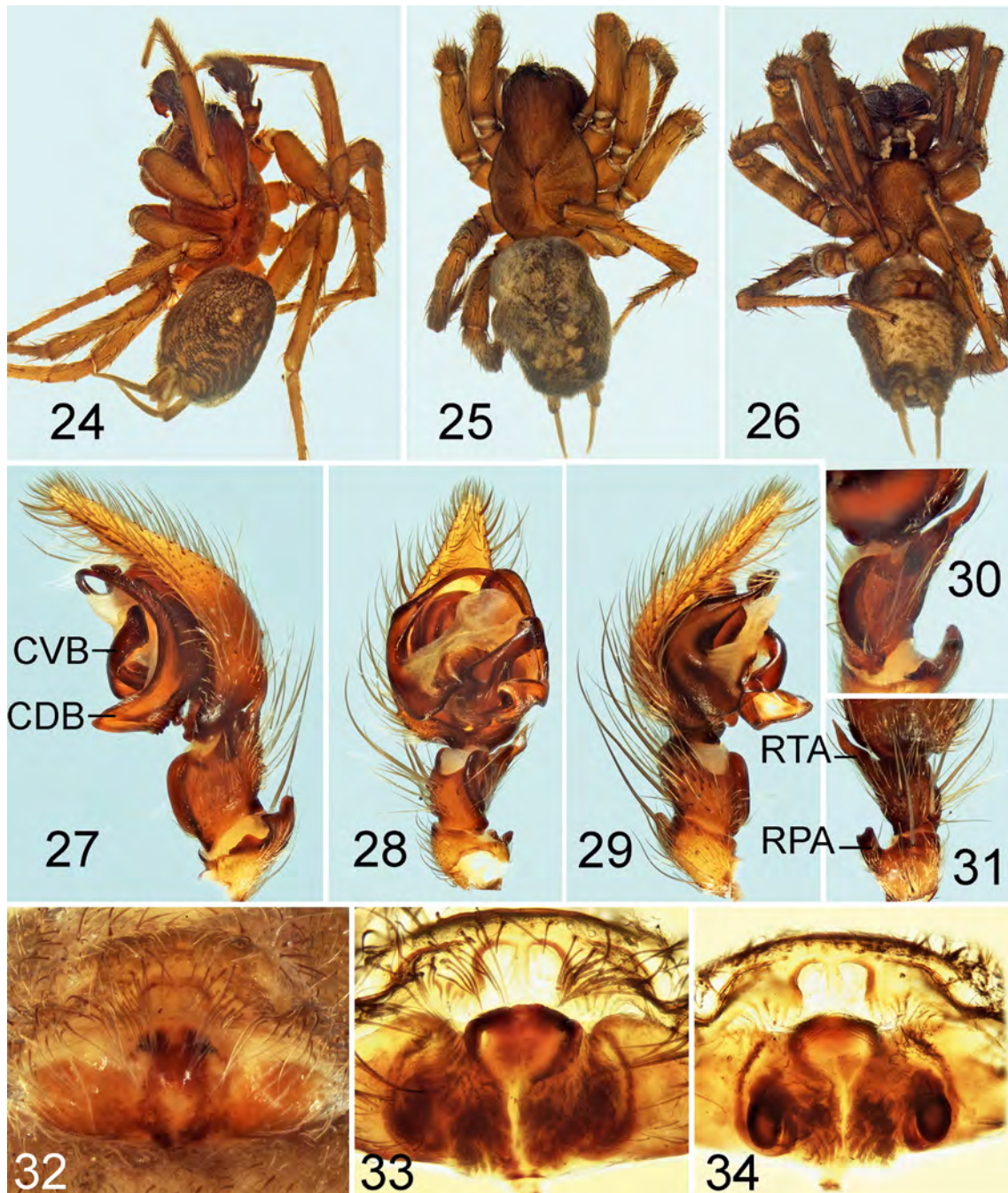
Lycosoides flavomaculata: Lehtinen (1967): 245, fig. 246 (transferred from *Textrix*); Levy (1996): 107, figs. 89–95 (♂♀); Trotta (2005): 159–160, figs. 185, 187.

Lycosoides subfasciata: Lehtinen (1967): 245 (transferred from *Textrix*).

Types: *Lycosoides flavomaculata* Lucas, 1846: Neotype ♂ (MNHN, tube 523), the Maghreb. *Textrix subfasciata* Simon, 1870: Neotype ♂ (MNHN, bocal 1956, tube 16302), Algeria, Daya; designated by de Blauwe (1980).

A neotype should be a single, unique specimen, and therefore only the neotype ♂ of *L. flavomaculata* designated by de Blauwe (1980) is to be considered valid. The neotype ♀ selected by the same author is invalid. Originally, a lectotype ♀ was designated by de Blauwe (1980) from the series of syntypes of *Textrix subfasciata* from Morocco, taken from between Tanger and Fès, but it is not traceable in the MNHN and is now considered lost. Therefore, it seems reasonable to treat the selected male from Algeria as a neotype (see above), not as a lectotype.

Other material: ALGERIA: Aïn Defla: 2♂, 5♀ (CRB), Aïn N'Sour, 36°21'01"N 2°15'47"E, 1150 m, stones in open *Quercus ilex* forest, 23 April 1989, RB; 1♂ (CRB), road Bordj Emir Khaled–Tarik Ibn Ziad, 36°2'39"N 2°10'46"E, 700 m, stones along rivulet, 18 May 1988, RB. Alger: 1♀ (CRB), Forêt de Bainem, S. slope, 36°47'45"N 2°58'10"E, 290 m, litter in *Pinus halepensis* forest, December 1986, RB; 2♀ (CRB), Ben Aknoun, Oued El Roumen, 36°44'26"N 3°00'34"E, 200 m, under stones, 20 April 1989, RB; 1♂ (CRB), El Harrach, Institut national d'Agronomie, 36°43'13"N 3°8'42"E, 25 m, pitfall traps in park, 15 April 1982, RB; 2♀ (CRB), Houssein Dey, Jardin d'Essaie, 36°44'4"N 3°6'23"E, 50 m, under stones, 29 December 1987, RB; 3♀ (CRB), Les Eucalyptus, 36°39'30"N 3°10'10"E, 35 m, pitfall traps in wasteland, 27 April 1988, RB; 2♂ (CRB), same locality, 15 May 1990, RB; 1♀ (CRB), same locality, 06 April 1991, RB; 1♂ (CRB), Kouba, 36°43'32"N 3°5'36"E, 50 m, garden around house, December 1987, RB. Batna: 2♂ (CRB), Aïn Yagout, Djebel Azem, 35°44'21"N 6°27'01"E, 1070 m, 25 December 2016, Y. Alioua. Blida: 1♂ (CRB), Arbatache, Djebel Bou Zegza, 36°35'53"N 3°26'8"E, 750 m, under stones, 16 April 1982, RB; 2♂ (CRB), Chréa NP, les Glacières, 36°27'19"N 2°51'37"E, 1045 m, pitfall traps 23 May 1987, RB; 11♂, 1♀ (CRB), Chréa W., Pic E. Abdelkader, 36°24'24"N 2°49'59"E, 1520 m, pitfall traps in *Cedrus atlantica* forest, 20 April 1987–09 May 1988, RB; 43♂ (CRB), Chréa NP,



Figs. 24–34: *Lycosoides flavomaculata* Lucas, 1846. **24** male, dorsal view; **25** female, dorsal view; **26** same, ventral view; **27** male palp, retrolateral view; **28** same; ventral view; **29** same, prolateral view; **30** palpal patella and tibia, ventral view; **31** same, dorsal view; **32** epigyne; **33** vulva, ventral view; **34** same, dorsal view. CDB, CVB = dorsal and ventral branch of conductor; RPA, RTA = retrolateral patellar and tibial apophysis.

Pic Fertasse, 36°24'53"N 2°51'27"E, 1450 m, pitfall traps, 20 April 1987–09 May 1988, RB; 1♂ (CRB), Chréa NP, Ghellai, 36°28'1"N 2°56'47"E, 15 April 1988, RB; 1♂ (CRB), Djebel Mouzaia, 36°21'59"N 2°41'21"E, 1250 m, stones in grassland, 14 May 1988, RB; 3♂, 1♀ (CRB), same locality, 1200 m, stones bordering lake, 10 April 1987, RB; 1♀ (CRB), same locality, 14 May 1988, RB; 2♂ (CRB), same locality, 1200 m, stones in grassland, 10 April 1987, RB; 3♂ (CRB), same locality, 27 January 1990, RB; 1♂ (CRB), Meftah, Djebel Zerouela, 36°36'0"N 3°15'0"E, 450 m, sifting litter, 07 March 1985, RB; 1♂, 3♀ (CRB), stones in grassland, 07 April 1987, RB; 1♂ (CRB), Oued Djer, Forêt des Soumatas, 36°26'0"N 2°29'0"E, 220 m, pitfall

traps in *Pistacea* maquis, 17 November 1988–18 June 1989, RB; 1♂ (CRB), Djebel Tamesguida, Oulad Sidi Aïsa N., 36°28'21"N 3°21'27"E, 975 m, pitfall traps in *Ampelodesma* grassland, 16 December 1988, RB. Bordj-Bou-Areridj: 1♀ (CRB), Ras el Oued S., El Tetla, 35°46'20"N 4°59'42"E, 1300 m, litter in small *Quercus ilex* forest, 20 April 1989, RB. Bouira: 1♂ (CRB), Lakhdaria E., Col des Beni Khal-foun, 36°34'36"N 3°42'3"E, 700 m, litter in degraded *Quercus suber* forest, 18 March 1988, RB; 1♀ (CRB), Sour el Gozlane S., Col de Dirah, 900 m, 36°27'39"N 3°22'02"E, stones along rivulet, 21 May 1987, RB. Chleff: 1♀ (CRB), Damous, 36°33'4"N 1°40'23"E, 5 m, stones in *Pinus halepensis* forest near the beach, 17 April 1987, RB; 1♂, 2♀

(CRB), S. Tenes, Gorges of Oued Allala, 36°29'58"N 1°17'36"E, 125 m, under stones, 06 May 1989, RB. Djelfa: 2♂ (CRB), Djebel Sénalba, 34°30'47"N 2°58'18"E, 1450 m, pitfall traps in *Pinus* forest, 10 April 1989, RB; 3♀ (CRB), same locality, 24 January 1989, RB; 11♂ (CRB), El Mesrane, 35°0'50"N 3°2'57"E, 900 m, 03 November 1989, RB; 4♂, 2♀ (CRB), same locality, 13 January 1990, RB; 14♂, 2♀ (CRB), same locality, 12 March 1990, RB. El Bayadh: 1♂, 2♀ (CRB), E. Aflou, 34°8'10"N 2°7'58"E, 450 m, stones in abandoned fields, 22 May 1990, RB; 1♂ (CRB), NE. Les Arbaouattes, 33°05'17"N 0°34'49"E, 900 m, stones along oued, 20 January 1988, RB; 1♀ (CRB), Benoud S., 900 m, 32°21'0"N 0°1'30"E, stones along dry river bed, 21 January 1988, RB; 1♂ (CRB), Noukhalia, E. El Abiodh-Sidi-Sjeikh, 32°53'35"N 0°34'54"E, 900 m, between herbs near spring, 18 January 1988, RB. Guelma: 1♂ 1 subadult♀ (CRB), E. Aïn Regada, 36°15'34"N 7°4'26"E, 600 m, herbs along oued, 22 November 1989, RB. Laghouat: 1♀ (CRB), Laghouat, Oued M'zi, 33°49'55"N 2°53'5"E, 750 m, in dense *Phragmites* litter, 21 April 1990, RB. Médéa: 7♂, 1♀ (CRB), Col de Beni Chicao, 36°12'52"N 2°53'09"E, 1230 m, pitfall traps in mixed *Quercus ilex* and *Q. suber* forest, 3 November 1989–20 May 1990, RB. M'Sila: 5♂, 1♀ (CRB), Aïn-El-Hadjel S., Réserve de Mergueb, 35°35'22"N 3°56'55"E, 540 m, pitfall traps in steppe, 10 March 1990, RB; 1♂ (CRB), same locality, 10 February 1980, RB; 1♀ (CRB), Chott el Hodna, Baniou S., 35°24'55"N 4°20'39"E, 400 m, pitfall traps in salt marsh, 1 July 1988, RB; 3♂ (CRB), Bou Saada S., Aïn Oghrab, 35°3'31"N 4°6'27"E, 650 m, pitfall traps in *Pinus halepensis* forest, 22 June 1990, RB; 2♀ (CRB), Djebel Mahadid, 35°52'0"N 4°44'0"E, 1500 m, stones in degraded *Quercus ilex* forest, 19 March 1990, RB; 2♀ (CRB), same locality, 980 m, stones in grassland, 28 April 1988, RB; 1♀ (CRB), 10 km E of M'Sila, 5°41'30"N 4°42'00"E, 475 m, stones in rocky area, 01 March 1989, RB; 1♂ (CRB), Ras el Oued S., El Tetla, 35°46'20"N 4°59'57"E, 1300 m, stones in *Quercus ilex* maquis, 20 April 1989, RB. Oran: 1♂ (CRB), Daiet El Bragat along W18, 35°32'40"N 0°34'9"W, 100 m, under dry *Salicornia* bushes, 25 April 1984, RB; 1♂ (CRB), Forêt de Msila, 35°40'8"N 0°51'14"W, 400 m, litter in *Quercus suber* forest, 25 April 1984, RB; 4♂, 1♀ (CRB), same locality, pitfall traps, 25 April 1984, RB; 1♂ (CRB), Mouley-Ismael forest, 35°37'0"N 0°19'0"W, 150 m, pitfall traps in young *Pinus* plantation, 25 May 1990, RB. Saida: 2♂, 3♀ (CRB), between Saida and Merdja, 34°48'35"N 0°5'2"E, 850 m, stones along fields, 18 January 1990, RB; 9♂ (CRB), Saida, 34°40'0"N 0°10'0"E, 840 m, pitfall traps in *Pinus* forest, 24 May 1990, RB; 6♂ (CRB), W. Saida, Guettara MF, 33°53'59"N 3°23'26"W, 850 m, pitfall traps under oleander, 24 May 1990, RB; 2♀ (CRB), Tircine, 34°54'4"N 0°33'16"E, 900 m, stones in cultivated fields, 04 April 1989, RB. Sétif: 1♂ (CRB), Djebel Babor, N slope, 36°29'59"N 5°28'13"E, 1650 m, pitfall traps in *Cedrus* forest, 21 April 1982, RB; 6♀ (CRB), Bir el Arche, 36°7'38"N 5°52'9"E, 900 m, stones in fields, 27 February 1990, RB; 2♂ (CRB), Magra, 35°38'13"N 5°5'40"E, 850 m, litter along Oued Nakhar, 2 November 1988, RB; 10♂, 1♀

(CRB), Monts du Hodna, Djebel Bouthaleb, 35°51'34"N 4°45'48"E, 1450 m, pitfall traps in *Cedrus atlantica* forest, 20 April 1989, RB; 9♂, 2♀ (CRB), same locality, 15.IV.1990, RB. Sidi Bel Abbès: 1♀ (CRB), Mezaourou, 34°48'36"N 0°37'53"W, 900 m, stones in clearing in *Pinus* forest, 23 May 1990, RB. Tebessa: 1♀ (CRB), Tebessa SE, Forêt de Bekkaria, 35°21'21"N 8°14'40"E, 1300 m, in *Juncus* grassland near spring, 02 March 1989, RB; 1♂ (CRB), same locality, stones in *Pinus halepensis* forest, 01 May 1989, RB. Tiaret: 1♀ (CRB), Frenda E., 35°04'06"N 1°06'15"E, 1075 m, stones in wet grassland, 26 April 1984, RB; 1♀ (CRB), Frenda NE, Aïn Hallouf, 35°11'22"N 1°09'05"E, 1050 m, pitfall traps in degraded *Quercus ilex* forest, 22 May 1990, RB. Tipaza: 1♂ (CRB), Sidi Fredj, 35°46'20"N 4°59'42"E, 10 m, litter in dunes, 18 December 1986, RB; 2♂ (CRB), Sidi Fredj, 36°45'40"N 2°50'38"E, 10 m, pitfall traps in *Pinus* forest in dunes, 10 December 1986–20 December 1987, RB; 1♂ (CRB), Zeralda, 36°41'57"N 2°48'14"E, 5 m, in grass tussocks in dunes, 25 April 1987, RB. Tissemsilt: 3♀ (CRB), Massif de l'Ouarsenis, Aïn Antar, 35°52'32"N 1°37'27"E, 1400 m, sifting litter in *Cedrus atlantica* forest, 24 March 1988, RB; 1♂ (CRB), 5 km N of Theniet-el-Had, along N14, 35°53'19"N 2°59'2"E, 880 m, litter in irrigated orchard, 26 April 1984, RB; 21♂, 4♀ (CRB), Theniet-el-Had, 35°52'17"N 1°56'38"E, 1500 m, pitfall traps in mixed *Quercus ilex* and *Cedrus atlantica* forest, 19 July 1987, RB; 24♂, 4♀ (CRB), same locality, 1540 m, pitfall traps in mixed *Quercus faginea* and *Cedrus atlantica* forest, 19 July 1988, RB; 23♂, 4♀ (CRB), same locality, 1600 m, pitfall traps in dense *Cedrus atlantica* forest, 19 July 1988, RB. Tizi Ouzou: 24♂, 1♀ (CRB), Massif du Djurdjura, Tizi Boussouil, 36°26'51"N 4°13'43"E, 1600 m, pitfall traps in montane grassland, January–December 1991, O. Abrous & RB; 5♂ (CRB), Col de Tizi 'n Kouillal, 36°26'51"N 4°13'43"E, 1450–1500 m, pitfall traps in *Cedrus* forest, 1 December 1991, RB. Tlemcen: 1♀ (CRB), Honaine, 35°10'4"N 1°40'17"E, 50 m, stones along rivulet, 24 May 1990, RB; 1♂ (CRB), Mansourah, 34°51'42"N 1°24'27"W, 975 m, stones in *Pinus halepensis* forest, 6 May 1984, RB; 1♂ (CRB), Monts de Traras, between El Arba and El Arabienne, 35°8'30"N 1°41'19"W, 580 m, pitfall traps in *Pistacea* maquis, 24 May 1990, RB; 1♂, 2♀ (CRB), S. Col d'Hafir, 34°46'50"N 1°25'27"W, 900 m, stones along river Tafna, 5 May 1984, RB; 8♂ (CRB), SE Tlemcen, Forêt d'Hafir, 34°47'13"N 1°26'39"W, 1350 m, pitfall traps in *Quercus suber* forest, 23 May 1990, RB; 2♂ (CRB), S. Tlemcen, Forêt de Tal Terny, 34°47'0"N 1°22'0"W, 1300 m, pitfall traps in *Quercus ilex* forest, 24 May 1990, RB; 4♂, 4♀ (CRB), S. Tlemcen, Terny plaine, 34°46'32"N 1°20'51"W, 1175 m, stones in grassland, 18 January 1990, RB. MOROCCO: Drâa-Tafilalet: 2♀ (CRB), Col de Tagalm, SE Zebzat, 32°30'34"N 04°31'59"W, 1905 m, stones bordering fields, 19 April 2002, RB; 1♀ (CRB), Immouzèr Ida Outanane S., Paradise Valley, 30°35'0"N 9°30'0"W, stones in Arganier steppe, 08 February 2007, RB; 1♀ (CRB), Tizi-n-Ikhsane, 30°26'56"N 7°31'24"W, 1650 m, stones bordering fields, 04 February 1996, RB. Fès-Meknès: 1♂, Dayet Ifrah, 33°33'32"N 4°55'47"W, 1780 m,

stones at border of lake, 11 May 1984, RB; 1♀ (CRB), Misour, 33°2'24"N 3°59'52"W, 910 m, pitfall traps in steppe, 23 January 2021, unknown collector; 1♂ (CRB), same locality, 15 June 2002, unknown collector. Tanger-Tetouan-Al Hoceima: 1♂ (CRB), 10 km W of Bab Berred, 34°59'11"N 4°47'46"E, 1525 m, stones in *Quercus faginea* forest, 15 May 1984, RB; 1♀ (CRB), N. Bab Bou Ider, 34°4'44"N 4°7'44"W, 1475 m, stones along pool, 22 April 1984, RB; 2♂, 1♀ (CRB), S. Issaguen, 34°53'25"N 4°34'59"W, 1450 m, stones in *Cedrus atlantica* forest, 15 December 2013, RB. TUNISIA: Ariana: 2♂, 2♀ (CRB), Kalaât Landaluz, 37°02'51"N 10°06'20"E, pitfall traps in salt marsh, March–April 2020, A. Boubakri; 3♂ (CRB, CJVK), Beja: 15 km N of Beja, 36°40'N 9°15'E, 250 m, under stones bordering fields, 27 February 2005, R. Bosmans & J. Van Keer. Gafsa: 1♂, 1♀ (CRB), El Guettar oasis, 34°20'11"N 8°56'59"E, 350 m, litter in palm yard, 02 March 2005, RB; 3♂ (CJVK), Gafsa Oasis, 34°30'0"N 8°45'0"E, 300 m, stones in oasis, 02 March 2009, J. Van Keer. Kairouan: 3♂ (CRB), Haffouz E, 35°38'6"N 9°40'37"E, 285 m, stones around spring, 27 January 2003, RB. Kasserine: 2♀ (CJVK), foot of Djebel Chambi, 35°10'00"N 8°38'00"E, 850 m, stones in alfa steppe, 03 March 2003, J. Van Keer; 3♂ (CRB), Thelepte, 34°58'33"N 8°35'38"E, 750 m, stones in ruins, 01 March 2005, RB. Médénine: 4♀ (CRB), El Kantara continent, 33°38'00"N 10°57'00"E, 5 m, stones bordering cultivated fields, 17 December 1999, RB. Nabeul: 1♀ (CRB), Hammamet NE, 36°24'57"N 10°39'43"E, 15 m, stones in olive orchard, 31 January 2003, RB; 1♂ (CRB), Kelibia, 36°51'0"N 11°6'0"E, 10 m, litter in *Eucalyptus* forest, 26 January 2003, RB. Siliana: 1♀ (CRB), Forêt de Kesra, 35°49'27"N 9°21'36"E, 820–1050 m, stones in *Pinus halepensis* forest, 23.I.1996, RB; 1♀ (CRB), same locality, 27 January 2003, RB. Zaghuan: 1♀ (CRB), Oued-Ez-Zit, 36°24'55"N 10°19'58"E, 70 m, stones in *Juniperus* forest, 28 January 2003, RB; 2♀ (CRB), Saouaf E, 36°14'04"N 10°09'19"E, 250 m, stones in maquis, 27 February 2005, RB; 1♀ (CRB), Zriba village, 36°20'22"N 10°15'8"E, 100 m, open grassland along Oued El Hammam, 24 January 1995, RB.

Previous records: ALGERIA (all by de Blauwe 1980 unless otherwise stated): Biskra: Biskra, 34°51'01"N 5°43'41"E. Constantine: El Khroub, 36°15'48"N 6°41'37"E. Djelfa: Tadmit, 34°17'24"N 2°59'15"E (Simon 1899: sub *L. subfasciata*); Djelfa, 34°40'22"N 3°15'47"E. El Bayadh: El Bayadh (as Géryville), 33°40'59"N 1°01'09"E; Le Kreider (as Le Krieder), 34°08'41"N 0°04'09"E. Médéa: Ksar-el-Boukhari (as Boghari), 35°53'20"N 2°44'57"E. M'Sila: Bou Saada, 35°12'31"N 4°10'26"E; Maadid, 35°51'43"N 4°45'08"E. Naama: Ain Sefra, 32°45'00"N 0°35'00"W; Mecheria, 33°32'40"N 0°16'52"W. Oran: Environs d'Oran, 35°41'57"N 0°38'09"W (Lucas 1846). Tlemcen: Ghazaouet (as Nemours), 35°00'49"N 0°44'53"W; Tlemcen (as Henscen), 34°52'42"N 1°18'54"W. Laghouat: road Laghouat-Metlili, 33°56'13"N 2°54'05"E (Simon 1899; sub *L. subfasciata*). MOROCCO: Tanger-Tetouan-Al Hoceima: Tanger, 35°46'02"N 5°47'59"W (de Blauwe 1980); Fès-Meknès: Fès, 34°01'59"N 5°00'01"W (de Blauwe 1980). Tanger-Te-

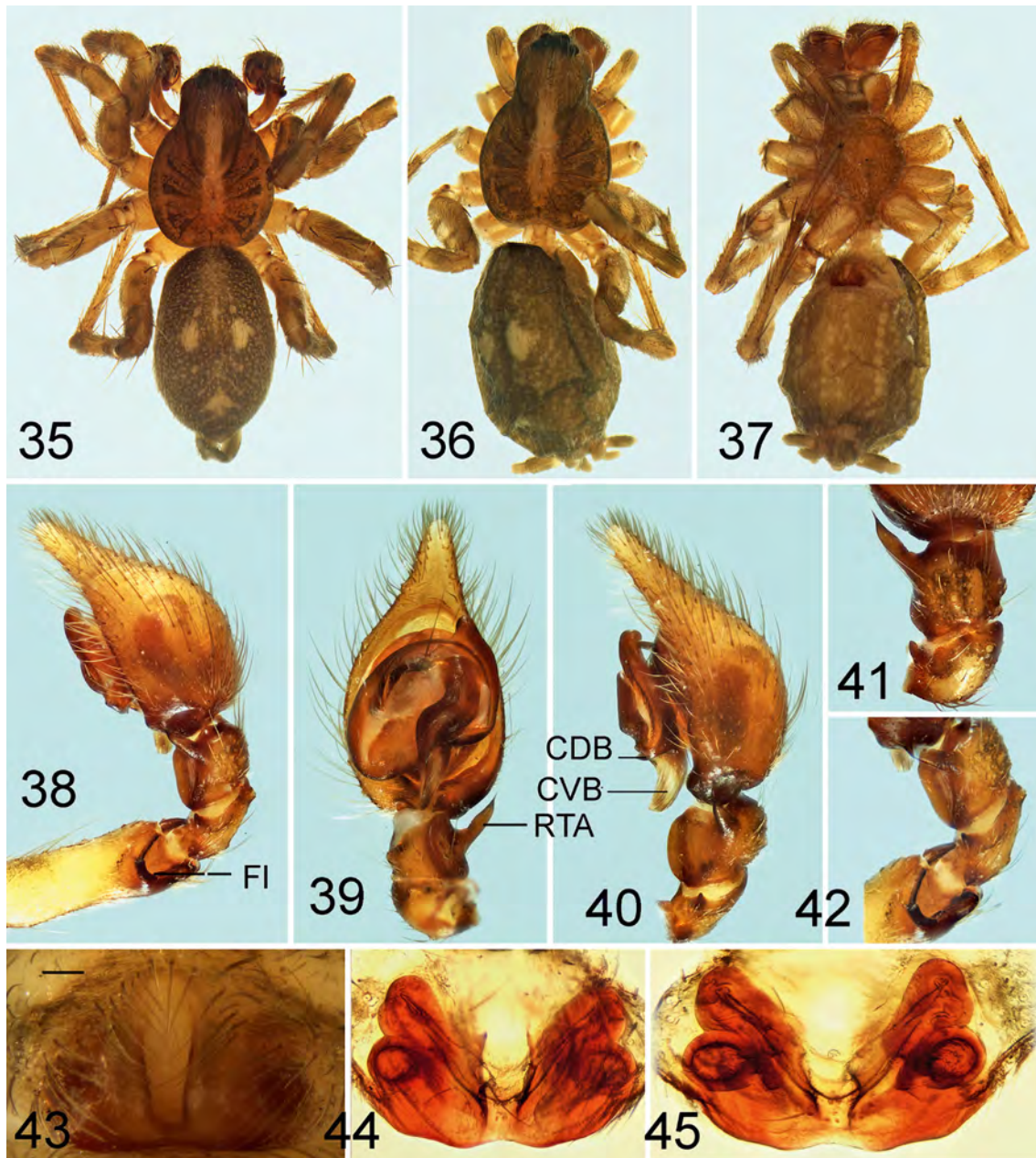
touan-Al Hoceima: between Tanger and Fès, 35°11'N 5°18'W (type locality of *L. subfasciata*; Simon 1870; Denis 1954). Drâa-Tafilalet: Massif de l'Ayachi, 32°28'38"N 4°55'48"W (Denis 1954: sub *L. subfasciata*). TUNISIA: Gabès: Matmata (as Mahmata), 33°27'07"N 9°48'07"E (de Blauwe 1980). Jendouba: region of Aïn Draham, 36°47'31"N 8°42'44"E (Simon 1908). Kairouan: Kairouan, 35°40'N 10°05'E (Benoit 1974). ITALY: no exact locality (Trotta 2005).

Diagnosis: This species is clearly different from other *Lycosoides* species: the male possesses the peculiar shape of the terminally incised patellar apophysis and the semi-circular dorsal branch of the conductor, the female differs in having the transverse atrium with postero-median balloon-like structure of variable size.

Remarks: Brignoli (1977: 16) already considered *L. subfasciata* a possible junior synonym of *L. flavomaculata*: "il me semble aussi que *L. subfasciata* (Simon, 1870) est probablement un synonyme de *L. flavomaculata* Lucas, 1846", but his suggestion has not been followed by later authors. Small differences between *L. flavomaculata* and *L. subfasciata* are visible in details of the male patellar apophysis. In most specimens, the tip of the apophysis is incised terminally, and these were accepted as normal for *L. flavomaculata*. In some specimens the apophysis is hardly incised and these were considered to be *L. subfasciata*. However, intermediate forms do exist. Females have a median knob in the epigynal atrium of variable size, small and/or membranous, or large and well sclerotized. Therefore, all these minor differences are accepted herein as an intraspecific variation, and the names *L. flavomaculata* and *L. subfasciata* as synonyms. Yet, the specimens with the hardly developed knob were probably named *L. caparti*. More research is needed to clarify the status and validity of the last species name.

Distribution: Known from Morocco to Tunisia and also Malta and south Italy (Fig. 125). The record from Bulgaria by Drensky (1936) is doubtful. The record by Simon (1878) from Corsica, France has been considered unacceptable by Danflous *et al.* (2020).

Description: Measurements: Male (n = 25): total length 4.3–9.0; carapace 2.05–4.51 long, 1.55–3.72 wide. Female: total length 5.1–12.9; carapace 2.61–4.46 long, 1.71–3.72 wide. Colouration variable. Carapace brown to grey brown, median stripe and submarginal band yellowish brown, striae darkened; sternum yellowish brown suffused with grey; legs yellowish brown, femora, patellae and tibiae respectively with three, one and two grey annulations; abdomen dark greyish brown to dark greyish black, a pair of median spots followed by 3–5 pale olive brown chevrons. Specimens collected in forests are generally much darker than specimens collected in steppe or desert areas. Male palp (Figs. 27–31): patella with large, dorso-retrolateral apophysis, with deeply rounded incised tip; tibia with slender, dorso-retrolateral apophysis with pointed tip and with ventral crest; dorsal branch of conductor a large, curved sclerite with rounded, deeply incised tip; ventral branch of conductor a large, oblique sclerite widening to both ends with or without an antero-median process of variable shape; embo-



Figs. 35–45: *Lycosoides incisofemoralis* Bosmans, sp. n. **35** male, dorsal view; **36** female, dorsal view; **37** same, ventral view; **38** male palp, retrolateral view; **39** same; ventral view; **40** same, latero-ventral view; **41** male palpal tibia and patella, dorsal view; **42** male palpal tibia, patella and distal part of femur, lateral view; **43** epigyne; **44** vulva, ventral view; **45** same, dorsal view. CDB = conductor, dorsal branch; CVB = conductor, ventral branch; FI = femoral incision; RTA = retrolateral tibial apophysis.

lus semi-circular, in first third gradually narrowing, then thread-like till the tip. Epigyne/vulva (Figs. 32–34): wider than long, with transverse postero-median plate preceded by an antero-median transverse atrium, in which a balloon-like structure of variable size can be observed; it can almost completely fill the atrium but can be much smaller, shriveled or even missing.

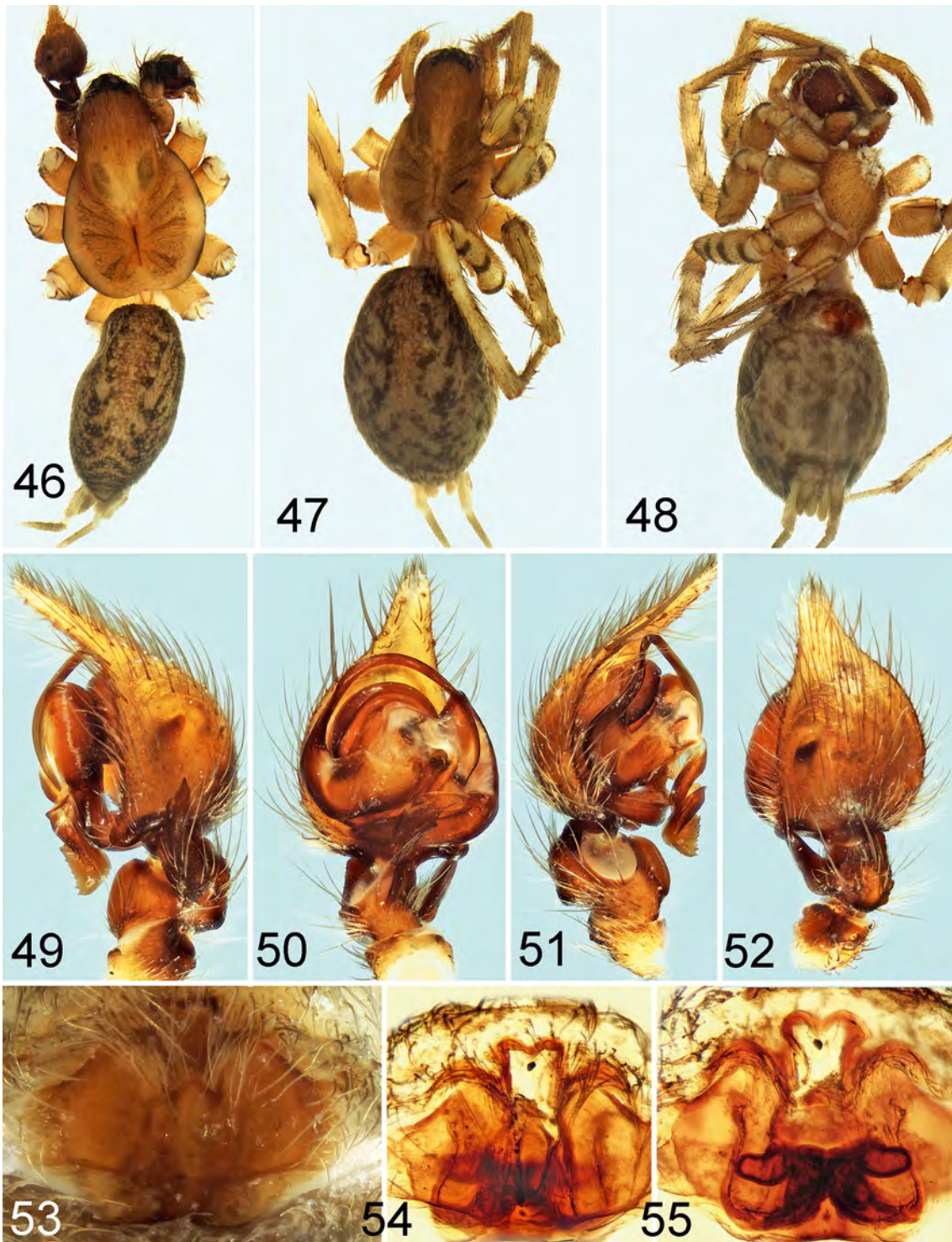
***Lycosoides incisofemoralis* Bosmans sp. n.** (Figs. 35–45, 126)

Types: Holotype ♂ (RBINS): ALGERIA: Tizi Ouzou, Massif du Djurdjura, Tala Guilef, 1450 m, pitfall traps in dense *Cedrus atlantica* forest, 12 December 1988–16

March 1990, RB. Paratypes: 5♂, 3♀ (RBINS), 5♂, 2♀ (MNHN), together with the holotype.

Etymology: The species name is derived from the Latin verb *incidere* (past participle *incisum*), and the Latin noun *femur*, meaning with incised femora.

Other material: ALGERIA: Bouira: 2♀ (CRB), Massif du Djurdjura, Tala Rana, 36°25'46"N 4°13'57"E, 1310 m, pitfall traps in open *Cedrus atlantica* forest, 06 October 1987–01 June 1988, RB; 36♂, 5♀ (CRB), Tigounatine, 36°27'22"N 4°6'22"E, 1460 m, pitfall traps in open *Cedrus atlantica* forest, 06 October 1987–01 June 1988, RB; 11♂, 2♀ (CRB), same locality, 01 June 1989, RB; 1♂ 1♀ (COA), Tikjda, 36°26'54"N 4°7'44"E, 1450 m, 20 June 2016, O. Abrous. Djelfa: 2♀ (CRB), El Mesrane, 35°0'50"N 3°2'57"E, 900 m, pitfall traps in fixed dunes, 03 November



Figs. 46–55: *Lycosoides instabilis* (Denis, 1954). **46** male, dorsal view; **47** female, dorsal view; **48** same, ventral view; **49** male palp, retrolateral view; **50** same; ventral view; **51** same, prolateral view; **52** same, dorsal view; **53** epigyne; **54** vulva, ventral view; **55** same, dorsal view.

1988–03 November 1989, RB. Tizi Ouzou: 76♂, 13♀ (CRB), Massif du Djurdjura, Tala Guilef, 1450 m, pitfall traps in dense *Cedrus atlantica* forest, 12 December 1988–16 March 1990, RB; 10♂, 4♀ (CRB), same locality, 1600 m, sifting litter in open *Cedrus atlantica* forest, 29 April 1984, RB; 19♂, 2♀ (CRB), near Hotel el Arz, 1400 m, pitfall traps in dense *Cedrus atlantica* forest, 18 September 1989, RB; 10♂ (CRB), same locality, 1500 m, pitfall traps in *Quercus ilex* forest, 12 April 1987, RB; 1♂ (CRB), Col de Tirourda, 36°28'53"N 4°21'5"E, 1750 m, stones in grass-

land, 26 April 1989, RB; 14♂, 4♀ (CRB), Aït Ouabane, 36°29'5"N 4°17'36"E, 1410 m, pitfall traps in *Cedrus* forest, 06 October 1987–01 June 1988, RB. Tlemcen: 1♂ (CRB), Col d'Hafir, 34°46'50"N 1°25'27"E, 900 m, stones along Oued Tafna, 05 May 1984, RB; 1♂ (CRB), S. Col d'Hafir, bridge over Oued Tafna, 35°17'50"N 1°28'6"W, 900 m, under stones, 05 May 1984, RB.

Diagnosis: Males are easily distinguished from all other *Lycosoides* species by the presence of an oval retrolateral incision in the male palpal femur (Figs. 38, 42), females by

the elongated epigynal atrium (Fig. 43), widened in all other species.

Distribution: An endemic species of the mountains in Algeria (Fig. 126), very common in the Djurdjura Massif but also occurring in the south to Djelfa and in the east to Tlemcen. The species was not captured below 900 m.

Description: Measurements: Male (n = 25): total length 5.50–8.90; carapace 2.00–3.70 long, 1.30–2.35 wide. Female (n=25): total length 6.50–8.50; carapace 2.15–5.00 long, 1.45–3.00 wide. Leg measurements of the holotype ♂ of *L. incisofemoralis* sp. n.:

	Fe	Pa	Ti	Mt	Ta	Total
I	2.15	0.95	1.81	2.25	1.45	8.61
II	2.26	0.95	1.75	2.26	1.41	8.63
III	2.25	0.80	1.75	2.39	1.35	8.54
IV	2.65	0.85	2.31	3.22	1.49	10.52

Colouration (Figs. 35–37): carapace dark greyish brown, finely mottled with yellowish brown spots, with clear yellowish brown median stripe, margin and radiating striae more or less pronounced often yellowish brown; sternum greyish brown, finely mottled with yellowish brown; legs yellowish brown, femora and tibiae with two dark grey annulations, patellae with one; abdomen dorsally dark grey to nearly black, with a distinct pair of large pale grey median spots, posteriorly often with some pale grey chevrons or one pale grey triangular spot, venter grey to pale grey; spinnerets pale greyish brown. Male palp (Figs. 38–42): femur distally with deep retrolateral, square incision, giving it a forked appearance (Fig. 38, FI); patella with small, antero-dorsal hump; tibia with pointed, slender retrolateral apophysis and with a ventral crest; dorsal branch of conductor much shorter than ventral branch, tip pointed (Fig. 40), ventral branch spoon-like, tip bluntly pointed; embolus whip-like, forming half a circle. Epigyne/vulva (Figs. 43–45): with median, elongated atrium, margin sclerotized for half its length, copulatory ducts starting half way of atrium, oblique, running in posteromedian direction, then to spermathecae; spermathecae rounded, separated by three diameters.

Lycosoides instabilis (Denis, 1954) (Figs. 46–55, 126)

Textrix instabilis Denis, 1954: 138, figs. 13–16 (♂♀); de Blauwe (1980): 29, figs. 40–45 (♂♀).

Lycosoides instabilis: Lehtinen (1967): 245 (transfer from *Textrix*).

Types: Holotype ♂ and paratype ♀ (MNHN): MOROCCO: Drâa-Tafilalet, Massif de l'Ayachi, 500 m, summer 1954, Meinsohn.

Other material: MOROCCO: Rabat-Salé-Khénifra: 4♀ (CJVK), 15 km S of Rabat, 33°59'28"N 6°50'24"W, under stones, 08 February 1996, J. Van Keer; 1♀ (CRB), 5 km N of Aïn el Aouda, 33°48'36"N 6°47'24"W, 240 m, stones in *Quercus suber* forest, 08 February 1996, RB & J. Van Keer; 7♀ (CRB), Maâmora forest, 2 km N of Sidi Allal-Bahraoui, 34°6'36"N 6°19'48"W, 175 m, under stones, 08 February 1996, RB; 1♂, 1♀ (CSB), Forêt de Maâmora, Sidi Amira, 34°03'21"N 6°40'10"W, 125 m, in forest litter, 03–06 Feb-

ruary 1989, S. Benhalima. Souss-Massa: 1♀ (CRB), Medina of Agadir, 30°25'18"N 9°34'52"W, 10 m, under stones, 16 February 2007, RB. Tanger-Tetouan-Al Hoceima: 1♀ (CRB), Djebel Tazeka, 29°54'36"N 9°12'0"W, 1850 m, stones in montane grassland, 22 April 1984, RB.

Diagnosis: This species is closely related to *L. flavomaculata*. The males can be distinguished by having no distinct patellar apophysis and the presence of the recurved, truncate and serrate tip of the ventral branch of the conductor (Fig. 49). The females have a narrower atrium than *L. flavomaculata* (cf. Figs. 53–54 and Figs. 32–33).

Distribution: Algeria and Morocco (Fig. 126).

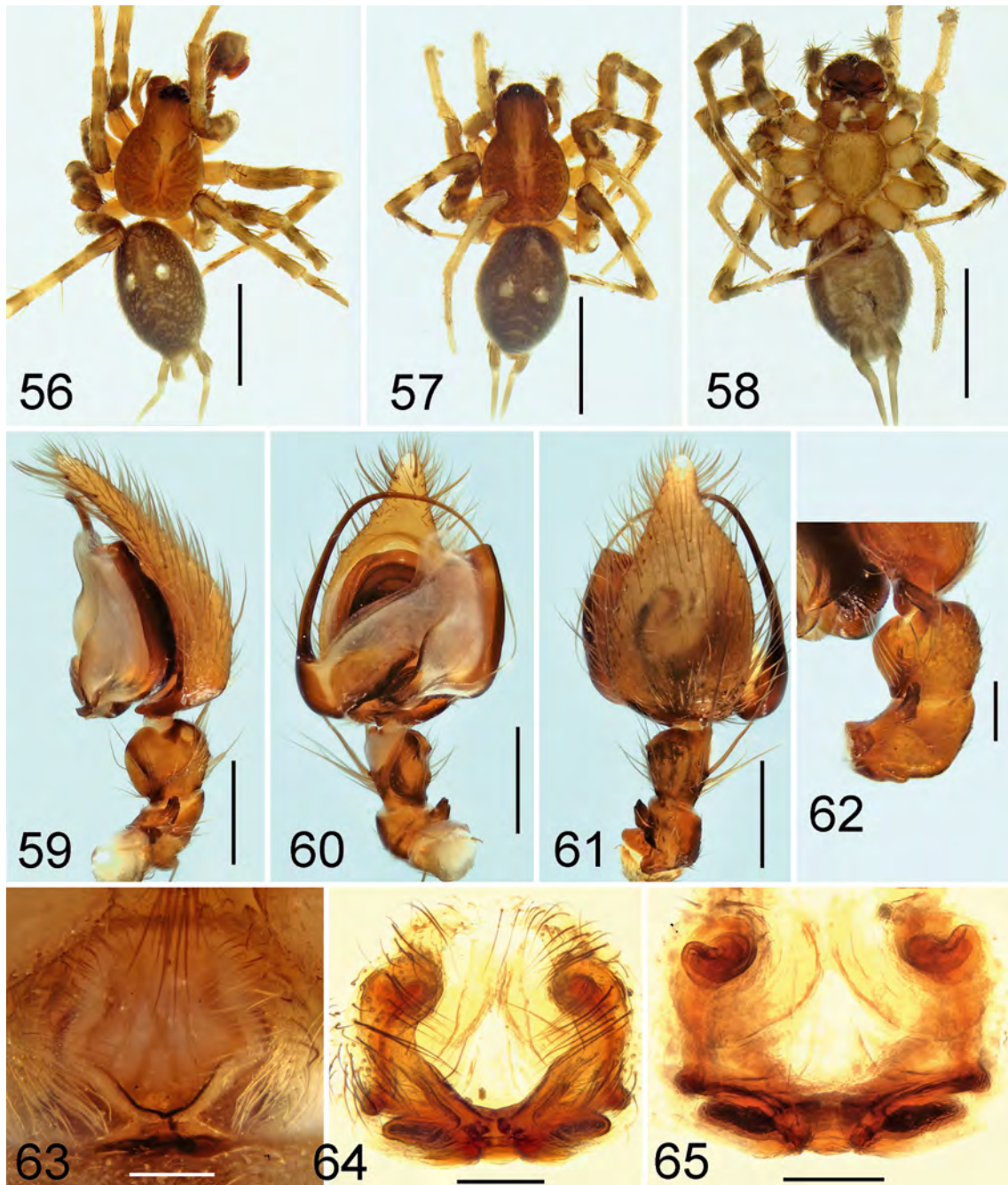
Description: Measurements: Male (n = 1): total length 7.7; carapace 3.21 long, 2.19 wide. Female (n = 15): total length 5.5–10.0; carapace 2.24–4.10 long, 1.49–2.31 wide. Colouration (Figs. 46–48): cephalic part of carapace yellow-brown with blackish eye region, thoracic part yellow-brown with darkened striae, and paler median and submarginal stripes; sternum yellow brown, darker towards the margin; legs yellow-brown with annulations on ventral and ventrolateral sides, three on femora, one on patellae and two on tibiae, other segments uniformly yellow brown; abdomen grey with an irregular pattern of dark grey spots; spinnerets yellowish. Male palp (Figs. 49–52): patella dorsally with two sclerified areas; tibia bulging dorsally, with large dorso-retrolateral apophysis, terminally pointed, ventrally with oblique keel; dorsal branch of conductor relatively poorly developed, tip rounded and hidden by the ventral branch; ventral branch of conductor in lateral view curved in ventral direction, tip truncate, with serrated margin; embolus semi-circular, terminally pointed. Epigyne/vulva (Figs. 53–55): epigynal plate trapezoid, with deep anteromedian atrium with well sclerotized anterior and anterolateral margins, posterior margin not sclerotized; cleared epigyne with wide, longitudinal ducts with transverse, oval spermathecae, separated by their diameter.

Lycosoides kabyliana Bosmans sp. n. (Figs. 56–65, 128)

Types: Holotype ♂ (RBINS): ALGERIA: Jijel, Ziama Mansouria, 36°40'0"N 5°29'0"E, 15 m, herbs along Oued Amsal, 24 December 1989, RB. Paratypes: 2♀ (RBINS), together with the holotype.

Etymology: The species occurs in the Algerian region Kabylie, east of the capital Alger, hence the name *kabyliana*.

Other material: ALGERIA: Béjaïa: 1♀ (CRB), Bordj Mira, 36°32'18"N 5°16'52"E, 70 m, 02 December 1988, RB; 1♂ (CRB), same locality, pitfall traps in *Eucalyptus* plantation, 05 November 89, RB; 1♂ (CRB), Cap Carbon, 36°47'0"N 5°6'0"E, 100 m, pitfall traps in orchard, 26 January 1988, Ounoughi; 1♀ (CRB), Melbous, Boulzazene, 36°37'N 5°21'E, pitfall traps in olive grove, January 2014, L. Outemzabet. Sétif: 2♂ (CRB), Djebel Babor, 36°29'59"N 5°28'13"E, 1800 m, pitfall traps in mixed *Cedrus* forest, 23



Figs. 56–65: *Lycosoides kabyliana* Bosmans, sp. n. **56** male, dorsal view; **57** female, dorsal view; **58** same, ventral view; **59** male palp, retrolateral view; **60** same; ventral view; **61** same, dorsal view; **62** palpal tibia and patellar retrolateral view; **63** epigyne; **64** vulva, ventral view; **65** same, dorsal view. Scale bars = 2 mm (56–58), 0.5 mm (59–61), 0.3 mm (62), 0.2 mm (63–65).

April–20 May 1982, RB; 18♂ (CRB), same locality, 1650 m, pitfall traps in *Cedrus atlantica* forest, 11 June 1989, RB.

Diagnosis: The males of this species can be recognized by the finger-like tibial apophysis and the relatively long embolus, forming $\frac{3}{4}$ of a circle (Fig. 60), compared to half a circle in all other species. The females differ in having the diamond-shaped atrium (Fig. 63), which is differently shaped in all other species.

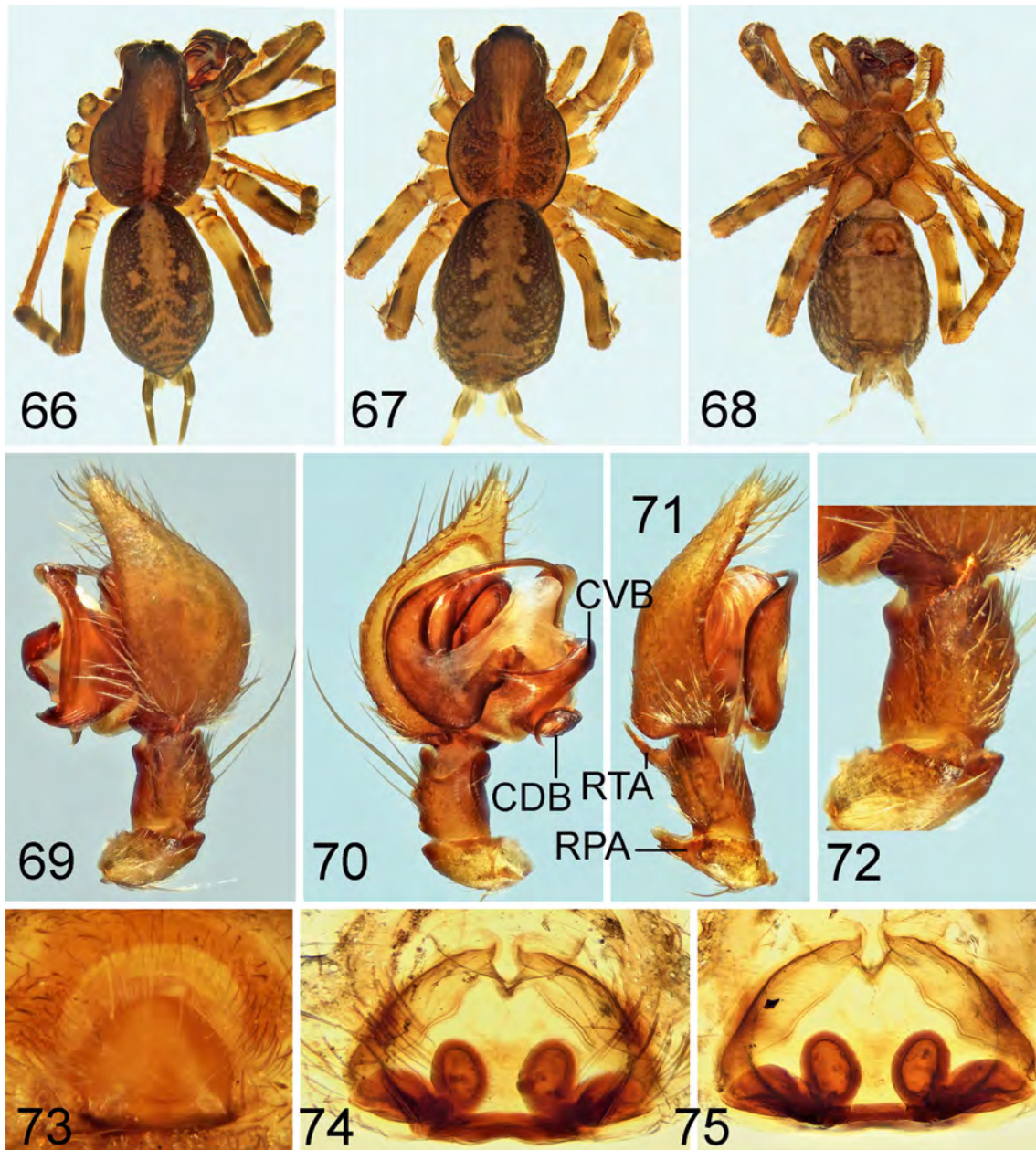
Distribution: Known from the central and north Algeria, in the region called ‘Petite Kabylie’, in three neighbouring provinces: Béjaïa, Jijel and Sétif (Fig. 128).

Description: Measurements: Males (n = 18): total length 4.4–5.9; carapace 2.08–2.36 long, 1.36–1.68 wide. Female

(n = 2): total length 6.4–7.1; carapace 2.60–2.95 long, 1.70–2.21 wide. Leg measurements of the holotype ♂ of *L. kabyliana* sp. n.:

	Fe	Pa	Ti	Mt	Ta	Total
I	1.91	0.64	1.58	1.79	1.24	7.16
II	1.69	0.64	1.58	1.63	1.04	6.58
III	1.69	0.64	1.58	1.62	1.12	6.65
IV	2.41	0.71	2.85	2.71	1.21	9.89

Colouration (Figs. 56–58): carapace brown with black eye region, thoracic part with pale grey median stripe, not reaching the posterior border; chelicerae reddish brown; sternum pale yellowish; legs pale yellowish, femora with three and tibiae with two dark grey annulations; spinnerets



Figs. 66–75: *Lycosoides leprieuri* (Simon, 1875). **66** male, dorsal view; **67** female, dorsal view; **68** same, ventral view; **69** male palp, retrolateral view; **70** same; ventral view; **71** same, prolateral view; **72** palpal patella and tibia, retrolateral view; **73** epigyne; **74** vulva, ventral view; **75** same, dorsal view. CDB = conductor, dorsal branch; CVB = conductor, ventral branch; RPA = retrolateral patellar apophysis; RTA = retrolateral tibial apophysis.

grey, distal segments whitish. abdomen dorsally dark grey, with paired median whitish spots followed by 5–6 narrow pale grey chevrons, ventrally grey with median and sublateral longitudinal paler stripes. Abdomen: posterior spinnerets elongated, half as long as the abdomen. Male palp (Figs. 59–62): patella with dorsal tubercle and retrolaterally with two tubercles, anterior and posterior; tibia with dorsal tubercle, and long, finger-like retrolateral apophysis, directed antero-retrolaterally; dorsal arm of conductor sickle-shaped, $\frac{3}{4}$ length of ventral arm; ventral arm of conductor an elongated, slightly curved sclerite with incised tip; embolus thread-like, forming a 270° loop. Epigyne/vulva (Figs. 63–65): epigynal plate reduced by strong extension of diamond-shaped atrium, posteriorly nearly reaching epigastric groove, anterior margins poorly defined, postero-lateral

margins defined by rim; spermathecae kidney-shaped, situated in anterior part of vulva, separated by two diameters.

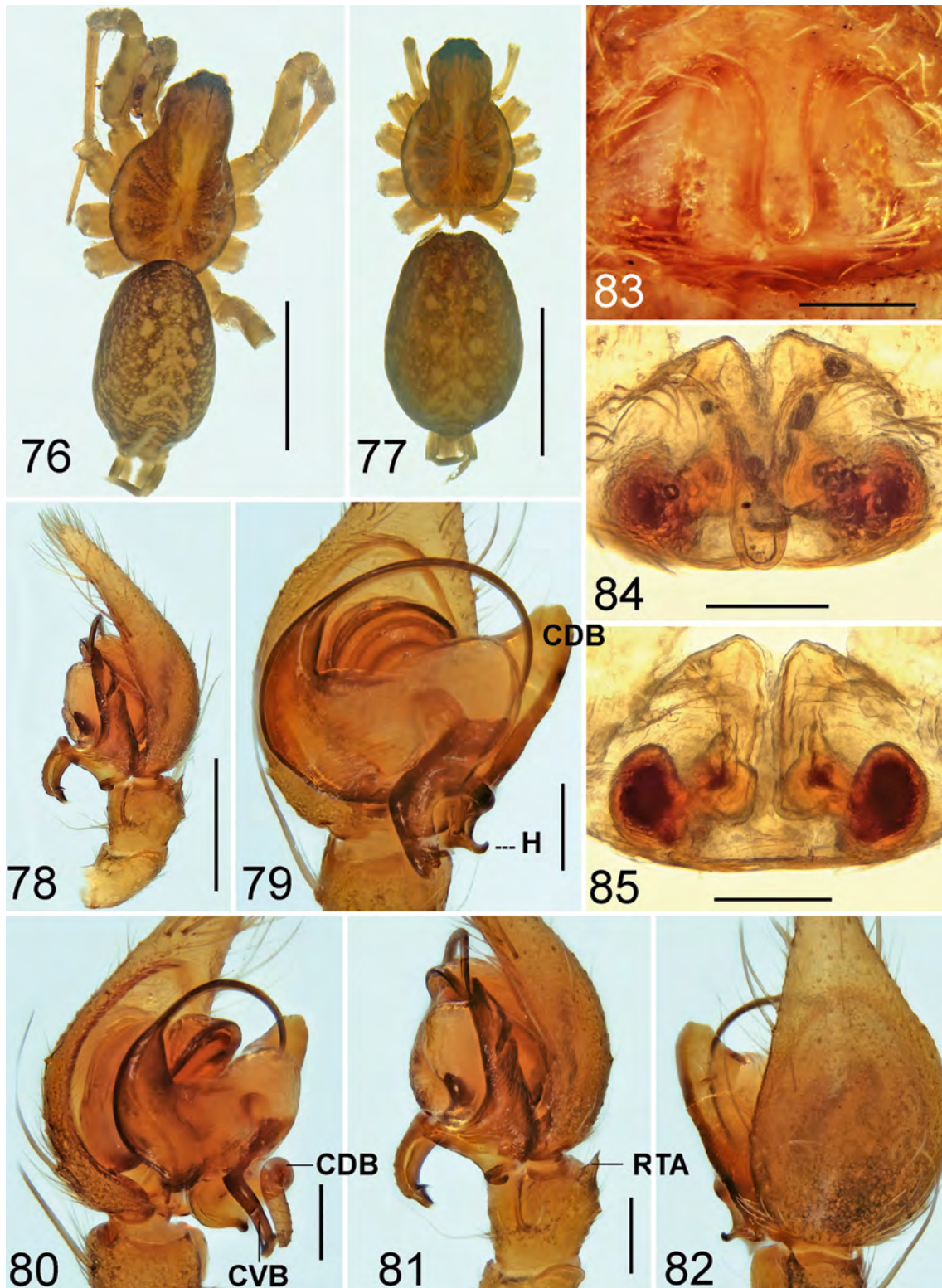
***Lycosoides leprieuri* (Simon, 1875) (Figs. 66–75, 127)**

Textrix leprieuri Simon, 1875: 62 (♂); Simon (1898): 252, fig. 249 (♂); de Blauwe (1980): 32, figs. 46–48 (♂).

Lycosoides leprieuri: Levy (1996): 108 (transferred from *Textrix*).

Type: Holotype ♂ (MNHN, 22647, local 1956): ALGERIA: Bordj-Menaïel.

Other material: ALGERIA: Alger: 2♂ (CRB), Ben Aknoun, Sidi M'Barek, Oued El Roumen, $36^\circ 46' 0''\text{N}$ $3^\circ 1' 0''\text{E}$, 200 m, 20 April 1989, RB; 3♀ (CRB), Forêt de Bainem, south slope, $36^\circ 47' 45''\text{N}$ $2^\circ 58' 10''\text{E}$, 250 m, litter



Figs. 76–85: *Lycosoides murphyorum* Bosmans, sp. n. 76 male holotype, dorsal view; 77 female paratype, dorsal view; 78 male palp, retrolateral view; 79 same, ventral view; 80 same, prolateral view; 81 same, retrolateral view; 82 same, dorsal view; 83 epigyne; 84 vulva, ventral view; 85 same, dorsal view. CDB = conductor, dorsal branch; CVB = conductor, ventral branch; H = hook on CDB; RTA = retrolateral tibial apophysis. Scale bars = 2.0 mm (76–77), 0.5mm (78), 0.2mm (79–82).

in *Eucalyptus* plantation, 16 April 1989, RB; 56♂ (CRB), Les Eucalyptus, 36°39'N 3°9'E, 35 m, pitfall traps in wasteland, 27 April 1988, RB; 1♀ (CRB), same locality, under stones in wasteland, 15 May 1990, RB. Blida: 1♀ (CRB), Atlas Blidéen: Arbatache, Djebel Bou Zegza, 36°35'53"N 3°26'8"E, 750 m, around pool, 16 April 1982, RB; 1♂

(CRB), Chréa, 36°24'24"N 2°49'59"E, 1500 m, pitfall traps in *Cedrus atlantica* forest, 8 April 1985, RB; 19♂ (CRB), Chréa, Hakou Feraoun, 36°28'17"N 2°51'3"E, 830 m, pitfall traps in *Cedrus atlantica* forest, 15 February 1987–02 January 1988, RB; 21♂, 6♀ (CRB), Chréa, Les Glacières S., 36°26'13"N 2°52'22"E, 1290 m, pitfall traps in *Cedrus*

forest, 15 February 1987–09 May 1988, RB; 47♂, 15♀ (CRB), Atlas de Blida, Meurdja, 36°29'54"N 3°8'21"E, 850 m, pitfall traps in *Cedrus atlantica* plantation, 15 April 1982, RB; 1♂ (CRB), Meftah, Djebel Zerouela, 36°35'54"N 3°14'8"E, 450 m, stones in mixed *Pinus halepensis-Quercus ilex* forest, 11 April 1985, RB; 1♂ (CRB), Boumerdes: mouth of Oued Réghaia, 36°46'43"N 3°20'2"E, 25 m, pitfall traps in *Olea maquis*, 22 April 1986, RB; 9♂, 1♀ (CRB), Forêt de Réghaia, 36°45'34"N 3°23'4"E, 45 m, pitfall traps in *Quercus suber* forest, 30 October 1988, RB; 1♂ (CRB), Chleff: Damous, 36°33'4"N 1°40'23"E, 50 m, pitfall traps in *Pinus halepensis* forest, 20 January 1990 RB. Saida: 1♀ (CRB), Tircine, 35°1'7"N 0°1'38"E, 900 m, stones along fields, 04 April 1989, RB. Sétif: 4♀ (CRB), Djebel Babor, 36°29'59"N 5°28'13"E, 1650 m, pitfall traps in *Cedrus atlantica* forest, RB. Tipaza: 6♂ (CRB), Douaouda, Oued Mazafran, 36°41'26"N 2°48'16"E, 50 m, pitfall traps in *Populus alba* forest, 16 December 1986–26 February 1988, RB. Tizi Ouzou: 3♂ (CRB), Chabet-El-Ameur, 36°39'47"N 3°37'15"E, 250 m, stones at border of fields, 20 April 1990, RB; 7♂ (CRB), Massif du Djurdjura, Tizi Bousouil, 36°28'11"N 4°11'10"E, 1600 m, pitfall traps in grassland, January–December 1991, O. Abrous.

Previous records: ALGERIA: Boumerdes: Bordj-Menaël (as Bordj-Menaïel), 36°44'36"N 3°43'02"E (Simon 1875; de Blauwe 1980). TUNISIA: Jendouba: Ain Draham, 36°47'31"N 8°42'44"E (Simon 1885).

Diagnosis: This species is closely related to *L. flavomaculata*, male differs by the patellar apophysis reduced to a small tubercle and the recurved, pointed tip of the ventral branch of the conductor (Fig. 70, CDB) versus deeply incised in *L. flavomaculata*. Females are easily recognized by the large sickle-shaped atrium (Fig. 73) and the unique posterior position of the spermathecae (Figs. 74–75), anteriorly or in the middle in all other species.

Distribution: Until now this species has only been known from one locality in Algeria and another in Tunisia. It appears to be very common in north Algeria, from Saida in the west to Sétif in the east (Fig. 127).

Description: Measurements: Males (n = 25): total length 4.2–5.7; carapace 2.01–2.89 long, 1.3–2.05 wide. Female (n = 25): total length 5.1–7.5; carapace 1.95–3.31 long, 1.31–2.09 wide. Colouration (Figs. 66–68): cephalic part and median and submarginal stripes olive brown, rest dark brown, with clearer reticulations; abdomen dark grey, with two pale grey median spots followed by 4–6 paler chevrons; chelicerae reddish brown; sternum yellowish grey; legs: femora dark brown, with pale base; other segments pale grey, tibiae with two dark annulations, metatarsi with one annulation. Specimens collected in forests are generally much darker. Chelicerae: fang groove with two promarginal and two retromarginal teeth. Male palp (Figs. 69–72): patella with 2 blunt, closely set apophyses; tibia with slender, pointed dorsal apophysis, and with ventral crest; dorsal branch of conductor elongated, tip pointed, recurved in posterior direction; ventral branch of conductor a large, oblique, dark sclerite, rounded at both edges, with median anterolateral projection of variable length; embolus thread-

like, gradually narrowing, terminally pointed. Epigyne/vulva (Figs. 73–75): epigynal plate large, rhomboid; atrium transverse, sickle-shape, having an anterior position; spermathecae rounded, having a posterior position, touching the epigynal groove, separated from each other by less than their diameter.

***Lycosoides murphyorum* Bosmans sp. n.** (Figs. 76–85, 124)

Types: Holotype ♂ (RBINS): MOROCCO: Tanger-Tetouan-Al Hoceima, 16 km W of Ketama, 34°54'36"N 4°33'16"W, 1750 m, pitfall traps in *Cedrus* forest, 20 April–15 May 1984, RB. Paratypes: 10♂, 3♀ (RBINS), together with the holotype.

Etymology: The species is dedicated to John and Frances Murphy in honour of their much appreciated papers on spider systematics, among them an important contribution to the Moroccan *Lycosoides*.

Other material: MOROCCO: Tanger-Tetouan-Al Hoceima: 2♀ (CRB), 40 km W of Ketama, 34°54'36"N 4°33'36"W, 1030 m, stones in degraded *Quercus* forest, 26 April 1989, RB.

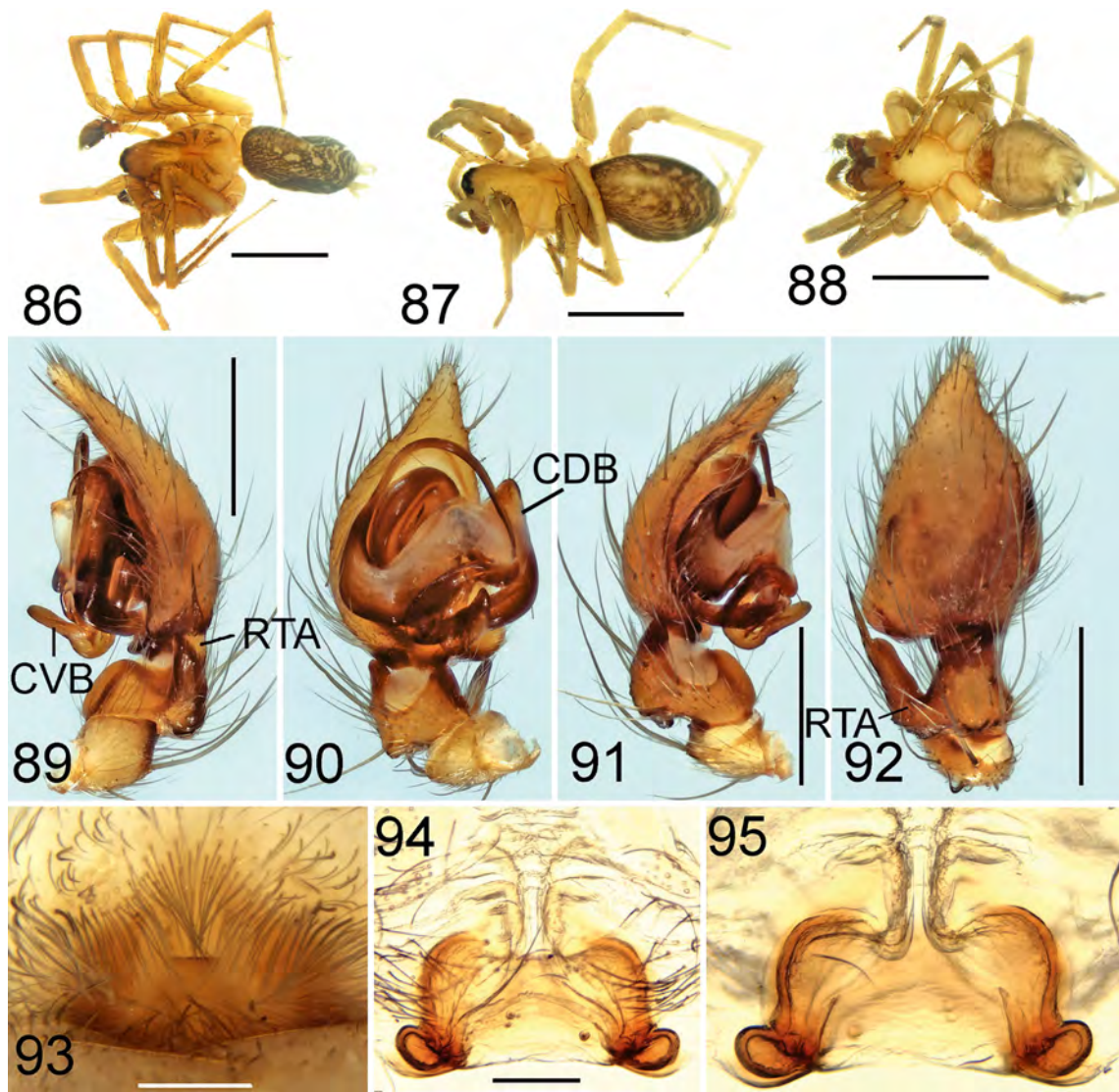
Diagnosis: The males of this species can be distinguished from all other congeners by the two parallel, pointed apophyses at the distal part of the two branches of the conductor (Figs. 80–81, CDB, CVB). The females can be separated by the elongated epigynal atrium (Fig. 83) and the spermathecae separated by more than 1.5 diameters (Fig. 85).

Distribution: Only two close localities in Morocco (Fig. 124).

Description: Measurements: Male (n = 2): total length 3.3–3.4; carapace 1.15–1.40 long, 1.35–1.40 wide. Female (n = 5): total length 4.9–6.6; carapace 2.87–3.33 long, 1.62–2.01 wide. Leg measurements of the holotype ♂ of *L. murphyorum* sp. n.:

	Fe	Pa	Ti	Mt	Ta	Total
I	1.65	0.60	1.28	1.84	1.06	6.43
II	1.58	0.56	1.28	1.51	1.03	5.96
III	1.48	0.56	1.45	1.90	1.08	6.47
IV	1.96	0.75	1.75	2.27	1.42	8.15

Colouration (Figs. 76–77): carapace grey-brown reticulated with pale yellow and darker eye region, cephalic part with median longitudinal stripe; legs pale yellowish, femora striped with greyish patterns, patellae with some grey patterns distally, tibiae with median and distal annulations, metatarsi with traces of median and distal annulations; chelicerae pale yellowish with darker base; sternum pale yellowish, margin with grey; abdomen grey indistinctly mottled with paler regions. Chelicerae: fang groove with three promarginal and two retromarginal teeth. Male palp (Figs. 78–82): patella with indistinct dorso-retrolateral tubercle; tibia with minute, pointed retrolateral apophysis (Fig. 81, RTA) and ventral crest; dorsal branch of conductor (Fig. 80, CDB) anteriorly rounded, subterminally with distinct hook (Fig. 79, H), then curving inwards to join distal



Figs. 86–95: *Lycosoides parva* (Denis, 1954). **86** male, dorsal view; **87** female, dorsal view; **88** same, ventral view; **89** male palp, retrolateral view; **90** same, ventral view; **91** same, prolateral view; **92** same, dorsal view; **93** epigyne, ventral view; **94** vulva, ventral view; **95** same, dorsal view. CDB = dorsal branch of conductor; CVB = ventral branch of conductor; RTA = retrolateral tibial apophysis. Scale bars = 2.0 mm (86–88), 0.5mm (89–92), 0.2mm (93–95).

part of ventral branch of conductor (Fig. 80, CVB); embolus filiform, forming half a circle. Epigyne/vulva (Figs. 83–85): epigynal plate almost quadrangular, middle part deeply incised by elongate atrium, open anteriorly; spermathecae oval, near posterior margin, separated by 1.5 diameters.

***Lycosoides parva* (Denis, 1954)** (Figs. 86–95, 124)

Textrix parva Denis, 1954: 143, fig. 21 (♀); de Blauwe (1980): 36, figs. 52–53 (♀).

Lycosoides parva: Lehtinen (1967): 245 (transferred from *Textrix*).

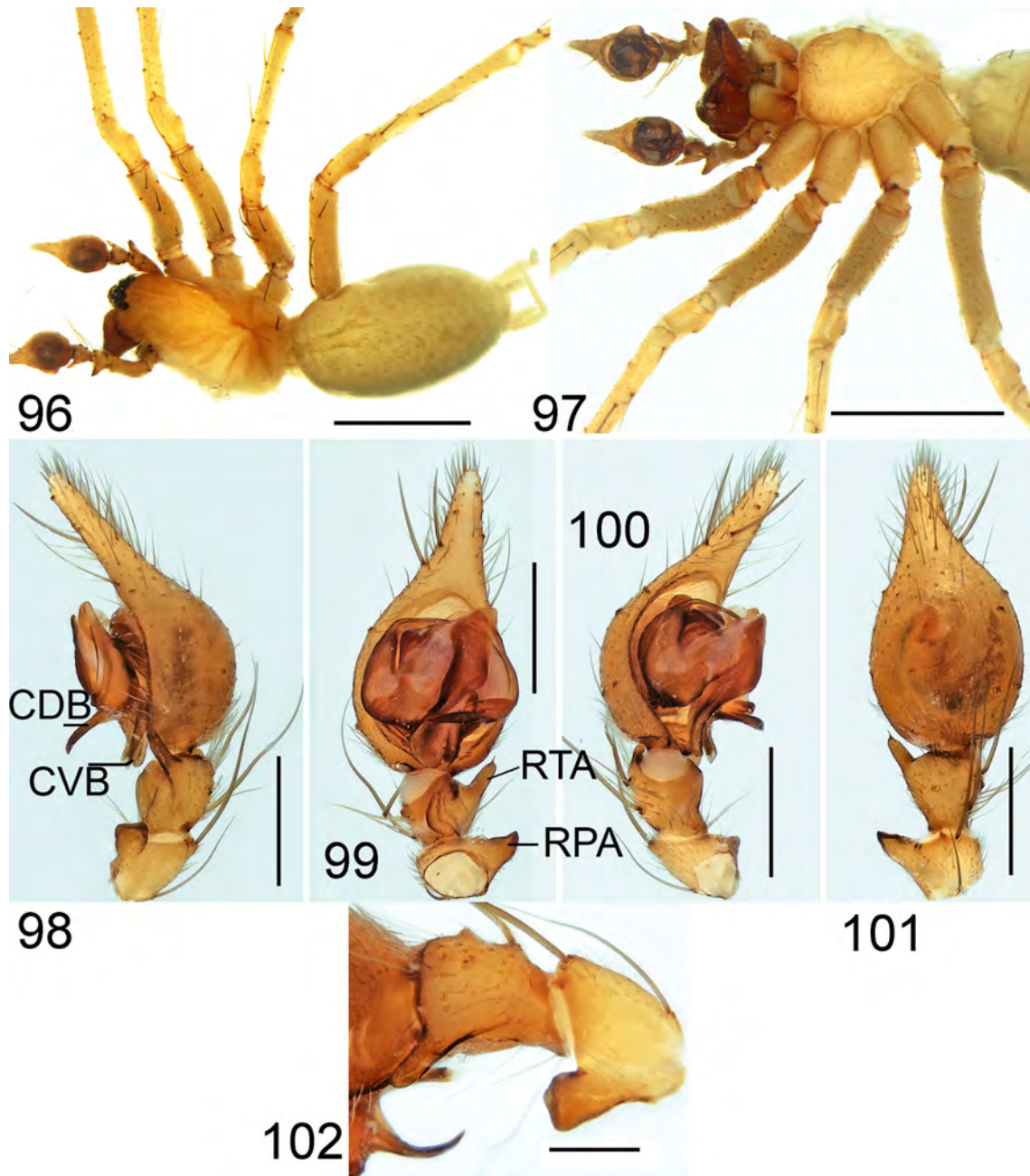
Type: Holotype ♀ (MNHN, bocal 1956): MOROCCO: Fès-Meknès, Cascades de Ras-el-Ma, 13 January 1951, J. Gattefossé.

Other material: MOROCCO: Fès-Meknès: 2♂, 7♀ (CRB), Tazeka National Park, Djebel Tazeka, 34°03'17"N 04°13'12"W, 1700 m, stones in mixed *Quercus ilex*–*Cedrus atlantica* forest, 14 December 2013, RB; 1♀ (CRB), same

locality, 34°03'17"N 4°13'12"W, 1850 m, stones in grassland in *Cedrus atlantica* forest, no date, RB; 1♂ (CRB), same locality, in pitfall traps at same site, 22 April–08 May 1984, RB; 1♂, 1♀ (CRB), Tazeka National Park, Ras el Ma, 34°08'58"N 4°00'23"W, 950 m, sifting litter in *Quercus suber* forest, 14 December 2013, RB; 1♀ (CRB), W of Bab Bou Idir, 34°04'26"N 04°10'50"W, 1200 m, sifting litter in *Quercus suber* forest, 14 December 2013, RB. Taza: 1♂, 1♀ (CSL), Tazekka National Park, Bab Bou Idir, Ghar Bouslama, 34°05'30"N 4°06'43"W, 1512 m, cave, 30 October 2018, B. Lips.

Previous records: MOROCCO: Fès-Meknès: Ras el Ma waterfalls, 34°08'58"N 4°00'23"W, 1400 m (type locality; Denis 1954).

Diagnosis: The males of this species were never described before. They can be easily recognized by the elongated tibial apophysis with a unique, needle-shaped tip (Fig. 92, RTA) and the terminally rounded extension of the ventral branch of the conductor (Fig. 89, CVB). The females can be distinguished by the small rounded epigynal atrium



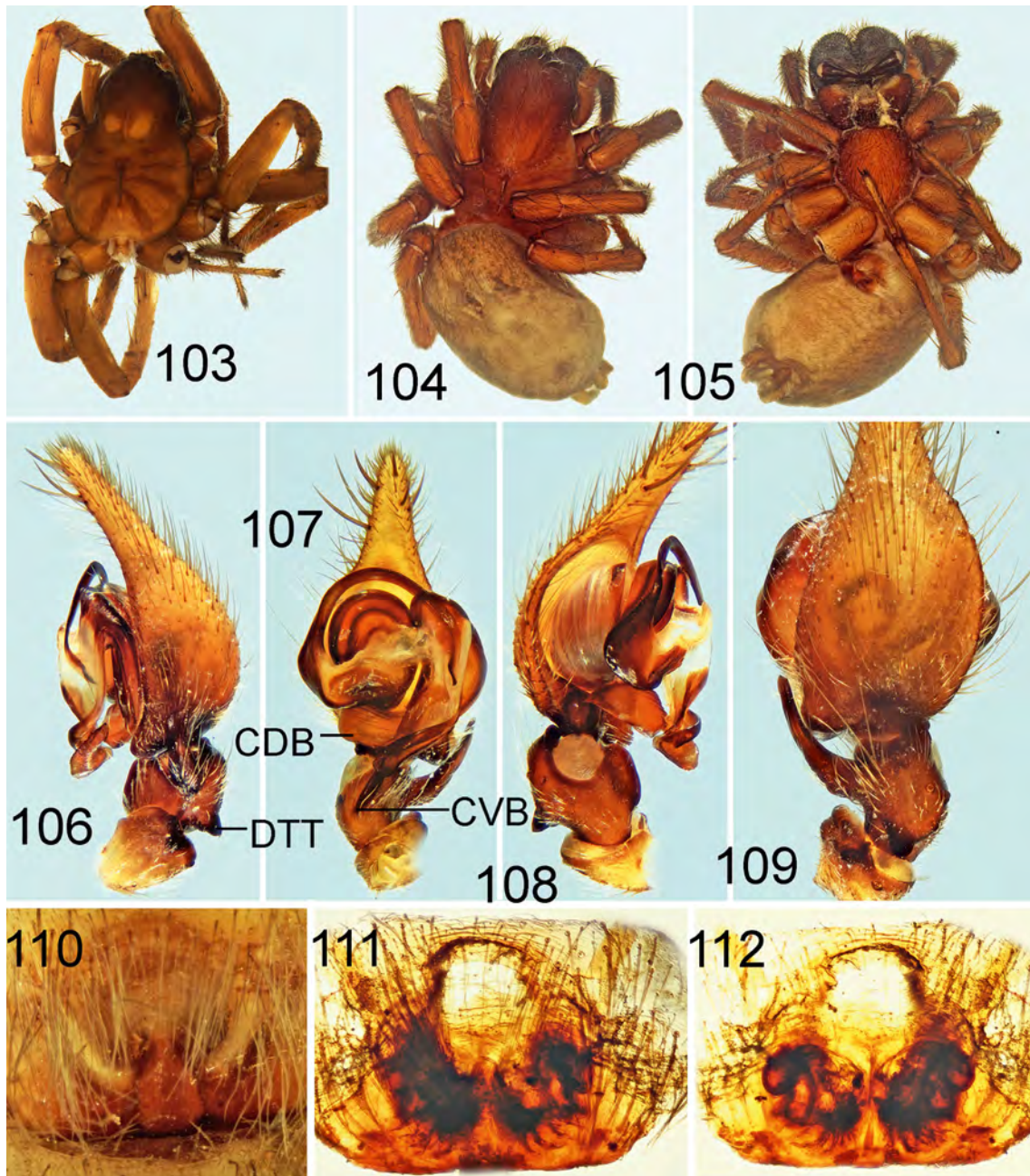
Figs. 96–102: *Lycosoides robertsi* Bosmans, sp. n. **96** male holotype, dorsal view; **97** same, ventral view; **98** male palp, retrolateral view; **99** same, ventral view; **100** same, prolateral view; **101** same, dorsal view; **102** male palpal patella and tibia, dorso-retrolateral view. CDB, CVB = dorsal and ventral branch of conductor; RPA, RTA = retrolateral patellar and tibial apophysis. Scale bars = 2.0 mm (96–97), 0.5 mm (98–101), 0.2 mm (102).

and the postero-lateral position of the spermathecae (Figs. 94–95).

Distribution: Known only from the Tazeka National Park in north-eastern Morocco (Fig. 124).

Description: Measurements: Male ($n = 23$): total length 4.8–4.9; carapace 2.38–2.51 long, 1.52–1.72 wide. Female ($n = 4$): total length 3.8–4.8; carapace 1.69–2.11 long, 1.10–1.43 wide. Colouration (Figs. 86–88): carapace yellowish brown, margin and widening radiating striae grey; sternum pale yellowish brown, gradually darker towards the margin; legs yellowish brown, femora with base and two annulations greyish; abdomen dorsally dark grey with pale grey pattern of anterior spots followed by chevrons, ventrally pale grey; spinnerets greyish, distal segment of posterior

spinnerets darkened. Chelicerae: three promarginal and two retromarginal teeth. Male palp (Figs. 89–92): patella with sclerotized antero-dorsal margin; tibia with large dorso-retrolateral apophysis, distal part needle-shaped (Fig. 92), additionally with a dorsal boss and a ventral keel (Fig. 89); basal part of dorsal branch of conductor a distally rounded structure with a robust, rounded protuberance pointing in postero-dorsal direction (Fig. 89), dorsal part running behind the base of the embolus (Fig. 90, CDB); ventral part of dorsal branch enlarged, slightly twisted, pointing to tip (visible in prolateral view, Fig. 91); ventral branch of conductor (extension of the membranous connection) enlarged (Fig. 89, CVB), tip finely serrated and pointing to both sides; retrolateral part robust, curving in antero-ventral



Figs. 103–112: *Lycosoides saiss* Bosmans, sp. n. **103** male carapace, dorsal view; **104** female, dorsal view; **105** same, ventral view; **106** male palp, retro-lateral view; **107** same; ventral view; **108** same, prolateral view; **109** same, dorsal view; **110** epigyne; **111** vulva, ventral view; **112** same, dorsal view. CDB = conductor, dorsal branch; CVB = conductor, ventral branch; DTT = dorsal tibial tubercle.

direction, tip rounded; embolus semi-circular, gradually narrowing. Epigyne/vulva (Figs. 93–95): epigynal plate trapezoid, with small anteromedian incision forming the transverse rectangular atrium, anteriorly open, posteriorly well delimited by transverse, sclerotized margin; spermathecae small, oval, having postero-lateral disposition, separated by more than 3 diameters.

***Lycosoides robertsi* Bosmans sp. n.** (Figs. 96–102, 127)

Type: Holotype ♂ (RBINS): TUNISIA: Gafsa, Arram oasis, 33°33'27"N 10°19'41"E, 65 m, in herbs along irrigation channels, 16 December 1999, RB.

Etymology: The species is dedicated to Michael Roberts (1945–2020) in recognition and respect of his work on spiders. Long ago, the first two authors, as young arachnologists, used Roberts's book *The Spiders of Great Britain and Ireland* as an indispensable source for identification of spiders from Belgium or the north of France.

Diagnosis: This pale species is easily distinguished from all other *Lycosoides* species by the large, truncate patellar apophysis, and the spike-like tip of the dorsal branch of the conductor (Fig. 98, CDB).

Distribution: Only the type locality in south Tunisia (Fig. 127).

Description: Measurements: Males (n = 1). Total length 6.2; carapace 2.71 long, 1.75 wide. Leg measurements of the holotype ♂ of *Lycosoides robertsi* sp. n.:

	Fe	Pa	Ti	Mt	Ta	Total
I	2.24	0.76	2.21	2.21	1.29	8.71
II	2.14	0.73	1.96	1.98	1.12	7.93
III	2.13	0.71	1.91	2.38	1.45	8.58
IV	2.41	0.73	2.61	3.37	1.62	10.74

Colouration (Figs. 96–97): cephalic part of carapace pale yellowish brown, thoracic part whitish with striae slightly darkened; chelicerae orange brown; legs pale yellowish brown; abdomen and spinnerets uniformly whitish grey. Abdomen: posterior spinnerets half as long as the abdomen. Palp (Figs. 98–102): patella with truncate rectangular retrolateral apophysis, as wide as long; tibia with large, erect, obtuse dorso-retrolateral apophysis, ending in thorn, and small, blunt dorso-prolateral apophysis and ventral crest; dorsal branch of conductor (Fig. 98, CDB) with spike-like tip pointing in postero-ventral direction, ventral branch (CVB) bifurcate, with spoon-like ventral part and pointed dorsal part; embolus in basal part narrowing gradually, in distal part filiform.

Lycosoides saiss Bosmans sp. n. (Figs. 103–112, 128)

Types: Holotype ♂ (RBINS): MOROCCO: Fès-Meknès, Plaine du Saïss, Douyet, 34°3'0"N 5°6'36"W, 450 m, pitfall traps in wheat fields, 15 April 1999, S. Boksich. Paratypes: 3♂, 1♀ (RBINS), together with the holotype.

Etymology: The species name is a noun in apposition derived from the Plaine du Saïss, a large plain south of Fès between the Rif Atlas and the Middle Atlas.

Other material: MOROCCO: Fès-Meknès: 17♀ (CJVK, CRB), S of Azrou, 33°26'17"N 5°13'14"W, 1450 m, litter in *Quercus ilex* forest, 7 February 1996, RB & J. Van Keer; 3♀ (CRB), S of Ifrane, 33°28'42"N 5°08'01"W, 1550 m, sifting litter in young *Quercus ilex* forest, 14 May 1984, RB; 1♂, 1♀ (CRB), Tazeka National Park, Ras el Ma, 34°08'58"N 4°00'23"W, 950 m, sifting litter in *Quercus suber* forest, 14 December 2013, RB; 1♂, 1♀ (CRB), Ifrane, 33°28'42"N 5°08'01"W, stones in grassland, 07 February 1996, RB.

Diagnosis: The males of the new species are very similar to those of *L. crassivulva*, but differ in the more pointed basal tooth of the palpal tibia (Fig. 106, DT), the shape of the distal part of the conductor (Fig. 107, CDB and CVB) and the subterminal twist of the embolar tip (Fig. 107). The females are closer to those of *L. variegata*, from which they differ in having the rectangular to quadrangular atrium (reversed trapezoid in *L. variegata*; cf. Figs. 110 and 120).

Distribution: North Morocco (Fig. 128).

Description: Measurements: Males (n = 4): total length 8.70–10.80; carapace length 4.12–5.28, width 2.64–3.52. Females (n = 1): total length 8.40; carapace length 3.85, width 2.46. Leg measurements of the holotype ♂ of *Lycosoides saiss* sp. n.:

	Fe	Pa	Ti	Mt	Ta	Total
I	3.37	1.610	2.61	3.33	1.91	12.83
II	3.37	1.42	2.41	3.33	1.95	12.48
III	3.30	1.49	2.07	3.66	2.03	12.55
IV	3.50	1.45	3.43	4.69	2.05	15.12

Colouration (Figs. 103–105): cephalic part of carapace reddish brown, thoracic part yellowish brown with paler region before fovea; chelicerae reddish brown; sternum and legs yellowish; abdomen grey, posterior half with indistinct traces of paler chevrons, venter and spinnerets pale grey. Spinnerets longer than half of the abdomen length. Male palp (Figs. 106–109): patella with distal retrolateral, sclerotized tubercle; tibia anterodorsally with triangular tubercle (Fig. 106, DT), large retrolateral apophysis, with pointed tip and ventral keel; dorsal branch of conductor (Fig. 107, CDB), semi-circular sclerite, curving posteriorly and appearing as large, grooved knob; ventral branch of conductor (Fig. 107, CVB) in distal half with oblique groove, terminally rounded; embolus semi-circular, linear with parallel margins, twisted just before bluntly pointed tip. Epigyne/vulva (Figs. 110–112): epigynal plate trapezoid, wider than long, with somewhat raised lateral margin and deep antero-medial incision, anteriorly with small septum; atrium quadrangular to slightly rectangular; disposition of spermathecae unknown, because we failed to clear the epigyne.

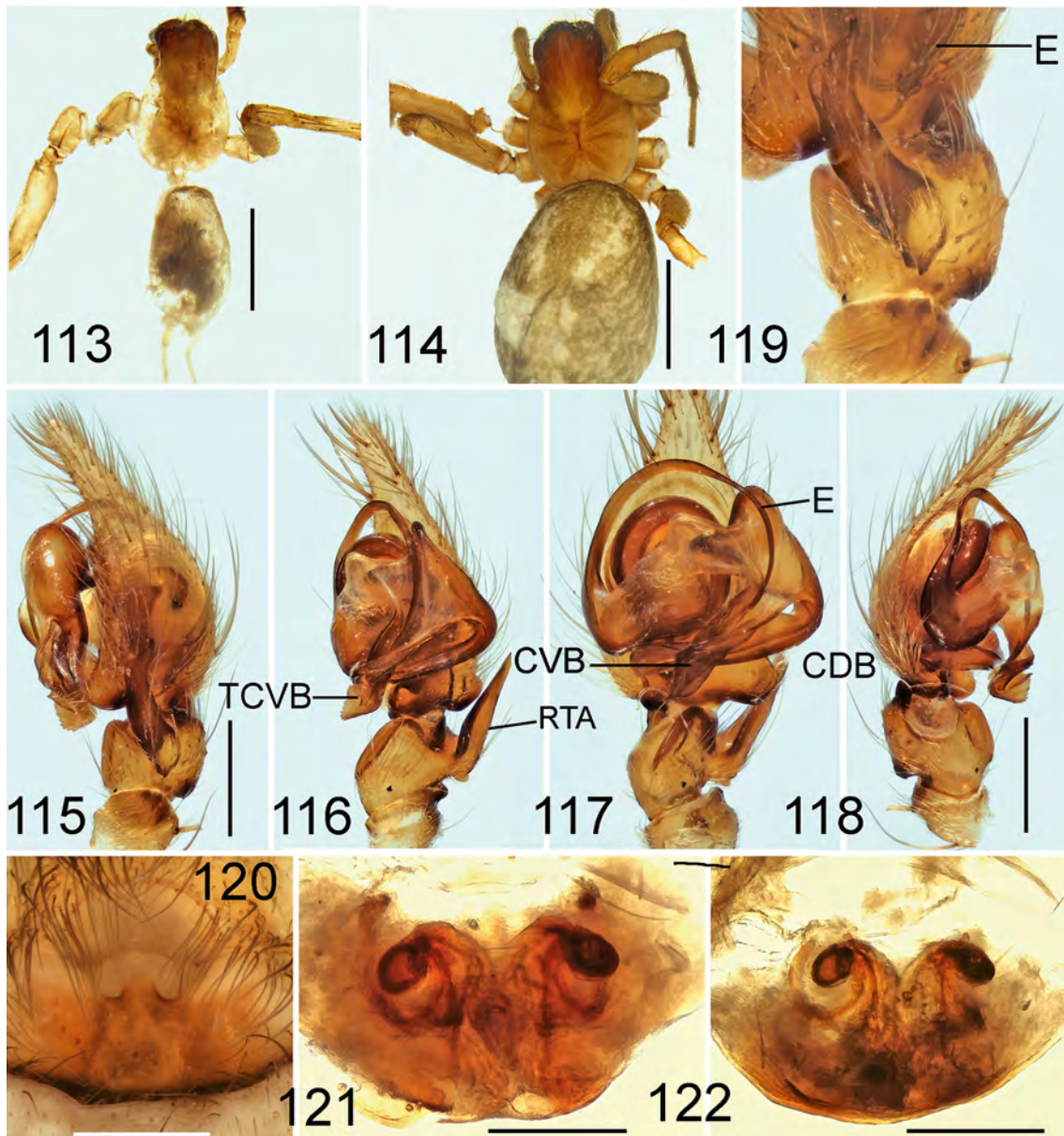
Lycosoides variegata (Simon, 1870) (Figs. 113–122, 127)

Textrix variegata Simon, 1870: 292 (♀); Denis (1954): 137, figs. 6–12 (♂♀); de Blauwe (1980): 43, figs. 63–68 (♂♀).

Lycosoides variegata: Lehtinen (1967): 245 (transferred from *Textrix*); Murphy & Murphy (1978): 254, figs. 34, 8 (♂♀).

Types: Lectotype ♀ (MNHN, 518, bocal 1956): MOROCCO, GIBRALTAR, Tanger, Mogador; designated by De Blauwe (1980). Paralectotype: 1♂ (MNHN, 518, bocal 1956), together with the lectotype.

Other material: MOROCCO: Fès-Meknès: 1♂, 3♀ (CRB), N of Azrou, 33°26'17"N 5°13'14"W, 1400 m, stones in grassland, 07 February 1996, J. Van Keer; 1♀ (CRB), Tazeka National Park, W of Bab Bou Idir, 34°04'26"N 04°10'50"W, 1200 m, sifting litter in *Quercus suber* forest, 14 December 2013, RB; 2♂, 7♀ (CRB), Tazeka National Park, Djebel Tazeka, 34°04'26"N 4°10'50"W, 1700 m, stones in mixed *Quercus–Cedrus* forest, 14 December 2013, RB; 1♂, 5♀ (CRB), Volubilis, 34°04'28"N 06°33'16"W, 400 m, stones in Roman ruins, 16 December 2013, RB. Marrakech-Safi: 2♀ (CRB), 10 km S of Chichaoua, 31°15'49"N 8°50'38"W, 400 m, stones in steppe, 09 February 1986, RB. Rabat-Salé-Kénitra: 3♂ 6♀ (CRB), Forêt de Maâmora, Sidi Amira, 34°03'21"N 6°40'10"W, 125 m, in forest litter, 03–06 February 1989, S. Benhalima. Souss-Massa: 5♀ (CRB), between Aoulouz and Taliouine, 30°34'35"N 8°1'53"W, 600 m, stones in Arganier steppe, 04 February 1996, RB; 4♀ (CRB), Sebti-Guerdane, 30°23'15"N 9°1'24"W, 200 m, stones along cultivated fields, 04 February 1996, RB. Tanger-Tetouan-Al Hoceima: 1♀ (CRB), N of Bab Bou Idir, 34°4'44"N 4°7'44"W, 1475 m, stones along pool, 22 April 1984, RB; 1♂ 6♀ (CRB), Djebel Tazeka, 29°54'36"N 9°12'0"W, 1850 m, stones in grassland, 22 April 1984, RB. GIBRALTAR: 1♀ (BMNH), Gibraltar, 36°08'41"N 5°21'09"W, no further data. SPAIN: Cadiz: 4♀ (CRB), Tarifa, 36°0'45"N 5°36'20"W, 10 m,



Figs. 113–122: *Lycosoides variegata* (Simon, 1870). **113** male, dorsal view; **114** female, dorsal view; **115** male palp, retrolateral view; **116** same, ventro-retrolateral view; **117** same; ventral view; **118** same, prolateral view; **119** same, dorsal view; **120** epigyne; **121** vulva, ventral view; **122** same, dorsal view. CDB = dorsal branch of conductor, CVB = ventral branch of conductor, E = embolus, RTA = retrolateral tibial apophysis, TCVB = tip of ventral branch of conductor. Scale bars = 3.0 mm (113–114), 0.5 mm (115–118, 120–122).

April 1990, P. Poot. Málaga: 2♀ (CRB), Pizarra, 36°45'5"N 4°42'30"W, hand collecting, 17 December 1997, RB.

Previous records: ALGERIA: El Bayadh: El Bayadh (as Géryville), 33°40'59"N 1°01'09"E (Simon 1875). MOROCCO: Béni Mellal-Khénifra: Tadla, 32°35'52"N 6°16'06"W (Denis 1954). Casablanca-Settat: Aïn Sebaa, 33°36'0"N 7°32'24"W (Denis 1954); Ben Slimane (as Boulhaut), 33°36'58"N 7°07'18"W (Denis 1954); El Jadida (as Mazagan), 31°03'50"N 7°56'15"W (Denis 1954); Oued Mellah, 33°42'14"N 7°24'52"W (Denis 1954); Sidi-Abd-er-Rahmane (as Sidi Abderhaman) (Denis 1954); Zenata, 33°39'56"N 7°20'59"W (Denis 1954). Fès-Meknès: Azrou, 35°07'49"N 3°32'40"W (Werner 1934). Marrakech-Safi: Essaouira (as Mogador), 31°30'45"N 9°46'12"W (Simon 1909). SPAIN: Jaén: La Cruz-Rechita, 38°08'29"N

3°38'07"W (Barrientos & Sanchez-Coral 2013). Malaga: Estepona NE, 36°25'40"N 5°08'45" W (Lecigne 2012).

Diagnosis: The males of this species can be distinguished by the wide bulb, the large development of the conductor and the embolus widening just before its tip (Fig. 117). The females can be distinguished by the reversed trapezoid shape of the atrium (Fig. 120), which is differently shaped in all other congeners.

Remarks: Murphy & Murphy (1978, fig. 8) presented the epigyne with two pointed structures in the atrium. We could not observe such structures in the studied specimens.

Distribution: Western Mediterranean: Algeria, Gibraltar, Morocco, Spain (Fig. 127).

Description: Measurements: Male (n = 1): total length 6.2; carapace length 3.21, width 1.92. Female (n = 20): total length 5.8–13.3; carapace length 3.10–6.01, width

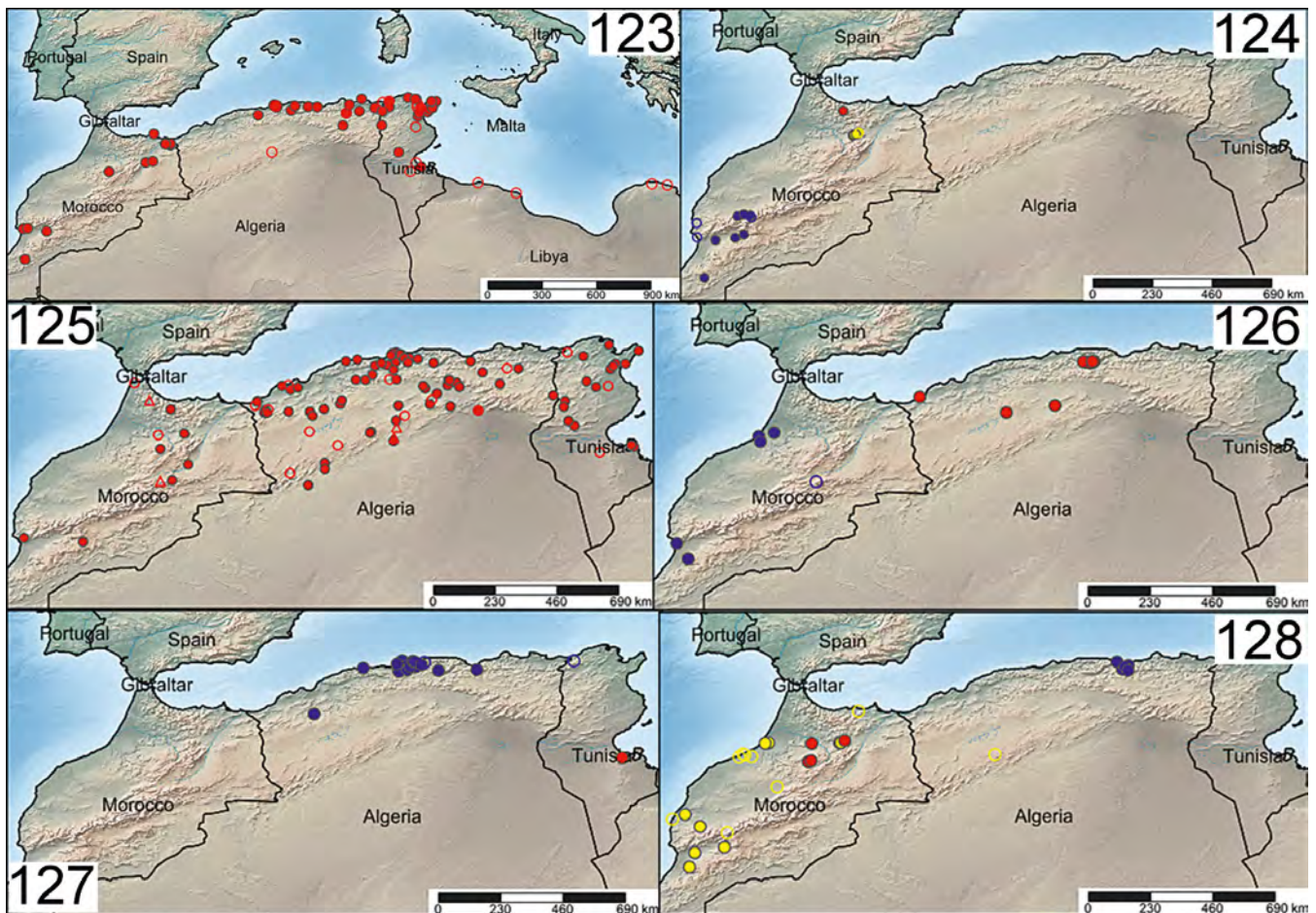


Fig. 123–128: Collecting localities of *Lycosoides* species in the Maghreb. **123** *L. coarctata* (Dufour, 1831); **124** *L. crassivulva* (Denis, 1954) (blue circles), *L. murphyorum* Bosmans, sp. n. (red circle), and *L. parva* (Denis, 1954) (yellow circles); **125** *L. flavomaculata* Lucas, 1846, open circles = citations of *L. flavomaculata*; open triangles = citations of its synonym *L. subfasciata* (Simon, 1870); **126** *L. incisofemoralis* Bosmans, sp. n. (red circles) and *L. instabilis* (Denis, 1954) (blue circles); **127** *L. leprieuri* (Simon, 1875) (blue circles) and *L. robertsi* Bosmans, sp. n. (red circle); **128** *L. kabyliana* Bosmans, sp. n. (blue circles), *L. saiss* Bosmans, sp. n. (red circles), and *L. variegata* (Simon, 1870) (yellow circles). Open circles = citations; closed circles = new records.

1.89–4.01. Colouration: Carapace with cephalic part yellowish brown, thoracic part somewhat paler, with greyish radiating striae; sternum yellowish brown, margin darker; legs uniformly yellowish brown; abdomen dorsally with a median paler area, rest of abdomen somewhat darker, venter greyish. Male palp (Figs. 115–119): patella with small, antero-dorsal, sclerotized boss; tibia with basal, angular boss, large, slightly curved retrolateral apophysis, pointed in antero-retrolateral direction and an oblique ventral keel; conductor prominent, giving the palp wide appearance, dorsal branch (Fig. 117, CDB) passing under ventral branch, ending into a rounded knob; ventral branch (Fig. 117, CVB) composed by a retrolateral and a prolateral sclerite, distally converging and curved in dorsal direction, terminally truncate and serrated (Figs. 116, TCVB, 117); embolus (Fig. 119, E) semi-circular, ribbon-like, from half its length gradually narrowing, somewhat widened before tip, terminally pointed. Epigyne/vulva (Figs. 120–122): epigynal plate trapezoid; atrium shaped as reversed trapezium, occupying somewhat more than half length of epigyne, anterior margin semi-circular, posterior margin straight with short septum; spermathecae oval, separated by 1.5 diameters.

Discussion

Prior to the present study, eight *Lycosoides* species were known from the Maghreb (World Spider Catalog 2022). In the present paper, one species is synonymized and five species are described as new. The number of *Lycosoides* species now stands at twelve. Only two of them display large ranges and occur all over the Maghreb: *L. coarctata* and *L. flavomaculata*. *Lycosoides crassivulva*, *L. instabilis*, *L. murphyorum* sp. n., *L. parva*, *L. saiss* sp. n., and *L. variegata* occur only in Morocco. *Lycosoides incisofemoralis* sp. n., *L. kabyliana* sp. n., and *L. leprieuri* are known from Algeria. Finally, *Lycosoides robertsi* sp. n. occurs only in Tunisia. So a minority of the species are widely distributed, while the majority is restricted to smaller areas, sometimes only to the type locality. Such species are to be considered endemics of certain regions; for instance, *L. parva* is known from six localities lying in the Tazeka National Park in the Middle Atlas of Morocco. More faunistic research all over the Maghreb is needed to enlarge the current knowledge of the spider diversity of the region.

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