

ARTÍCULO:

**A new contribution to the knowledge of the genus *Typhochrestus* Simon in Europe and North Africa (Araneae: Linyphiidae)**

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ARTÍCULO:

**A new contribution to the knowledge of the genus *Typhochrestus* Simon in Europe and North Africa (Araneae: Linyphiidae)**

**Robert Bosmans**

**Abstract:**

Three new *Typhochrestus* species are described: *T. berniae* n. sp. and *T. sireti* n. sp. from Spain and *T. sardus* n. sp. from Sardinia (Italy). *Typhochrestus hispaniensis* Wunderlich, 1995 is synonymised with *T. bogarti* Bosmans, 1990. The unknown male of *Typhochrestus curvicervix* (Denis, 1964) and the unknown females of *T. bogarti* and *T. splendidus* Bosmans, 1990 are described for the first time.

**Key words:** *Typhochrestus*, systematics, Europe, North Africa, new species.

**Taxonomy:** *Typhochrestus berniae* sp. nov., *Typhochrestus sireti* sp. nov., *Typhochrestus sardus* sp. nov.

**Nueva contribución al conocimiento del género *Typhochrestus* Simon en Europa y en el Norte de Africa (Araneae: Linyphiidae)**

**Resumen:**

Se describen tres nuevas especies de *Typhochrestus*: *T. berniae* n. sp. y *T. sireti* n. sp. de España y *T. sardus* n. sp. de Cerdeña (Italia). Se propone la sinonimia de *Typhochrestus hispaniensis* Wunderlich, 1995 con *T. bogarti* Bosmans, 1990. Se describen por primera vez el macho *Typhochrestus curvicervix* (Denis, 1964) y las hembras de *T. bogarti* y *T. splendidus* Bosmans, 1990.

**Palabras clave:** *Typhochrestus*, sistemática, Europa, Norte de Africa, especies nuevas.

**Taxonomía:** *Typhochrestus berniae* sp. nov., *Typhochrestus sireti* sp. nov., *Typhochrestus sardus* sp. nov.

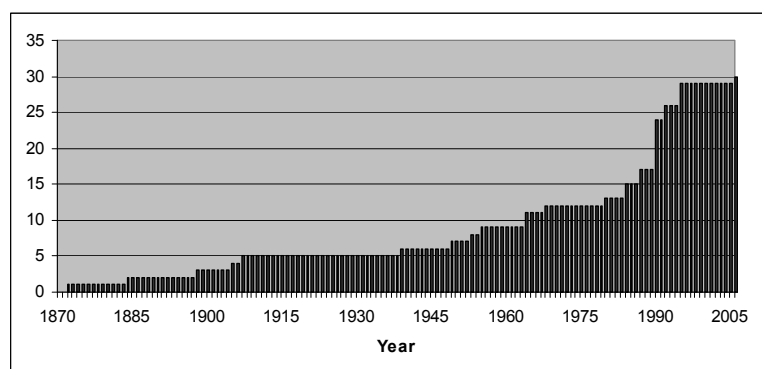
**Introduction**

Members of the genus *Typhochrestus* are among the smallest Linyphiid spiders (BOSMANS & ABROUS, 1990; THALER, 1980, 1984); WUNDERLICH, 1987, 1992, 1995). In the 19th century, only 3 species were known. In the following first eighty years of the 20th century, species were added at irregular intervals, one or two at a time (Figure 1), its number reaching 13 in 1980. Since the eighties, with a growing interest in linyphiid spiders, the number of species increased rapidly. Journeys to Mediterranean regions by arachnologists from temperate Europe became more frequently, and several species were described from their type locality only, for instance from the Canary Islands (THALER, 1980; WUNDERLICH, 1987), Spain WUNDERLICH (1992) and Greece (WUNDERLICH, 1995). A more detailed research was carried out in the Maghreb by BOSMANS & ABROUS (1990) and BOSMANS & BOURAGBA (1991) with the description of 7 new species, each with distinct, rarely overlapping distribution areas. The number of actually known *Typhochrestus* species now has reached a total of 30 species. There appears to be only one species with a larger distribution area: *Typhochrestus digitatus* (O.P.-Cambridge), occurring in the Maghreb and all over Europe. In the Mediterranean region on the contrary, *Typhochrestus* species appear to have much smaller distribution areas. As several parts of the Mediterranean are still inadequately sampled, many more species are to be expected, for instance in the Greek islands. In the present paper, three new species are added, one new

synonym is proposed and the unknown male of *T. curvicervix* and the unknown females of *T. bogarti* and *T. splendidus* are described for the first time. This brings the number of known *Typhochrestus* species to 32. Moreover, in my collection I have females from Morocco and Greece which cannot be identified with certainty, and in absence of males their description is postponed.

Several reasons for the poor knowledge of the genus *Typhochrestus* can be given. Their small size is the first one. They rarely exceed 1.5 mm and in the field

they are easily overlooked or taken for juveniles, especially some pale coloured species. Secondly, they are adult during winter, a time when collecting in the Mediterranean region by arachnologists (mostly from temperate Europe) is hardly done. Thirdly, the adult stage of males is rather short compared to females, as in most other Linyphiidae, so males are not so often collected. While males are readily distinguished by cephalic tubercles and details in the palps, females are much less readily distinguished and often not taken for new species.



**Figure 1.** Increase of the number of *Typhochrestus* species in the world

## Materials and methods

Specimens were examined and illustrated using a Wild M5 stereomicroscope. Further details were studied using an Olympus CH2 stereoscopic microscope with a drawing tube. Taxonomic descriptions follow the format of BOSMANS & ABROUS (1990). Left structures are depicted. All morphological measurements are given in millimetres. Eye measurements were based on the lens at its widest point. Somatic morphology measurements were taken using a scale reticule in the stereo microscope. Female genitalia were excised using sharpened needles. These were then transferred to clove oil for examination under the microscope. Male palps were detached and transferred to glycerol for examination under the microscope. Later, the genitalia were returned to 70% ethanol.

All species described below have the characteristics of the genus: metatarsus IV without trichobothrium, tibiae I-III with two spines, tibia IV with one spine, position of trichobothrium on metatarsus I 0.35-0.45, presence of postocular sulci and details in the male palp and female epigyne (BOSMANS & ABROUS, 1990; HORMIGA, 2000). Measurements are in mm.

Type material and important reference material is deposited in the KBIN or in the MNHNP, the other material is deposited in the collection of the author or in one of the collections listed below.

The following abbreviations are used in the text and figures: CJVK: collection J. Van Keer; CRB: collection R. Bosmans; CPC: collection P. Cardoso; KBIN: Koninklijk Belgisch Instituut voor Natuurwetenschap-

pen, Brussel; MNHNP: Muséum national d'Histoire naturelle de Paris; NHML: Natural History Museum, London; PL, PM, PE: posterior lateral, posterior median and posterior eyes; SMF: Senckenberg Museum, Frankfurt am Main.

## Taxonomy

### *Typhochrestus bogarti* Bosmans, 1990

Figs. 2-8

*Typhochrestus bogarti* Bosmans, in Bosmans & Abrous, 1990: 20, figs 8-12 (holotype male from Morocco, Casablanca; deposited in KBIN; examined); Ledoux & Raphael, 1999: 9.

*Typhochrestus hispaniensis* Wunderlich, 1995: 668, figs 79-82 (holotype male from Spain, Alicante; deposited in SMF; not examined) **N. SYN.**

**DIAGNOSIS.** Males of *Typhochrestus bogarti* are recognized by the three, nearly equal teeth in the palpal tibia, less in number or unequal in all other species; females are very similar to *T. digittatus*, in having a nearly rectangular postero-median plate, but differ by the relatively narrower anterior depression.

**REMARK ON SYNONYMY.** A comparison of Wunderlich's figures 79-82 of *Typhochrestus hispaniensis* and Bosmans' figures 8-12 of *T. bogarti* makes it evident that both are the same species. They have the same denticulation of the palpal tibia, and the same slightly twisted embolar apophysis. Furthermore, specimens

from Alicante at our disposal were compared with specimens from Morocco, and they appeared to be identical. As this is the type locality of *T. hispaniensis*, there is enough evidence that this is a junior synonym of *T. bogarti*.

**DESCRIPTION.** Measurements: MALE: Total length 1.2-1.4; carapace 0.51-0.66 long, 0.44-0.53 wide. FEMALE - Total length 1.5-1.9; carapace 0.62-0.70 long, 0.42-0.49 wide.

**Colour:** Carapace brown, eye region, fovea, striae and margin grey brown; legs yellowish to orange brown; abdomen dark grey to black.

**Carapace** (figs 2-3): In males with relative strong elevation behind the PM and with well-developed sulci; PM separated by their diameter, from the PL by 1.5 their diameter.

**Palp** (figs 4-6): Tibia obliquely truncated, with three teeth of about equal size; protégulum protruding ventrally; embolus describing 1.5 circle; embolar apophysis slightly twisted, terminally pointed.

**Epigyne** (fig. 7): Median plate square to wider than long, with anterior part in a depression, often filled with debris; anchoring hole in a large, shallow depression.

**Vulva** (fig. 8): Spermathecae separated by slightly more than their diameter; entrance ducts moderately developed, 1.5 times as long as the diameter of the spermathecae.

#### NEW MATERIAL EXAMINED.

MOROCCO: Er Rachidia: Tinerhir, 135m, 1 male 1 female, stones in small oasis, 6.II.1996. Fez: West of Fes, Douet, 5 males, pitfalls in wheat fields, 8.XII.1997, S. Boksch leg.

PORTUGAL: Trás-Os-Montes: Algozinho, 1 female, 30.II.2001, P. Cardoso leg.; Vila Chá de Braciosa, 1 male, 13.XI.2002, 1 female, 8.II.2001, P. Cardoso leg. (CPC).

SPAIN: Alicante: Altea la Vieja, 1 male, 23.I.1994, M. Perez leg.; N. Benidorm, la Nucua, 1 female in pine forest, 23.III.1995, M. Perez leg. Badajoz: Peloché, embalse de Garcia Sola, 1 male, 12.IV.1994. Granada: Baza, Barranco del Espartal, 2 males, pitfall on slope to rambla, 12.XI.1990, 1 male 25.XI.1992, L. Zarcos leg.; El Baul, 900m, 2 females in small *Quercus ilex* bushes, 11.IV.1999.; Sierra de la Contreviesa, Puerta Camacho, 1230m, 1 male, litter in pine forest, 6.IV.1997; Sierra de Huétor, 1 female, stones in *Pinus* forest, 18.XII.1997; Ventoros de San Jose, 1 male, 12.IV.1998. Jaen: south of Jaen South, 700m, 1 male 4 females, stones in *Pinus* forest, 12.IV.1998. Madrid: Pelayos de la Presa, along Rio Alberche, 2 females under stones, 13.IV.1999. Malaga: West of Archidona, 1 male in grassland, 18.XII.1997; Sierra de las Nieves, El Burgo, 1 male in litter in *Abies* forest, 13.V.2001, K. De Smet leg. Murcia: Fuente Alamo, 1 male, litter in maquis, 4.V.2002 (CJVK); La Alberca, Santuario de la Fuensanta, 150m, 1 female, litter in oak forest, 7.IV.1999; Mazarron, 2 males 1 female, pitfalls in maquis, 16-28.XII.1998 (CJVK); Sierra de Espuña, Alhama de Murcia, 1 male 2 females, pitfalls in pine forest, 16-28.XII.1998; Sierra de Espuña,

Totana, 7 females, litter in pine forest, 2.V.2002 (CJVK). Toledo: El Pinar de Almorox, 600m, 2 females, stones in pine forest, 13.IV.1999. Valencia: Bellus N., 200m, 1 female around pools in river bed, 7.IV.1999. Valladolid: South of Tordesilla, 700m, 1 female, litter in pine forest, 10.IV.1996.

**DISTRIBUTION.** *T. bogarti* was described from Casablanca in Morocco, and later cited from the French Pyrénées by LEDOUX & RAPHAEL (1999). *T. hispaniensis* described from Alicante in Spain appears to be a junior synonym. Additional records in Spain make it evident that the species is not rare at all in the Iberian Peninsula. It occurs all over Andalucía and reaches the province Valladolid in the north and Valencia in the east. It also occurs in Portugal.

#### *Typhochrestus curvicervix* Denis, 1964

Figs. 9-13

*Diplocephalus curvicervix* Denis 1964: 388, figs 8-9 (description female).

*Typhochrestus curvicervix*; Bosmans & Abrous, 1990: 34 (transfer).

**TYPE MATERIAL.** Holotype female from Tunisia, not examined (deposition unknown; absent from MNHNP and NHML).

**REMARKS.** DENIS (1964) described the species in the genus *Diplocephalus* and only the female is known. BOSMANS & ABROUS (1990) transferred it to *Typhochrestus*. The type locality of the female is Gammarth, situated 5 km N. of Tunis. A specimen collected 70 km east of Tunis is here provisionally described as its conspecific male.

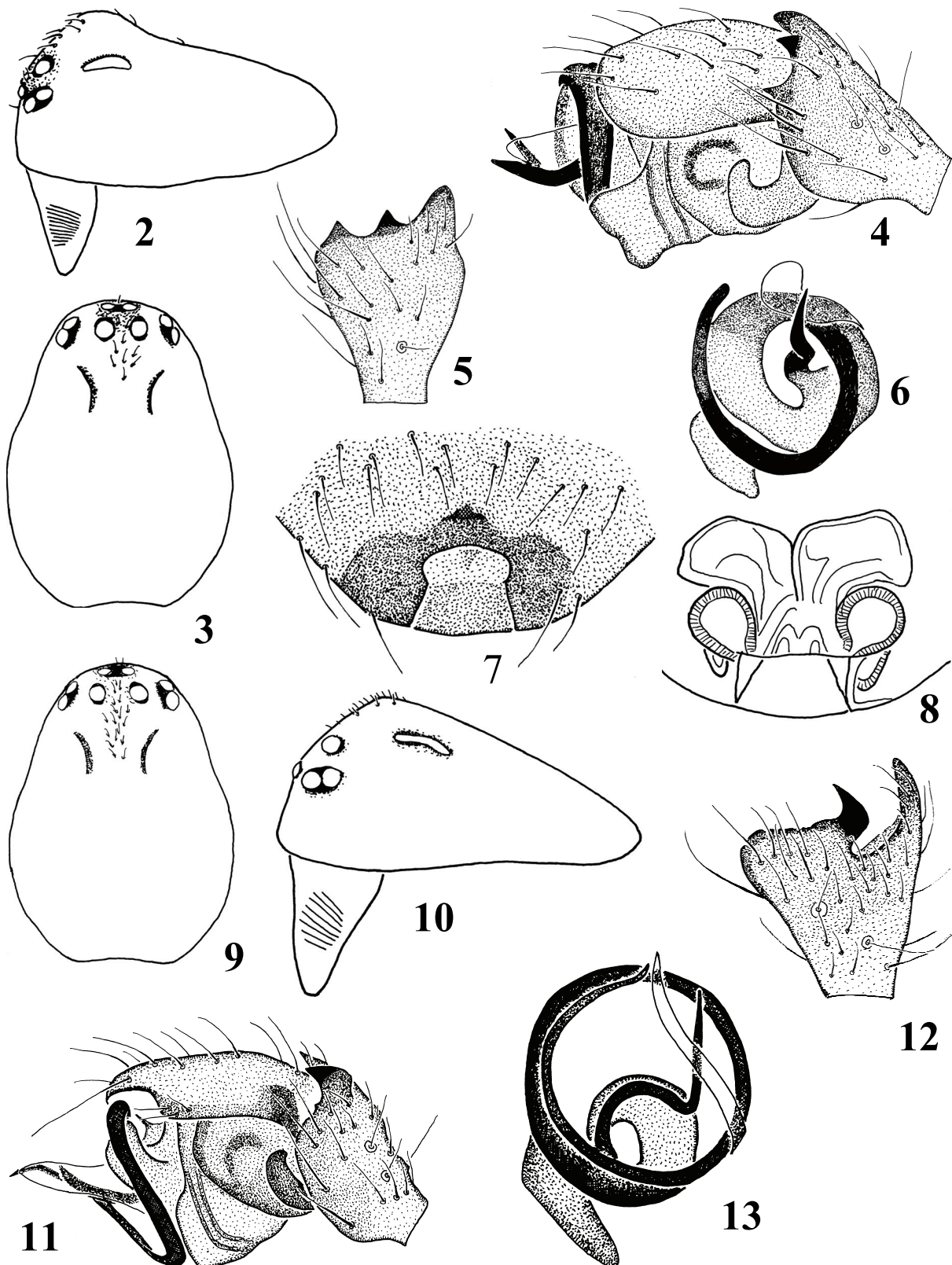
**DIAGNOSIS.** *Typhochrestus curvicervix* and *T. splendidus* from Algeria differ from all other *Typhochrestus* species by the curved antero-median tibial apophysis of the male palp; both species differ clearly by the larger prolateral tibial apophysis and the presence of a long embolar apophysis in *T. curvicervix*.

**DESCRIPTION.** Measurements: MALE: Total length 1.5; carapace 0.69 long, 0.52 wide.

**Colour:** Carapace yellowish brown, cephalic part somewhat darkened, margin narrowly grey; legs yellowish orange; abdomen pale grey.

**Carapace** (figs 9-10): Behind the PE slightly elevated and with some scattered hairs; sulci well-developed, slightly curved, 3.5 x longer as diameter of PM; PM separated by slightly more than their diameter, from the PL by 1.5 x their diameter.

**Palp** (figs 11-13): Tibia with long, slender, bluntly pointed prolateral apophysis, strongly curved, pointed medio-lateral apophysis and retrolateral margin rounded; embolus threadlike, describing a circle of 1.5 turn, gradually narrowing, terminally slightly bent; embolar apophysis narrow and elongated, first describing half a



**Figures 2-8.** *Typhochrestus bogarti* Bosmans; 2. Male carapace, lateral view; 3. Idem, dorsal view; 4. Male palp, lateral view; 5. Male palpal tibia, dorsal view; 6. Embolic division, antero-mesal view; 7. Epigyne; 8. Vulva.  
**Figures 9-13.** *Typhochrestus curvicervix* (Denis). 9. Male carapace, dorsal view; 10. Idem, lateral view; 11. Male palp, lateral view; 12. Male palpal tibia, dorsal view; 13. Embolic division, antero-mesal view.

circle, then abruptly curving to the tip of the embolus; embolic membrane relatively narrow, elongated and with parallel margins.

**FEMALE:** See Denis, 1964, figs 8-9. As the type material is not available, a redescription cannot be given. According to Denis' figure, the species has a triangular posero-median plate,

#### **NEW MATERIAL EXAMINED.**

**TUNISIA:** Nabeul: Northeast of Zaouiet el Mgaiez, 1 male, litter in *Pinus* forest, 26.I.2003. R. Bosmans leg.

**DISTRIBUTION.** The northeast coast of Tunisia.

#### ***Typhochrestus digitatus* O.P.-Cambridge, 1872**

*Typhochrestus digitatus*; Bosmans & Arous, 1990: 22, figs 13-19 (redescription).

**DESCRIPTION AND DIAGNOSIS.** See Bosmans & Arous (1990).

#### **NEW MATERIAL EXAMINED.**

**PORTUGAL:** Trás-Os-Montes: Picote, 1 male, 29.XI.2001, P. Cardoso leg. (CPC).

**SPAIN:** Avila: Sierra de Gredos, 1 female, 22.V.1992, P. Poot leg.

**DISTRIBUTION.** Europe, North Africa. The new records in Portugal and Spain fit well into the known distribution area of the species.

#### ***Typhochrestus alticola* Denis, 1953**

Figs. 14-18

*Typhochrestus alticola* Denis, 1953: 96, figs 8-12 (holotype mâle de France, Hautes Pyrénées, Pic de Bernat Barrau; not examined). *T. a.* Denis, 1953: 96, f. 8-12 (Dm). *T. a.* Thaler, 1980: 589, f. 32, 36, 40, 44 (m).

**DIAGNOSIS.** Males of this species are easily distinguished by the elongated prolateral tibial apophysis, which is much shorter in all other *Typhochrestus* species.

**DESCRIPTION.** Measurements: MALE: Total length 1.6; carapace 0.71 long, 0.51 wide.

**Colour:** Carapace yellowish brown, margin, fovea and striae darker brown; legs pale yellowish; abdomen grey. **Carapace** (figs 14-15): Only slightly elevated behind the PM; sulci well-developed, elongated; PM separated by slightly more than their diameter, from the PL by twice their diameter.

**Male palp** (figs 16-18): Tibia with strongly elongated prolateral apophysis, subterminally denticulated, terminally rounded, sharp antero-median tooth and rounded retro-lateral margin; basal part of paracymbium with two hairs; tegulum protruding ventrally; embolus describing a rather narrow circle of slightly more than one turn;

embolar apophysis absent, embolar membrane very large.

**FEMALE:** Unknown.

#### **NEW MATERIAL EXAMINED.**

**FRANCE:** Pyrénées Atlantiques: Pic d'Orhy, 1 male, 29.IX. 1989, P. Poot leg.

**DISTRIBUTION.** Previously only known from the type locality in the Hautes Pyrénées (DENIS, 1953), and here cited from the Pyrénées Atlantiques, 70 km to the east of the type locality. THALER (1980) cites *Typhochrestus* *cfr. alticola* from Corsica, but according to his drawings, it considers another species.

#### ***Typhochrestus mauretanicus* Bosmans, 1990**

*Typhochrestus mauretanicus* Bosmans, in Bosmans & Arous, 1990: 25, figs 20-26 (holotype male, 2 male 1 female paratypes from Algeria, Theniet-el-Had; deposited in KBIN; examined).

**DESCRIPTION AND DIAGNOSIS.** See BOSMANS & AROUS, 1990.

#### **NEW MATERIAL EXAMINED.**

**ALGERIA:** Djelfa: Djebel Djellal, 10 males 2 females, 1990; Djebel Senalba, 7 males, 1990, N. Bouragba leg.

**DISTRIBUTION.** Northwest Algeria, northeast Morocco. The new record fits well into the known distribution area of the species.

#### ***Typhochrestus sardus* n. sp.**

Figs. 19-25

**TYPE MATERIAL.** Holotype male, 5 paratype males 8 paratype females from Italy, Sardinia, Cagliari, southwest of Santa Lucia, Monte Arcosu, 600m, in litter, 17.II.1999, K. De Smet leg. Holotype male, 2 males 3 females paratypes deposited in KBIN, 1 male 3 females paratypes in MNHNP, 2 males 2 female paratypes in CRB.

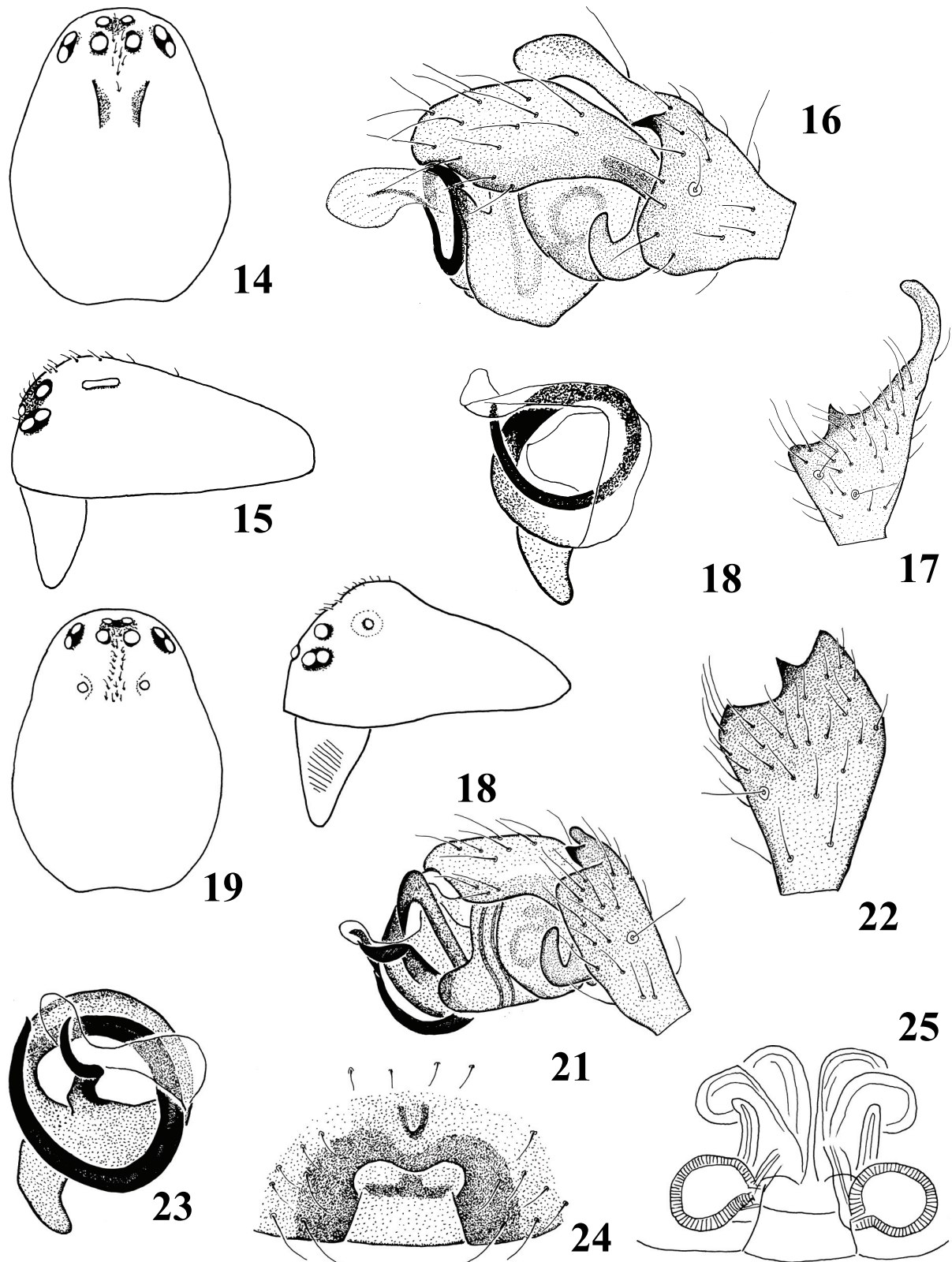
**DIAGNOSIS.** Males are closely related to *T. bogarti* but are at once recognised by the semi-circular cephalic sulci and the higher cephalic protuberance, females are recognised by the epigyne with wide median plate, much narrower in all other species.

**ETYMOLOGY.** The species occurs in the island Sardinia and is named after it.

**DESCRIPTION.** **Colour:** Carapace yellowish brown, with grey margins, in some specimens foveae and striae with some grey; top of male cephalic elevation whitish; legs yellowish brown; abdomen grey.

Measurements: MALE: Total length 1.2-1.3; carapace





**Figures 14-18.** *Typhochrestus alticola* Denis. 14. Male carapace, dorsal view; 15. Idem, lateral view; 16. Male palp, lateral view; 17. Male palpal tibia, dorsal view; 18. Embolic division, antero-mesal view.

**Figures 19-25.** *Typhochrestus sardus* n. sp. 19. Male carapace, dorsal view; 20. Idem, lateral view; 21. Male palp, lateral view; 22. Male palpal tibia, dorsal view; 23. Embolic division, antero-mesal view; 24. Epigyne; 25. Vulva.

0.58-0.71 long, 0.42-0.55 wide. Female: Total length 1.3-1.4; carapace 0.52-0.56 long, 0.40-0.42 wide.

**Carapace** (figs 19-20): In male relatively strongly elevated behind the eye region, covered with hairs and with an anterior concavity; sulci small, circular, situated in a large depression; PM separated by their diameter, from PL by nearly twice their diameter; in females, PM separated by  $\frac{3}{4}$  their diameter.

**Male palp** (figs 21-23): Tibia with blunt antero- and retrolateral teeth and sharp median tooth; paracymbium with three hairs on basal part; protégulum strongly protruding; embolus describing slightly more than one circle, gradually narrowing; embolar apophysis corkscrew-shaped, basal half wider than distal half, terminally pointed; embolar membrane large.

**Epigyne** (fig. 24): Postero-median plate distinctly wider than long, anteriorly with a large depression with concave, chitinised anterior margin; anchoring hole bordering a large circular depression.

**Vulva** (fig. 25): Entrance ducts long, describing wide circles; spermathecae separated by more than their diameter.

**FURTHER MATERIAL EXAMINED.** None.

**DISTRIBUTION.** Only known from the type locality in Sardinia.

#### *Typhochrestus sireti* n. sp.

Figs. 26-31

**TYPE MATERIAL.** Holotype male from Spain, province of Malaga, Tolox, 550m, in pitfalls in *Pinus* forest, 10.IV.1998, R. Bosmans leg.; deposited in KBIN. Females collected at a distance of 150 km in the province of Jaen are described here tentatively as the female of *T. sireti*.

**DIAGNOSIS.** Males of *Typhochrestus sireti* n. sp. are easily recognised by the large, truncate retrolateral tibial apophysis, females by the distinct antero-median septum in the epigyne.

**ETYMOLOGY.** The species is dedicated to Luis Siret, a Belgian archaeologist and illustrator who went to live in Cuevas del Almanzora (Almería) when he was contracted as a mining engineer. Trough 50 years, Siret investigated neolithic sites and his discoveries meant a great advance in the history of the South-eastern Iberian Peninsula and helped settle the sequence from Paleolithic to Copper Age in the zone. In the same way, I try to contribute to a better knowledge of the Spanish spider fauna.

**DESCRIPTION.** Measurements: MALE: Total length 1.3; carapace 0.62 long, 0.48 wide. FEMALE: Total length 1.6-1.9; carapace 0.60-0.68 long, 0.42-0.48 wide.

**Colour:** Carapace yellowish orange, margin and fovea grey; legs pale yellowish; abdomen grey.

**Carapace** (figs 26-27): Hardly elevated behind the PE, with scarce hairs; sulci relatively short, twice as long as the diameter of the PM; PM separated by  $\frac{3}{4}$  their diameter, from the PL by 1.5 x their diameter.

**Male palp** (figs 28-29): Tibia with bluntly pointed prolateral apophysis, at both sides with basal angularity; retrolateral apophysis truncate, separated from the prolateral one by a deep incision; embolus describing a circle of 1.5 turn, with broad base, gradually narrowing; embolar apophysis absent, eventually broken off; embolar membrane relatively small.

**Epigyne** (fig. 30): Postero-median plate longer than wide, anteriorly with distinct antero-median septum, preceded by a large anchoring hole.

**Vulva** (fig. 31): Spermathecae separated by slightly less than their diameter; entrance ducts very wide, U-shaped.

**FURTHER MATERIAL EXAMINED.**

SPAIN: Jaen: Jaen south, Jabalcuz, 700m, 3 females, stones in *Pinus* forest, 12.IV.1998, R. Bosmans leg. (2 females deposited in KBIN, 1 female in CRB).

**DISTRIBUTION.** The provinces Malaga and Jaen in the South of Spain.

#### *Typhochrestus berniae* n. sp.

Figs. 32-36

**TYPE MATERIAL.** Holotype male, 4 paratype males from Spain, Alicante, north of Altea, Sierra de Bernia, 640m, in pitfalls, 9.II.1994, M. Perez leg. (holotype, paratype deposited in KBIN, 2 paratype males deposited in MNHNP).

**DIAGNOSIS.** *Typhochrestus berniae* is easily recognised by the peculiar shape of the prolateral apophysis of the palpal tibia with an angularity at its mesal side, unique in the genus.

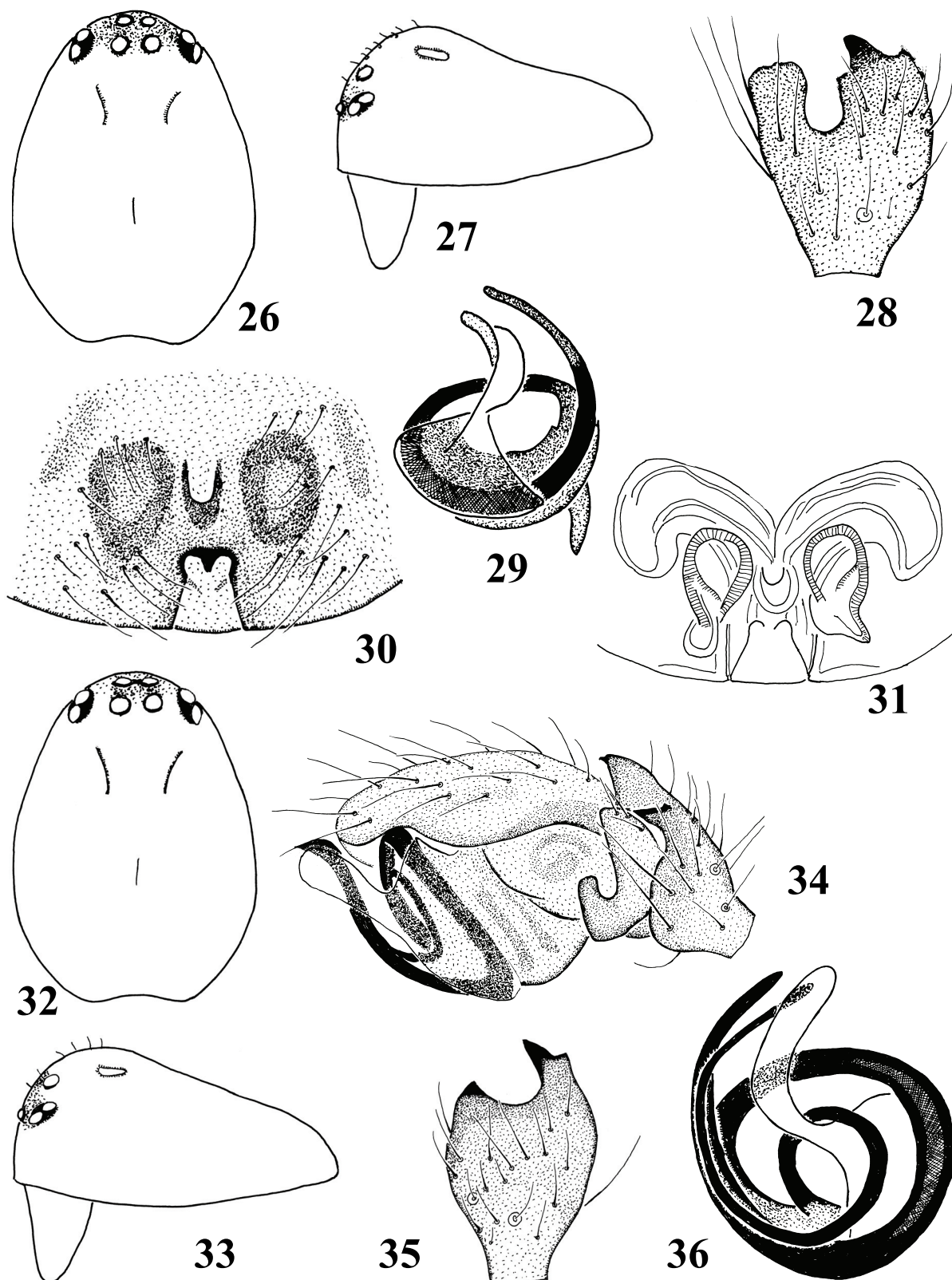
**ETYMOLOGY.** The species name is a noun in the genitive case derived from the type locality.

**DESCRIPTION.** Measurements: MALE: Total length 1.3-1.4; carapace 0.62-0.68 long, 0.43-0.50 wide.

**Colour:** Carapace with orange brown cephalic part and yellowish brown thoracic part, region of fovea and narrow margin greyish; legs yellowish orange; abdomen grey.

**Carapace** (figs 32-33): With rounded elevation behind the PE, only with few hairs; sulci relatively short, length twice the diameter of the PM; PM separated by their diameter, from the PL by 1.5 x their diameter.

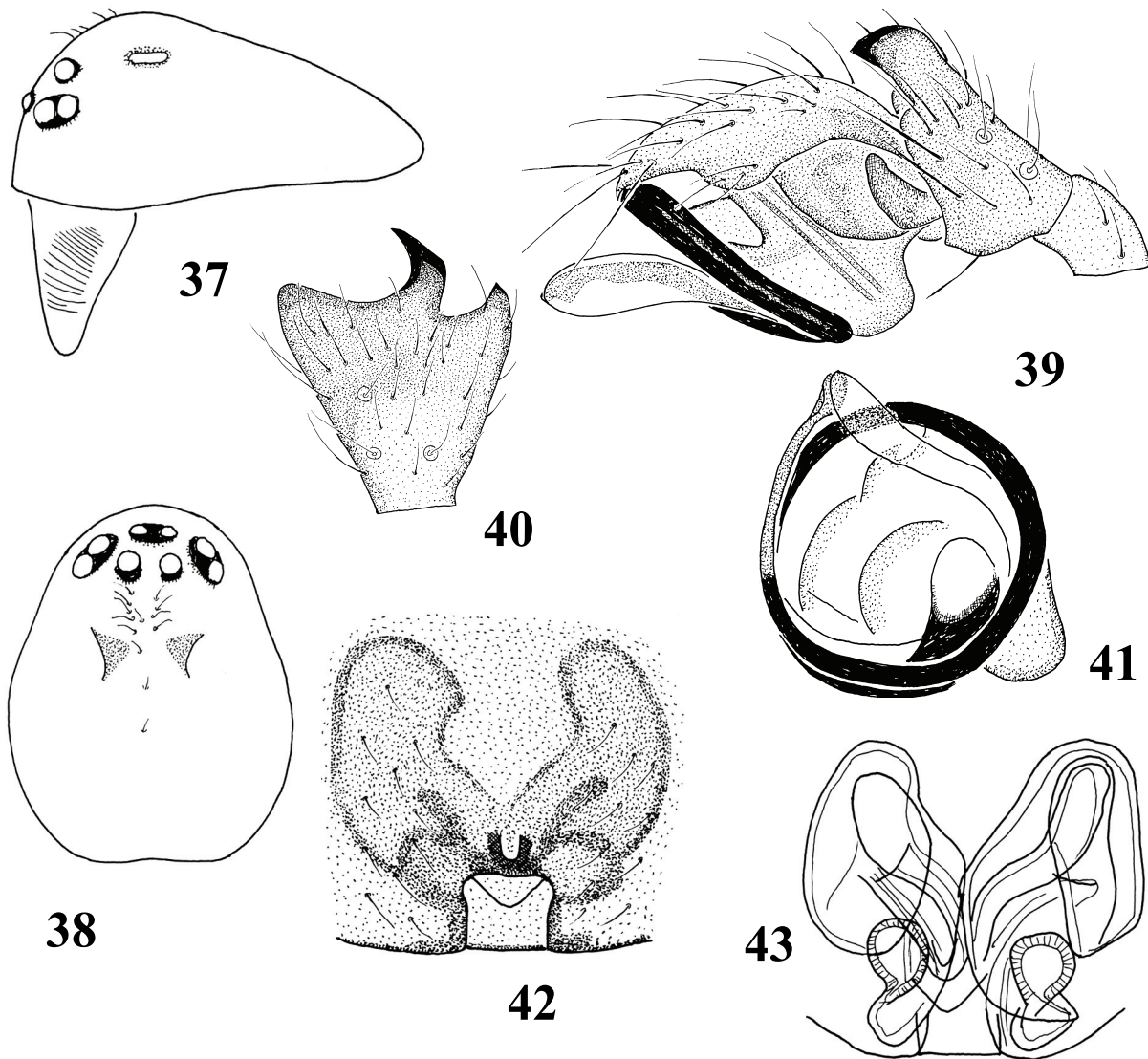
**Male palp** (figs 34-36): Tibia with pointed prolateral apophysis with angularity at mesal side and blunt retrolateral apophysis; embolus threadlike, describing a wide circle of 1.5 turn; embolar apophysis threadlike, describing a much narrower circle of the same length; embolar membrane large, of variable shape. In some specimens,



**Figures 26-31.** *Typhochrestus sireti* n. sp. 26. Male carapace, dorsal view; 27. Idem, lateral view; 28. Male palpal tibia, dorsal view; 29. Embolic division, antero-mesal view; 30. Epigyne; 31. Vulva.

**Figures 32-36.** *Typhochrestus berniae* n. sp. 32. Male carapace, dorsal view; 33. Idem, lateral view. 34. Male palp, lateral view; 35. Male palpal tibia, dorsal view. 36. Embolic division, antero-mesal view.





**Figures 37-43.** *Typhochrestus splendidus* Bosmans. **37.** Male carapace, lateral view; **38.** Male palp, lateral view; **39.** Male palpal tibia, dorsal view; **40.** Embolic division, antero-mesal view; **41.** Epigyne; **42.** Vulva.

the embolar apophysis lacks completely and must be broken off.

FEMALE: Unknown.

**FURTHER MATERIAL EXAMINED.**

SPAIN: Alicante: Northwest of Benidorm, Sierra de Aitana, 1000-1250m, 1 male, M. Perez leg. (CRB).

**ECOLOGY.** The type material was collected in the limestone mountains of the Sierra de Bernia in a low 'matorral' with *Rosmarinus officinalis*, *Thymus vulgaris*, *Helianthemum lavandulifolium*, *Chamaerops humilis*, *Ulex parviflorus*, *Lavandula dentata*, *Arisarum vulgare* and *Brachypodium retusum*.

**DISTRIBUTION.** The species is known from two neighbouring mountains near Benidorm: Sierra de Bernia and Sierra de Aitana, province Alicante in Spain.

***Typhochrestus spatulatus* Bosmans, 1990**

*Typhochrestus spatulatus* Bosmans, in Bosmans & Abrous, 1990: 30, figs 34-41 (holotype male, 2 female paratypes from Algeria, Zemmouri; deposited in KBIN; examined).

**DESCRIPTION.** See Bosmans & Abrous (1990).

**NEW MATERIAL EXAMINED.**

ALGERIA: Djelfa: Djebel Senalba, 1400m, 1 female in pitfalls in *Pinus halepensis* forest, 15.II.1990, N. Bouragba leg.

MOROCCO: Khenifra: Forêt de Mamora, 2 km N. Sidi Allal-Bahraoui, 2 females, litter in *Quercus suber* forest, 8.II.1996.

**DISTRIBUTION.** Formerly only known from the coastal region around Alger, here also cited in a more arid re-

gion 200 km inland and in Morocco.

***Typhochrestus splendidus* Bosmans, 1990**

Figs. 37-43

*Typhochrestus splendidus* Bosmans, in Bosmans & Abrous, 1990: 30, figs 42-46 (holotype male, 1 paratype male from Algeria, El Kala, deposited in KBIN; examined).

**DIAGNOSIS.** *Typhochrestus splendidus* and *T. curvicer-vix* from Tunisia differ from all other *Typhochrestus* species by the curved antero-median tibial apophysis of the male palp; both species differ clearly from each other by the smaller prolateral tibial apophysis and by the absence of a long embolar apophysis in *T. splendidus*. By the large epigynal entrance ducts, females are closest to *T. numidicus* and *T. ultimus*, but *T. splendidus* differs by the nearly square postero-median plate, trapezoid or rectangular in respectively *T. numidicus* and *T. ultimus*.

**DESCRIPTION. MALE:** see BOSMANS & ABROUS (1990) and figs 37-41.

**FEMALE:** Measurements: Total length 1.4-1.6; carapace 0.62-0.65 long, 0.55-0.57 wide.

**Colour:** Carapace yellowish brown, eye region, fovea, striae and margin grey brown; legs yellowish to orange brown; abdomen grey to pale grey.

PM separated by their diameter, from the PL by slightly more than their diameter.

**Epigyne** (fig. 42): Median plate rectangular, only slightly wider than long, anterior part depressed, preceded by a distinct anchoring hole; spermathecae, oblique duct and wide entrance ducts clearly visible in transparency.

**Vulva** (fig. 43): Spermathecae small, separated by slightly more than their diameter; entrance ducts wide.

**NEW MATERIAL EXAMINED.**

ALGERIA: El Tarf: Fedder, 1 male 8 females, litter in *Quercus faginea* forest, 25.III.1996, K. De Smet leg.; El Kala, Lac Oubeira, 1 female, litter in *Quercus suber* forest, 17.III.1996, K. De Smet leg.; El Kala, Lac Tonga, 13 males 2 females, litter in *Quercus suber* forest, 15.I.1996 and 1 female, 22.III.1996, K. De Smet leg.; Djebel Rhorra, 1 male 1 female, litter in *Quercus faginea* forest, 22.III.1996, K. De Smet leg.

**DISTRIBUTION.** Until now the species was only known from the wilaya El Tarf in the extreme northeast of Algeria. Several new localities, all in the same wilaya, are added here and the female is described for the first time. The species is to be expected in Tunisia.

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**References**

- BOSMANS, R. & O. ABROUS (1990). The genus *Typhochrestus* Simon 1884 in North Africa (Araneae: Linyphiidae: Erigoninae). Studies on North African Linyphiidae V. *Bulletin de l'Institut royal des Sciences naturelles de Belgique* **60**: 19-37.
- BOSMANS, R. & N. BOURAGBA (1991). Trois nouvelles Linyphiidae de l'Atlas Algérien, avec la description du mâle de *Lepthyphantes djazairi* Bosmans, et la redescription de *Lepthyphantes homonymus* Denis (Araneae). *Bulletin et Annales de la Société royal Belge d'Entomologie* **128**: 245-262.
- DENIS, J. (1953). Araignées des environs du Marcadau et du Vignemale (Hautes-Pyrénées). *Bulletin de la Société d'Histoire naturelle de Toulouse* **88**: 83-112.
- HORMIGA, G. (2000). Higher level phylogenetics of erigonine spiders (Araneae, Linyphiidae, Erigoninae). *Smithsonian Contributions to Zoology* **609**: 1-160.
- LEDoux, J.-C. & B. RAPHAEL (1999). Araignées de la Réserve naturelle du Mas Larrieu (Argèles, Pyrénées Orientales). Office pour l'Information Eco-entomologique du Languedoc-Rousillon, Milas, 1-16.
- THALER, K. (1980). Über wenig bekannte Zwergspinnen aus den Alpen-VI (Arachnida: Aranei, Erigonidae). *Revue suisse de Zoologie* **87**: 579-603.
- THALER, K. (1984). Sechs neue Mediterrane Zwergspinnen (Aranei, Linyphiidae: Erigoninae). *Archs Sci. Genève* **37**: 193-210.
- WUNDERLICH, J. (1987). *Die Spinnen der Kanarischen Inseln und Madeiras: Adaptive Radiation, Biogeographie, Revisionen und Neubeschreibungen*. Triops Verlag, Langen, West Germany.
- WUNDERLICH, J. (1992). Die Spinnen-Fauna der Makaronesischen Inseln: Taxonomie, Ökologie, Biogeographie und Evolution. *Beiträge zur Araneologie* **1**: 1-619.
- WUNDERLICH, J. (1995). Beschreibung bisher unbekannter Arten der Baldachinspinnen aus der Östlichen Mediterraneis (Arachnida: Araneae: Linyphiidae). *Beiträge zur Araneologie* **4**: 655-686.