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Contribution to the study of the genus *Centromerus* in Turkey, with the description of a new species of blind spiders (Arachnida, Araneae: Linyphiidae)

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Abstract: *Centromerus petrovi* sp. nov. (male and female) is described and illustrated from a cave in the Strandzha Mountain, Turkey (European part). The new species is closely related to *Centromerus milleri* Deltshev, 1974, known from caves of the Rhodope Mountains, southern Bulgaria, from the Ruj Mountain, western Bulgaria and from eastern Rhodope Mountains, Greece. A new synonymy is established: *Centromerus turcicus* Wunderlich, 1995, syn. nov. = *Centromerus valkanovi* Deltshev, 1983.

Keywords: Taxonomy - Turkey - Strandzha Mountain - caves.

INTRODUCTION

Currently, the genus *Centromerus* Dahl, 1886 includes 88 valid species (World Spider Catalog, 2019). Most of them (61 species) are known from Europe, only seven species are presently recorded from Turkey. In this paper *Centromerus petrovi* sp. nov. is described and illustrated from Strandzha Mountain (European part of Turkey). The new species is troglobitic and has already been reported from its type locality under *Centromerus milleri* (misidentification) by Deltshev *et al.* (2011). Therefore *Centromerus milleri* should be excluded from the list of spider species recorded from Turkey. Also, *Centromerus turcicus* Wunderlich, 1995 is newly established as a junior synonym of *Centromerus valkanovi* Deltshev, 1983. Therefore the number of *Centromerus* species currently known from Turkey is six. The diversity of the genus is much lower than in the Balkan Peninsula (27 species). The most reasonable explanation for this is that the Balkan Peninsula is better studied, and many more *Centromerus* species can be expected to be discovered in Turkey in the future.

MATERIAL AND METHODS

The specimens were collected by hand. Coloration is described from material preserved in 80% alcohol. Male palps were examined and illustrated after they were dissected from the spider bodies. Photos were taken

with a Canon EOS1100D digital camera attached to an Amplival microscope. Measurements of the legs were taken from the dorsal side. Total length of the body includes the chelicerae. All measurements used in the description are in millimetres.

Abbreviations: BPS - basal part of scape (= proscape); DPS - distal part of scape; E - embolus; LC - lamella characteristica; MM - median membrane; ST - stretcher; SA - suprathecal apophysis; TA - terminal apophysis.

The holotype and six females paratypes are deposited in the collection of the National Museum of Natural History, Sofia, Bulgaria (NMNHS); 1 male and 1 female paratypes are deposited in the Muséum d'histoire naturelle de Genève, Switzerland (MHNG). Type material of *Centromerus turcicus* was obtained from the Natur-Museum Senckenberg, Frankfurt, Germany (NMSF).

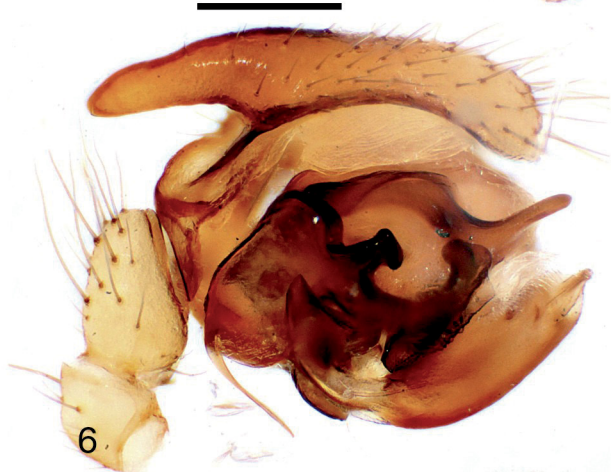
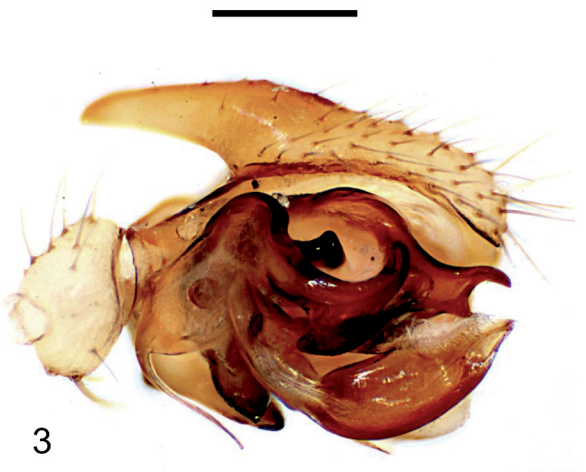
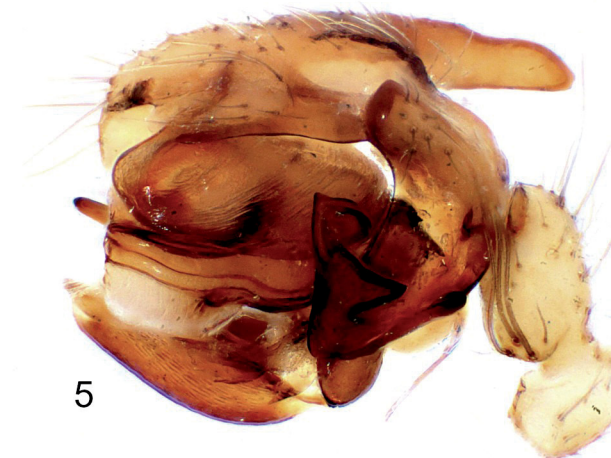
TAXONOMIC PART

Centromerus petrovi sp. nov.

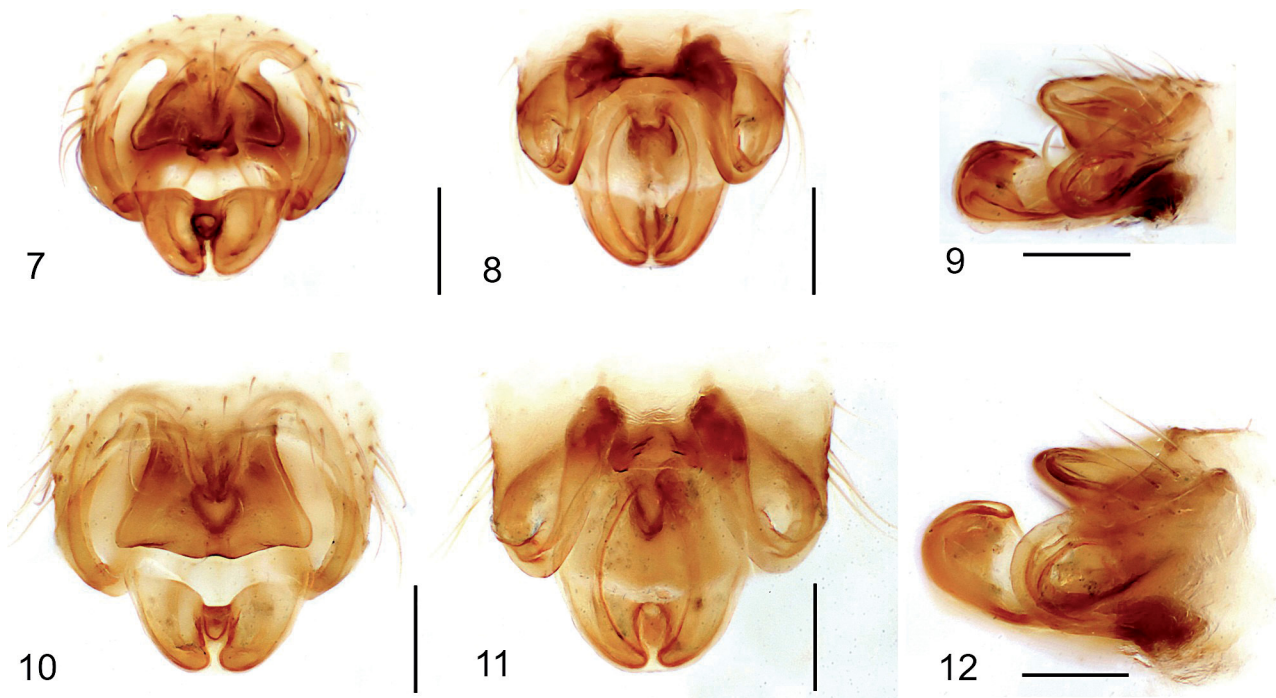
Figs 1-3, 7-9, 13-14, 17-19

Centromerus milleri Deltshev, 1974. – Deltshev *et al.*, 2011: 42. [misidentification]

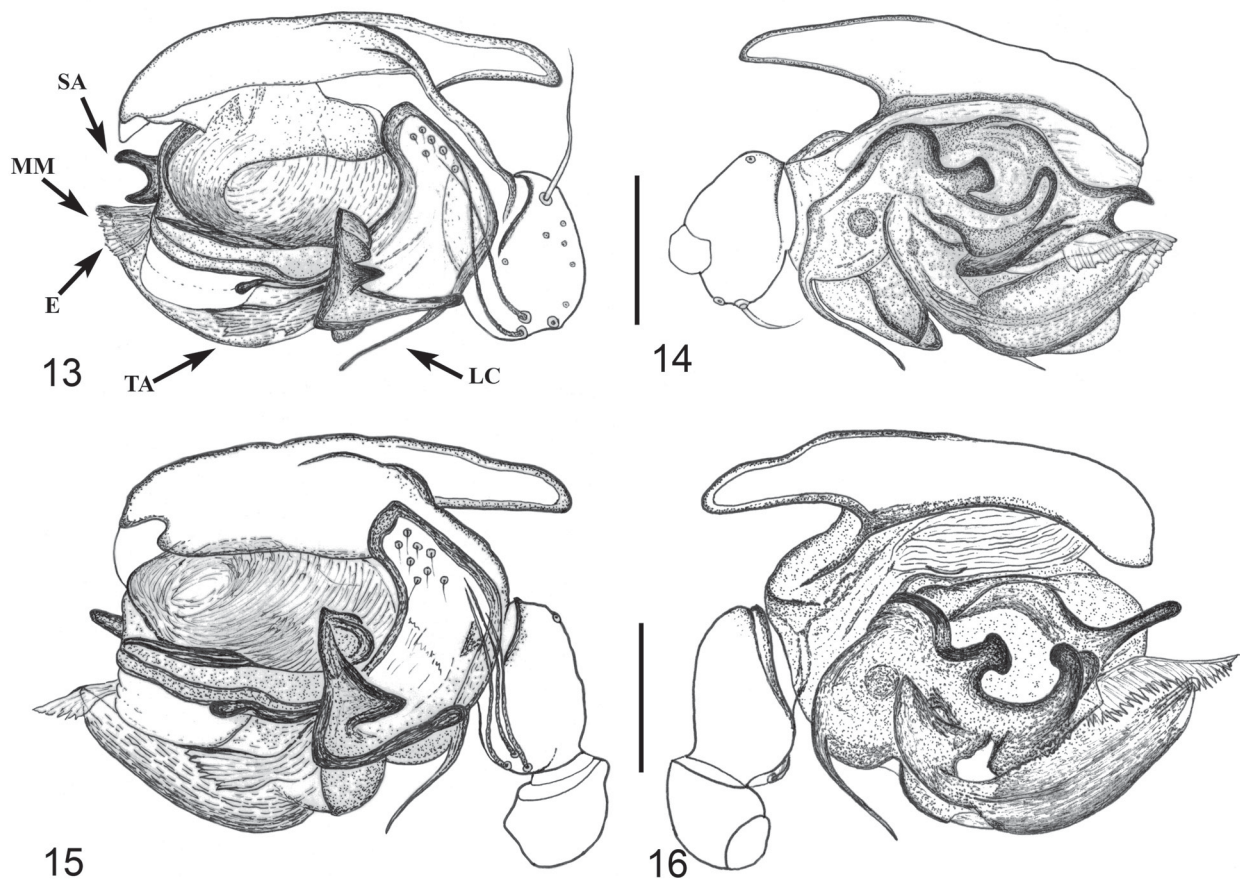
Type material: NMNHS and MHNG; male holotype, 1 male paratype, 7 females paratypes; TURKEY, European part, Strandzha Mountains, Dupnisa Cave (41.84578, 27.55997; alt. 348 m), under stones and on



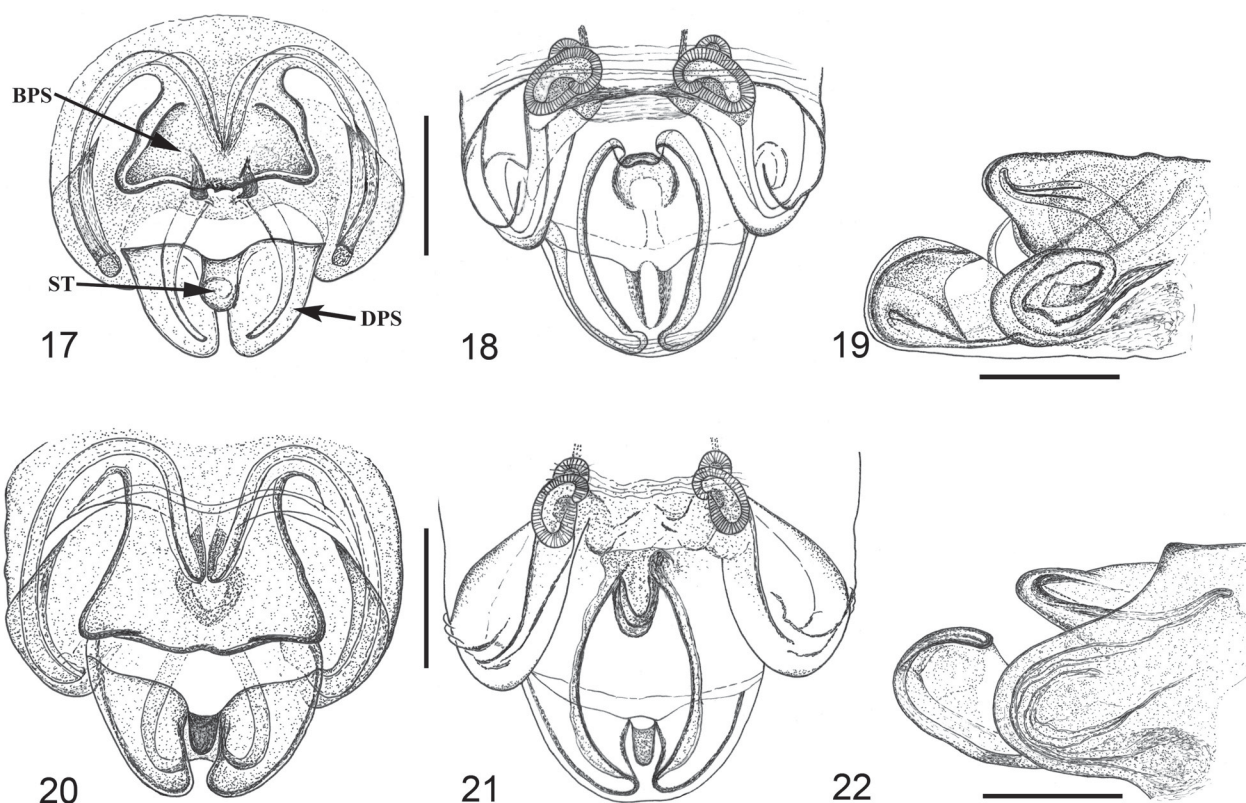
Figs 1-6. *Centromerus petrovi* sp. nov., male holotype (1-3); *Centromerus milleri*, male holotype (4-6). (1, 4) Habitus, dorsal view. (2, 5) Palp, retrolateral view. (3, 6) Palp, prolateral view. Scale: 0.8 mm (1, 4), 0.25 mm (2-3, 5-6).



Figs 7-12. *Centromerus petrovi* sp. nov., female paratype (7-9); *Centromerus milleri*, female paratype (10-12). (7, 10) Epygine, ventral view. (8, 11) Epygine, dorsal view. (9, 12) Epygine, lateral view. Scale: 0.25 mm.



Figs 13-16. *Centromerus petrovi* sp. nov., male holotype (13-14); *Centromerus milleri*, male holotype (15-16). (13, 15) Palp, retrolateral view. (14, 16) Palp, prolateral view. Scale: 0.25 mm.



Figs 17-22. *Centromerus petrovi* sp. nov., female paratype (17-19); *Centromerus milleri*, female paratype (20-22). (17, 20) Epygine, ventral view. (18, 21) Epygine, dorsal view. (19, 22) Epygine, lateral view. Scale: 0.25 mm.

cave walls; 25.07.2006; leg. P. Stoev & S. Lazarov. – 1 female paratype; same locality; 16.03.2008; leg. Boyan Petrov.

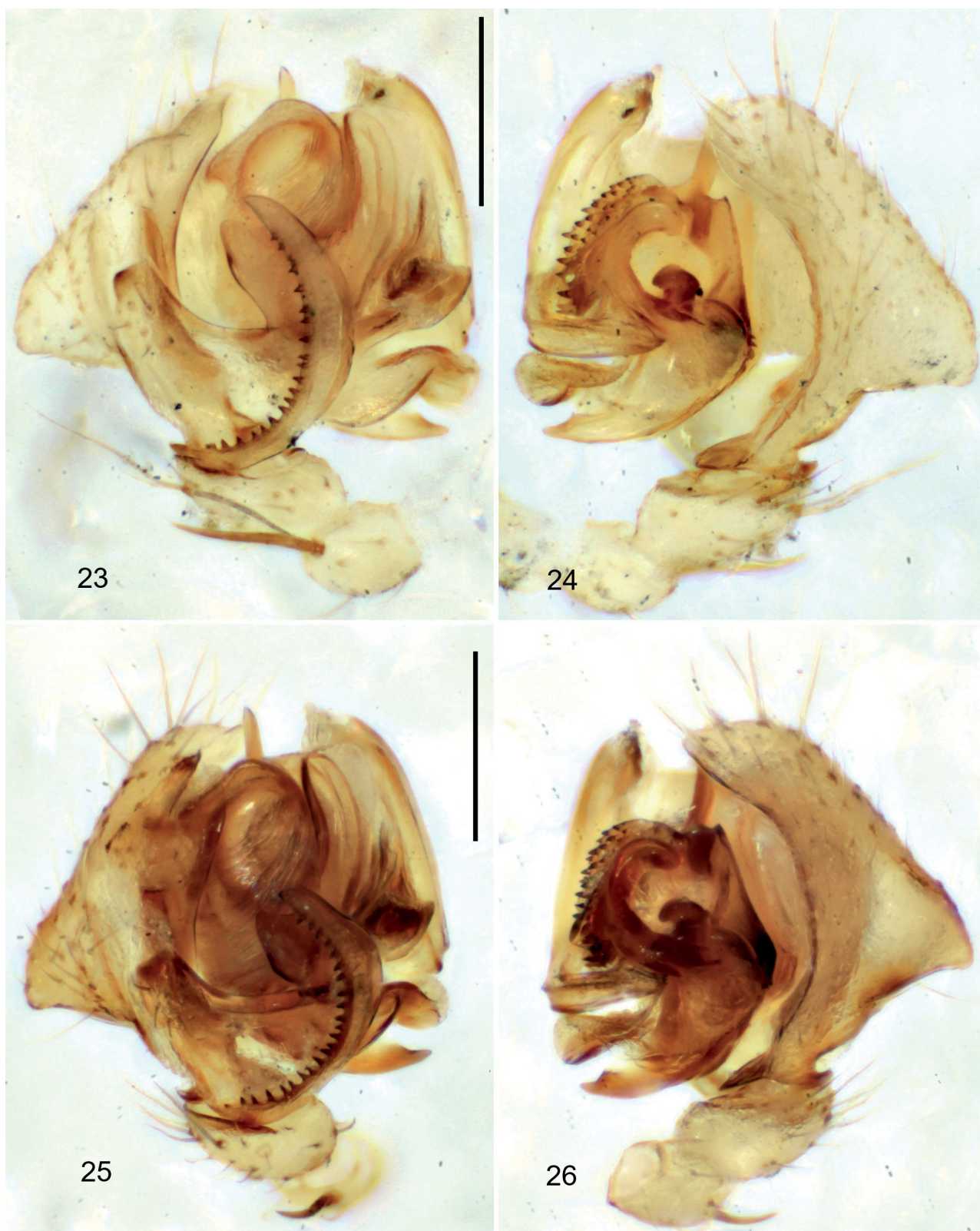
Diagnosis: The new species has somatic characters that correspond well to those of the genus *Centromerus*. It bears a close resemblance to *C. milleri* (Figs 4-6, 10-12, 15-16, 20-22), but can be easily distinguished by the absence of eyes and by smaller body size (Fig. 1). The male of *C. petrovi* sp. nov. can be distinguished from that of *C. milleri* also by the palp structure: the characteristic tooth on the distal part of the paracymbium is smaller and sharper than in *C. milleri* (Figs 2, 13), and the suprategular apophysis is forked (Figs 2-3, 13-14). The epygines of both species are very similar, but in *C. petrovi* sp. nov. the basal part of the scape is narrower than in *C. milleri*, and the inner sides of the lateral lobes are parallel to each other (Figs 7, 17), whereas in *C. milleri* they are more converging distally, forming a triangle (Figs 10, 20). Moreover, the reduced stretcher in the distal part of the scape is shaped as a spherical button in *C. petrovi* sp. nov. (Figs 7, 17), while in *C. milleri* it is more elongated (Figs 10, 20).

Etymology: This species is dedicated to our late colleague and well-known Bulgarian biospeleologist and alpinist Boyan Petrov.

Description of male (holotype): Measurements: Total length 2.52; carapace length 1.08, width 0.90; chelicerae length 0.61, width 0.22; sternum length 0.72, width 0.65; abdomen length 1.51; leg I length 5.33 ($1.44 + 0.32 + 1.55 + 1.30 + 0.72$); leg II length 5.03 ($1.33 + 0.32 + 1.44 + 1.26 + 0.68$); leg III length 4.35 ($1.26 + 0.32 + 1.15 + 1.08 + 0.54$); leg IV length 5.61 ($1.51 + 0.32 + 1.62 + 1.44 + 0.72$). Coloration (Fig. 1): Carapace, sternum and legs pale yellow. Abdomen white to light grey. Male palpal cymbium and female epygine light brown.

Eyes: Absent, only two small, hardly visible spots in place of anterior median eyes (Fig. 1).

Chelicerae: Anterior margin of groove with 4 well-developed teeth. Posterior margin with 4 very small teeth. Legs: Femur I with 1 retrolateral spine in apical half and 1 dorsal spine in the middle. All tibiae with 2 dorsal spines. Palp (Figs 2-3, 13-14): Tibia with 4 stout retrolateral spines. Cymbium with a long postero-dorsal protuberance. Paracymbium large and prominent, with characteristic triangular tooth on its distal part. Suprategular apophysis wide at base and forked apically. Terminal apophysis lamellar. Embolus masive, bulging. Lamella characteristica long, ending in very thin whip-like process.



Figs 23-26. *Centromerus valkanovi*, male holotype (23-24); *C. valkanovi*, male paratype of *C. turcicus* syn. nov. (25-26). (23, 25) Palp, retrolateral view. (24, 26) Palp, prolateral view. Scale: 0.2 mm.

Description of female paratype (NMNHS): Measurements: Total length 2.81; carapace length 1.08, width 0.72; chelicerae length 0.54, width 0.22; sternum length 0.61, width 0.54; abdomen length 2.09; leg I length 5.14 ($1.44 + 0.32 + 1.44 + 1.26 + 0.68$); leg II length 4.83 ($1.28 + 0.32 + 1.33 + 1.22 + 0.68$); leg III length 4.57 ($1.33 + 0.32 + 1.26 + 1.08 + 0.58$); leg IV length 5.36 ($1.44 + 0.32 + 1.55 + 1.37 + 0.68$). Coloration and leg spination as in male.

Epigyne (Figs 7-9, 17-19): Oval in shape. Basal part of scape trapezoid, narrow at base, gradually widening towards tip. Distal part of scape expanded, bursae copulatrix well developed.

Distribution: Known only from the type locality in the European part of Turkey.

Remarks: This species was already recorded from Turkey under *C. milleri* by Deltshv *et al.* (2011). These authors discussed that the population from the Turkish Strandzha might belong to a new troglotic species, closely related to *C. milleri*. This assumption was confirmed when re-examining the material. Therefore *C. milleri* should be excluded from the list of the spider species known from Turkey.

Centromerus valkanovi Deltshv, 1983

Figs 23-28

Centromerus valkanovi Deltshv, 1983: 53, pl. 1, figs 1-2, pl. 2 figs 1-2. – Demircan & Topçu, 2015: 178, fig. 2A-C. – Komnenov *et al.*, 2016: 27, figs 57-58.

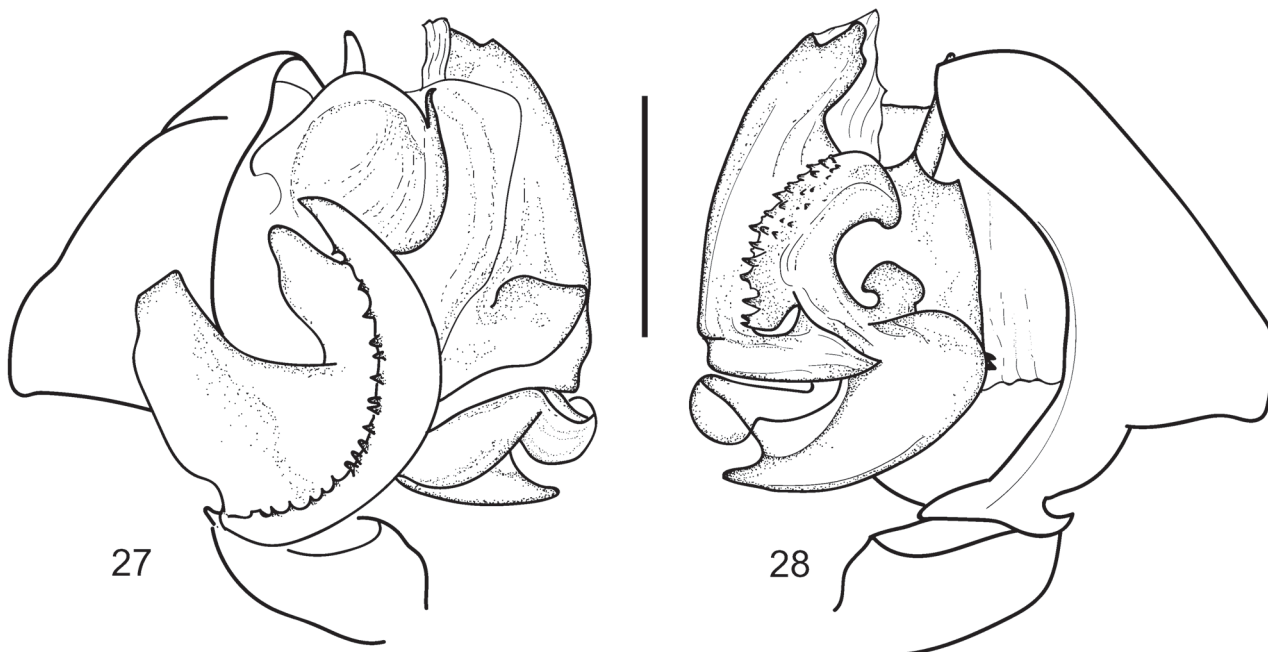
Centromerus turcicus Wunderlich, 1995: 656, figs 6-8. **syn. nov.**

Type material examined: Male holotype; NMNHS; Bulgaria, Varna, Asparuhovo; 8.09.1945; leg. A. Valkanov.

Other material examined: Paratypes of *Centromerus turcicus*; NMSF; 5 males; TURKEY, Anatolia, Abant Mountain, near Bolu, alt. 1200 m; without date; leg. H. Korge.

Distribution: Known from several localities in Bulgaria, Greece and Turkey.

Remarks: This species was described from Bulgaria by Deltshv (1983), and recorded subsequently from the European part of Turkey (Demircan & Topçu, 2015) and from the Dadia National Park in northern Greece (Komnenov *et al.*, 2016). Wunderlich (1995) described *C. turcicus* from near Bolu, Turkey. The pictures in Wunderlich (1995) show no differences from *C. valkanovi* and the author did not discuss the relationships of the two species, which prompted us to study the type material. When comparing the paratypes of *C. turcicus* syn. nov. (Figs 25-26) to the holotype of *C. valkanovi* (Figs 23-24, 27-28), we established with certainty that they are all conspecific and that *C. turcicus* should be synonymized with *C. valkanovi*. This extends the distribution range of the species and changes its zoogeographical status. It can no longer be considered a Balkan endemic, since it is already known from the Asia Minor. It is most likely a species with an Euxinic origin. The Euxinic fauna comprises mesophilic, forest-dwelling species with a zoogeographical centre along the southern and eastern (i.e. Anatolian) Black Sea shores (Gruev & Kouzmanov,



Figs 27-28. *Centromerus valkanovi*, male holotype. (27) Palp, retrolateral view. (28) Palp, prolateral view. Scale: 0.2 mm.

1994). The fact that all records are from forest habitats supports this assumption too. The species is probably even more widespread in the east, in the Pontic montane forests.

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