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Research article

First described case of self-inflicted injury in a brown bear (*Ursus arctos* Linnaeus, 1758) following capture with an Aldrich snare

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Abstract: Trapping bears (Ursidae) with Aldrich leg snares has established itself as one of the most successful methods of trapping live animals with minimal injury. Most documented injuries are related to damage caused by the trap and prolonged exposure to it. Various physiological and behavioural responses have been observed, however self-eating of the toes of the captured foot has not been described so far. In November 2017 an adult male brown bear was caught with a standard Aldrich type leg snare. When the research team arrived, the bear teared off and swallowed phalanges of the first toe of its rear left foot before it could be sedated. The bear was measured and marked with GPS-GSM collar. Following the instalment of the collar, the animal was monitored for the duration of 23 months when the drop-off mechanism of the collar was activated. This rule out the possibility that a serious life threatening complications arised from the trauma.

Keywords: behaviour response, capture, self-injury, *Ursus arctos*

Introduction

Trapping mammals has been a constant part of the work of researchers and nature managers in recent decades. Despite its indisputable scientific contributions, capturing and tagging mammals poses certain risks to the animals' health. Many aspects of an animal's physiological state are affected by its stay in the different types of traps (Cattet et al., 2008; Kreeger et al., 1990; White et al., 1991). Bears are a group of animals that are impossible for handling with unless they are captured and immobilised. Snares are a relatively selective method of trapping bears when properly set (Jonkel, 1993; Pereira at al., 2022). Although the documented cases of injury because of capture are few, such possibility is by no means excluded. Short stays in the traps reduce the likelihood of injury, but not always (Powell & Proulx, 2003; Seaman & Powell, 2008). An assessment of the risk of injury in trapping bears with Aldrich traps was made based on 208 American black bears, *Ursus americanus* Pallas, 1780 trapped 340 times, an injury scoring system was added, and a success rate of over 95% with minor injuries was found (Powell, 2005). There are many cases of undocumented deaths of bears during capture (Kaczensky et al., 2002). The authors cite personal correspondence with colleagues in which deaths and injuries are mentioned. Risk of injury during snaring can be reduced by proper trap placement (Jonkel, 1993) and minimising the time spent in snare (Woodbury, 1996). Most authors consider that possible injuries could come only from the placement and tightening of the noose rope (Powell, 2005). There are documented cases of wolves dying during trapping (Ballenberghe, 1984; Kirilyuk et al., 2021). Mortality due to anesthetisation was also considered as a percentage of mortality from captured individuals, with the rate dropping

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Fig. 1. [a] Dorsal view of left rear foot of *Ursus arctos* (from Post, 2016); [b] view of the self-inflicted injury of the rear left foot of the individual captured 7 November 2017, showing the missing first toe.

dramatically to 0.3% after anaesthetics were modernised (Arnemo et al., 2006). However, to date there are no reports (at least to the authors' knowledge) on self-inflicted harm by trapped brown bears.

Materials and methods

On 7 November 2017 an adult male brown bear was caught with a standard Aldrich type leg snare at the edge of a meadow bordering deciduous forest near a feeding site of state hunting enterprise "Rusalka" in the land of the town of Apriltsi, Bulgaria. (N 42.78°; E 24.94°). The bear was caught for tagging with a GPS-GSM collar, as part of the activities of a project to study individual territories, migrations and activity of bears in Stara Planina Mountains. The site was located about a kilometre from the end of the city. The area has one of the highest density of bears in the country (Kaczensky et al., 2013). The capture was carried out on non-rainy-day at 06:27 h. A photo trap with MMS and e-mail function (LTL Acorn 5310) was used as an alarm system. The research team arrived at capture site at 06:57 h, 30 minutes after the registered capture. The tranquiliser (tiletamine/zolazepam – 5 mg/kg) was shot at 07:12 h and the animal was sedated 5 minutes following it.

The established wound was treated with povidone-Iodine for cleansing and then liberally smeared with antibiotic paste (gentamicin).

Results

In the time interval between the arrival of the team and the first dart (15 min) an interesting behaviour was observed. With its mouth, the bear teared off and swallowed the distal (distal phalanx), proximal (proximal phalanx) and first metatarsal (1-st metatarsal), phalanges of the first toe of the rear left foot, on which it was caught (Fig. 1). The age was determined approximately by the condition of the teeth of an approximately 8–10-year-old animal. The bear was measured (body length 202 cm, chest circumference 171 cm, head length 48 cm, head circumference 78 cm, front right paw width 16 cm, temperature 39,3). Due to the large size of the animal, its weight could not be measured by the small team of two researchers. The bear was marked with GPS-GSM collar Followit (Tellus GPS Medium Plus, Followit, Lindesberg AB, Sweden). The animal started to move its head at 07:55 h and it was on his feet at 10:46 h and departed far away from the capture site.

Discussion

About 30 bears were caught with Aldrich snares in Bulgaria between 2007 and 2021. So far, apart from some slight superficial skin injuries, no other traumas have been detected. Such self-eating behaviour was never observed. After reviewing the literature, it can be argued that such a case has not been reported anywhere and this is the first ever reported case of a bear self-injuring itself during capture. The regular inspection of the traps can reduce the risk of injury, but there are always exceptions (Powell & Proulx, 2003; Proulx & Rodtka, 2017, 2019). Increased stress levels in the not yet fatigued animal and its inability to escape a second immediate threat (i.e., the arrival of the team at the place of capture) are likely the reason for this unusual response, in which the animal is trying to free itself at all cost, even sacrificing part of its paw. It should be noted that the animal was monitored with the GPS-GSM collar for the duration of 23 months when the drop-off mechanism was activated, which rules out the possibility that a serious life-threatening complications arised from the trauma. Tracking showed no differences in movement and individual territories established for male bears in the same area (Todorov et al., 2020). Furthermore, the individual was detected on photo traps 10 months after being marked, and it does not appear that the trauma affected its physical condition.

There are some known undocumented cases of injury and even death to animals caught with Aldrich traps in Europe (Kaczensky et al., 2002), as well as a number of sightings of minor snaring injuries in North America. In reviewing all the available literature, we did not find such a case documented anywhere. However, it is possible that similar cases of self-inflicted injuries have occurred before, but the authors did not think it necessary to announce them. Shedding more light on this overlooked topic could help to improve and optimise the generally accepted practices for capturing and handling wild animals and by so, preventing, or at the very least, minimising the harm, caused by unwanted injuries. For instance, it would be beneficial, if when reporting the success-rate of trapping with live traps, an information about the adverse consequences that occurred on the animals during the trapping process should also be applied. Such information would be useful for optimising the research process and reducing human-caused damage to the study animals.

Acknowledgments

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Research article

A new species of *Tapinella* Enderlein, 1908 (Insecta: Psocoptera) from French Guiana, North Amazon rainforest

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https://zoobank.org/F517CD1F-3116-4897-B66D-AB8004001558

Abstract: A new species of *Tapinella* Enderlein, 1908 was described from French Guiana – *T. montjoliensis* **n. sp.** It was collected near Montjoly Town and Wayki Village. The species was found in a plantation and a village from dry banana (*Musa* sp.) leaves, and among river bank scrubs from dry leaves of various bushes.

Keywords: Amazonia, biodiversity, equatorial, insects, rainforest

Introduction

The faunistic and taxonomic works on the psocid fauna of the Guianas (North Amazon) are scarce. For the territory of French Guiana only 20 species of Psocoptera are known (Lienhard 2016). Information about this insect group can be found in the papers and monographs of Enderlein (1919), Eertmoed (1973), New (1973), Mockford (1974, 1993), and García-Aldrete (2000).

No any species from the family Pachytroctidae were known from the Guianas till now. In this paper I describe a new species of *Tapinella* Enderlein, 1908 (Pachytroctidae) from French Guiana, a genus which contains mainly tropical species and is not studied in detail in the entire area of Equatorial America.

Material and methods

Psocoptera were collected from French Guiana by beating the vegetation between 29.07–03.08.2023. The specimens were stored in 96% ethanol. The photos (specimens in glycerin) were taken by a camera Canon PowerShot SX500IS through the eyepiece of a light microscope Optika. The material was deposited at the National Museum of Natural History, Sofia, Bulgaria (NMNH), Natural History Museum of Geneva, Switzerland (NHMG) and the collection of the author. The species discussed in the paper were considered according to original descriptions. Measurements followed Lienhard (1998).

Measurements abbreviations (all in mm in the text): LC = body length; A = antenna length, F+tr = hind femur and trochanter length; T = hind tibia length; t1, t2, t3 = tarsomeres of hindtarsus (lengths measured from condyle to condyle), FW = forewing, HW = hindwing, D = anteroposterior diameter of the compound eye, IO = shortest distance between compound eyes.

Results and discussion

Family Pachytroctidae Enderlein, 1904

Tapinella montjoliensis **n. sp.**

urn:lsid:zoobank.org:act:
319B2C44-FCEE-4083-BC47-E70ED272D2D9

Material examined: Holotype: 1 ♀, 03.08.2023, North Amazon Region, French Guiana, near Montjoly

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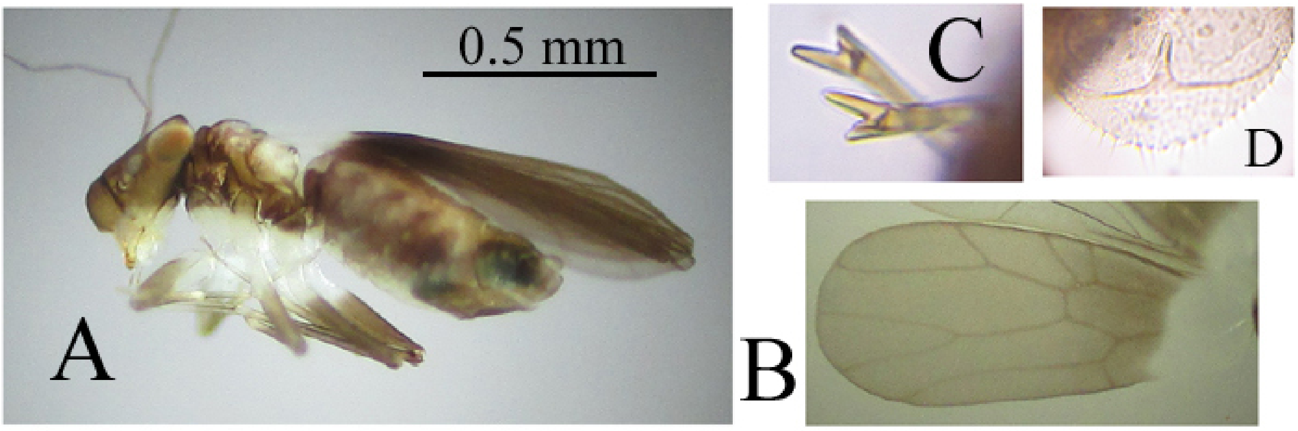

Fig. 1. *Tapinella montjoliensis* n. sp.: A – lateral view, B – forewing, C – tips of the lacinias, D – apex of the subgenital plate with the T-sclerite (C, D – not to scale).

Town, banana (*Musa* sp.) plantation, from dry banana leaves, N04 51 33.0 W52 15 46.0, 14 m a.s.l., NMNH – Sofia, Bulgaria; Paratypes: 2 ♀♀, same date and locality, NMNH – Sofia, Bulgaria; 2 ♀♀, same date and locality, NHMG – Geneva, Switzerland; Additional material: 1 ♀, 29.07.2023, North Amazon Region, French Guiana, near Montjoly Town, banks of Mahury River, from dry bush vegetation, N04 51 38.0 W52 15 23.1, 3 m a.s.l., coll. D. Georgiev; North Amazon Region, French Guiana, Wayki Village, from dry banana leaves, N04 44 27.8 W52 19 13.6, 8 m a.s.l., coll. D. Georgiev.

Type locality: North Amazon Region, French Guiana, near Montjoly Town, banana (*Musa* sp.) plantation, from dry banana leaves, N04 51 33.0 W52 15 46.0, 14 m a.s.l.

Description (after 28 days in 96% ethanol): Female: Colouration: The whole animal is blackish-brown with an exception of the base of the wings, dorsal and ventral side of the thorax, distal half of the coxae, base of the femurs, distal part of the tibias, ocelli, base of the palps, and mouth apparatus which are white or pale creamy (Fig. 1A).

Morphology: Macropterous. Three ocelli present. Lacinial tip with one long cusp and a small one having itself a small ridge at its internal side (Fig. 1C). Fore and hind wings slender with venation typical for the genus, same as in *T. pictipenna* Thornton, Lee & Chui, 1972 (Thornton et al. 1972) (Fig. 1B). Subgenital plate with large T-sclerite having well developed stem and very long arms, more than two times longer than the stem length (Fig. 1D). Epiproct cone-shaped, paraprocts elongated. Both with two types of setae: long and short. The long setae of the epiproct are same length like these of the paraprocts.

Measurements (in mm): Holotype (female): LC = 1.06; F+tr = 0.42; T = 0.40; t1 = 0.10, t2 = 0.03, t3 = 0.04, FW = 0.96, HW = 0.74, D = 0.12, IO = 0.25, IO/D = 2.08.

Male: Unknown.

Diagnosis: In body coloration *T. montjoliensis* n. sp. is most similar with *T. pictipenna* Thornton, Lee & Chui, 1972 known from Indonesia (Thornton et al. 1972). The new species differs from *T. pictipenna* by its brown eyes (versus black), darker maxillary palps and antennae (versus very pale buff) and lack of wide dark grey longitudinal band at each side of the abdomen and between the compound eye and the antennal socket (only slight dark patches present). The pigmentation of the forewing of the new species is more evenly distributed, and only by a particular light a slight darkening can be observed near the hyaline basal zone. In addition the arms of the T-sclerite compared to its stem are longer in *T. montjoliensis* n. sp. (more than two times than the stem length). The ratio IO/D in the new species is about two times lower that this in T. pictipenna (2.1 vs 4.5).

Etymology: Named after the Montjoly Town, French Guiana, at which vicinities the species was firstly found.

Habitat: The species was collected from a plantation and a village from dry banana (*Musa* sp.)

leaves, and among river bank scrubs from dry leaves of various bushes.

Acknowledgements

I am grateful to Dr Cristina Fiera (Institute of Biology, Bucharest, Romania) for the scanned paper of Badonnel (1977) about the Cuban cave *Tapinella*.

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Research article

On the cave spiders of Georgia with description of a new blind *Centromerus* (Arachnida: Araneae)

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https://zoobank.org/86E63D5F-9D89-4286-8E05-9A3DED003985

Abstract: A new species *Centromerus georgicus* **sp. n.** collected in a Georgian cave (Caucasus) is described based on male and female specimens, diagnosed, and illustrated. New records of some poorly known species (*Tegenaria pontica* Haritonov, 1947, *Dysdera anatoliae* Deeleman-Reinhold, 1988 and *Leptonetela caucasica* Dunin 1990), as well as the description of the unknown female of *L. caucasica* are also presented.

Keywords: Caucasus, *Dysdera, Leptonetela,* new species, *Tegenaria*

Introduction

The first information about spiders in the caves of Georgia was published by Reimoser (1930) followed by Spassky (1932) and Charitonov (1939, 1941a, 1941b, 1946, 1947, 1956). Charitonov (1941a) divides the distinct zoogeographical group of the Caucasian troglobite spiders into two sub-groups: Pontic group and Abkhazian group. The first summarising data about Georgian spiders was published in the monograph ‘Georgian spiders’ in which Mcheidze (1997) reported 362 spider species found on the territory of Georgia. Most recent papers on Georgian cave spiders are those of Dunin (1990), Marusic & Guseinov (2003), Ponomarev & Chumachenko (2007), Kovblyuk et al. (2011) and Otto (2022).

The aim of the present study is to provide information on accumulating data on recently collected spiders in Georgian caves and description of a blind *Centromerus* species.

Material and methods

The studied material was collected by hand picking. Colouration is described from alcohol preserved specimens. Measurements of the legs were taken from the dorsal side. Total length of the body includes the chelicerae. All measurements are in mm. Specimens were examined and measured using a Wild M5A stereomicroscope. Digital images were taken with a Canon EOS1100 attached to a Carl Zeiss Amplival microscope and processed using Adobe Photoshop CS6 software. The specimens are preserved in 70–95% ethanol and deposited in Institute of Zoology, Tbilisi (IZISU), Natural History Museum Stuttgart (NHMS) and National Museum of Natural History, Sofia (NMNHS). The nomenclature follows the World Spider Catalog (World Spider Catalog, 2023) and the taxa are listed alphabetically.

Abbreviations (follow Ballarin & Pantini, 2020): AER – anterior eye row; ALE – anterior lateral eyes; APP – anterio-proximal part of the median

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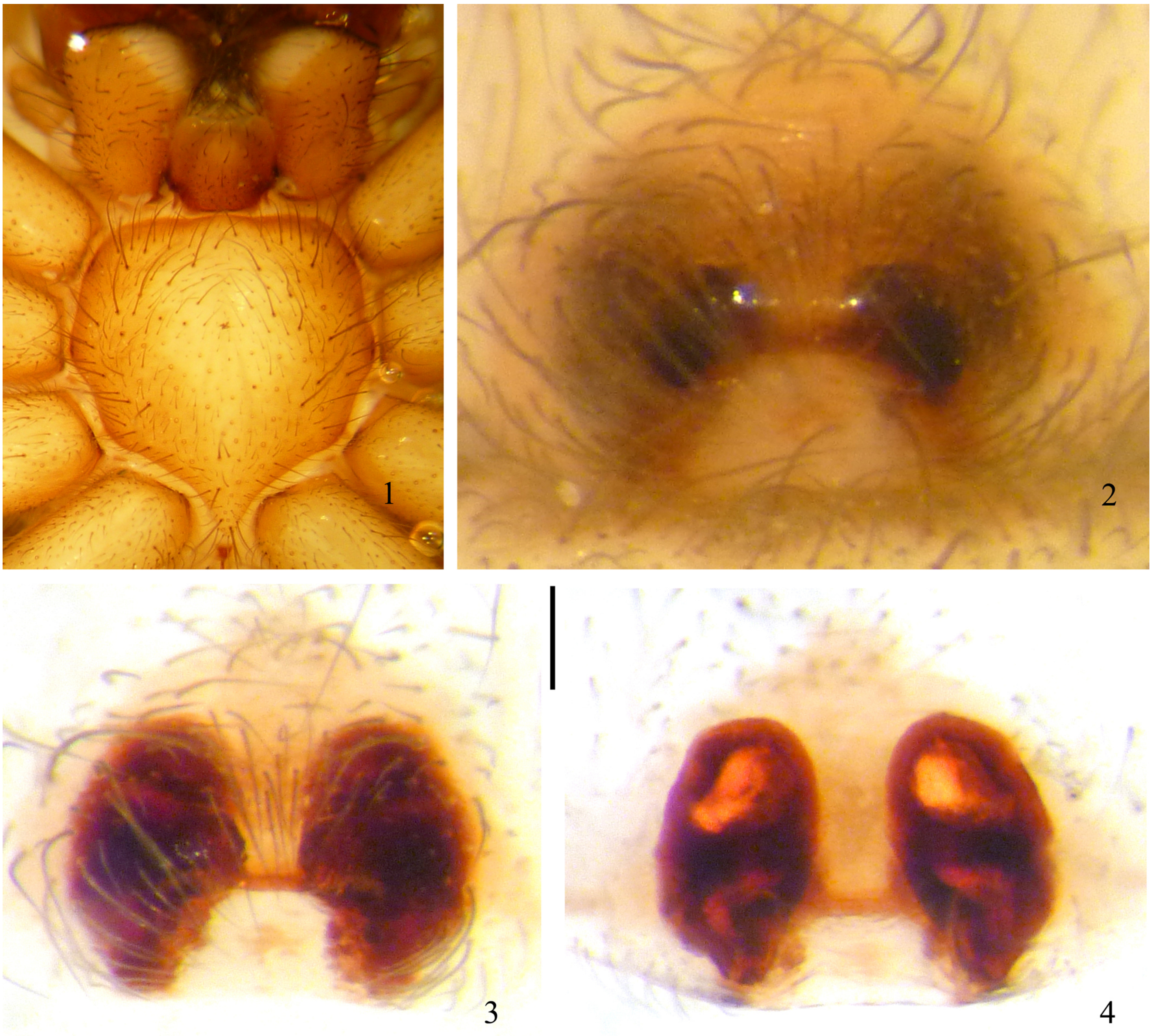


Figs 1–4. *Tegenaria pontica:* (1) sternum; (2) epigyne; (3, 4) epigyne/vulva ventral/dorsal view. Scale bars – Fig. 1 – 0.6 mm; Figs 2–4 – 0.1 mm.

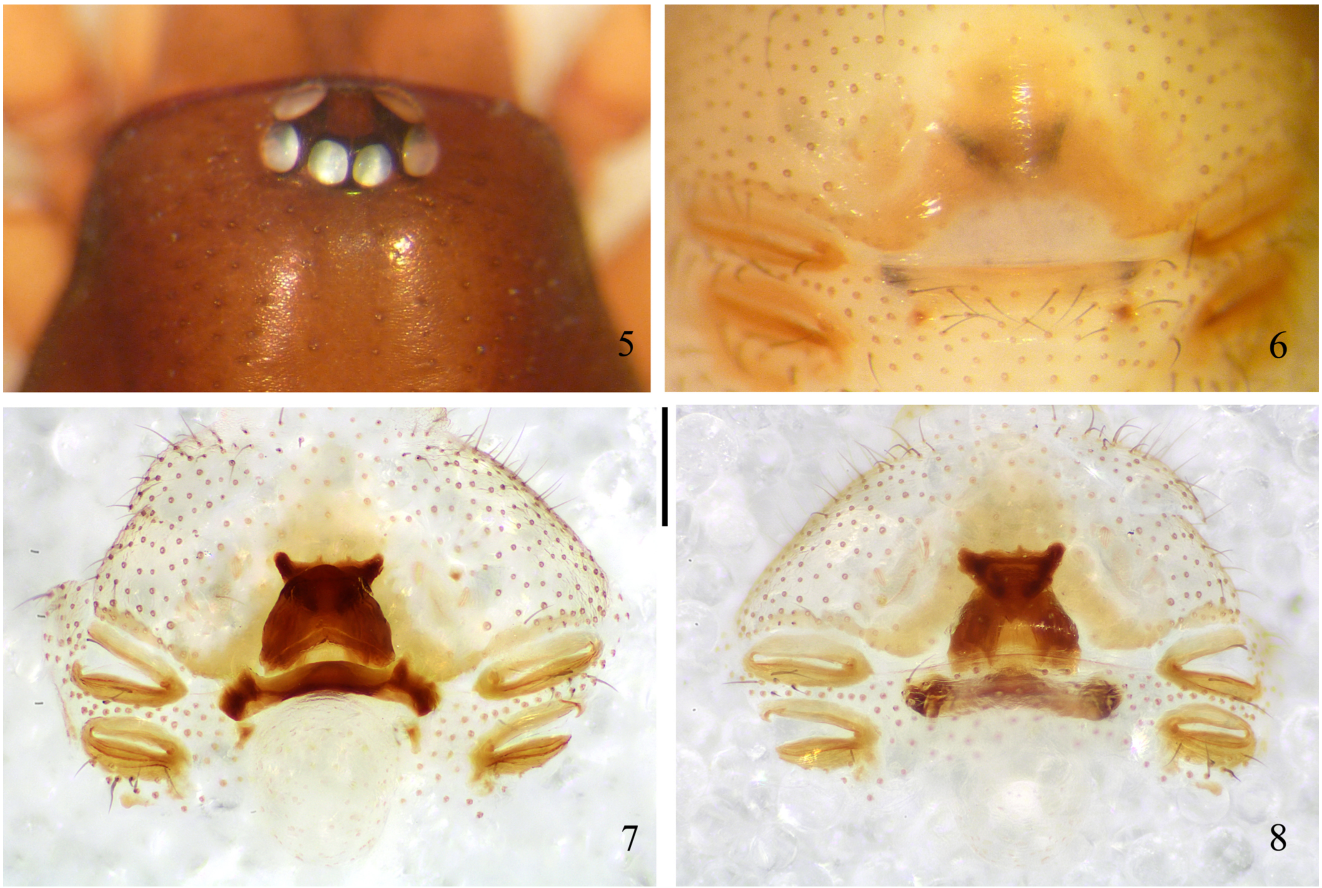
membrane; AW – anterior wall of the epigyne; CG – copulatory grooves; CO – copulatory opening; DS – distal part of scapus; DT – distal tubercle (dorsal hump) of the cymbium; E – embolus; LAW – lateral lobes of the anterior wall; MM – median membrane; MT – median tubercle of the cymbium; P – paracymbium; PER – posterior eyes row; PLE – posterior lateral eyes; PME – posterior median eyes; PMP – posterior median plate; R – radix; RA (I-II) – radical apophyses; S – spermatheca; SA – distal suprategular apophysis; TA – terminal apophysis.

Results

Agelenidae

Tegenaria pontica Charitonov, 1947

Material. 2 ♀♀ (NHMS), Samegrelo-Zemo Svaneti Region, Martvili Municipality, Odishi Karst Massif, Inchkhuri Cave, 18.V.2022, S. Barjadze, A. Faille, E. Maghradze leg.



Figs 5–8. *Dysdera anatoliae:* (5) epigyne; (6–8) epigyne/vulva ventral/dorsal view. Scale bars – Fig. 5 – 0.3 mm; Figs 6–8 – 0.2 mm.

Distribution: Georgia (Otto, 2022; World Spider Catalog, 2023) (Fig. 23).

Remarks. Known only from type locality (Phanagoria Cave) (Otto, 2022). Our specimen is either identical or closely related to *T. pontica* and corresponds with the description and single drawing published so far. Here we provide photographs of sternum and epigyne/vulva that correspond with the single figure in the description of the species (Figs 1–4).

Dysderidae

Dysdera anatoliae Deeleman-Reinhold, 1988
Figs 5–8

Material. 1 ♀, 1 juv. (NHMS), Racha-Lechkhumi-Kvemo Svaneti Region, Ambrolauri Municipality, Racha Karst Massif, Dolabistavi Cave, 25.V.2022, S. Barjadze, A. Faille, A. Maghradze leg.

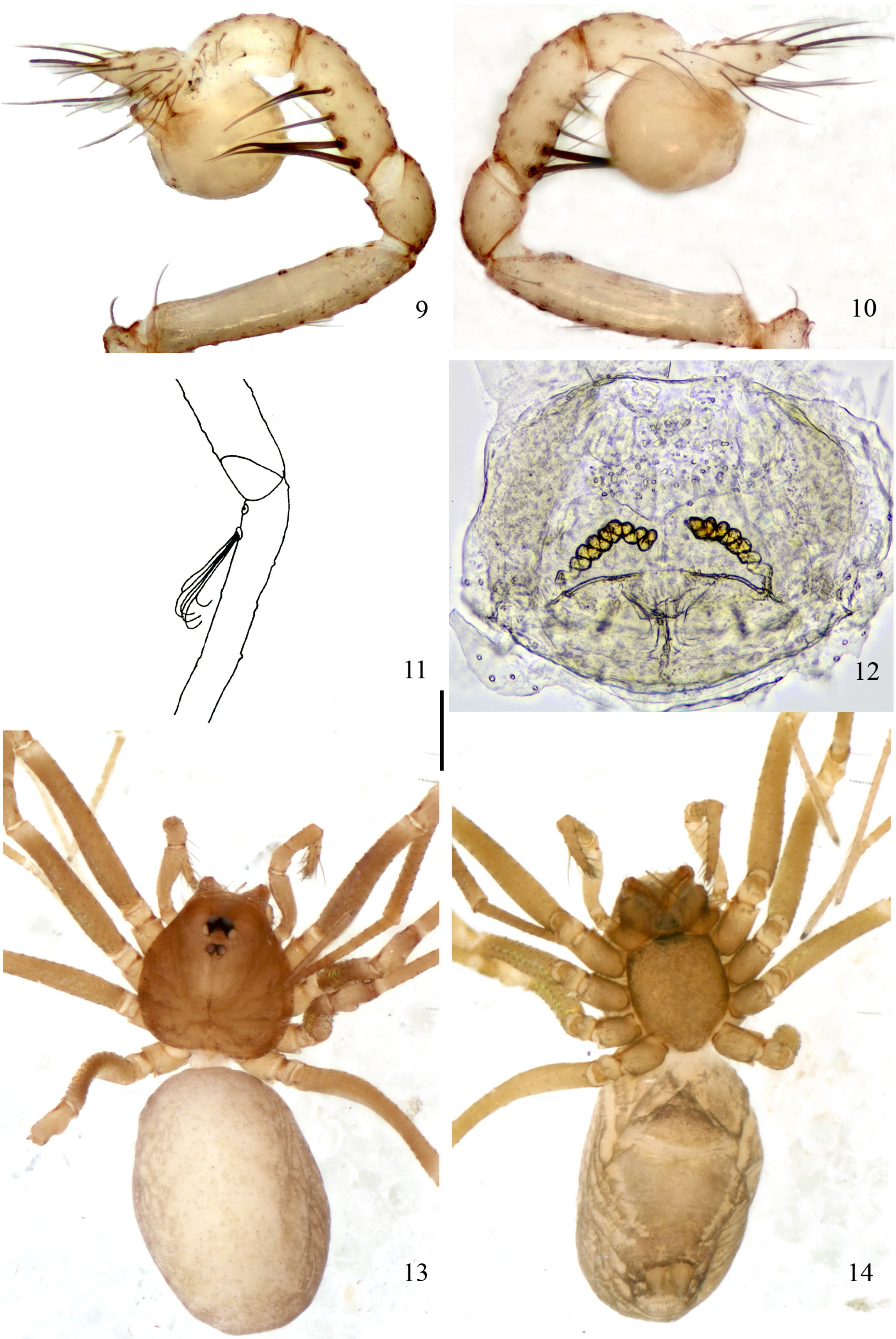
Distribution: Turkey (World Spider Catalog, 2023), Georgia (this paper) (Fig. 23).

Remarks. Known only from type locality (North Anatolia) (Deeleman & Reinhold, 1988). Our specimen is either identical or closely related to *D. anatoliae* and corresponds with the description and drawings published so far. Here we provide photographs of eyes and epigyne/vulva that correspond with the figures in the description of the species (Figs 5–8).

Leptonetidae

Leptonetela caucasica Dunin, 1990
Figs 9–14

Material. 2 ♂♂, 3 ♀♀ (NHMS), Samegrelo-Zemo Svaneti Region, Martvili Municipality, Odishi Karst Massif, Inchkhuri Cave, 18.V.2022, S. Barjadze, A. Faille, E. Maghradze leg.



Figs 9–14. *Leptonetela caucasica:* (9, 10) male palp, retrolateral/prolateral view; (11) tuft of hairs on Mt III: (12) internal genitalia; (13, 14) habitus, dorsal/ventral view. Scale bars – Figs 9, 10 – 0.1 mm; Fig. 11 – 0.2 mm; Fig. 12 – 0.08 mm; Figs 13, 14 – 0.4 mm.

Distribution: Georgia – North Caucasus (Otto, 2022; World Spider Catalog, 2023) (Fig. 23).

Remarks. The species was described by Dunin (1990) from a male, collected in detritus of beech forest in the North Caucasus. Marusik & Guseinov (2003) presented the description of a female of *L. caucasica* from Azerbaijan with the remark, that the identification is very provisional and the single female may be preferable refer to the Turkish *L. deltshevi* (Brignoli, 1979) or to an undescribed species. The present material (male/female) is found in a cave but is identical both in habitus and structures of the palp and corresponds completely with the descriptions and all available drawings published so far (Figs 9–11). The collected undescribed female gives the possibility to ameliorate the description.

Description of female: Measurements: Total length 1.98; cephalothorax length 0.72, width 0.65; sternum length 0.48, width 0.40; clypeus 0.10; chelicerae length 0.32, width 0.14; eyes ALE 0.07, PLE 0.04, PME 0.07; ALE-PME 0.04, PLE-PLE 0.04, PLE-PME 0.05, AER 0.15, PER 0.1; abdomen 1.10; legs: I – 4.32 (1.26, 0.18, 1.22, 0.86, 0.79); II – 3.38 (0.90, 0.18, 0.97, 0.72, 0.61); III – 2.92 (0.83, 0.18, 0.79, 0.61, 0.50); IV – 4.18 (1.26, 0. 18, 1.19, 0.83, 0.72).

Colouration. Carapace pale brown, median groove needle shaped. Chelicerae brown with nine promarginal cheliceral teeth. Endites and labium brown. Sternum pale brown. Legs yellow to pale yellow. Abdomen grey to pale grey (Figs 13, 14).

Genital area covered with short hairs, spermathecae slightly visible. Internal genitalia with a pair of spermathecae and sperm ducts, atrium fusiform (Fig. 12).

Linyphiidae

Centromerus georgicus Deltshev **sp. n.**
Figs 15–23

urn:lsid:zoobank.org:act:
BD0B0D4F-6B40-4787-A47C-9575BDF15C1A

Material. Holotype ♂ (IZISU), Imereti Region, Tskaltubo Municipality, Sataplia-Tskaltubo Karst Massif, Melouri Cave, 1.XII.2018, E. Maghradze leg. Paratypes: 2 ♀♀ (IZISU), 1 ♀ (NMNHS) same data as holotype; 1 ♂ (NMNHS), same locality as holotype, 30.X.2018, E. Maghradze leg.

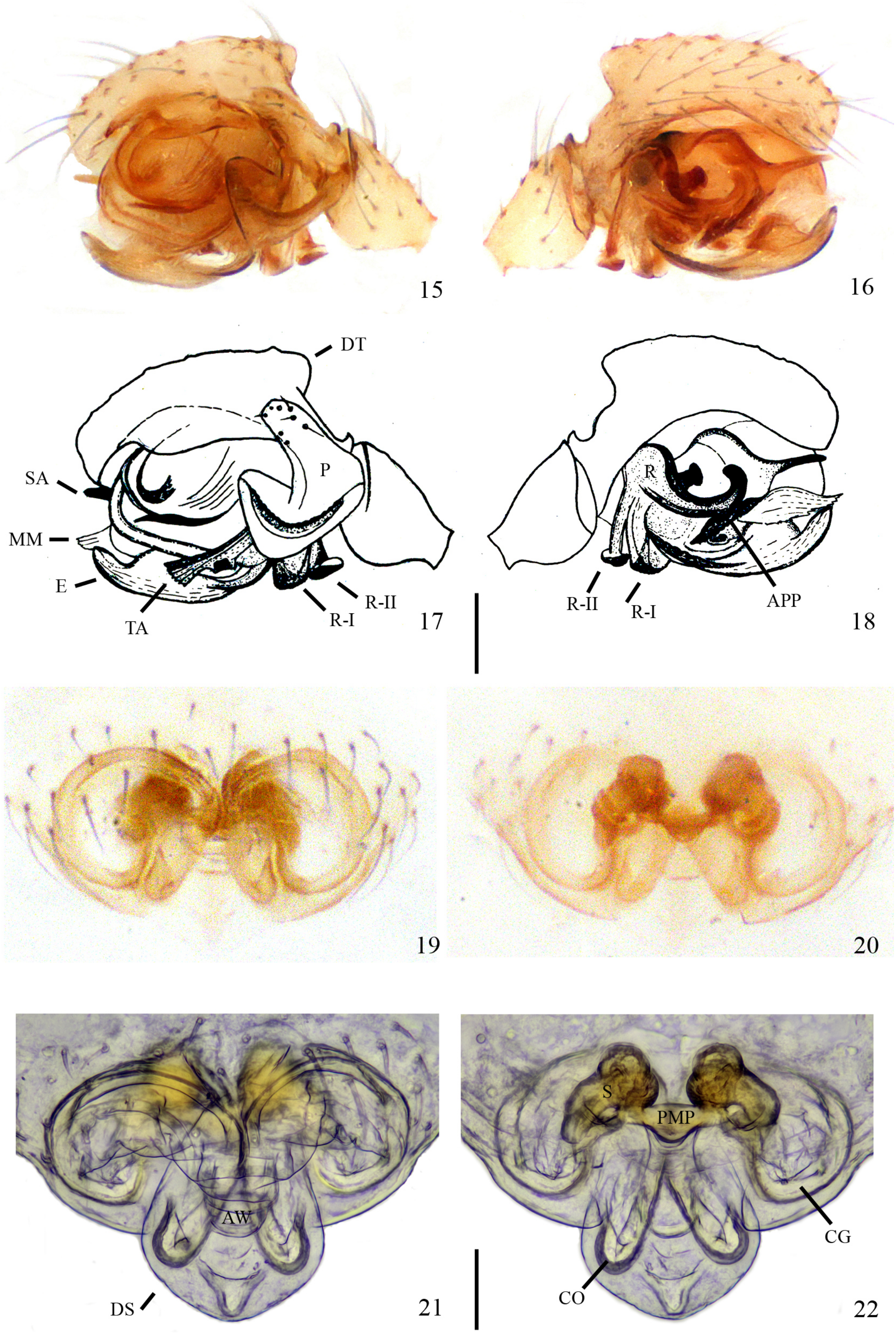
Comparative material examined: *Centromerus bulgarianus* Drensky, 1931, 1 ♂ lectotype, 3 ♀♀ paralectotypes, Bulgaria, Lakatnik Village, Suhata Pestera Cave, P. Drensky leg (NMNHS); *Centromerus dacicus* Dumitresco, 1980, 4 ♀♀, Romania, Closhani Cave, 18.II.2020, A. Nae leg (NMNHS).; *Centromerus serbicus* Deltshev, 2002, 1 ♂, 1 ♀, Serbia, Zlot, Beljavina Village, Mandina Cave, 27.V.2012, D. Antić & S. Ćurčić leg. (NMNHS).

Diagnosis. *Centromerus georgicus* sp. n. is a blind species and belongs to europaeus species group of *Centromerus* (Deltshev, & Ćurčić 1997). The new species is closely related to *C. bulgarianus* Drensky, 1931, *C. dacicus* Dumitrescu & Georgescu, 1980 and *C. serbicus* Deltshev, 2002, distinguished from them by the following differential features: *C. serbicus* is larger (1.8/2.16), followed by *C. bulgarianus* (1.64/1.74), *C. georgicus* sp. n. (1.44/1.46) and *C. dacicus* (1.32/1.57) (Dumitrescu & Georgescu, 1980; Deltshev, 1973, 1997; Deltshev & Ćurčić, 2002); the terminal apophyses are similar but in *C. georgicus* sp. n. is the straightest, while in the other species it is more or less curved apically (Fig. 17) (Deltshev & Ćurčić, 2002); radical apophyses (I-II) are also similar but in *C. bulgarianus* the heel of R II is more pointed at the end, elliptical in *C. georgicus* sp. n. and more or less spherical in *C. dacicus* and *C. serbicus* (Figs 15–18) (Deltshev & Ćurčić, 2002); antero-proximal parts of the median membranes are similar butdiffer in details, with slightly toothed margin in *C. georgicus* sp. n. and *C. bulgarianus* and covered with small teeth along its entire length in *C. dacicus* and *C. serbicus* (Figs 16, 18) (Deltshev & Ćurčić, 2002); females are almost indistinguishable but the spermathecae in *C. georgicus* sp. n. are the smallest than in the other species and the posterior median plate has a horizontal upper edge (Figs 19–22) (Deltshev & Ćurčić, 2002).

Etymology. The species name is derived from Georgia.

— Description

Male holotype. Measurements: Total length 1.44; cephalothorax length 0.65, width 0.54; sternum length 0.32, width 0.32; chelicerae length 0.25, width 0.10; eye absent: abdomen length 0.80; legs: I – 3.38 (0.97, 0.18, 0.90, 0.72, 061); II – 3.06 (0.90, 0.18, 079, 0.65, 0.54); III – 2.66 (0.68, 0.18, 0.72, 0.58,



Figs 15–22. *Centromerus georgicus* sp. n.: (15, 16) left male palp external/internal view; (17, 18) left male palp external/internal view; (19, 20) epigyne/vulva ventral/dorsal view; (21, 22) epigyne/vulva ventral/dorsal view. Scale bars – Figs 15–18 – 0.1 mm; Figs 19–22 – 0.04 mm.

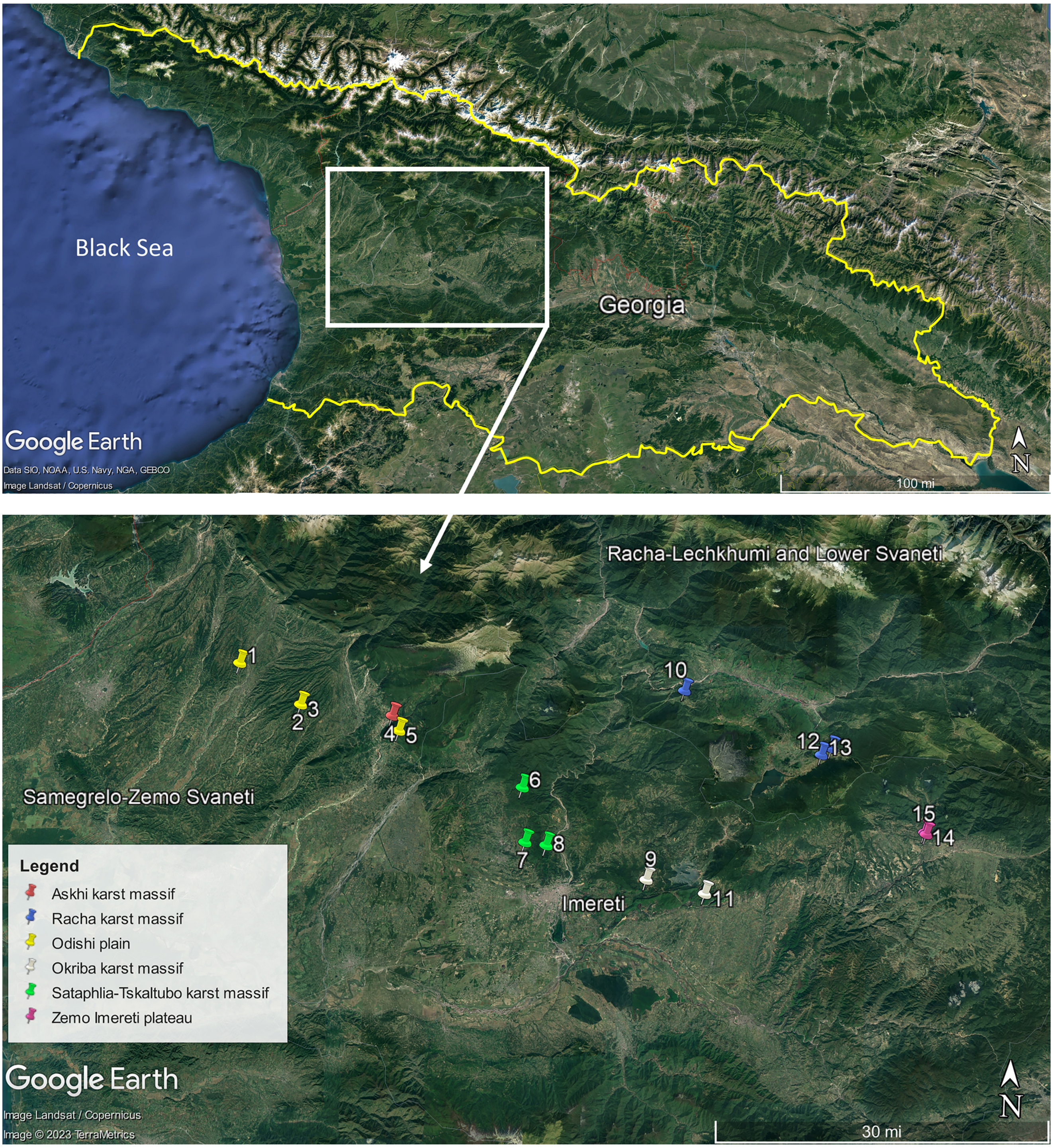


Fig. 23. Distributional map of the caves sampled spiders in Georgia: 1 – Letsurtsume Cave, 2 – Kakaro I Cave, 3 – Kakaro III Cave, 4 – Motena Cave, 5 – Inchkhuri Cave, 6 – Melouri Cave, 7 – Khomuli Cave, 8 – Sataplia Cave, 9 – Tsutskhvati Cave Complex, 10 – Gogolati (= Tsakhi) Cave, 11 – Sagvarjile Cave, 12 – Sakishore Cave, 13 – Dolabistavi Cave, 14 – Taroklde Cave, 15 – Khvedelidzeebisklde Cave.

0.50); IV – 3.35 (0.97, 0.18, 0.90, 0.72, 0.58). Colouration: Chelicerae yellow brown, armed with 3 teeth on outer row and 3 denticles on inner row. Carapace and sternum yellow. Abdomen pale-yellow. Legs yellow to pale yellow, femora I with a prolateral spine in apical half; tibiae II-III with 2 dorsal spines;

tibia IV with1 dorsal spine: metatarsi I-II with 1 small dorsal spine.

Palp (Figs 15–18): Cymbium with distal tubercle. Paracymbium large with serrated inner margin and 6 short hairs near proximal end. Two proximal radical apophyses, one short and robust, the other long, curved with a small heel-like appendage apically. Distal suprategular apophysis long, slightly curved and robust. Antero-proximal part of median membrane with a row of small, blunt teeth. Terminal apophysis transparent and scarcely visible. Embolus massive, curved, pointed apically.

Female (paratype). Measurements: Total length 1.46; cephalothorax length 0.61, width 0.54; sternum length 0.32, width 0.32; chelicerae length 0.25, width 0.10; eyes absent; abdomen 0.83; Legs: I – 3.13 (0.90, 0.18, 0.79, 0.72, 0.54); II – 2.80 (0.76, 0.18, 0.76, 0.58, 0.54); III – 2.45 (0.68, 0.18, 0.61, 0.54, 0.43); IV – 3.31 (0.90, 0. 18, 1.15, 0.65, 0.47).

Colouration as in male.

Epigyne/Vulva (Figs 19–22): Anterior wall triangular, strongly wrinkled, covering a large epigynal cavity, ending with elongated truncated, squared tip. Distal part of scapus wide and rounded. Posterior median plate small and rectangular, with a triangular extension in the middle pointed to distal part, longer than wide. Spermathecae elongated comma-shaped. Copulatory ducts turning arcuate posteriorly and outward before returning to the middle part of the vulva, ending in copulatory openings in the distal part of the scapus.

Ecology. *C. georgicus* sp. n. inhabits the dark zone of the cave and can be regarded as a troglobite species (sensu Sket, 2008).

Distribution. Known only from the type locality in Caucasus Mts, Georgia (Fig. 23).

Remarks. *C. georgicus* sp. n., *C. bulgarianus, C. dacicus* and *C. serbicus* are closely allied and strictly vicariant species forming a superspecies. All these taxa are similar, they have limited ranges and probably, represent the descendants of a common ancestor; it is assumed that this ancestral form is no longer present in the epigean fauna and that it has been replaced by an extant *Centromerus* (Deltshev & Ćurčić, 1997).

Porrhomma convexum (Westring, 1851)

Material. 1 ♀ (NMNHS) Georgia, Imereti Region, Tskaltubo Municipality, near Banodja Village, Sataplia I Cave, 407 m, 22.VII.2006, S. Lazarov, P. Stoev leg.

Distribution: Palaearctic (World Spider Catalog, 2023).

Remarks. First record for Georgian caves.

Nesticidae

Aituaria borutzkyi (Reimoser, 1930)

Material. 3 ♂♂, 2 ♀♀, 2 juv. (NHMS) Imereti Region, Tskaltubo Municipality, Sataplia-Tskaltubo Karst Massif, Khomuli Cave; 3 ♂♂, 2 ♀♀ (NHMS) Imereti Region, Chiatura Municipality, near Zodi Village, Khvedelidzeebisklde Cave; 3 ♀♀ (NHMS) Imereti Region, Chiatura Municipality, near Zodi Village, Zemo Imereti Plateau, Taroklde Cave; 1 ♀ (NHMS) Imereti Region, Tskaltubo Municipality, Okriba Karst Massif, Tsutskhvati Cave Complex; 1 ♀ (NHMS) Racha-Lechkhumi-Kvemo Svaneti Region, Ambrolauri Municipality, Racha Karst Massif, Dolabistavi Cave; 2 juv. (NHMS) Racha-Lechkhumi-Kvemo Svaneti Region, Ambrolauri Municipality, Racha Karst Massif, Sakishore Cave; 1 ♀ (NHMS) Racha-Lechkhumi-Kvemo Svaneti Region, Ambrolauri Municipality, Racha Karst Massif, Gogolati (=Tsakhi) Cave; 1 juv. (NHMS) Samegrelo-Zemo Svaneti Region, Martvili Municipality, Askhi Karst Massif, Motena Cave, 21.V.2022; 2 ♂♂, 1 ♀, 2 juv. (NHMS) Samegrelo-Zemo Svaneti Region, Chkhorotsku Municipality, Letsurtsume Cave, 20.V.2022; 2 ♂♂, 2 juv. (NHMS) Samegrelo-Zemo Svaneti Region, Chkhorotsku Municipality, Odishi Karst Massif, Nogha Village, Kakaro I Cave, 18.V.2022; 2 ♂♂, 4 ♀♀, 5 juv. (NHMS) Samegrelo-Zemo Svaneti Region, Chkhorotsku Municipality, Odishi Karst Massif, Nogha Village, Kakaro III Cave, 21.V.2022; 7 juv. (NHMS) Samegrelo-Zemo Svaneti Region, Martvili Municipality, Odishi Karst Massif, Inchkhuri Cave, 8.V.2022 (S. Barjadze, A. Faille, E. Maghradze leg.); 2 ♂♂, 3 ♀♀, 3 juv. (NMNHS) Imereti Region, Tskaltubo Municipality, near Banodja Village, Sataplia-Tskaltubo Karst Massif, Sataplia I Cave, 407 m, 22.VII.2006; 3 ♀♀, 3 juv., (NMNHS) Imereti Region, Terjola Village, DzevriVvillage, Water Power Station Sagvarjile, Okriba Karst Massif, Sagvarjile Cave, 232 m, 22.VII.2006, (P. Stoev & S. Lazarov leg.).

Distribution: Georgia, Turkey and Ukraine (World Spider Catalog, 2023) (Fig. 23).

Remarks. *A. borutzkyi* was described by Reimoser (1930) until now known from 4 caves in the Caucasus. The new reported localities except Sataplia I Cave are new for the species.

Pholcidae

Holocnemus pluchei (Scopoli, 1763)

Material. 1 ♀, Georgia, Racha-Lechkhumi-Kvemo Svaneti Region, Ambrolauri Municipality, Racha Karst Massif, Dolabistavi Cave, 25.V.2022, S. Barjadze, A. Faille, E. Maghradze leg.

Distribution: Europe, North Africa, Turkey, Caucasus, Middle East. Introduced to USA, Argentina, Japan, Australia (World Spider Catalog, 2023) (Fig. 23).

Remarks. First report for the caves of Georgia.

Tetragnatidae

Metellina merianae (Scopoli, 1763)

Material. 1 ♀ (NMNHS) Georgia, Imereti Region, Tskaltubo Municipality, Banodja Village, Sataplia-Tskaltubo Karst Massif, Sataplia I Cave, 407 m, 22.VII.2006, S. Lazarov & P. Stoev leg.; 1 ♀ (NMNHS) Georgia, Imereti Region, Terjola Municipality, Dzevri Village, Water Power Station Sagvarjile, Sagvarjile Cave, 232 m, 22.VII.2006, P. Stoev & S. Lazarov leg.

Distribution: Europe to Central Asia (World Spider Catalog, 2023) (Fig. 23).

Remarks. *M. merianae* is widespread in the caves, the new reported caves are new localities for the species in Georgia.

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