

A historical record from the Romanian Banat contributes to the discussion on *Trichoceble major* PIC, 1922 (Coleoptera: Rhadalidae)

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Abstract

A male specimen of the *Trichoceble floralis* species complex from the Romanian Banat region is described and illustrated. It tentatively matches (based on photo comparison) with the female holotype of *T. major* PIC, 1922; this name currently is in synonymy with that of the morphologically diverse *T. floralis unguicularis* REITTER, 1902 sensu LIBERTI (2012). The latter taxon concept is discussed, and the name *major* is retained as useful for future revisionary work. Previous records of three *Trichoceble* species from Romania are also discussed. The correct identification of *T. memnonia* (KIESENWETTER, 1859) and *T. fulvohirta* (BRISOUT DE BARNEVILLE, 1862) is doubtful. Furthermore, it is an open question, whether the records of *T. floralis floralis* (OLIVIER, 1790) from Bukovina and Transylvania refer to the taxon described herein.

Key words. Coleoptera, Rhadalidae, *Trichoceble*, faunistics, taxonomy, Romania.

Zusammenfassung

Ein männliches Exemplar aus dem *Trichoceble floralis*-Artenkomplex aus dem rumänischen Banat wird beschrieben und illustriert. Es stimmt provisorisch (basierend auf einem Fotovergleich) mit dem weiblichen Holotypus von *T. major* PIC, 1922 überein; dieser Name ist derzeit synonym mit dem der morphologisch vielfältigen *T. floralis unguicularis* REITTER, 1902 sensu LIBERTI (2012). Das letztgenannte Taxonkonzept wird diskutiert, und der Name *major* wird als nützlich für zukünftige Revisionsarbeiten beibehalten. Frühere Nachweise von drei *Trichoceble*-Arten aus Rumänien werden ebenfalls diskutiert. Die korrekte Bestimmung von *T. memnonia* (KIESENWETTER, 1859) und *T. fulvohirta* (BRISOUT DE BARNEVILLE, 1862) ist zweifelhaft. Außerdem ist es eine offene Frage, ob sich die Nachweise von *T. floralis floralis* (OLIVIER, 1790) aus Bukowina und Siebenbürgen auf das hier beschriebene Taxon beziehen.

Introduction

Taxonomic work on *Trichoceble* THOMSON, 1859 is a challenging task due to the sparsity of voucher specimens, which are “rare to very rare, and males even more than females” (LIBERTI 2012). Most recently, LIBERTI (2012, 2018, 2021) reviewed the European and Cyprian faunas morpho-taxonomically, and the author (e.g. PLONSKI 2019, 2022, 2023) has also contributed to the knowledge of the Trichoceblini MAJER, 1990.

In what follows, further interim results of the ongoing revision of the *Trichoceble* collection housed in the Natural History Museum Vienna (henceforth abbreviated as NHMW) are presented. This time, a male specimen from Romania is tentatively matched with a female holotype, other faunistic records from Romania are discussed, and an outlook on future revisionary (both faunistic and taxonomic) work is given.

Material and methods

One male specimen of the *floralis* species complex housed in the NHMW was studied. The male was compared with (1) the female holotype of *T. major* PIC, 1922, which is housed in the National Museum of Natural History in Paris, France (henceforth abbreviated as MNHN), and of (2) the female holotype of *T. unguicularis* REITTER, 1902, which is housed in the Hungarian Natural History Museum in Budapest, Hungary.

Label data are cited verbatim and described as accurately as possible for easier specimen identification during future revisionary studies – the conventions are detailed in PLONSKI (2014).

For proper identification, the specimen was re-mounted and its terminalia dissected – the procedure is described in PLONSKI (2014).

Three stereo-microscopes, viz. an Olympus SZX10, a Leica M165C equipped with a camera lucida, a Nikon SMZ1500 equipped with an ocular micrometre, and two light-microscopes, viz. an Olympus BX40 equipped with a camera lucida, Nikon Eclipse 80i equipped with a Nikon DS-Fi1 camera, were used as optical tools.

Two morphometric characteristics, viz. the ocular index (CAMPBELL & MARSHALL 1964) and the pronotal index (CAMPBELL 1965), are used in addition to standard measurements. The ocular index equals $100 \times (\text{IOW}/\text{HW})$, the pronotal index $100 \times (\text{PL}/\text{PW})$. The standard measurements have been recorded in thousandths of a millimetre, but are reported as rounded to the nearest hundredth.

Photographs of antenna, head capsule and pronotum were made and edited with the same equipment and software as detailed in PLONSKI & HÁVA (2020). The illustration of tegmen was first hand sketched with the light microscope and then redrawn with GIMP 2.10. Micro-photographs of median lobe and dorsal lever were made with the aforementioned Nikon tools, and edited with NIS-Elements and GIMP 2.10.

The distribution map was created with the free online tool SimpleMappr (SHORTHOUSE 2010) and was subsequently edited with GIMP 2.10.

The following abbreviations are used to report morphometric data:

- AL Length of antenna. Added lengths of all antennomeres.
- DE Diameter of compound eye. Maximum width of a compound eye, measured in dorsal view.
- EL Elytral length. Maximum length of elytra, including the scutellum, measured along the suture in dorsal view.
- EW Elytral width. Maximum width of elytra, measured in dorsal view.
- FL Frons length. Maximum length of frons from posterior eye margin to connective membrane, measured in dorsal view.

- HW Head width. Maximum width of head including eyes, measured in dorsal view.
- IOW Interocular width. Minimum width of interspace between eyes, measured in dorsal view.
- PL Pronotal length. Maximum length of pronotum, measured in dorsal view.
- PW Pronotal width. Maximum width of pronotum, measured in dorsal view.
- SW Shoulder width. Width of elytra along the humeri, measured in dorsal view.
- TL Total length of specimen. Measured in dorsal view from anterior tip of clypeus to apex of elytra.

Results

Taxonomy of *Trichocele major* PIC, 1922

Trichocele major PIC 1922: 17. – PEACOCK 1987: 159 (checklist). – MAYOR 2007: 414 (catalogue). – LIBERTI 2012: 212, 214 (as synonym of *T. floralis unguicularis*).

Julistus major: PIC 1937: 48 (catalogue).

Type locality. “Mont Athos” = Mount Athos (40°09’30” N, 24°19’38” E), Athos peninsula of Chalkidiki peninsula, Central Macedonia, Greece.

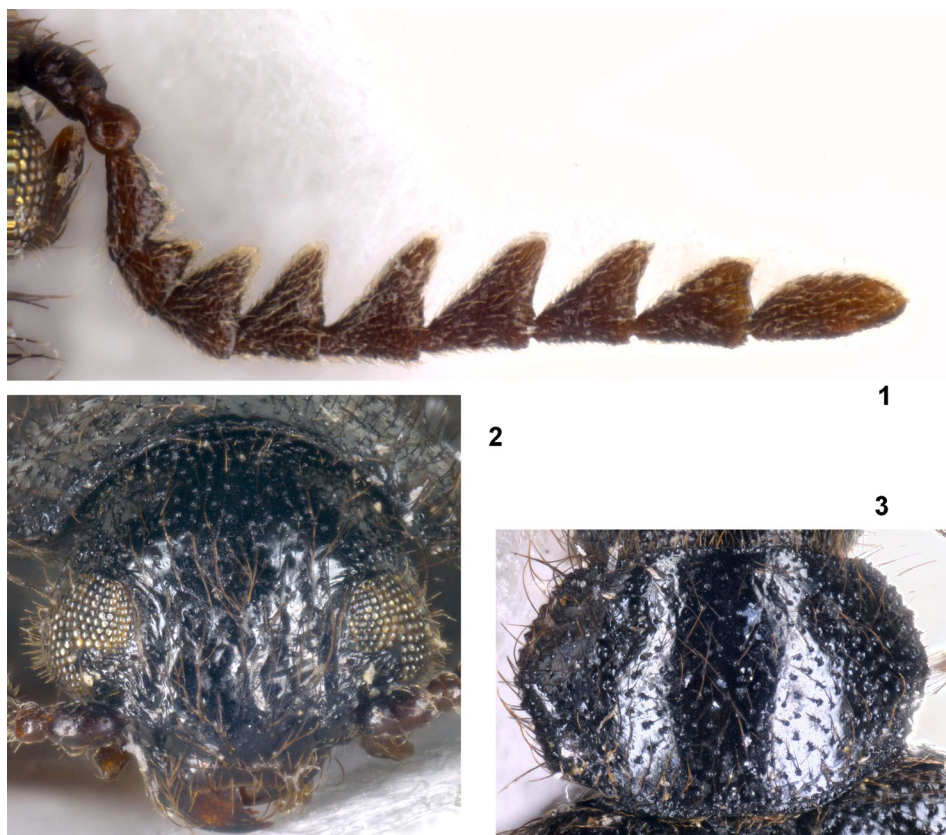
Type material examined. Five photos (MNHN – Corentin Nerzic, 2020) of the holotype of *T. major*, ♀ (in MNHN), labelled with “Athos \ (Macedonien) \ A. Schatzmayr” [white paper, typed], “major \ Pic” [white paper, handwritten, MS Pic], “type” [white paper, handwritten, MS Pic], “Museum Paris \ Coll. M. Pic” [white paper, printed], “TYPE” [red paper, printed], “HOLOTYPUS \ Trichocele \ major Pic \ vidit Liberti III.2007” [red paper, printed], “MNHN \ EC10517” [white paper, printed]. – See: <http://coldb.mnhn.fr/catalognumber/mnhn/ec/ec10517>.

Measurements taken from photographs (circa). PW/PL: 1.54; SW/PW: 1.16; EL/PL: 3.89; EL/EW: 2.18.

The Romanian specimen of *Trichocele* cf. *major* PIC, 1922

Material examined: 1 ♂ (in NHMW) labelled with “Hungaria \ N.[émet-] Bogsán. [= Bok-sánbánya = Bocșa (45°22’29” N, 21°42’38” E), Caraș-Severin County, Romania]” [white paper, handwritten, MS N.N.], “Trichocele \ floralis Oliv.[ier]” [white paper, handwritten, MS N.N.], “Collect.[io] \ Hauser” [white paper, typed], “floralis [handwritten, MS Ganglbauer] \ det. Ganglb. [auer] [typed]” [white paper], “♂” [white paper, typed], “Trichocele \ cf. major PIC \ det. I. Plonski ‘24” [white paper, handwritten, MS Plonski].

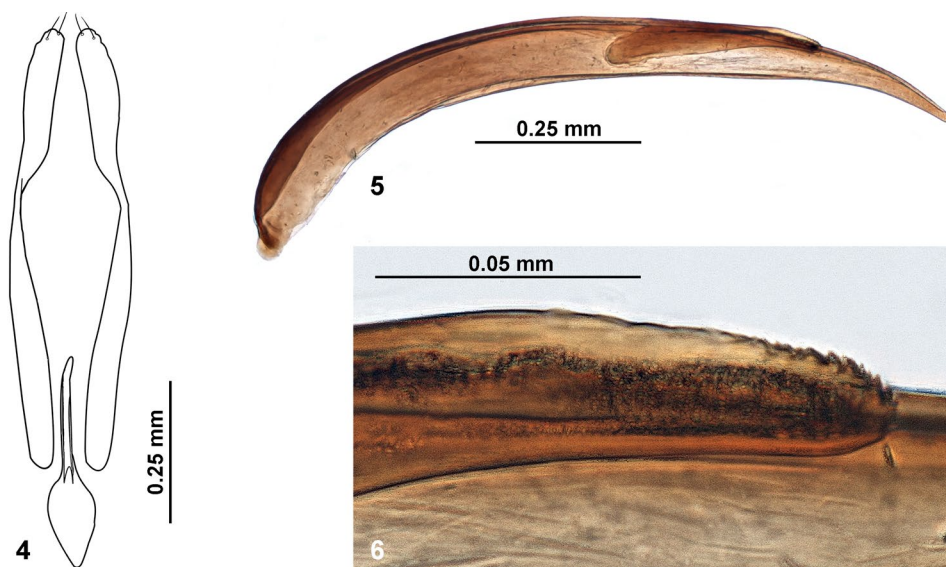
Observations on the labels. The patria-label and the first determination label show the same handwriting and pin hole position (on the left side). The specimen was collected sometime after 1867 and before 1910, because the patria-label indicates that the specimen was collected during the time of the Hungarian administration of the Banat region (1867–1918), and because the collection label and second determination label (pin holes on the right side) were added by Ludwig Ganglbauer (†1912) in 1910, when he continued to set up the Malacodermata collection and incorporated an acquired part of the collection of Friedrich Hauser (*1853, †1932) at the same time (STEINDACHNER 1911).



Figs 1–3. Romanian specimen of *Trichocele* cf. *major*. (1) Right antenna in dorsal view. (2) Head in frontal view. (3) Pronotum in dorsal view.

Observations on the specimen. (1) It resembles the holotype of *T. major* PIC, 1922 in colouration, proportions (except the ratios EL/PL and EL/EW), and foremost in shape, crenulation and puncturation of pronotum which were visible on the photos. It does not seem to resemble the holotype in surface structure of the frons, which looks normally arched and even in the picture. Unfortunately, the photos of the holotype are too dark, thus the result of comparison is tentative. (2) Using the key in LIBERTI (2012), the specimen keys out to *T. floralis unguicularis* REITTER, 1902. However, there is a conflict in couplet 14: A dorsal decrease of the median lobe is not noticeable. (3) The median lobe shape is similar, especially in curvature, to that of the specimen(s) of *T. floralis floralis* (OLIVIER, 1790) from Champdepraz (Aosta, Italy) depicted by LIBERTI & FOCARILE (2005: fig. 9) and LIBERTI (2002: fig. 22), and less similar to that of the specimen of *T. floralis unguicularis* from Litochoro (Piera, Greece) depicted by LIBERTI (2012: fig. 24), which possesses a more incurved basal half of the median lobe.

Description of the specimen. Colouration: head, thorax, abdomen, scape, and femora black; pedicel, flagellomeres, tibiae and tarsi chestnut-brown lightened; front-



Figs 4–6. Romanian specimen of *Trichocele* cf. *major* (4) Tegmen in dorsal view. (5) Median lobe in lateral view. (6) Dorsal lever apex in lateral view.

tibiae darker than mid- or hind-tibiae; dorsal pubescence chestnut-brown to blackish. Antennae (Fig. 1): pectinate; aV–aVII wider than long; aVIII balanced, as wide as preceding segments; aIX–aX slightly more slender than preceding segments; aIII 1.5 times longer than aIV; aV–aVI together as long as last segment; aVII–aX each approximately as long as third segment; aIII elongate, 1.9 times longer than wide, inner side angular; aIV balanced, 1.1 times broader than long, inner side angular; aV–aVI transverse, 1.3 times wider than long, inner side straight, apical side concave; aVII slightly transverse, 1.1 times wider than long, inner side sinuate, apical side concave; aVIII as long as broad, inner side sinuate, apical side concave; aIX elongate, 1.2 times longer than broad, inner side almost sinuate, apical side concave; aX elongate, 1.3 times longer than broad, inner side almost sinuate, apical side concave; aXI elongate, 2.7 times longer than broad, ellipsoid in shape. Head (Fig. 2): narrower than pronotum ($PW/HW = 1.29$); ocular index = 54.17; vertex evenly arched; frons asperous with irregular impressions confluent medially into short sulci subparallel to the interocular furrows; interocular furrows running from the level of posterior eye margin to just in front of the antennal sockets; dorsal surface structure punctate; punctures similar to those of pronotum; interstices smooth, on vertex 2.0–3.5 times wider than a puncture's diameter. Pronotum (Fig. 3): transverse, $PW/PL = 1.55$; pronotal index = 64.52; broadest at the middle of length; narrower than elytral base ($SW/PW = 1.13$); basis arcuate, then diverging towards basal corners; sides arcuate; apex sub-arcuate; basis and apex margined; sides crenulated; some crenulae slightly larger than adjoining; disc convex; dorsal surface structure punctate; punctures with slightly raised margins, inside round impressions with irregular demarcation; interstices smooth, on disc 1.6–3.0 times wider than a puncture's diameter. Elytra: $EL/PL = 3.52$; $EL/EW = 1.74$.

Claws of hind tarsi with thick base, and an unguis apodeme as long as base broad. Apical margin of sternite VII straight. Pygidium slightly transverse (w/l: 1.12). Sternite VII normal, except median projection loosely attached to a depigmented area, and both ends abruptly more slender than the rest of the stalk. Tegmen (Fig. 4): distal half of phallobase rhomboid shaped in dorsal view. Parameres in apical half abruptly expanded, apically as wide as median lobe base; apex rounded off in steps. Median lobe (Fig. 5): 1.04 mm long, basal half moderately bent; apical half weakly bent ventrally; apex shorter than dorsal lever; dorsal lever slightly bent, 2.03 times longer than apex of median lobe; tip of dorsal lever (Fig. 6) beset with tiny thorns.

Measurements: TL 4.50 mm; AL 1.97 mm; FL 0.54 mm; HW 1.04 mm; IOW 0.57 mm; DE 0.28 mm; PL 0.87 mm; PW 1.35 mm; SW 1.57 mm; EL 3.06 mm; EW 1.76 mm.

Discussions

On the species problem in *Trichoceble*

A full recapitulation of contemporary philosophy and theory pertaining to the species problem lies outside the scope of this paper. To summarize, it has been observed that the debate has shifted its focus from ontology to epistemology, and from theory to praxis during the last two and a half decades. In this spirit, it can be asserted that: (1) Species originate in the mind of people, e.g. taxonomists, due to cognition, and in nature due to evolution. (2) A given species is foremost an epistemological problem.

Note that species delimitation in *Trichoceble* systematics was always and is still morphology-based. We are therefore dealing with morpho-species (Liberti in lit., e-mail July 3rd, 2024). So far, 42 names have been proposed. The taxa have been given the rank of species or variety (before 1961!), and recently also the rank of subspecies. Some of the taxa are singletons or doubletons (viz. described based on one or two specimens), or uniques (viz. described after a sample from one locality). Many of these are based on female specimens. The phenomenon of rarity impedes our knowledge of *Trichoceble* biodiversity and causes a high level of uncertainty in the ongoing endeavour to fill the knowledge gaps, especially that of species number and geographic distribution. LIBERTI (2012: 193) writes that a “major source of uncertainty” in the “interpretation” of “existing taxa, more than one century old” was that types “are either lost or females, so of limited taxonomical value”.

A number of *Trichoceble* morpho-species are perfectly recognizable and possess very good characters. Others are in comparison relatively uniform and homogeneous. The latter is a truism for the group including *T. floralis* (OLIVIER, 1790) (LIBERTI in lit., email July 3rd, 2024). Sorting, grouping and classification of specimens may vary from expert to expert and depend on the characters selected and considered useful. LIBERTI (2012) focused on characteristics of the median lobe, and was confronted with conformity in median lobe shape (viz. within the variability range of *T. floralis* s.str. from Central Europe) combined with disparity in other characters in one particular set of *Trichoceble* specimens (see the next paragraph). The present author also uses median lobe shape, but additionally focuses on the surface structure of the pronotum (in order to match name-bearing females with males), and on the fine structure of the dorsal lever's apex (in order to tackle aforementioned conformity). The dorsal lever was found to be “of limited use as a diagnostic tool”

by LIBERTI (2012: 200), but under very strong magnification it shows an apex that is either pointed, rounded or truncate, and either with or without tiny thorns (Plonski, pers. obs.).

The applied taxon concept

The subspecies concept of *T. floralis unguicularis* REITTER, 1902 sec. LIBERTI (2012) is challenging, because it assumes high variability and no clear bio-geographic pattern, or with the words of LIBERTI (2012: 215f.): “This subspecies looks very variable and seems to have a wide distribution area (...). [N]one of the (...) mentioned characters appear to be sufficiently stable, significant, and spread over a meaningful territory, to allow raising the variant populations to valid species or subspecies.”

Among the materials available to him, LIBERTI (op. cit.) observed that certain population samples “from Turkey (mainly, but not only, from the north and the west of the country) look very similar, if not identical” to Central European *T. floralis* specimens in both eidonomic (colour, body shape) and anatomic (aedeagus) characters, while other population samples “from the north of Greece and from Turkey (Bolu and Mersin areas) have similar, if not identical, aedeagi but look rather different externally: red (versus black) tibiae, male antennal articles 6–9 slightly less S-shaped on internal side, slightly different body shape (male elytra less convex and more widened in apical half)” – “this might be the form called *T. major* by PIC”. However, two other population samples (viz. from Nea Santa (Rodopi Province, Greece) and from Eflani (Zonguldak Province, Turkey)) “show, although not in all specimens, a slightly different median lobe”, viz. with a basal half “strongly bent” (op. cit, p. 215) or “more developed and more bent ventrally” (op. cit., p. 216).

Thus, LIBERTI (op. cit., pp. 212–214) decided to make the following synonymizations: *T. unguicularis* REITTER, 1902 (= *T. funera* var. *brunneipennis* REITTER, 1902; = *T. subcoriacea* REITTER, 1902; = *T. sparsepunctata* PIC, 1921; = *T. major* PIC, 1922). And, because of the aforementioned *T. floralis* lookalikes, he gave the taxon the rank of a subspecies.

In conclusion, LIBERTI (op. cit., p. 216) reflects on the specimens subsumed by him: “... many doubts on this taxon, relating both to variability (with reference to the possibility that it would include more than one form) and to valid name” remained. And LIBERTI (op. cit.) could not “avoid the suspect to have clustered two or three very similar species” (p. 215) under one name – he writes: “understanding whether it is a synonym, a subspecies, a species or even a cluster of true species is, at the moment, beyond my possibility of morphological investigation” (p. 210). Knowing that *Trichoceble* is “a very difficult genus” (p. 192), LIBERTI (op. cit.) emphasized that his concept is a proposal, which “may possibly require future adjustments when more materials will be available” (p. 193).

Here, the present author follows LIBERTI (op. cit.) and still accepts his proposed taxon concept for the time being. However, the new observation indicates that *T. major* might need to be reinstated from synonymy.

Other records of *Trichoceble* from Romania

The so far known distribution of *Trichoceble* in Romania is depicted in Figure 7. Eleven records have been published under three different names: (1) *Trichoceble floralis* (OLIVIER, 1790) was reported from Grosspold (= Apoldu de Sus, Sibiu County), Schässburg (= Sighișoara, Mureș County), and Borszég (= Borsec, Harghita County) by BIELZ (1886: 77), from Rosenau (= Râșnov, Brașov County) (coll. Deubel) and Bistritz (= Bistrița, Bistrița-Năsăud County) (coll. Müller) by PETRI (1912: 145), from Cârlibaba (Suceava County) by

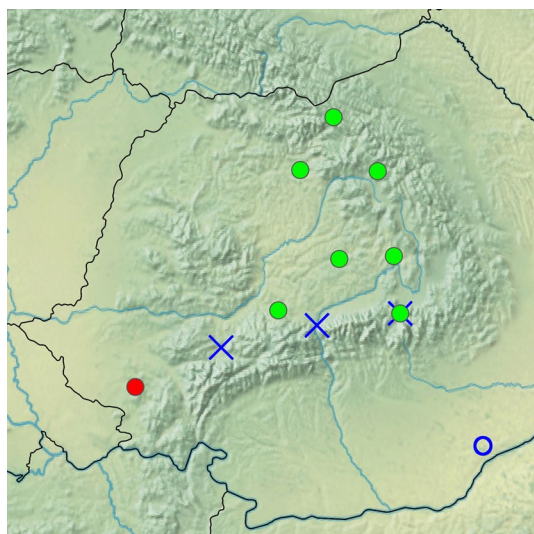


Fig. 7. Known distribution of *Trichoceble* in Romania based on herein and earlier published records. The records are: red dot = *T. cf. major*; green dot = *T. floralis* species complex; blue ring = *T. memnonia*; blue cross = *T. fulvohirta*.

MARCU (1936: 71), and from the Perșani Mountains next to Vârghiș (Covasna County) (leg. Podlussány; det. Szalóki) by SZÉL et al. (1996: 84). (2) *Trichoceble memnonia* (KIESENWETTER, 1859) was reported from Comana in Vlaşca County (= today's Giurgiu County) (leg. & coll. Montandon; det. Bourgeois) by MONTANDON (1908: 87). (3) *Trichoceble fulvohirta* (BRISOUT DE BARNEVILLE, 1862) was reported from Hátszeg (= Hățeg, Hunedoara County) (coll. Petri) and Rosenau (= Râșnov, Brașov County) (coll. Deubel) by PETRI (1912), and from Vöröstorony (= Turnu Roșu, Sibiu County) by KASZAB (1955: 108).

These chresonyms should be verified or corrected based on a revision of the original voucher specimens. Especially the four occurrence records of *T. memnonia* (= *T. fulvohirta*) from the historical regions of Muntenia and Transylvania should be checked, because the true *T. memnonia* should not occur in Southeast Europe (cf. the distribution notes in LIBERTI (2012: 202, 227f.)). PLONSKI (2019: 174) writes that misidentifications of *T. floralis* specimens as *T. memnonia* specimens are common in Central Europe “because (...) [in *T. floralis*] the pubescence is sometimes unpigmented and just with the yellowish colour of chitin” – see for example HOLZER (2002: 69) versus HOLZER (2008: 174). However, the converse is also possible – see for example LOHSE (1958: 35) versus ZIEGLER (1995: 59), or ALLENSPACH & WITTMER (1979: 100) versus CHITTARO & SANCHEZ (2019: 159) – if outdated works (e.g. WEISE 1887, SEIDLITZ 1891, REITTER 1902, KASZAB 1955, LOHSE 1979) are used for identification. Thus, for the revision of the Romanian records, the state-of-the-art determination key in LIBERTI (2012) supplemented with the identification aids by LIBERTI & FOCARILE (2005: figs. 9–14) and CONSTANTIN & LIBERTI (2011: figs. 86–89) is mandatory.

Note that the collection of Arnold Lucien Montandon (*1852, †1922) is housed in the Grigore Antipa National Museum of Natural History in Bucharest (ANDREI & SERAFIM 1993), and that the collections of Eduard Albert Bielz (*1827, †1898), Friedrich Deubel (*1845, †1933), Arnold Müller (*1884, †1934), and Karl Petri (*1852, †1932) are housed in the Natural History Museum of Sibiu (CUZEPAN et al. 2015). The specimens reported by KASZAB (1955) and SZÉL et al. (1996) are probably housed in the Hungarian Natural History Museum.

Outlook

The present author is working towards a solution to the taxonomic problem imposed by the conception of *T. floralis unguicularis* sensu LIBERTI (2012). A direct examination of the holotype of *T. major* and comparison with material from Northern Greece and Turkey is pivotal for this project.

A revision of the Romanian records would considerably improve our knowledge of the *Trichoceble* occurring in Eastern Europe. It is still an open question, whether all previously reported specimens of *T. floralis* from Transylvania and Bucovina are identical to the specimen reported above.

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