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Gymnomus caucasicus, a new species of heleomyzid flies from
Caucasus Mountains
(Diptera: Heleomyzidae)

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ABSTRACT. *Gymnomus caucasicus*, new to science, is described from Caucasus Mts. Its relationships with other representatives of the genus are discussed. *Scoliocentra amplicornis* (CZERNY, 1924) is transferred to *Gymnomus* and the lectotype is designated.

Key words: entomology, taxonomy, morphology, new species, Diptera, Heleomyzidae, *Gymnomus*, *amplicornis* species group, Palaearctic Region.

INTRODUCTION

The monotypic genus *Gymnomus* was described on the basis of *Gymnomus troglodytes* LOEW, 1863 from European caves and for a long time has been regarded as a unique taxon within Heleomyzidae (PAPP & WOŹNICA, 1993). GORODKOV (1984) recognized it as a subgenus within *Scoliocentra* LOEW, 1862 which included four other species. PAPP & WOŹNICA (1993) revised the genus *Gymnomus* and described six new species from Palaearctic Region, however they did not analyze the relationships among the subgenera in the sense of GORODKOV (1962). The genus *Amoebaleria* CZERNY, 1924 with the species *amplicornis* (CZERNY, 1924) was synonymized with *Scoliocentra* by GORODKOV (1962) but regarded as separate genus by GILL (1962). WOŹNICA (1996) pointed to the affinity of *Scoliocentra amplicornis* (CZERNY) to the *caesia* species-group on the basis of the type of chaetotaxy and postabdominal characters. The newly described species is closely related to *G. amplicornis*, and both species form a separate species-

group based on the following characters: the presence of big first flagellomere, one pair of prosternal setae, bare anepimeron (except for the hairy anterior corner), bare anepisternum and meron, one katepisternal bristle with entirely hairy katepisternal area, and sternite VIII in female elongated and separated in the apical part. Basistyli are well developed, dististyli L-shaped, flattened dorsally with a small protrusion in the ventral part. Cerci are wide and reversely U-shaped.

MATERIAL AND METHODS

The material was borrowed from several institutions (abbreviations are used in the text in parentheses, an asterisk indicates collections where types are deposited or were borrowed from). All figured structures are magnified to the same scale.

- *DEI - Deutsches Entomologisches Institut, Müncheberg, Germany.
- HNHM - Magyar Természettudományi Múzeum Allattára, Budapest, Hungary.
- ISEA - Instytut Systematyki i Ewolucji Zwierząt, PAN, Kraków, Poland.
- IRSNB - Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium.
- MIIZW - Muzeum i Instytut Zoologii PAN, Warszawa, Poland.
- MMBC - Moravské Zemské Museum, Brno, Czech Republic.
- MZLU - Lunds Universitet, Zoologiska Museét, Lund, Sweden.
- *NMW - Naturhistorisches Museum in Wien, Austria.
- NRMS - Naturhistoriska Riksmuseet, Stockholm, Sweden.
- USMB - Upper Silesian Museum in Bytom, Poland.
- *USNM - National Museum of Natural History, Smithsonian Institution, Washington, USA.
- VK - Dr. V. KOŠEL, (private collection), Bratislava, Slovakia.
- *VIM - Dr. V. MARTINEK, (private collection), Dobruška, Czech Republic.
- WA - author's collection, Department of Zoology & Ecology of Agricultural University, Wrocław, Poland.
- *ZIRANSP - Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia.
- ZMA - Zoological Museum, University of Amsterdam, Amsterdam, the Netherlands.
- *ZMHB - Zoologisches Museum, Humboldt Universität, Berlin, Germany.
- ZMUB - Zoological Museum, University of Bergen, Norway.
- ZMUC - Zoological Museum, Copenhagen University, Denmark.
- ZMUN - Zoological Museum of Oslo, Norway.

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E. NARTSCHUK and Dr. V. TANASIJCHUK (ZIRANSP), Dr. P. LAUTERER (MMB), Dr. T. PAPE (ZMUC), Dr. L. PAPP (HNHM), Dr. H. SCHUMANN (ZMHB), Dr. K. ROGNES (ZMUN), Dr. T. ZATWARNICKI (UO), and Dr. J. ZIEGLER (DEI and ZMHB) for the loan of the material for studies.

SYSTEMATICS

***Gymnomus amplicornis* (CZERNY, 1924) comb. nov.**

(Figs 1-6)

Amoebaleria amplicornis CZERNY, 1924: 135 (description, terra typica: Austria); CZERNY, 1927a: 40 (distribution, Palearctic); LERUTH, 1934: 108 (Belgium); COLLART, 1940: 14 (Romania, fig. of male genitalia); ROHLFIEN & BIRGIT, 1970: 465 (syntypes in coll. of ZALF).

Scoliocentra amplicornis (CZERNY): COLLIN, 1943: 247 (combination, UK); GORODKOV, 1984: 28 (distribution, Palearctic); MARTINEK, 1977: 67 (Czech Republic), 1982: 77 (Slovakia), 1986: 139 (Slovakia), 1987: 241 (Czech Republic & Slovakia); HACKMAN, 1980: 146 (Finland); PAPP, 1981: 63 (Hungary); CEIANU et al., 1991: 101 (Romania); WOŹNICA, 1991: 209 (Poland); MANSARD-VEKEN, 1992: 393 (faunistic, Germany); KOVAL, 2001: 133 (Ukraine).

DIAGNOSIS

G. amplicornis differs from the newly described species in having three or more rows of peristomal setulae, yellowish postpronotum and scutellum and also in the structures of male and female genitalia (figs 1-6).

DESCRIPTION

Body length varies from 4.4 to 6.7 mm.

Head: Ratio: 1.16-1.20. Face yellowish, slightly depressed below antennae. Palpus yellowish-orange in colour. Eye rounded. Frons yellowish-brown. A whitish dusting area present around eye, ocellar triangle and vertex. Ocellar triangle dark brown in colour. One big vibrissa present. Peristomal setulae arranged in three to four irregular rows. Two well developed orbitals, the anterior one directed outwardly and distinctly shorter than the posterior one (0.6-0.7 times).

Antennae: Scape and pedicel yellowish-orange in colour. First flagellomere big, round and orange. Arista dark brown, short pubescence only but it is longer than height of head. Hypostom brownish. Cheek-eye ratio about 0.53 to 0.54. Flag-cheek ratio varies from 0.83 to 0.89.

Thorax: Mesonotum bluish-grey, without acrostichal setae covered with short and thin hairs only. Dorsal and pleural part brownish. Dorsocentral bristles arise from dark black spots. Postpronotum yellowish-orange, the area around hind notopleural seta and scutellum similar in colour. Postscutellum grayish. Hind part of anepisternum and anterior part of anepimeron brownish-grey. Anterior corner of anepisternum with several short hairs.

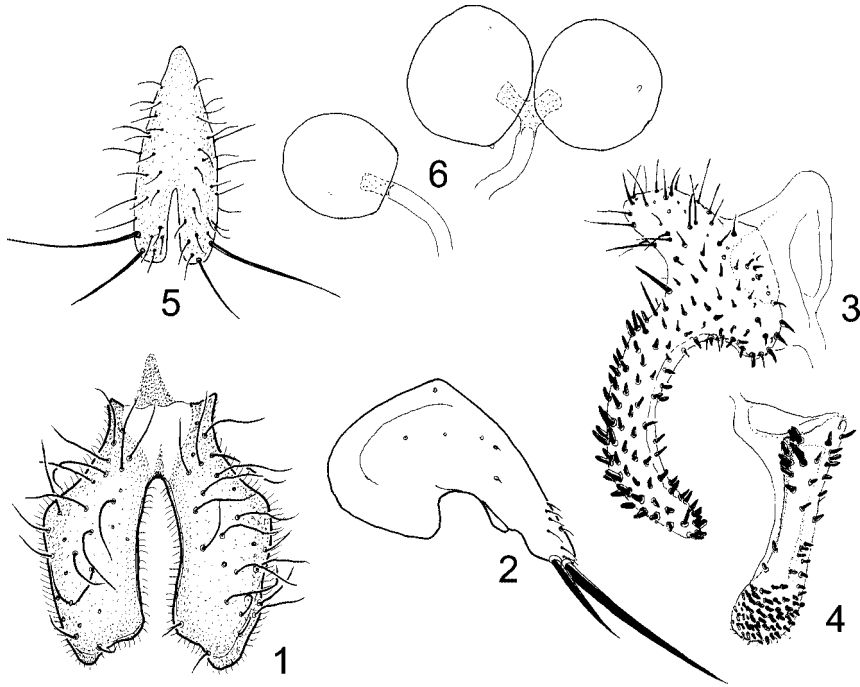
Wing: Length: 4.5-6.8 mm, width: 2.1-2.4 mm. Membrane transparent, veins yellowish, cross-veins not darkened. Costal spines well developed and distinctly longer than the width of costa. Medial vein ratio: 1.122 -1.130 (1.182 in lectotype). Halteres pale yellow.

Legs: yellowish-orange and with short hairs. Mid and hind femora with two rows of bristles outwardly. Hind femur with 3-4 dorsolateral bristles distally. Last two tarsomeres of all legs dark brown in colour. Remaining segments darkened in the apical part only. All tibiae and all tarsomeres except for the last ones with short hairs.

Abdomen: Tergites and sternites yellowish-orange, covered with short hairs and also with strong black marginal bristles.

Male genitalia: Epandrium yellowish-orange in colour, widened in the middle part. Cerci longer than wide, oblique apically (fig. 1). Basistylus finger-like (fig. 3), slightly swollen and setulose basally, curved distally and covered with black thorns. Dististylus (fig. 4) with very thin and rounded distally external lobe which is covered with thorns. Inner apical part with small knob-like projection covered also with small thorns. Postgonite (fig. 2) with two strong unequal in length bristles.

Female genitalia: VIIIth sternite (fig. 5) separated apically. Three round spermathecae covered with small protrusions. (fig. 6).



1-6. *Gymnomus amplicornis*: 1-4 - male terminalia: 1 - cerci, 2- postgonite laterally, 3 - basistylus laterally, 4 - dististylus laterally; 5-6 - female diagnostic characters: 5 - VIIIth sternite, 6 - spermathecae

BIOLOGY AND DISTRIBUTION

Larvae are saprophagous and develop i.e. in bats guano (in caves up to 40 meters deep). *G. amplicornis* is a European, boreo-alpine and troglophilous species. All data concerning the distribution of *G. amplicornis* in Caucasus Mts should be treated as misidentification (see *G. caucasicus* sp. n.). *G. amplicornis* is widely distributed and known from several European countries (WOŹNICA 2004). New to Estonia, known from Ukraine also (KOVAL 2001) but omitted by WOŹNICA (2004).

TYPE MATERIAL

Lectotype male, Austria sup. Bad Hall Czerny (below 25/4); *Amoebaleria amplicornis* Czerny; Lectotypus (red) M *Amoebaleria amplicornis* Czerny, 1924; epandrium in microvial (NMW) by present designation.

Paralectotypes: 1M, Hungaria oc. Theben 13.6.15; *Amoebaleria amplicornis* Czerny; Paralectotypus (red) M *Amoebaleria amplicornis* Czerny, 1924: 1M Nimptsch (=Niemcza, Pl). Schls. Duda; 4.6.08 (red); *Amoebaleria amplicornis* M Czerny det. Czerny; Paralectotypus red) M *Amoebaleria amplicornis* Czerny, 1924: 1M, 10.6.82; Austria sup. Freistadt; *Amoebaleria amplicornis* M Czerny; Paralectotypus (red) M *Amoebaleria amplicornis* Czerny, 1924: 1M, Simony Mödling; *Amoebaleria amplicornis* M Czerny; Paralectotypus (red) M *Amoebaleria amplicornis* Czerny, 1924: 1F, Berlin Pichelberg 12.7.05; *Amoebaleria amplicornis* F Czerny det. Czerny; Paralectotypus (red) F *Amoebaleria amplicornis* Czerny, 1924: 1M (all NMW): 23.VI.11; Nimptsch (= Niemcza, Pl). Schls. Duda; *Amoebaleria amplicornis* Czerny; cotype (red) No 29349 U.S.N.M.; *Amoebaleria amplicornis* Cz.; Paralectotypus M *Amoebaleria amplicornis* Czerny, 1924 (USNM): 1M1F, Wölf[e]lsg[r]und (Międzygórze, Pl), 24.06.05; *amplicornis* Czerny; coll.Oldenberg; Type (red); paralectotypus, *Amoebaleria amplicornis* Czerny, 1924; A. Woźnica des.95: 1F, Tiers, 17.06.1914; *amplicornis* Czerny; coll.Oldenberg; Type (red); paralectotypus, *Amoebaleria amplicornis* Czerny, 1924; A. Woźnica des. 95 (DEI).

OTHER EXAMINED MATERIAL

AUSTRIA: Austria inf., 1F, Kertész, 18.05.1900 (HNHM). Austria inf., Halnburg, 1M, Zerny 2.04.1920 (NMW).

ESTONIA: Peshchera Helme, 3 km NW Tyrva, Yu. Estonia, 1M2FF 3.04.1971, Nartshuk; ibidem, 2MM, Gorodkov. Piusa, 10 km ESS, 13MM2FF, 9.10.1976, Gorodkov et Elberg (ZIRANSP).

BELGIUM: Cav. aux vegetations, Ramioul, 1M, 6.03.1932, R. Leruth; ibidem, 2MM, 18.12.1932, R. Leruth; ibidem, 3MM3FF, 12.03.1933, R. Leruth. Trou Manto, Solières, 1M, 20.03.1932, R. Leruth (all NMW); 1M; Ramioul, 12-3-1933, R.Leruth; Cav. aux vegetations, B.2; AMOEBALERIA m amplicornis det. Czerny; 1M: Ramioul, 18.12.1932, R. Leruth; Cav. aux vegetations, B.2; AMOEBALERIA m amplicornis det. Czerny; 1F: Ramioul, 29.9.1932, R. Leruth;

Cav. aux vegetations, B.2; AMOEBALERIA m amplicornis det. Czerny; 1F: Solières, 20-3-1932, R. L.; Trou Manto, B. 6.; AMOEBALERIA F amplicornis det. Czerny (all IRSNB)

CZECH REPUBLIC: Bohemia Centr: Žehunska obora, env. Žehun, 1F, 5.06.1972, V. Martinek lgt. Bohemia or: Bestviny, Malin env. Dobruška, 1M, 29.06.1965, V. Martinek. Bohemia occ: Blatno env. Žlutice, 1M, 14.07.1967, V. Martinek. Bohemia or sept: Dobrošovska mysl, Polsko nr Nachod, 1M, 30.04.1986, V. Martinek lgt. Bohemia occ: Nové Mesto, env. Téplice, 1F, 20.07.1977 (VIM). Wypustek, Moravia Macocha Höhle, 1F, 6.04.1912, Czerny (NMW), 1M, F. Kowarz, Franznsbd.(= Frantiskovy Lázně) (below 31.3.05) (NRMS).

FINLAND: Ab 668: 32, Lohja Torhola, 2MM1F, 21.05-22.08.1985, Biströom & Hippa leg.

FRANCE: Basses Alpes St. Jean-Batie du Col Bas, 1M, 1700m, 23.05.1969, B. et O. Tkalců lgt (MMBC).

NETHERLAND: Ravenboschgroeve III, Valkenburg c.a. Bela 159, 1M1F, 6.01.1965, W.N. Ellis det. 1964 (ZMA).

GERMANY: St. Wendel, 25.06.1921, 1F, Duda (ZMHU). Berlin Finkenkrug, 1F, 8.05.1904, coll. Oldenberg. Berlin P[ichelberg], 1F, 19.04.1911, coll. Oldenberg (DEI).

NORWAY: HOY: Bergen St. Milde, Grñnevika, 1F, det. L. Greve. HOY: OS, Scelelid, MF, 1F, 9 -16.05.1991, leg. G. A. Haworsen (ZMB). EIS 37, Ak, SŘRUM: Lřrenfallet, Egner, 1F, 05.1994, L. O. Hansen i O. Sřrlibrřten (ZMO): Porsgrund; 1F, Strand (DEI).

POLAND: Bieszczady: pasmo Łopiennika, distr. Lesko, 1M, 7.05.1966, leg. J. Wojnarowicz (MIIZW). Dolny Ślask: Chojnów, Grodziec, 1M, 01.05.1980, leg. T. Zatwarnicki; Jarosówka, distr. Legnica, 1M, 21.03.1981, leg. T. Zatwarnicki (WA); Niemcza, 1M, (Nimptsch, bei Kl. Ellgurh.), 16.05.1913 (ZMHU). Wustung bei Habelschwerdt (Bystrzyckie, distr. Bystrzyca Kłodzka, Pl), 1F, 26.05.1921, (ZMHU): Reinerz (Duszniki Zdrój), 1M, 06.1928, P. Riedel (NMW). Wölfelssgr. (Międzygórze), 20.06.1905, 1F, coll. Oldenberg (DEI). TATRY: Chochołowska Szczelina, 1M, 8.04.1964, A. Skalski leg. J. Kamienne Mleko, Tatry, 2MM2FF, 13.04.1960, A. Skalski (USMB).

ROMANIA: 1F: Scărisoara, 17.VII.1938, R. Leruth; R.61, Peștera dela Pojarul Ghetzarului; A.Collart det. 1940, Amoebalera amplicornis Czerny; 1F: Dobresti, 22.VIII.1938, R. Leruth; R.97, Peștera I din Velea Vizui; A.Collart det. 1940, Amoebalera amplicornis Czerny; 1M: Báita, 16.VIII.1938, R. Leruth; R.83, Peștera dela p. Corbatului; A. Collart, det. 1940: AMOEBALERIA amplicornis Czerny (without genitalia) (all IRSNB).

RUSSIA: Okr. Lugi, peshchera Leningr. obl., 1M1F, 6.01.1957, Gorodkov (USNM); ibidem, 6MM8FF, 6.01.1957, Gorodkov. Okr. Lugk, Leningr. obl., 1M1F, 6.01.1957, Stackelberg, (ZMHU); ibidem, 1M, 3.08.1967, Shtackelberg (ZIRANSP). Imale, Komarovo, leningr. O. 13. V. Shtakelberg 951, Scoliocentra amplicornis (Czerny) Gorodkov det. 69; 1M: Czernaja rjechka, Karjelsk. Lenin-

grad. O. Schtakelberg 30.IV.963, *Scoliocentra amplicornis* (Czerny) Gorodkov det. 65; 1M: Archangjelsk, berez. Sok, A. Birulya 24.V.933, *Scoliocentra amplicornis* (Czerny) Gorodkov det. 69 (ZIRANSP).

SLOVAKIA: Slovakia Mer. or., Majková cave nr Silica, 2MM1F, 6.03.1991, V. Košel lgt. Slovakia centr., Slovensky raj, Koniarova cave, 13MM4FF, 19.08.1991, V. Košel lgt. Slovakia centr., Na Skale cave, 2MM3FF, 20.08.1991, V. Košel lgt. Teplica cave m. Tisovec, 1M2FF, 7.08.1991, V. Košel lgt. Slovakia centr., Burda cave nr Rovné, 5MM5FF, 11.08.1991, V. Košel lgt. Slovakia centr., Slovensky raj, Vlciá cave, 1F, 11.01.1992, V. Košel lgt; ibidem, 1F, 19.01.1992, V. Košel lgt. (VIM).

SWEDEN: *Sc. amplicornis*: 2FF: S: Sm. Rydöbruk, 18-24.6. 1987, Malaisefälla, P & J. Ardö (Andersson coll); 1M: *Sc. amplicornis*: S Oeg. Sturefors naturreservat, 1990, Magnus Wadstein, 15. 06.7; 3MM: *Sc. amplicornis*: Hall Ensloev, Årnilt, 22.4.73, H. Andersson (MZLU); 1M of *Scoliocentra amplicornis*: S:Sm. Vaexjo, S. Lreda, 29.IV.1989, leg. R. Danielsson (MZLU).

REMARKS

The material deposited in DEI, labeled partially as *Agrypocentra dasynota* (CZERNY's handwriting) is not mentioned in the description (CZERNY 1924: 135), and has not been recognized as a type material.

DISCUSSION

The structure of female's VIIIth sternite is similar to that of *G. spectabilis* (unpublished data). Cerci are rather typical of *villosa* species-group of *Scoliocentra*, but the type of head and mesonotal chaetotaxy does not differ from the *caesia* species group.

Gymnomus caucasicus n. sp.

(Figs 7-12)

ETYMOLOGY

The specific name is Latin and refers to the locus typicus.

DIAGNOSIS

Gymnomus caucasicus is closely related to *G. amplicornis* and differs from the latter in the presence of two rows of peristomal setulae only, brownish grey postpronotum and scutellum of the same colour, 4 to 6 dorsolateral bristles on hind femur, and distinct structure of genitalia (figs. 7-12).

DESCRIPTION

Body length: 5.42-6.80 mm.

Head: Head ratio: 1.10-1.20. Frons yellowish-brown in colour. Whitish dusting around eyes, ocellar triangle and vertex similar to those observed in

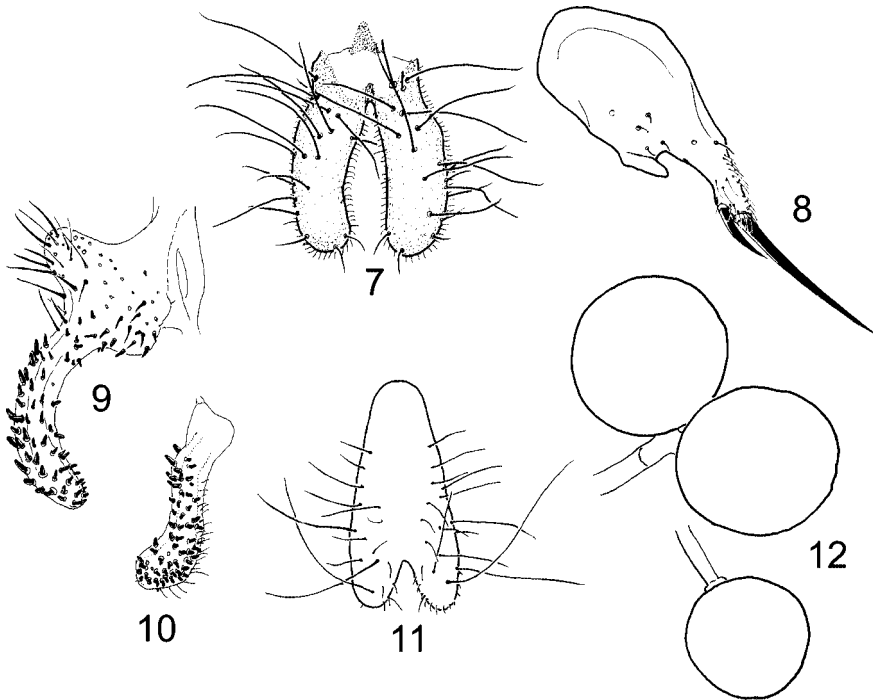
G. amplicornis. Ocellar triangle dark brown. Peristomal setulae arranged in one to two irregular rows. Anterior orbital directed outwardly and shorter than the posterior one (ca. 0.60-0.65 of the Por). Face yellow in colour, slightly depressed under the antennae. Palpus yellowish-orange. Hypostom brownish in colour. Eye rounded.

Antennae: Arista similar in length and colour to *G. amplicornis*. All antennal segments orange in colour. Flag-cheek ratio varies from 0.75 to 0.85, cheek-eye ratio from 0.55 to 0.60.

Thorax: Mesonotum bluish-grey, without acrostichals, covered with thin and short hairs only. Dorsocentral bristles arising from black spots. Postpronotum and scutellum brownish-grey. Postscutellum distinctly grey. Anterior part of anepisternum with 6 to 12 thin hairs only.

Wings: Length of wing: 5.8-6.90 mm, width: 2.0-2.25 mm. Membrane transparent, veins yellowish, crossveins not darkened. Costal spines strong and longer than the width of costa. Medial vein ratio: Holotype: 1.200, paratypes: 1.165-1.210. Halteres whitish-yellow.

Legs: Legs yellowish-orange in colour and with short hairs only. Hind femur usually with 5-6 big black dorsolateral bristles (if four only than other characters



7-12. *Gymnomus caucasicus*: 7-10 - male terminalia: 7 - cerci, 8 - postgonite laterally, 9 - basistylus laterally, 10 - dististylus laterally; 11-12 - female diagnostic characters: 11 - VIIIth sternite, 12 - spermathecae

are constant). All tarsomeres of first leg and apical parts of tarsomeres of legs II and III dark brown. The hairiness of all tibiae and tarsi as in *G. amplicornis*.

Abdomen: Abdominal segments yellowish-orange. Chaetotaxy similar to that described for *G. amplicornis*.

Male genitalia: Epandrium yellowish-orange in colour, widened in the middle part. Cerci longer than wide, rounded apically as in figure no 7. Basistylus finger-like (fig. 9), distinctly curved and covered with black thorns apically. Dististylus (fig. 10) setulose with very thin and rounded distally external lobe; inner apical part with small protuberance covered with small thorns. Postgonite (fig. 8) elongated with two unequal in length bristles.

Female genitalia: VIIIth sternite apically separated and incised (fig. 11). Three round and smooth spermathecae (fig. 12).

TYPE MATERIAL

Holotype male, Teberdinsk, zapov. okr. usadby, Kavkaz, Gorodkov, 23.IV.964, *Scoliocentra caucasica* Woźnica, sp. nov. (ZIRANSP).

Paratypes: 2MM, Teberdinsk, zapov. okr. usadby, Kavkaz, Gorodkov, 23 i 24.IV.964, *Scoliocentra caucasica* Woźnica, sp. nov.; Olenya balka pihtach, 1700 and 1650m; *Scoliocentra amplicornis* (Czerny) Gorodkov det. 69 (ZIRANSP i WA): 2FF, Teberdinsk, zapov. okr. usadby, Kavkaz, Gorodkov, 2.V (M) i 3 V (F) 964: Olenya balka pihtach, 1600 i 1700m; na trupe *Apodemus sylvaticus* (L.); *Scoliocentra amplicornis* (Czerny) Gorodkov det. 69; *Scoliocentra caucasica* Woźnica, sp. nov. (ZIRANSP and WA).

BIOLOGY AND DISTRIBUTION

An alpine species, probably endemic for Caucasus Mts. Larvae possibly develop in carcasses of small mammals (rodents), where imagines have been collected (April to May).

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