Beitr. Ent.	Keltern	ISSN 0005 - 805X
51 (2001) 2	S. 247 - 334	16.12.2001

A revision of *Callicerus* GRAVENHORST, 1802, *Pseudosemiris* MACHULKA, 1935, and *Saphocallus* SHARP, 1888

(Coleoptera: Staphylinidae, Aleocharinae, Athetini)

With 17 figure plates, 11 diagrams, and 5 maps

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Summary

The types and additional material of the species of *Callicerus* GRAVENHORST, *Pseudosemiris* MACHULKA, and *Saphocallus* SHARP are revised. The taxonomic history of these taxa is outlined. Based on a comparative morphological study - including species of the presumably closely allied genus group taxa *Aloconota* THOMSON, 1858 and *Disopora* THOMSON, 1859 - *Callicerus*, *Pseudosemiris*, and *Saphocallus* are regarded as distinct genera and redescribed. 7 valid species of *Callicerus*, 7 of *Pseudosemiris*, and one of *Saphocallus* are recognized and (re-)described: *C. obscurus* GRAVENHORST, *C. muensteri* BERNHAUER, *C. atricollis* (AUBÉ), *C. appenninus* **sp. n.**, *C. sparsicollis* BERNHAUER, *C. fulvicornis* EPPELSHEIM, *C. rigidicornis* (ERICHSON), *P. kaufmanni* (EPPELSHEIM), *P. breiti* SCHEERPELTZ, *P. circassica* FAGEL, *P. fulgida* **sp. n.**, *P. granulosa* FAGEL, *P. stricticornis* FAGEL, *P. zanettii* **sp. n.**, and *S. parviceps* SHARP. *P. velox* JABLOKOW-KHNZORIAN is regarded as a species dubia. The following synonymies are established: *Callicerus* GRAVENHORST, 1802 = *Semiris* HEER, 1839, resyn., = *Sphaerotaxus* BERNHAUER, 1915, **syn. n.**; *Callicerus obscurus* GRAVENHORST, 1802 = *Callicerus stolfai* SCHEERPELTZ, 1956, **syn. n.**, = *Callicerus ibericus* FAGEL, 1958, **syn. n.**; *Calodera atricollis* AUBÉ, 1850 = *Callicerus clavatus* ROTTENBERG, 1870, **syn. n.**; *Callicerus fulvicornis* EPPELSHEIM, 1883 = *Callicerus gagliardii* SCHEERPELTZ, 1956, **syn. n.**; *Homalota rigidicornis* ERICHSON, 1839 = *Callicerus mandli* SCHEERPELTZ, 1956, **syn. n.**, = *Callicerus beieri* SCHEERPELTZ, 1959, **syn. n.**; *Homalota gregaria* ERICHSON, 1839 **(nomen protectum)** = *Aleochara caliginosa* STEPHENS, 1832, **syn. n. (nomen oblitum)**; *Atheta montenegrina* BERNHAUER, 1899 = *Callicerus smetanai* SCHEERPELTZ, 1967, **syn. n.** *Atheta toroenensis* BERNHAUER, 1943, a species previously attributed to *Callicerus*, is assigned to the genus *Homoiocalea* BERNHAUER, 1943, **stat. n.** Both the genus and *H. toroenensis* (BERNHAUER), **comb. n.** are redescribed. A neotype is designated for *Callicerus obscurus* GRAVENHORST. Lectotypes are designated for *Calodera atricollis* AUBÉ, *Callicerus muensteri* BERNHAUER, *C. obscurus* var. *pedemontanus* BAUDI, *C. clavatus* ROTTENBERG, *C. sparsicollis* BERNHAUER, *C. fulvicornis* EPPELSHEIM, and *C. kaufmanni* EPPELSHEIM.

Distinguishing characters of all the genus group and species group taxa treated as well as the results of the morphometric analyses are figured. The descriptions are complemented by remarks on intraspecific variation, by comparative notes, and by keys to the species of *Callicerus* and *Pseudosemiris*. The available data on the distribution and bionomics of the species are compiled. Ecological evidence and collection data suggest that species of *Callicerus* and *Pseudosemiris* are univoltine, with reproduction and pre-imaginal development taking place from early spring to early summer, and apparently reproduce and hibernate in an unknown cryptic habitat, which would also explain the fact that records of practically all species are rare to extremely rare. The phenologies of *C. obscurus* and *C. rigidicornis* are figured, and the areas of distribution of the less rare species are mapped.

DOI: 10.21248/contrib.entomol.51.2.247-334

Key words

Coleoptera - Staphylinidae - Aleocharinae - Athetini - *Callicerus* - *Pseudosemiris* - *Saphocallus* - *Homoiocalea* - *Aloconota* - Palaearctic region - Europe - taxonomy - biogeography - ecology - intraspecific variation - life history - new species - new synonymy - new combination - neotype designation - lectotype designation

Zusammenfassung

Die Typen und weiteres Material der Arten der Gattungen *Callicerus* GRAVENHORST, *Pseudosemiris* MACHULKA und *Saphocallus* SHARP werden revidiert. Auf der Grundlage eines morphologischen Vergleichs unter Berücksichtigung der wahrscheinlich nahverwandten Taxa *Aloconota* THOMSON, 1858 und *Disopora* THOMSON, 1859 werden *Callicerus*, *Pseudosemiris* und *Saphocallus* als distinkte Gattungen betrachtet und redeskribiert. 7 valide *Callicerus*-, 7 *Pseudosemiris*-Arten sowie eine Art der Gattung *Saphocallus* werden erkannt und beschrieben: *C. obscurus* GRAVENHORST, *C. muensteri* BERNHAUER, *C. atricollis* (AUBÉ), *C. appenninus* **sp. n.**, *C. sparsicollis* BERNHAUER, *C. fulvicornis* EPPELSHEIM, *C. rigidicornis* (ERICHSON), *P. kaufmanni* (EPPELSHEIM), *P. breiti* SCHEERPELTZ, *P. circassica* FAGEL, *P. fulgida* **sp. n.**, *P. granulosa* FAGEL, *P. stricticornis* FAGEL, *P. zanettii* **sp. n.** und *S. parviceps* SHARP. *P. velox* JABLOKOW-KHNZORIAN wird als species dubia betrachtet. Die folgenden Taxa werden synonymisiert: *Callicerus* GRAVENHORST, 1802 = *Semiris* HEER, 1839, resyn., = *Sphaerotaxus* BERNHAUER, 1915, **syn. n.**; *Callicerus obscurus* GRAVENHORST, 1802 = *Callicerus stolfai* SCHEERPELTZ, 1956, **syn. n.**, = *Callicerus ibericus* FAGEL, 1958, **syn. n.**; *Calodera atricollis* AUBÉ, 1850 = *Callicerus clavatus* ROTTENBERG, 1870, **syn. n.**; *Callicerus fulvicornis* EPPELSHEIM, 1883 = *Callicerus gagliardii* SCHEERPELTZ, 1956, **syn. n.**; *Homalota rigidicornis* ERICHSON, 1839 = *Callicerus mandli* SCHEERPELTZ, 1956, **syn. n.**, = *Callicerus beieri* SCHEERPELTZ, 1959, **syn. n.**; *Homalota gregaria* ERICHSON, 1839 (**nomen protectum**) = *Aleochara caliginosa* STEPHENS, 1832, **syn. n. (nomen oblitum)**; *Atheta montenegrina* BERNHAUER, 1899 = *Callicerus smetanai* SCHEERPELTZ, 1967, **syn. n.** *Atheta toroenensis* BERNHAUER, 1943, die zuvor *Callicerus* zugeordnet worden war, wird in die Gattung *Homoiocalea* BERNHAUER, 1943, **stat. n.** gestellt. Sowohl die Gattung als auch *H. toroenensis* (BERNHAUER), **comb. n.** werden redeskribiert. Für *Callicerus obscurus* GRAVENHORST wird ein Neotypus, für *Calodera atricollis* AUBÉ, *Callicerus muensteri* BERNHAUER, *C. obscurus* var. *pedemontanus* BAUDI, *C. clavatus* ROTTENBERG, *C. sparsicollis* BERNHAUER, *C. fulvicornis* EPPELSHEIM und *C. kaufmanni* EPPELSHEIM werden Lectotypen designiert.

Die Differentialmerkmale aller untersuchter Gattungs- und Artengruppentaxa sowie die Ergebnisse morphometrischer Analysen werden illustriert. Die Diagnosen werden durch Angaben zur intraspezifischen Variabilität und zur Unterscheidung von ähnlichen Arten sowie durch Bestimmungstabellen für die Arten der Gattungen *Callicerus* und *Pseudosemiris* ergänzt. Die verfügbaren Daten zur Verbreitung und Bionomie werden ausgewertet. Die Arten der Gattungen *Callicerus* und *Pseudosemiris* sind danach univoltin; die Fortpflanzungsperiode beginnt im Frühjahr, und die Präimaginalentwicklung ist im Frühsommer abgeschlossen. Reproduktion und Überwinterung finden offenbar in einem unterirdischen, bisher aber unbekannten Habitat statt. Dies würde erklären, warum praktisch alle Arten selten bis extrem selten nachgewiesen wurden. Die Phänologien von *C. obscurus* und *C. rigidicornis* werden durch Diagramme veranschaulicht. Verbreitungskarten illustrieren die Verbreitungsgebiete der weniger seltenen Arten.

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DOI: 10.21248/contrib.entomol.51.2.247-334

1. Introduction and taxonomic history

Callicerus was described by GRAVENHORST (1802) to include the new species *C. obscurus*. Shortly afterwards, however, GRAVENHORST (1806) reconsidered the systematic position of *C. obscurus*, renaming and attributing it to *Aleochara* GRAVENHORST as *A. callicera*. STEPHENS (1832), in contrast, considered *Callicerus* a distinct genus and described another species, *C. spencii*, based on a Kirby manuscript name. CURTIS (1833), like STEPHENS (1832) referring to Kirby´s manuscript name, described the same species again under the same name and added the new taxon *C. hybridus*. Some years later, ERICHSON (1837, 1839) attributed the species previously included in *Callicerus* to *Homalota* MANNERHEIM and synonymized *C. spencii* and *C. hybridus* with *C. obscurus* (as *Homalota obscura*). Based on an examination of the mouthparts and other characters, KRAATZ (1856) reinstated *Callicerus* as a distinct genus including two species, *C. obscurus* and *C. rigidicornis* (ERICHSON, 1839), which had originally been described in *Homalota*, and synonymizing *Semiris* HEER, 1839 with *Callicerus* and *S. fusca* HEER, 1839 with *C. rigidicornis*. Without stating his reasons, THOMSON (1860) referred *Callicerus obscurus* to *Semiris*, thus implicitly synonymizing *Callicerus*, whereas MULSANT & REY (1874) treated *Semiris* as a subgenus of *Callicerus*, separated from *Callicerus* s. str. especially by the different morphology of the antennae, by the absence of an impression on the head, by the different puncturation of the abdomen, and by larger size. GANGLBAUER (1895) adopted this concept, his synopsis including one additional species of *Callicerus* s. str. (*C. atricollis* (AUBÉ, 1850)) with the

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junior synonym *C. obscurus* var. *pedomontanus* BAUDI, 1869), two more species of the subgenus *Semiris* (*C. fulvicornis* EPPELSHEIM, 1883 and *C. kaufmanni* EPPELSHEIM, 1887), and an additional synonym of *C. rigidicornis*: *Calodera unicarinata* FAIRMAIRE & LABOULBÈNE. *Callicerus puberula* CASEY, 1893 from North America was later transferred to the new oxypodine genus *Gennadota* by CASEY (1906), which is now a synonym of *Pyroglossa* BERNHAUER, 1901 (ASSING, 1999).

A third subgenus of *Callicerus*, *Sphaerotaxus*, was established by BERNHAUER (1915) based on the morphology of the antennae and the more strongly dilated third joint of the shorter maxillary palpi of *C. sparsicollis*, a species described in the same paper. Apart from this species and subgenus and another new species described by BERNHAUER (1900), *C.* (*Semiris*) *muensteri*, two new synonymies were the only changes incorporated in the catalogue by BERNHAUER & SCHEERPELTZ (1926): *Aleochara caliginosa* STEPHENS, 1832 and *Callicerus clavatus* ROTTENBERG, 1870 as junior synonyms of *Callicerus obscurus*. The next major change was proposed by MACHULKA (1935), who, based on the different shape of the third joint of the maxillary palpi, established the new genus *Pseudosemiris* for *Callicerus kaufmanni*.

The sole Ethiopian species originally attributed to *Callicerus*, *C.* (*Semiris*) *congoensis*, was described by CAMERON (1950). However, the morphological details indicated in the original description (there is no mention of the mouthparts) as well as biogeographical considerations (all other *Callicerus* are Western Palaearctic) make it appear highly unlikely that this species is correctly placed in the genus.

SCHEERPELTZ (1956) presented a key to the species of *Callicerus*, *Pseudosemiris*, and *Saphocallus* SHARP, 1888, a monotypical Eastern Palaearctic genus he regarded as closely allied to *Callicerus* (see also Scheerpeltz (1929)). In the same paper he described three species of *Callicerus* (*C.* (s. str.) *stolfai*, *C.* (*Semiris*) *gagliardii*, *C.* (*S.*) *mandli*) and one of *Pseudosemiris* (*P. breiti*). Since then, seven more species of *Callicerus* and *Pseudosemiris* have been described: *C.* (s. str.) *ibericus* FAGEL, 1958, *C.* (s. str.) *smetanai* SCHEERPELTZ, 1967, *C.* (*Semiris*) *beieri* SCHEERPELTZ (1959), *P. velox* JABLOKOW-KHNZORIAN, 1960, *P. stricticornis* FAGEL, 1966, *P. granulosus* FAGEL, 1966, and *P. circassicus* FAGEL, 1966. JABLOKOW-KHNZORIAN (1960) established the subgenus *Callicerodes* for *C. velox*, but this taxon was rejected by FAGEL (1966) and implicitly synonymized with *Pseudosemiris*. Based on a study of the mouthparts and other morphological characters, SAWADA (1984) attributed a species from Taiwan originally described as *Atheta toroenensis* by BERNHAUER (1943) to *Callicerus*. No further changes and additions were proposed until LOHSE (1989), apparently based on ZERCHE (unpubl.), again referred *Pseudosemiris* as a subgenus to *Callicerus* without further comment. Thus, disregarding the doubtful Ethiopian *C. congoensis* CAMERON, 13 species of *Callicerus*, 6 of *Pseudosemiris*, and one of *Saphocallus* were recognized before the present revision, all of them either Western Palaearctic (*Callicerus* spp., *Pseudosemiris*) or Eastern Palaearctic (*Saphocallus*, *Callicerus toroenensis*). CAMERON (1925) described *Neocallicerus dammermani* from Indonesia, a species externally somewhat resembling *Callicerus rigidicornis*; however, it lacks the characteristic morphology of the maxillary palpi of *Callicerus*, and a closer phylogenetic relationship to *Callicerus* is unlikely also for biogeographical reasons.

Attempts at identifying Southern European material of *Callicerus* using the key by SCHEERPELTZ (1956) and various original descriptions raised considerable doubts regarding the validity of several species, an observation also shared by various colleagues. This and the fact that the primary sexual characters as well as the phylogenetic affiliations of *Callicerus* and allied taxa had never been thoroughly studied eventually gave rise to the present study.

2. Material, measurements, and abbreviations

Types and additional material from the following institutions and private collections were examined:

BMNH	The Natural History Museum London (M. BRENDELL, S. SHUTE)
CNC	Canadian National Collections of Insects, Arachnids and Nematodes, Ottawa (A. SMETANA)
DEI	Deutsches Entomologisches Institut, Eberswalde (L. ZERCHE)
FIS	Forschungsinstitut Senckenberg, Frankfurt a. M. (A. VESMANIS)
HNHM	Hungarian Natural History Museum, Budapest (O. MERKL)
IRSNB	Institut Royal des Sciences Naturelles de Belgique, Bruxelles (D. DRUGMAND)
ISEA	Institute of Systematics and Evolution of Animals, Krakow (G. PAŚNIK)
MCSNT	Museo Civico di Storia Naturale Trieste (N. BRESSI)
MHNG	Muséum d´Histoire Naturelle, Genève (G. CUCCODORO)
MNHNP	Muséum National d´Histoire Naturelle, Paris (N. BERTI)
MNHUB	Museum für Naturkunde der Humboldt-Universität, Berlin (M. UHLIG)
NHMB	Naturhistorisches Museum Basel (D. BURCKHARDT, E. SPRECHER)
NHMW	Naturhistorisches Museum Wien (H. SCHILLHAMMER)
NME	Naturkundemuseum Erfurt (M. HARTMANN, J. WILLERS)
NMP	Národní Muzeum v Praze (J. JELÍNEK)
TLMFI	Tiroler Landesmuseum Ferdinandeum, Innsbruck (M. KAHLEN)
cApf	private collection W. APFEL, Eisenach
cAss	author´s private collection
cBra	private collection C. BRANDSTETTER, Bürs
cCre	private collection L. CREVECOEUR, Genk
cFel	private collection B. FELDMANN, Münster
cGil	private collection G. GILLERFORS, Varberg
cKap	private collection A. KAPP, Rankweil
cKöh	private collection F. KÖHLER, Bornheim
cMau	private collection C. MAUS, Freiburg
cMey	private collection H. MEYBOHM, Stelle
cNao	private collection S.-I. NAOMI, Chiba (via M. MARUYAMA)
cOwe	private collection J. A. OWEN, Epsom
cPan	private collection W. PANKOW, Dogern
cRen	private collection K. RENNER, Bielefeld
cSch	private collection M. SCHÜLKE, Berlin
cSol	private collection A. SOLODOVNIKOV, St. Petersburg
cTer	private collection H. TERLUTTER, Billerbeck
cVog	private collection J. VOGEL, Görlitz
cWun	private collection P. WUNDERLE, Mönchengladbach
cZan	private collection A. ZANETTI, Verona

In order to assess intraspecific variation, altogether 610 specimens were measured. The measurements are given in mm and abbreviated as follows:

AL: length of antenna
AxL: length of antennomere X
AxiL: length of antennomere XI
HW: head width across (and including) eyes
PW: maximal width of pronotum
PL: length of pronotum along median line
EL: length of elytra from apex of scutellum to elytral hind margin
HTiL: length of metatibia (external face)
HTaL: length of metatarsus (claws not included)
ML: length of median lobe of aedeagus (from base to apex of ventral process)
TL: body length from anterior margin of labrum to hind margin of abdominal segment VIII.

3. Phylogenetics and systematic position of *Callicerus* GRAVENHORST and *Pseudosemiris* MACHULKA

Both *Callicerus* and *Pseudosemiris* belong to the Athetini and share various characters and character states with species of *Aloconota* THOMSON, 1858 and *Disopora* THOMSON, 1859, the latter of which is treated as a distinct genus by some authors and as a subgenus of *Aloconota* by others. In order to clarify the systematic status of *Callicerus* and *Pseudosemiris*, a comparative morphological study was carried out, including especially *Aloconota gregaria* (ERICHSON), *A. sulcifrons* (STEPHENS), and *Disopora languida* (ERICHSON).

It should be noted beforehand that it is not the object here to present a thorough phylogenetic analysis of *Callicerus* and allied genera, because this can be achieved only through comprehensive revisions of many more athetine taxa which have not yet been thoroughly examined. It is for this reason that the polarity of the characters evaluated below is partly doubtful.

The following similarities were found in all the taxa studied: forebody with distinctly isodiametric microsculpture, microsculpture of the abdomen usually composed of isodiametric or short transverse meshes, forebody and abdomen with relatively fine puncturation, eyes relatively large, ventral carina of postgenae more or less reduced, shape of labrum, labrum anteriorly in the middle with ± campanulate setae and/or pseudopores, ligula membranous and ± bifid, pronotum relatively slender, with the hypomera visible in lateral view, pubescence of pronotal midline directed caudad (though this character varies among species of *Aloconota* s. str.), mesosternum without median carina, mesocoxal cavities carinate, first metatarsomere longer than the second, but not longer than the combined length of the second and third metatarsomere, sternum VIII with sexual dimorphism, ♂ tergum VIII at posterior margin with granula and/or processes (which are usually rudimentary or completely reduced in *Callicerus* and *Aloconota gregaria*), the shape of the median lobe of the aedeagus, internal sac of aedeagus with flagellum of variable length, and the remarkably similar morphology of the spermatheca (large capsule, short duct, capsule clearly separated from duct, whole spermatheca ± distinctly sclerotized).

Several characters are shared by *Callicerus* and *Pseudosemiris*, but some of them may well represent homoplasies or plesiomorphies (the respective characters states in the *Aloconota* species given in brackets): head with coarse microsculpture and usually at least weakly granulose puncturation (microsculpture weaker, puncturation fine and not granulose), head posteriorly ± abruptly sloping (more gradually sloping), head ± flattened or impressed (weakly convex, sometimes with central impression), dorsal pubescence of head predominantly directed medio-caudad (medio-anterad or mediad), antennae long, massive and with a distinctly coniform antennomere III (antennae more slender, antennomere not distinctly coniform), labrum with numerous long setae as well as lateral and anterior short setae in characteristic arrangement (labrum with fewer long and short setae, anteriorly in the middle with two short stout setae), fourth joint of the maxillary palpi short and basally dilated (fourth joint very long, parallel, and basally at most only weakly dilated), pronotum centrally ± impressed, sulcate, or depressed (not flattened or impressed), sternum VIII distinctly transverse (weakly transverse), internal sac of aedeagus with short flagellum (internal sac with moderately to very long flagellum).

The following character states are shared by either *Callicerus* or *Pseudosemiris* and by at least one of the *Aloconota* species examined: postgenae not carinate (*Callicerus*, *A. sulcifrons*), ♂ tergum VII unmodified (*Callicerus*, *A. gregaria*; in one *Callicerus* species, however,

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rudiments of a granulum may be present), ♂ tergum VII with granulum (*Pseudosemiris*, *A. sulcifrons*, *A. languida*; granulum sometimes reduced in *Pseudosemiris*), tergum VIII with weak or without sexual dimorphism (*Callicerus*, *A. gregaria*), ♂ tergum VIII dentate posteriorly (*Pseudosemiris*, *A. sulcifrons*, *A. languida*), sternum VIII with weaker (*Callicerus*, *A. gregaria*) or with more distinct sexual dimorphism (*Pseudosemiris*, *A. sulcifrons*, *A. languida*), not strictly ripicolous (*Callicerus*, *A. gregaria*; probably also *Pseudosemiris*, but hardly anything is known about the ecology of the species of this taxon).
Both *Callicerus* and *Pseudosemiris* are characterized by some obvious autapomorphies, the former by a posteriorly constricted head, a strongly dilated third joint of the maxillary palpi, and a sparsely pubescent tergum X, and the latter by a distinctly elongated third joint of the maxillary palpi, a broadly coniform apical lobe of the paramere with two long setae, and by a proximally obliquely truncate spermathecal duct.

The character analysis above suggests the following conclusions:

1. Weakly pronounced or absent ♂ secondary sexual characters on terga VII and VIII are apparently the result of a secondary reduction, since rudiments of such characters may occur in part of the specimens of one species or in part of the species of a genus group taxon and, moreover, because they are subject to intraspecific and intra(sub-)generic variation. Consequently, these reductions are autapomorphies of single species or synapomorphies of species groups within a genus group taxon.
2. The hypothesis that *Callicerus*, *Pseudosemiris*, *Aloconota*, and *Disopora* are phylogenetically closely affiliated is supported by the (probably synapomorphic) ♂ secondary sexual characters on the abdominal terga VII and VIII, the morphology of the median lobe of the aedeagus, and particularly the morphology of the spermatheca (see above). In addition, these taxa share many similarities in the mouthparts and in external characters of uncertain polarity.
3. There is at least some doubt that *Pseudosemiris* and *Callicerus* together should form a monophyletic group, since the possibility that the character states shared by both taxa are homoplastic or plesiomorphic cannot be ruled out, because these similarities are in conflict with other characters shared by either *Pseudosemiris* or *Callicerus* with *Aloconota*, and because the phylogenetic affiliations of many athetine genera, especially from the Eastern Palaearctic region, are unknown. For additional remarks see also section 7.1. Therefore, *Callicerus* and *Pseudosemiris* are here treated as distinct genera rather than subgenera of *Callicerus*.

The Western Palaearctic genus group taxa allied to *Callicerus* and treated above are distinguished as follows:

1. Third joint of maxillary palpus distinctly dilated. Head with posterior constriction. ♂ tergum VII usually unmodified. .... *Callicerus* GRAVENHORST
\- Third joint of maxillary palpus slender. Head without posterior constriction. ♂ tergum VII in most species with granulum. 2

2. Third joint of maxillary palpus strongly elongated, more than three times as long as wide; fourth joint of maxillary palpus dilated at base. Antenna massive, antennomere III distinctly coniform. Internal sac of aedeagus with short flagellum. Proximal end of spermathecal duct obliquely truncate; proximal opening subapi-

cal, forming a well-delimited short tube on the side of the proximal part of duct. .... *Pseudosemiris* MACHULKA

- Third joint of maxillary palpus slender, but not strongly elongated, less than three times as long as wide; fourth joint of maxillary palpus at most weakly dilated at base. Antenna slender, antennomere III not distinctly coniform. Internal sac of aedeagus with longer flagellum. Spermathecal duct proximally of different morphology. 3

3. Abdominal segments III-VI with fine and moderately dense puncturation, interstices distinctly wider than diameter of punctures; marginal setae of pronotum shorter; postgenae behind eyes in dorsal view usually strongly convex. .... *Aloconota* THOMSON s. str.

- Abdominal segments III-VI with extremely fine and very dense puncturation; marginal setae of pronotum long; postgenae weakly convex, smoothly curving towards neck, posterior angles of head obsolete. .... *Disopora* THOMSON

4. The genus *Callicerus* GRAVENHORST, 1802

Callicerus GRAVENHORST, 1802: 65f.
Semiris HEER, 1839: 342f., **resyn.**
Sphaerotaxus BERNHAUER, 1915: 77f., **syn. n.**

4.1. Redescription

Species of small to intermediate size. For an illustration of the facies of the largest *Callicerus* species see Fig. 1. Microsculpture of forebody distinctly isodiametric, that of abdomen with isodiametric to distinctly transverse meshes.

Puncturation of forebody usually at least weakly granulose, that of abdomen fine, not granulose.

Head with posterior constriction (0.6-0.7x width of head); dorsal surface posteriorly ± abruptly sloping downwards towards constriction; vertex ± flattened or impressed; pubescence of vertex predominantly directed diagonally medio-caudad; eyes relatively large and distinctly bulging; postgenae not carinate, in dorsal view moderately to distinctly convex; gular sutures widely separated.

Antennae long and stout, with or without sexual dimorphism; antennomere III coniform.

Maxillary palpi with third joint distinctly dilated; fourth joint short, coniform, and basally dilated (Figs. 2c, 12a, 14b); ligula bifid, apical joint of labial palpi slender (Figs. 2a, 12b, 14c); mandibles apically acute, right mandible with weak tooth, not or only indistinctly serrate in dorsal molar region (Figs. 2d, 14d); labrum with numerous long and several short marginal setae (Figs. 2b, 14a).

Pronotum wider than head, but mostly relatively slender; posterior angles obtuse, but usually distinct; maximal width in anterior half; often centrally impressed or sulcate in posterior half; pubescence without sexual dimorphism, directed caudad in midline, ± diagonally latero-caudad to almost caudad in lateral areas, and transversely laterad near posterior margin; hypomera visible in lateral view.

Elytra in most species relatively long, wider than pronotum; hind wings usually fully developed, in one species of reduced length. Mesosternum without median carina, mesosternal process long and acute, mesocoxal cavities delimited from metasternum by carina. Legs long and slender; first metatarsomere usually at least slightly longer than second.

Abdomen with fine puncturation; terga III-V with deep, tergum VI with shallow anterior impression; tergum VIII posteriorly convex, with ± long and very thin setae; tergum and sternum VIII distinctly transverse; tergum X with relatively sparse pubescence (Fig. 2n).

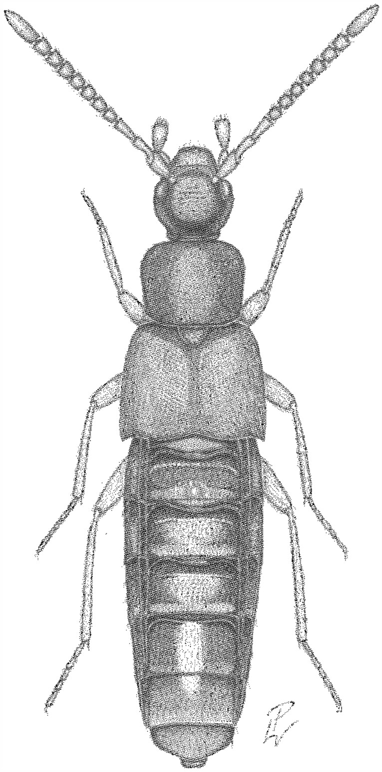

Fig. 1: *Callicerus rigidicornis* (ERICHSON). Facies of a ♀ from Greece; length of specimen: 5.5 mm.

♂: tergum VIII usually unmodified, rarely with pair of small granula or with indistinct projections; sternum VIII without micropubescence, hind margin strongly convex; aedeagus without conspicuous modifications, of the usual athetine morphology, internal structures as in Figs. 2g-h, 7c-d, 8c, 14k-l, flagellum very short; apical lobe of paramere moderately oblong, with one long and 3 moderately or very short setae (e. g. Figs. 2i, 14m).

♀: sternum VIII with weakly convex hind margin, posteriorly with row of moderately stout setae and with micropubescence; spermatheca rather strongly sclerotized, capsule ± oval, distinctly delimited from duct, the latter relatively short and wide, proximally often with weak torsion; capsule in lateral view with weakly pronounced cuticular intrusion (e. g. 2j-m, 14n-q).

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4.2. The subgenera of *Callicerus*

As outlined in section 1, the subgeneric concept of *Callicerus* is based mainly on differences in the relative length of antennomere X, which distinguishes *Callicerus*, *Semiris*, and *Sphaerotaxus*, as well as in the shape of the third joint of the maxillary palpi, which separates *Sphaerotaxus* from the other subgenera (BERNHAUER, 1915; GANGLBAUER, 1895; MULSANT & REY, 1874; SCHEERPELTZ, 1956). The long antennomere X and the pronounced sexual dimorphism of the antennae are clearly synapomorphies shared by *C. obscurus* and *C. atricollis*. A sexual dimorphism of the antennae is present, though somewhat less pronounced, also in *C. muensteri*, which has previously been attributed to *Semiris* based on the relatively short antennomere X, but which is much more closely related to *C. obscurus* and *C. atricollis*, the three species together doubtlessly forming a monophylum within *Callicerus*. The more strongly dilated third joint of the maxillary palpi is indeed an (aut-)apomorphy of *C. sparsicollis*, which shares a similar and probably apomorphic antennal morphology with *C. appenninus*. Both species are evidently more closely related to *C. obscurus* and allied species than to *C. rigidicornis*. The latter species, the type species of *Semiris*, is characterized by some autapomorphies, especially the modifications of the ♂ tergum III, but there are no obvious apomorphic characters linking this species to *C. fulvicornis*. Consequently, if the subgenus *Semiris* were retained, it would be constituted by plesiomorphic character states (if both *C. rigidicornis* and *C. fulvicornis* were included), or a new subgenus would have to be erected for *C. fulvicornis*, which is characterized at least by one autapomorphic character, the long ventral process of the aedeagus.

In view of the phylogenetic conclusions, of the fact that the traditional subgeneric concept is based on characters which are subject considerable intra(sub-)generic variation and consequently of little practical significance, as well as of the standards generally applied to characters constituting and distinguishing aleocharine subgenera, the description of a new subgenus for *C. fulvicornis* is refrained from, and *Semiris* HEER and *Sphaerotaxus* BERNHAUER are here placed in the synonymy of *Callicerus*.

4.3. Distribution and bionomics

The distribution of the genus is apparently confined to the Western Palaearctic region. The highest diversity was observed in Italy and southeastern Europe, only two species occur north of the Alps.

Relatively little is known about the bionomics of *Callicerus* species. They inhabit various terrestrial habitats, both in open biotopes such as arable land, grassland, banks of lakes and rivers, and in forests at lower or intermediate elevations. Apparently, all species are univoltine and reproduce in spring. Teneral adults have been observed in late spring and early summer. Autumn and winter records of adult beetles are absent or very rare, which suggests a cryptic, subterranean hibernation habitat. Only rarely, have *Callicerus* species been collected in larger numbers. Most records are based on single specimens, so that it may be concluded that the epigeic density is low and that epigeic activity only occurs during the reproduction (mating, search for suitable habitats for oviposition) and during the dispersal period. On a few occasions, *C. obscurus* has been collected in large numbers by sweeping grass, suggesting that this species disperses by flight (HORION, 1967). For more details, the species sections are referred to.

DOI: 10.21248/contrib.entomol.51.2.247-334

4.4. The species of *Callicerus*

4.4.1. *Callicerus obscurus* GRAVENHORST, 1802

Figs. 2a-u, 3-6, 9-10, Map 1

Callicerus obscurus GRAVENHORST, 1802: 66.
Aleochara callicera GRAVENHORST, 1806: 153; objective synonym.
Homalota callicera: ERICHSON (1837, 1839).
Callicerus spencii STEPHENS, 1832: 165; synonymy by ERICHSON (1937), here confirmed.
Callicerus spencii CURTIS, 1833: 443; primary homonym; synonymy confirmed.
Callicerus hybridus CURTIS, 1833: 443; synonymy by ERICHSON (1837), here confirmed.
Semiris obscura: THOMSON (1860).
Callicerus (s. str.) *obscurus*: MULSANT & REY (1874).
Callicerus (s. str.) *obscurus*: SCHEERPELTZ (1956).
Callicerus stolfai SCHEERPELTZ, 1956: 35, 40ff., **syn. n.**
Callicerus (*Semiris*) *ibericus* FAGEL, 1958: 242f., **syn. n.**

Types examined

C. obscurus GRAVENHORST: Neotype ♂ [remounted], present designation: 5356 / callicera Gr.* Sch. / Hist.-Coll. (Coleoptera) Nr. 5356 (1. Ex.) Homalota [sic] callicera Grvh. Schüpp., Zool. Mus. Berlin / Neotypus ♂ *Callicerus obscurus* Gravenhorst, desig. V. Assing 2000 (MNHUB).

C. stolfai SCHEERPELTZ: Holotype ♀: Firenze, Palude Brozei, Stolfa 1931 / Nidi talpa / Callicerus sp. n. / TYPUS Callicerus (Callicerus) Stolfai O. Scheerpeltz / Callicerus (Subg. Callicerus) Stolfai nov. spec. / Callicerus obscurus Gravenhorst ♀ det. V. Assing 2000 (MCSNT).

C. ibericus FAGEL: Holotype ♀: Espagne: Castille, Puerto de Bejar, 800-1400m, V-VI.1957 G. Fagel / G. Fagel det., ibericus n. sp. / Type / Callicerus obscurus Gravenhorst ♀, det. V. Assing 2000 (IRSNB). Paratype ♀: same labels as holotype, but "Paratype" (IRSNB).

Additional material examined

Sweden: Skåne: 1♂, NE Angelholm, Tåstarp, 23.IV.1999, leg. Gillerfors (cGil); 1♂, Håkanryd, 30.III.1974, leg. Gillerfors (cGil); 1♂, Vittskövle, 19.III.1977, leg. Gillerfors (cGil). **Halland:** 1♂, Lindberg, Himleån, 16.V.1986, leg. Gillerfors (cGil); 1♀, same data, but 10.III.1975; 1♀, same data, but 13.IV.1979; 2♂♂, 1♀, ca. 20 km N Falkenberg, Åtrafors, 7.IV. 1976, leg. Gillerfors (cGil); 1♂, ca. 5 km N Falkenberg, Lindhult, 30.III.1977, leg. Gillerfors (cGil); 1♀, Varberg, 30.III.1998, leg. Gillerfors (cGil); 1♀, Getinge, 15.IV.1977, leg. Gillerfors (cGil). **Västergötland:** 2♂♂, N Göteborg, Surte, 26.III.1977, leg. Gillerfors (cGil); 2♀♀, Göteborg, 1.IV.1978, leg. Gillerfors (cGil).

British Isles: England: 1♀, Hampshire, Newbury, III.1908 (MHNG); 8♂♂, locality not specified, coll. Stephens (BMNH).

Spain: Castilla-La Mancha: 1♂, 1♀, Albacete, Villaverde, 13.IV.1959, leg. Besuchet (MHNG). **Cataluña:** 1♂, Lleida, Les, 15.V.1924, leg. Léon-Hilaire (NHMB). **Aragón:** 1♀, locality not specified, leg. Reitter (NHMW). **Madrid:** 1♂, Madrid, leg. Varendorff (NHMW). **Andalucia:** 2♂♂, 1♀, Sierra Nevada, above Capileira, 1600m, bank of stream, 22.III.1994, leg. Assing (cAss); 1♂, same data, leg. Wunderle (cWun).

France: Hautes-Pyrénées: 1♂, 1♀, locality not specified, leg. Pandellé (NHMW). **Île-de-France:** 1♂, Paris (DEI). **Normandie:** 1♀, Calvados, Fauvel (FIS). **Picardie:** 1♂, Oise, Laigneville, 17.IV.1935, leg. Méquignon (MHNG); 1♂, Laigneville, VI.1931, leg. Méquignon (MHNG). **Centre:** 1♂, 1♀, Tours, inundation, 4.III.1906, leg. Mequignon (MHNG); 1♂, Perrusson (I. L.), leg. Méquignon (MHNG). **Haute-Savoie:** 1♂, La Tour, 27.III.1962, leg. Comellini (MHNG); 1♂, Saxel, 10.IV.1960 (MHNG). **Rhône-Alpes:** 1♂, 1♀, Lyon, leg. Guillebeau (NHMW). **Provence:** 2♀♀, 2 ex., Nice, 1882, leg. Bedel (MHNG); 1♂, Nice, Madeleine, I.1960 (MHNG); 1♂, Alpes-Maritimes, Loup inundation, II.1957 (MHNG); 2♂♂, Alpes-Maritimes, Menton (MNHUB); 1♂, Var, Argens inundation, XII.1960 (MHNG); 1♂, Bouches-du-Rhône, leg. Perrot (MHNG); 1♀, Camargue, leg. Puel (NHMB); 1♀, Camargue, Étang de Vaccarés, 28.III.1964 (NHMW). **Locality ambiguous or not identified:** 1♂, Cussac, 10.IV.1934, leg. Giraud (MHNG); 1♀, Bontaut (?), 10.III.1943 (MHNG).

Belgium: 1♂, Oost-Vlanderen, Cloître, 28.III.1936 (IRSNB); 1♂, 1♀, Flämisch-Brabant, Wemmel,

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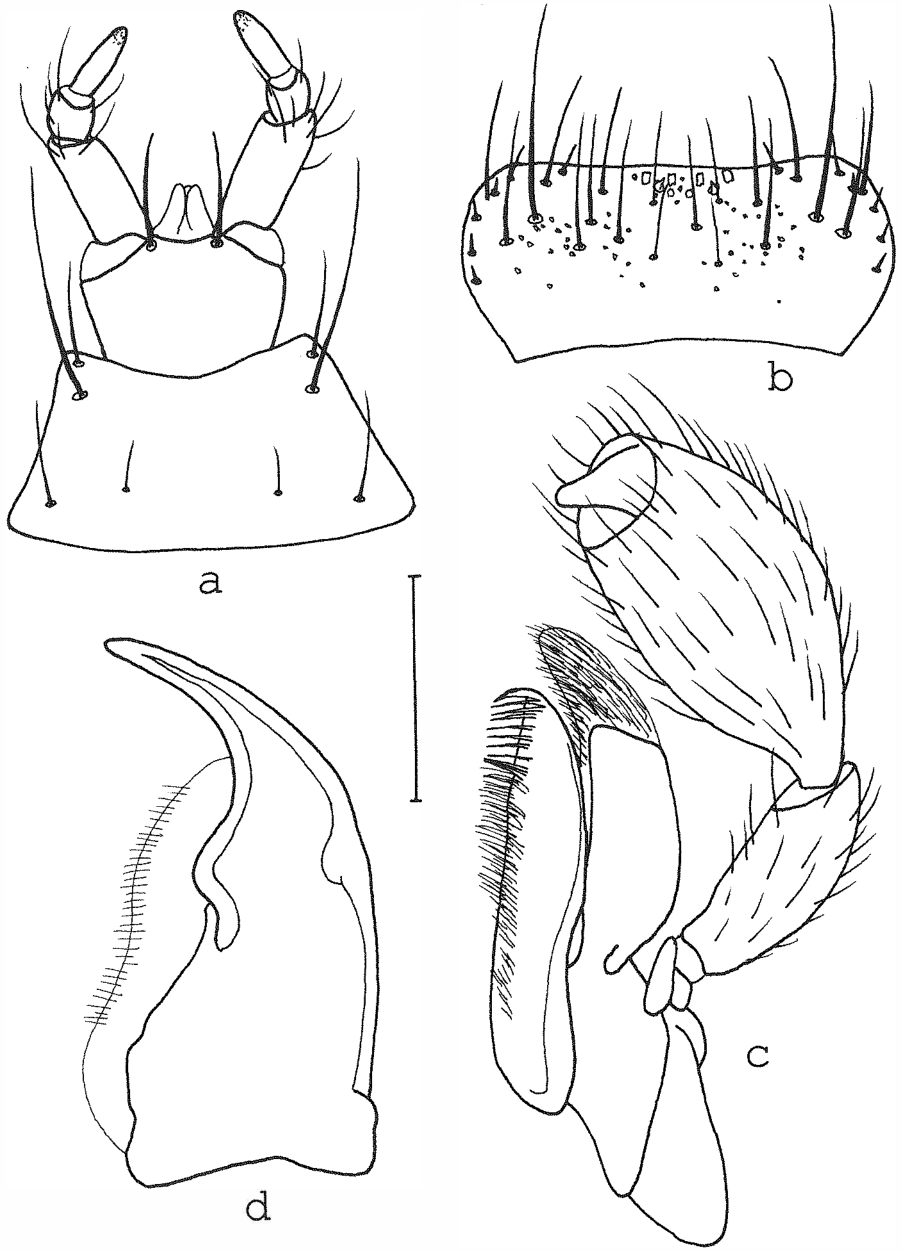

Figs. 2a - d: *Callicerus obscurus* GRAVENHORST. Labium (**a**); labrum (**b**); maxilla (**c**); right mandible (**d**); Scale: a - d: 0.1 mm.

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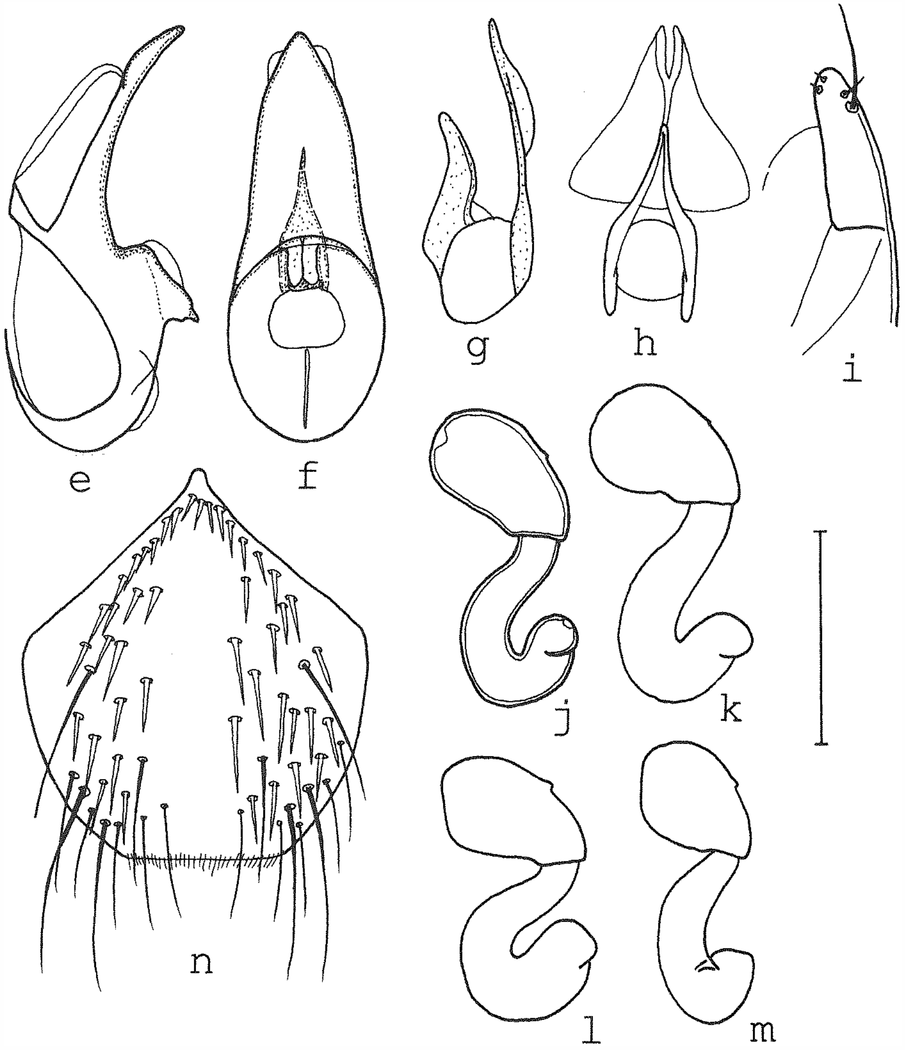
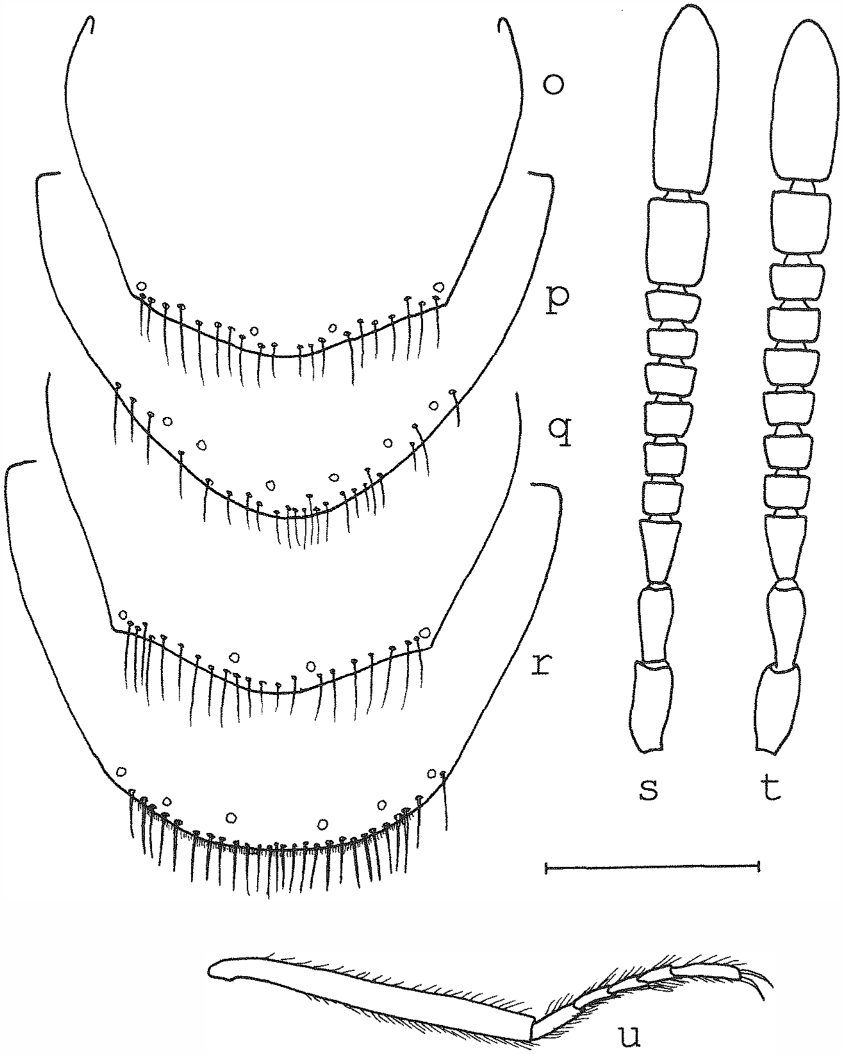


Figs. 2e - n: *Callicerus obscurus* GRAVENHORST. Median lobe of aedeagus in lateral (**e**) and in ventral view (**f**); internal structures of aedeagus in lateral (**g**) and in ventral view (**h**); apical lobe of paramere (**i**); spermathecae of ♀♀ from Germany (**j, k**), Italy (**l**), and southern Spain (**m**); tergum X (**n**); Scale: g - i, n: 0.1 mm; e - f, j - m: 0.2 mm.

9.&19.IV.1945, leg. Fagel (IRSNB); 1♂, Flämisch-Brabant, Groenendaal, 25.III. 1957 (IRSNB); 1♂, Namur, Anseremme, Neffe, 30.V.1946, leg. Fagel (IRSNB); 1♀, Luxembourg, Gênes (NHMB).
Germany: Schleswig-Holstein: 2♂♂, 1♀, Lauenburg, 3.IV.1988, leg. Wunderle (cWun); 1♂, 1♀, Eutin, 20.&21.V.1917, leg. Künnemann (DEI); 3♂♂, Eutin, Beutinerholz, 2.IV.1921, leg. Künnemann (DEI); 2♂♂, Kiel-Wik, 20.IV.1946, leg. Tischler; 3♂♂, Oldesloe, Treuholz/ Barnitz, 26.IV.1987, leg. Meybohm (cMey); 2♂♂, same data, but 6.III.2000 (cMey); 1♂, Ratzeburg, Büchen Dorf, 10.V.1988, leg. Meybohm (cMey); 2♂♂, Itzehoe, Breitenburg, chalk pit, 2.V.1997, leg. Meybohm (cMey). **Hamburg:** 1♂, Rönneburg, 22.III.1960, leg. Meybohm (cMey); 1♂, same data but 19.III.1961; 1♀, same data, but 1.III.1962; 1♂, same data, but 7.V. 1963; 1♂, Hamburg (NHMW); 2♂♂, 1♀, Wilhelmsburg, 27.III.1976, leg. Koltze (DEI);

2♂♂, 1♀, Bergedorf, 11.IV.95 (DEI). **Nordrhein-Westfalen:** 1♂, Brühl near Köln, Staatsforst Ville, car-net, 6.III.1989 (cWun); 1♂, same locality, 30.III.1987, leg. Köhler (cKöh); 1♂, 1♀, same locality, 7.&31.III.1989, leg. Köhler (cKöh); 1♀, Brühl, NWZ Altwald Ville, 19.V.1993, leg. Köhler (cKöh); 1♀, Ville, Swister Bruch, car-net, 7.IV.1989, leg. Köhler (cWun); 1♀, Kölner Bucht, Chorbusch, 10.III.1989, leg. Köhler (cKöh); 1♀, Niederkassel, Rheinaue Rheidt, 24.I.1995, leg. Köhler (cKöh); 1♂, 1♀, Wesseling, Rheinaue Urfeld, 30.I.1995, leg. Köhler (cKöh); 1♀, Worringen, 2.IV.1986, leg. Koch (cKöh); 5♀♀, Kalkar, Kiesgrube Wissel, 20.IV.1991, leg. Köhler (cKöh); 1♀, Wisseler Dünen, 20.IV.1991, leg. Wunderle (cWun); 1♂, Bonn-Beuel, Siegaue, 26.I.1989, leg. Siede (cWun); 1♂, same data, but 26.III.1989 (cWun); 1♂, Wup-



Figs. 2o - u: *Callicerus obscurus* GRAVENHORST. Outlines of ♂ tergum VIII (**o**), ♂ sternum VIII (**p**), ♀ tergum VIII (**q**), and ♀ sternum VIII (**r**); ♂ antenna (**s**); ♀ antenna (**t**); metatibia and metatarsus (**u**). Scale: o - r: 0.2 mm; s - u: 0.4 mm.

pertal, Elberfeld, leg. Cornelius (DEI); 1♂, Elberfeld, leg. Hagens (DEI); 1♂, Elberfeld (FIS); 1♂, Düsseldorf, Mönchenwerth, 29.I.1939, leg. Ermisch (MNHUB); 1♂, Düsseldorf (DEI); 1♀, Krefeld, leg. Mink (DEI); 1♀, Menden, Volkringhausen, 29.IV.1995, leg. Feldmann (cFel); 1♀, Münster, Gittrup, 12.V.1990, leg. Terlutter (cTer); 1♀, Kreis Unna, Geisecke, pitfall, 12.-26.VI.1996, leg. Flake (cFel); 1♂, Barmen, leg. Fischer (MNHUB); 1♂, Neviges (NHMW); 1♂, "Westphalen" (MNHUB). **Rheinland-Pfalz:** 1♂, Nahetal, Heinzenberg, 23.IV.1987, leg. Siede (cWun); 1♂, Nahetal, Schloßböckelheim, 28.III.1989, leg. Wunderle (cWun); 2♀♀, Schmalfelderhof, 22.V.1907, leg. Schaaff (FIS). **Baden-Württemberg:** 1♂, Karlsruhe, Durlach (MHNG); 1♂, Freiburg/Breisg., Tniberg, 250m, 2.IV.1985, leg. Pankow (cPan); 1♂, Öhringen, 21.IV.1985, leg. Pankow (cPan); 1♂, same data, but 22.IV. 1985; 1♂, Ulm (NMP); 3♀♀, "Wimpfn." (FIS). **Niedersachsen:** 1♀, Osnabrück, Bad Laer, 7.VI.1981, leg. Renner (cRen); 1♀, W Hannover, Bad Nenndorf, bank of stream, 11.III.1989, leg. Assing (cAss); 1♂, SW Hannover, Düt near Hameln, 1.V.1989, leg. Assing (cAss); 1♂, SW Hannover, Großenwieden near Rinteln, arable land, pitfall trap, 18.-27.IV.1987, leg. Sprick (cAss); 2♂♂, same data, but 6.-13.VII.1987; 2♀♀ [1♀ teneral], same data, but 10.-14.VII.1987; 2♂♂, same data, but 14.-28.III.1988; 1♂, 2♀♀, SW Hannover, Ahnsen near Bückeburg, arable land, pitfall trap, 10.-18.IV.1987, leg. Sprick (cAss); 1♂, same data, but 18.-27.IV.; 1♀, same data, but 27.IV.-4.V.; 2 ex., same data, but 4.-11.V.; 1♀, same data, but 18.-25.V.; 1♀, same data, but 25.V.-1.VI.; 1♀ [teneral], same data, but 6.-13.VII.; 1♀, S Hannover, Alfeld/L., Ortsberg, pitfall trap, IV.1985, leg. Assing (cAss); 1♀, same data, but V.1985; 1♀, same data, but V.1986; 1♀, same data, but VII.1986; 2♀♀, same data, but IV.1987; 1♀, Alfeld/L., Wernershöhe, arable land, pitfall trap, III.1998, leg. Schmidt & Sprick (cAss); 1♀, same data, but V.1998; 1♀, S Hannover, Steinberg near Hildesheim, pitfall trap, III.1997, leg. Schmidt & Sprick (cAss); 3♀♀, same data, but IV.1997; 6♀♀, same data, but 15.V.1997; 1♀, Göttingen, 3.IV.1970, leg. Renner (cRen); 1♂, 5♀♀, NW Hannover, Neustadt/Rbg., Himmelreich, mixed forest, window trap, 18.III.1990, leg. Schmidt (cAss); 1♂, 2♀♀, same data, but 24.III.; 1♀, same data, but 8.IV.; 11 ex., N Hannover, Langenhagen, 1991, leg. Sprick (cAss); 1♂, Hannover, Eilenriede, mixed forest, sifted leaf litter, 24.II.1991, leg. Assing (cAss); 1♂, Hannover, Herrenhausen, Leine inundation, 16.III.1991, leg. Sprick (cAss); 8♀♀, Hannover, Herrenhausen, pitfall trap, 29.V.1992, leg. Sprick (cAss); 1♂, Hannover, Stöcken, bank of Leine river, 14.III.1993, leg. Assing (cAss); 1♀, Hannover, Stöcken, fallow, pitfall trap, 16.V.1986, leg. Assing (cAss); 5♀♀, same data, but 31.V.; 4♀♀, same data, but 30.VI.; 1♀, same data, but 15.VII.; 1♀, Hannover, Ahlem, fallow, pitfall trap, 21.IV.1992, leg. Sprick (cAss); 1♂ [teneral], Braunschweig, Wendhausen, arable land, pitfall trap, 31.V.1989, leg. Heimbach (cAss); 1♂, Hötzum near Braunschweig, arable land, pitfall trap, 15.V.1988 (cAss); 2♂♂, Braunschweig, 8.V.1893 (MNHUB); 2♂♂, Dannenberg, Höbeck, 1.V.1987, leg. Meybohm (cMey); 1♂, Helmstedt, 24.III.1911, leg. Ihssen (MNHUB). **Hessen:** 1♀, Wiesbaden, grassland, V.1985, leg. Steinmetz (cWun); 1♀, Marburg, Cappel, 1.I.1987, leg. Wunderle (cWun); 1♂, Marburg, Cappel, III.1987, leg. Wunderle (cWun); 1♀, Marburg, Cölbe, debris on bank of Lahn river, 26.III.1988, leg. Wunderle (cWun); 1♂, Hochheim/M., II.1990, leg. Hetzel (cFel); 1♂, 1♀, Höchst (Main), Niddawiesen, 25.I.1939, leg. Stock (FIS); 1♂, W Riedstadt, Rheininsel Kühkopf, 15.II.1958, leg. Vogt (FIS). **Bayern:** 1♂, München, 22.X. 1907, leg. Ihssen (MNHUB); 1 ex., München (NHMW); 1♂, München, Moosschwaigl, 1.V. 1955 (FIS); 1♀, Vilshofen, 5.V.1929, leg. Stöcklein (NHMB); 1♂, Pfarrkirchen, leg. Stöcklein (NHMB). **Mecklenburg-Vorpommern:** 1♀, Ahlbeck near Eggesin, window trap, 28.III.-18.IV.1982, leg. Apel (DEI); 1♂, Ludwigslust, 3.V.1978, leg. Dieckmann (cVog); 1♀, Tessin near Rostock, beech forest, 21.V.1982 (DEI); 1♂, Rügen, Neureddevitz, 9.IV.1974 (cVog). **Sachsen-Anhalt:** 1♂, Thale/Harz, 14.V.1950, leg. Heidenreich (DEI); 2♀♀, Thale, 5.V.1940, leg. Ihssen (MNHUB); 1♀, same data, but 30.IX.1941; 1♂, Schönebeck a. E., 9.IV.1920 (DEI); 1♂, Wallendorf near Merseburg, swept from *Alliaria officinalis*, 23.III.1957, leg. Dieckmann (DEI); 1♀, Rötel near Naumburg, 5.IV.1926, leg. Maertens (MNHUB); 1♂, Lieskau near Halle, 14.IV.1983, leg. Bliss (cVog); 2♂♂, Aschersleben, NSG "Hakel", 28.IV.1979, leg. Stubbe (cVog); 1♀, Landkreis Wittenberg, Gallin, Elbe inundation, 12.III.2000, leg. Schülke (cSch); 1♂, 1♀, Naumburg, leg. Maertens (NHMW). **Berlin/ Brandenburg:** 1♀, Rietzer See near Brandenburg, flood debris, 18.III.1979, leg. Uhlig (DEI); 16♂♂, Luckenwalde, Lindenberg, V.1930, leg. Delahon (DEI, FIS); 27♂♂, same data, but V.1928 (FIS); 1♂, same data, but IV.1928 (FIS); 10♂♂, same data, but IV.1930 (FIS); 3♂♂, same data, but IV.1931 (FIS); 1♂, same data, but IV.1932 (MNHUB); 4♂♂, same data, but IV.1930 (FIS); 1♂, same data, but IV.1920 (MNHUB); 1♂, same data, but IV.1922 (MNHUB); 1♂, same data, but V.1917 (MNHUB); 1♂, same data, but VIII.1928 (SMTD); 1♂, same data, but IV.1926 (FIS); 16♂♂, Luckenwalde, coll. Neresheimer (DEI); 1♂, Luckenwalde, VI.1906, leg. Delahon (MNHUB); 1♂, IV.1921, leg. Delahon (FIS); 2♂♂, Rheinsberg, V.1916, leg. Delahon (MNHUB); 1♂, Mittenwalde, coll. Neresheimer (DEI); 1♂, Eberswalde, NSG Stolzenhagen, 25.IV.1987, leg. Zerche (DEI); 5♂♂, Frankfurt/O., leg. Schukatschek (MHNG, cAss); 1♂, Chorin, 5.V.1923 (MNHUB); 1♂, Chorin, 9.V.1917 (MNHUB); 1♂, Chorin (MNHUB); 1♀, Charlottenburg, Lietzen See, leg. Deppe (MNHUB); 2♀♀, Berlin, Jungfernheide (MNHUB); 1♀, Berlin-Mahlsdorf, pitfall, 28.IV.-7.V.1992, leg. Plötner & Uhlig (MNHUB); 2♀♀, same data, but 23.V.-

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5.VI.1992; 1♀, Berlin, 26.V.1904 (MNHUB); 1♂, Berlin (MNHUB); 1♂, Berlin-Marzahn, Hellerndorfer Berg, 25.IV.1987, leg. Arnold (cSch); 1♂, "Berolin" (DEI). **Thüringen:** 2♂♂, Erfurt, Stedtener Wald, meadow, pitfall, 3.IV.1998, leg. Kopetz (NME); 1♀, Badra, Badraer Lehde, 14.IV.1998, leg. Weipert (NME); 1♀, same data, but 31.III.1998; 1♀, Merkers, bank of Werra river, 1.VII.1998, leg. Sparmberg (NME); 1♀, Menteroda, Schacht Pöthen, pitfall, 6.VI.1996, leg. Sparmberg (NME); 1♂, Erfurt, Marbach, Hungerbachtal, pitfall, 4.V.1997, leg. Kopetz (NME); 1♂, Erfurt, Möbisburg, Wiesengrund, 28.III.1992, leg. Kopetz (NME); 1♀, Gebesee, Unstrut, pitfall, 30.VI.1989, leg. Sparmberg (NME); 1♂, Bindersleben, pitfall, 4.V.1993, leg. Kopetz (NME); 6♂♂, same data, but 16.IV.1993; 1♂, S Leipzig, Haselbach, 6.IV.1913, leg. Linke (SMTD); 1♂, Haina near Gotha, 1.V.1996, leg. Bellstedt (cVog); 2♂♂, "Thuringia" (MNHUB); 3♂♂, 1 ex., "Thüringen" (NHMW). **Sachsen:** 1♂, Leipzig, forest, 14.IV.1972, leg. Uhlig (MNHUB); 1♀, Leipzig, Schleußig, 25.IV.1951, leg. Dorn (MNHUB); 65♂♂, 1♀, Leipzig, Connewitzer Holz, 16.IV. 1926 (2♂♂), 31.III.1946 (1♂), 5.IV.1946 (2♂♂), 15.IV.1946 (1♂), 13.IV.1947 (1♂), 17.III. 1953 (1♂), 18.III.1953 (1♂), 20.III.1953 (10♂♂), 21.III.1953 (2♂♂, 1♀), 25.III.1953 (15♂♂), 26.III.1953 (12♂♂), 13.III.1957 (10♂♂), 9.III.1967 (1♂), 27.III.1967 (2♂♂), 12.IV.1967 (4♂♂), leg. Dorn (MHNG, MNHUB, cAss); 3♂♂, Leipzig, Elsterflutbett, 10.VI.1961, leg. Dorn (MNHUB); 1♂, Leipzig-Taucha, 2.IV.1946, leg. Dorn (MNHUB); 4♂♂, 2♀♀, Leipzig, Wahner Heide, 14.VII.1907, leg. Linke (SMTD); 2♂♂, 2♀♀, Leipzig, Model, 5.XII.1909, leg. Linke (SMTD); 3♀♀, Leipzig, Dölitz, 12.V.1929, leg. Linke (SMTD); 5♂♂, 1♀, Leipzig, Gundorf, 29.III.1932, leg. Linke (SMTD); 2♀♀, same data, but 14.III.1915; 1♂, 1♀, Leipzig, Rötha, 16.I.1938, leg. Linke (SMTD); 1♂, Leipzig, Eilenburg, 8.X.1922, leg. Linke (SMTD); 2♀♀, same data, but 21.VII.1907; 1♀, same data, but 14.II.1946; 1♂, 1♀, Leipzig, leg. Linke (FIS, NHMW); 1♀, Hochweitzschen near Döbeln, 22.III.1945, leg. Dorn (MNHUB); 1♂, Meißen, Zadel, 6.V.1970 (MNHUB); 1♂, same data, but 14.IV.1972; 1♂, Großenhain near Dresden, compost, 21.II.1973, leg. Reßler (MNHUB); 1♂, same data, but 3.III.1973; 1♂, Erzgebirge, Stollberg, Stegewiesen, 6.III.1922, leg. Uhmann (DEI); 1♀, Erzgebirge, Gornau, 7.V.1975, leg. Zerche (DEI); 2♂♂, Sächsische Schweiz (DEI); 1♀, Wechselburg, 5.VIII.1979, leg. Zerche (DEI); 1♀, Weinböhla, 26.IV.1931, leg. Maertens (MNHUB); 2♂♂, Torgau, leg. Sapolski (MNHUB); 1♀, Ostritz near Görlitz, LSG Neißetal, 26.II.1987, leg. Sieber (cVog); 1♂, Chemnitz, 24.IV.1987, leg. Peschel (cSch);1♂, "Saxon.", leg. Märkel (DEI); 6♂♂, "Saxon."/"Saxonia" (MHNG, MNHUB, SMTD). **Locality not specified, illegible, or ambiguous:** 2♂♂, "Germania", leg. Leonhard (DEI); 1♂, 1 ex., "H. Schönhausen", 1910 (MNHUB); 1♂, Schönebeck, 17.V.1917 (MNHUB); 1♂, "H." (MNHUB); 2♂♂, V.1877 (MNHUB); 1♂, "Rheinland" (MNHUB); 1♂, "Obrls." (FIS); 1♂, 12.IV.1922 (MNHUB); 1♂, 1♀, without data (MNHUB); 1♂, "Deutschland" (NHMB).

Austria: Vorarlberg: 1♂, ca. 10 km S Bludenz, Sarotlatal, Brand Galaverda, 900-1000m, swept from vegetation, 2.VI.1991, leg. Brandstetter (cBra); 2♂♂, ca. 4 km SW Bludenz, Bürserberg, Ausserberg, 820 m, swept from vegetation, 2.V.1992, leg. Brandstetter (cBra); 2♀♀, Bodenseegebiet, Hörbranz, Leiblach, 22.IV.1911 (NHMW). **Tirol:** 1♂, Hall, leg. Ammann (TLMFI). **Niederösterreich:** 2♂♂, Mödling, Eichkogel, 18.-21.V.1994 (cKap); 1♀, same data, but 30.III.-9.IV.1994; 1♀, same data, but 21.IV.1994; 1♂, Mödling, leg. Wagner (NHMW); 1♀, Mödling (NHMW); 1♂, Wien (MNHUB); 2♂♂, Wien, leg. Lackner, Moczarski (NHMW); 4♂♂, Wien, Prater, leg. Breit, Pazourek, Skalitzky (NHMW); 1♂, Stockerau near Wien, leg. Skalitzky (NHMW); 1♀, Mariabrunn near Wien, leg. Skalitzky (NHMW); 1♂, Donau-Auen, leg. Otto (NHMW); 1♂, Leithagebirge, leg. Molitor (NHMW); 1♀, Wechselgebirge, leg. Mader (NHMW); 2♂♂, Wechselgebirge (NHMW). **Kärnten:** 1♀, Eisenkappel (NHMB). **Locality not specified:** 1♂, "Austria", leg. Ullrich (DEI); 1♂, "Austria" (NMP).

Italy: Trentino - Alto Adige: 8♂♂, Caldaro (BZ), swept from vegetation, 2.V.1970, leg. Kahlen (TLMFI); 1♀, Lago di Caldaro (BZ), Caricetum, 21.IV.1992, leg. Zanetti (cZan); 1♀, Bressanone (BZ), garden, 26.IV.1955, leg. Peez (TLMFI); 2♂♂, same data, but 27.IV.1955; 1♂, same data, but 19.IV.1956; 2♂♂, same data, but 23.IV.1956; 1♂, same data, but 24.V.1956; 2♂♂, same data, but 1.V.1956; 1♀, same data, but 9.VI.1956; 2♂♂, same data, but 28.IV.1957; 1♀, same data, but 4.V.1957; 1♀, same data, but 6.VII.1957; 2♀♀, same data, but 14.IV.1958; 1♂, Pieve di Ledro, 10.V.1908 (DEI); 1♀, Bolzano, 1879, leg. Reitter (HNHM); 1♀, Bolzano (HNHM). **Piemonte:** 1♂, 1♀, Bosco Marengo (AL), in nest of *Talpa*, 1.IV.1986, leg. Zoia (cZan); 3♂♂, 1♀, "Piemont, Bargagli" (NHMW); 3♀♀, locality not specified (FIS). **Lombardia:** 1♂, Lago d´Idro, 28.IX.1992 (cZan); 1♀, Milano, 18.III.1888 (MHNG). **Liguria:** 1♂, San Colombano Certenoli (GE), Fontanabuona, 17.IV.1977, leg. Bartoli (cZan); 1♂, Genova, Nervi, I.1925, leg. Botto (MHNG); 1♂, 1♀, Ruta, leg. Lokay (NMP, cAss); 1♀, N Nervi, Monte Fasce, 14.V.1899, leg. Dodero (MNHUB); 1♂, Genova, Guinto (?), 1.III.1923, leg. Botto (MHNG); 1♀, Genova, 10.III.1897, leg. Dodero (MNHUB); 1♀, Genova, VI.1942 (IRSNB); 1♂, San Remo, leg. Schneider (NHMW). **Veneto:** 1♂, Verona, dint. Stadio, with *Lasius fuliginosus*, 23.I.1975, leg. Zanetti (cZan); 1♀, Parco Lessinia, Ponte di Veja, 13.IV. 1991, leg. Zanetti (cZan); 1♀, Alpi Lessini, Grezzana, 14.VI.1989,.leg. Renner (cRen). **Toscana:** 1♀, Monticiano, R. N. dei Tocchi, 7.II.1999, leg. Meybohm (cAss); 1♂, 1♀, Ponteginori (SI), *Quercus ilex* wood, 4.IV.1994, leg. Gardini (cZan, cAss); 1♂, 1♀, Alberese (GR), Azienda, V.1988, leg. Cenzi (cZan); 1♀, Alberese (GR), Azienda Le Tofane, 1.IV.1988 (cZan); 1♀, Vallombrosa (FI), Regelle, 750m, 28.IV.1991, leg. Wunderle (cWun); 3♂♂, S Lucca, Monte Pisano ["Mte. Pisani"], leg. Linke (SMTD, cAss); 1♀, Lucca (HNHM); 1♂, Firenze, 31.I.1909 (NHMB); 1♀, locality illegible, 7.I.1967 (MHNG). **Emilia-Romagna:** 1♀, Sant´Agostino (FE), Bosco Panfilia, 20m, in *Apodemus* nest, 23.III.1997, leg. Tagliapietra & Zanetti (cZan); 1♂, S Bologna, Paderno, 4.IV.1906, leg. Fiori (MNHUB); 1♀, Bano (?), 31.III. 1898, leg. Fiori (TLMFI); 1♂, Y. Galico (?), VI.1907, leg. Fiori (MNHUB); 1♂, Sant´Ágata, 27.III.1907 (MNHUB); 2♀♀, Bazzano, 28.III.1906, leg. Sekera (HNHM); 1♀, Bazzano, 10.III.1905 (HNHM). **Abruzzo:** 2♀♀, Prov. di l´Aquila, 10 km SE Castel di Sangro, Mte. Pagano, leg. Paganetti (NHMB, cAss). **Lazio:** 1♂, 1♀, Monte Circeo, ca. 50m, N-slope, *Quercus ilex* forest, 29.XII.1994, leg. Assing (cAss); 1♂, Colli Albani, M. Artemisio, 28.III. 1975, leg. Audisi (cZan). **Calabria:** 1♀, ca. 10km S Palmi, Santa Eufemia d´Aspromonte, leg. Paganetti (cAss). **Elba:** 2♂♂, 2♀♀, 1908, leg. Paganetti (DEI, HNHM, MNHUB, NHMB); 5♀♀, leg. Holdhaus (NHMW). **Locality not specified:** 1♀, "Italia", leg. Reitter (FIS).

Italian or Slovenian territory: 1♀, "Görz" (= Gorizia or Nova Gorica), leg. Ludy (MNHUB).

Slovenia: 2♂♂, Maribor (NHMW).

Poland: 2♂♂, 1♀, Silesia, Legnica ["Liegnitz"], leg. Gerhard (FIS, MNHUB).

Slovakia: 1♂, 1♀, Zliechov, 15.IV.1917, leg. Lokay (NMP).

Czech Republic: Bohemia: 12♂♂, 3♀♀, Praha, leg. Skalitzky (FIS, MHNG, NHMW); 2♂♂, Praha env., leg. Smolka (FIS); 3♂♂, Praha, garden, 20.IV.1895, leg. Skalitzky (NHMW); 2♂♂, 1♀, same data, but 27.IV.1895 (NHMW); 4♀♀, Praha (NMP); 1♀ [with worker of *Lasius brunneus* attached to the pin], Praha, Stromovka, leg. Klička (NMP); 1♀, Stromovka, 31.III. 1912 (NMP); 3♂♂, 2♀♀, Stromovka (NMP); 1♂, Brandýs n.L., inundation, 31.III.1895 (MNHUB); 1♂, Brandýs n.L. (NMP); 1♂, 1♀, N Praha, Neratovice, leg. Klička (NMP); 1♂, NW Praha, Klobuky (NMP); 1♀, Klobuky, 16.V.1914, leg. Procházka (NMP); 1♂, E Praha, Pe ky, 18.III.1906, leg. Rambousek (NMP); 1♀, NE Praha, Toušeň, 15.III.1906 (NMP); 1♀, NE Praha, Lysá nad Labem (NMP); 1♂, SE Praha, Říčany, leg. Klička (NMP); 1♂, Kostomlaty, 11.IV.1981, leg. Janák (cVog); 1♂, Mladá-Boleslav, leg. Skalitzky (NHMW); 1♀, E Teplice, Modlany, leg. Klička (NMP); 1♂, Pardubice, 6.IV.1918, leg. Procházka (NMP); 1♂, "Böhmerwald", leg. Tanzer (NMP); 1♂, locality illegible, 13.V.1907, leg. Roubal (MHNG); 4♂♂, locality not specified, leg. Reitter (DEI, FIS, HNHM). **Moravia:** 1♀, Čejč , VII.1940, leg. Hoffer (NMP).

Locality not indicated, not identified, or illegible: 2♂♂, 2♀♀, (standing as *Homalota* [sic] *callicera* in coll. Gravenhorst) (MNHUB); 2♂♂, 1♀, 1 ex., "Europa" (FIS); 5♂♂, 1 ex., "Sartorius 1876" (NHMW); 3♂♂, "Patria? Reitter" (NHMW); 12♂♂, 4♀♀ (MNHUB, NHMW, NMP).

Locality doubtful: 1♂, "Bosnie", leg. Schramm (NMP).

Redescription

Measurements (mm) and ratios (range, arithmetic mean; n = 242): AL ♂: 1.15 - 1.59, 1.40; AL ♀: 1.15 - 1.52, 1.33; AxL ♂: 0.12 - 0.18, 0.15; AxL ♀: 0.08 - 0.11, 0.10; AxiL ♂: 0.28 - 0.38, 0.33; AxiL ♀: 0.24 - 0.31, 0.27; HW: 0.41 - 0.51, 0.46; PW: 0.44 - 0.59, 0.52; PL: 0.38 - 0.52, 0.46; EL: 0.36 - 0.56, 0.48; HTiL ♂: 0.48 - 0.68, 0.60; HTiL ♀: 0.45 - 0.63, 0.57; HTaL ♂: 0.33 - 0.48, 0.43; HTaL ♀: 0.32 - 0.42, 0.38; ML: 0.38 - 0.42, 0.39; TL: 2.0 - 3.7, 2.8; PW/HW: 1.06 - 1.20, 1.12; PW/PL: 1.00 - 1.21, 1.13; EL/PL: 0.91 - 1.17, 1.06; HTaL/HTiL ♂: 0.62 - 0.82, 0.72; HTaL/HTiL ♀: 0.62 - 0.74, 0.67; AxiL/ AxL ♂: 1.91 - 2.53, 2.21; AxiL/ AxL ♀: 2.43 - 3.27, 2.86.

Colour of body dark brown to blackish, with the elytra and the narrow hind margins of the abdominal terga and sterna usually slightly lighter, brown to dark brown; legs castaneous to dark brown; antennae often lighter than head, brown or castaneous, especially in ♀♀.

Head weakly transverse (length measured from anterior margin of labrum to occiput); eyes rather large and distinctly bulging; postgenae in dorsal view strongly convex and slightly longer than eyes; occiput strongly constricted, 0.6x the width of head including eyes, and distinctly delimited from epicranium; dorsal central surface ± flattened or weakly (circularly or longitudinally) impressed; microsculpture isodiametric and usually very coarse, thus rendering the surface ± mat and the fine puncturation indistinct; rarely, with ± reduced microsculpture and moderate shine; postgenae without distinct carina. Antennae with antennomeres II and III subequal in length, more slender and slightly shorter than I; III coniform; IV - IX short and increasingly transverse; X much longer than IX; XI very long; with distinct sexual dimorphism: in ♂, antennomeres IV-IX are somewhat shorter and more transverse, antennomere X is distinctly oblong, and XI is longer and of more parallel outline; in ♀♀, antennomere X is ± subquadrate to weakly oblong (Figs. 2s-t). The length and shape especially of the apical antennomeres are subject to some intraspecific variation. Mouthparts as in Figs. 2a-d.

Pronotum slightly wider than head (see ratio PW/HW) and weakly transverse (see ratio PW/PL); margins finely carinate; maximal width near anterior angles; posterior angles marked and obtuse; occasionally with weak longitudinal impression along median line; microsculpture similar to head; puncturation usually somewhat more distinct than on head and weakly granulose; pubescence directed caudad along median line and near lateral margins, ± diagonally latero-caudad in lateral areas, and transversely laterad near posterior margin.

Legs slender; in ♂ on average slightly longer than in ♀ (see measurements, ratios, and Fig. 3); tarsi rather long in relation to tibiae; metatarsomere I usually slightly longer that II, but shorter than V (Fig. 2u).

Elytra distinctly wider than and at suture approximately as long as pronotum (see ratio EL/PL); microsculpture of elytra and scutellum isodiametric and distinct, but weaker than on head and pronotum; surface with subdued shine or mat; puncturation relatively fine and rather dense; hind wings fully developed.

Abdomen with more shine than forebody; microsculpture composed of isodiametric and weakly transverse meshes; puncturation very fine, on posterior terga distinctly sparser than on anterior terga; tergum VII with palisade fringe; posterior margin of tergum VIII convex and with long thin setae (Figs. 2o, q). Tergum X as in Fig. 2n.

♂: posterior margin of sternum VIII strongly convex and with long thin setae (Fig. 2p); aedeagus with median lobe relatively small (see measurements) and slender in ventral view (Figs. 2e-f); internal structures and apical lobe of paramere as in Figs. 2g-i.

♀: posterior margin of sternum VIII moderately convex and with slightly stouter setae (Fig. 2r); spermatheca with relatively short and stout duct (Figs. 2j-m).

Intraspecific variation

Body size and most other size related parameters are subject to moderate, the shape and length of the two apical antennomeres to considerable intraspecific variation (see measurements and Fig. 4). The largest specimens examined and measured were from Italy, but otherwise no clinal variation was observed (Fig. 5); this is also true of the relative length of the elytra. The microsculpture of head and pronotum is extremely variable. While it is pronounced in the vast majority of the material examined, it was found to be reduced to various degrees especially in part of the specimens from Italy, Austria, and the Czech Republic.

Comments

GRAVENHORST (1902) based his description of *C. obscurus* - the type species of the genus, which was described in the same work - on a single specimen taken in the court garden in Braunschweig apparently by Gravenhorst himself ("semel tantum captus Brunsuiga in horto aulico"). Shortly afterwards, however, GRAVENHORST (1806) reconsidered the generic affiliation and attributed the species to *Aleochara* GRAVENHORST, explicitly referring to the original description of *C. obscurus* and renaming - but not describing - it as *Aleochara callicera* ("nomen hactenus genericum speciei manebit", p. 146). Conse-

DOI: 10.21248/contrib.entomol.51.2.247-334

quently, according to Article 12 of the Code (ICZN, 1999), *A. callicera* is an available replacement name, but at the same time an objective junior synonym of *C. obscurus*, and both names are based on the same holotype (Article 72.7). The historical collection at the MNHUB contains five specimens standing as *A. callicera* and collected by Schüppel in Berlin, as can be inferred from the labels and from ERICHSON (1837). For this reason and because they are neither from the Knoch nor from the Hellwig-Hoffmannsegg collection, which contain original type material of species described by Gravenhorst, none of these specimens can be attributed type status (see also Article 72.7 of the Code). It appears, therefore, that the holotype of *C. obscurus* was in the Gravenhorst collection, which was housed in Breslau (today Wroclaw, Poland) and which was destroyed in World War II (for details see SCHÜLKE, 1997). In the interest of the stability of nomenclature - *C. obscurus* is the types species of the genus - a neotype designation was deemed necessary to replace the lost holotype and to maintain the long-standing interpretation of the species and the genus. A male specimen in good condition and probably seen by Gravenhorst himself from the historical collection in the MNHUB was selected as neotype.

The original description of *C. spencii* STEPHENS is based on a single specimen "taken in England by Mr. Spence", which, according to SHUTE (pers. comm.) and STEPHENS (1829), is neither in the Stephens nor in the Kirby collection, but was originally kept in "Mus. Spence" (STEPHENS, 1829), whose whereabouts is unknown (HAMMOND, 1972; SHUTE, pers. comm.). However, the fact that the Stephens collection contains 7 specimens identified as *C. spencii*, all of them conspecific with *C. obscurus*, and that STEPHENS (1839) himself synonymized *C. spencii* with *C. obscurus*, as well as the morphological details indicated in the original description of *C. spencii* leave no doubt whatsoever that the synonymy is correct. Therefore, a neotype designation is here refrained from.

C. spencii CURTIS is a junior primary homonym of *C. spencii* STEPHENS. The types of neither *C. spencii* CURTIS nor *C. hybridus* CURTIS could be located, but it can be inferred from the original descriptions, which are accompanied by an excellent drawing of a male *C. obsurus*, that *C. spencii* CURTIS without doubt refers to the male and *C. hybridus* to the female of *C. obscurus*.

Based on an examination of the holotype, *C. stolfai* SCHEERPELTZ was found to be conspecific with and consequently a junior synonym of *C. obscurus* GRAVENHORST.

In the original description of *Callicerus ibericus*, FAGEL (1958) compares the species with *C. muensteri* BERNHAUER, but does not refer to *C. obscurus* at all. Apparently, he believed the two types to be a male and a female, which would also explain why he attributed the species to the subgenus *Semiris* Heer. The two type specimens, however, are both females of *C. obscurus*, so that *C. ibericus* is here placed in the synonymy of that species.

Distribution and bionomics

C. obscurus is apparently an Atlantomediterranean faunal element sensu LATTIN (1967) (Map 1). In Skandinavia, it is known from Norway, the south of Sweden north to approximately 60° northern latitude (Skåne, Blekinge, Halland, Öland, Gotland, Östergötland, Västergötland, Bohuslän, Närke, Södermanland, Uppland, Västmanland, Dalarna), southern Finland, and all the regions of Denmark except for Bornholm (HANSEN, 1996; HORION, 1967; LUNDBERG, 1995; PALM, 1968; SILFVERBERG, 1992; and material examined). In the British Isles, it has been recorded from the Republic of Ireland, Northern Ireland, and Great Britain north to southern Scotland (BULLOCK, 1914; CURTIS, 1833; FOWLER, 1888; HORION, 1967; JOY, 1932; and material examined). In southern and central Europe, its distribution includes the south of the Iberian Peninsula, all of France, Belgium, the Netherlands, all German regions except for the Saarland (KÖHLER & KLAUSNITZER, 1998), Switzerland, Austria, Italy south to Calabria, Slovenia, the Czech Republic, Slovakia, and Poland (material examined); for additional records from these countries see e. g. BENICK & LOHSE (1959), GRÄF (1987), HORION (1967), JANÁK (1992), JELÍNEK (1993), KIENER (1986), KOCH (1968), KOCIAN (1993), LINDBERG (1931), LUIGIONI (1929), MULSANT & REY (1874), PEEZ & KAHLEN (1977), SCHILTHUIZEN (1985), SMOLEŃSKI (1997), VOGEL (1978), WITTWER (1993), and WÖRNDLE (1950). According to HORION (1967), *C. obscurus* was also found on the Dalmatian island Mljet [=Meleda], based on a record of *C. clavatus* (which was later synonymized with *C. obscurus*) by GANGLBAUER (1904). However, since there is no further evidence, apart from a specimen vaguely and possibly erroneously labelled "Bosnie" (see material examined), the presence of the species in southeastern Europe seems very unlikely. The record from Mljet ("Reitter det.") may, in fact, refer to *C. fulvicornis* or be based on a misidentification. The corresponding specimen(s) was found neither in the NHMW, where Ganglbauer´s collection is deposited, nor in the HNHM, where Reitter´s material is kept.

As can be inferred from the material examined, the species occurs in a great variety of both open and woodland biotopes at low to intermediate altitudes (additional literature references are given in brackets): banks of rivers and lakes (HORION, 1967; KUNZE &

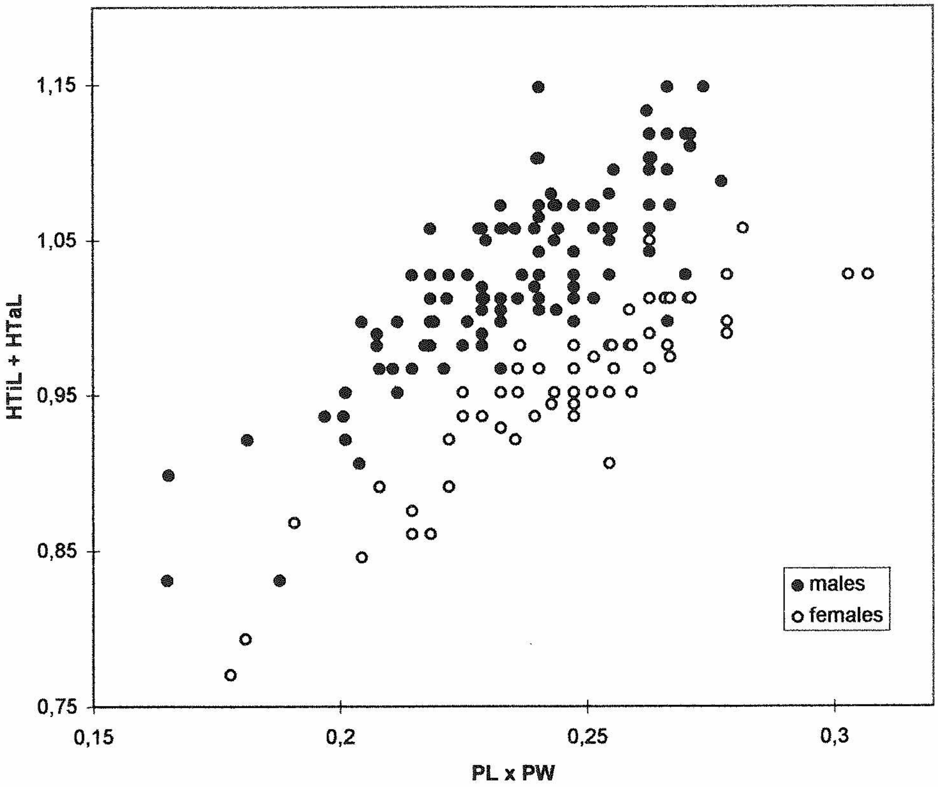

Fig. 3: *Callicerus obscurus* GRAVENHORST. Variation of the combined length of metatibia and metatarsus in relation to pronotum size in males and females.

DOI: 10.21248/contrib.entomol.51.2.247-334

KACHE, 1998; WILLERS, 1990), riparian meadows (BARANOWSKI & SÖRENSSON, 1978; HORION, 1967; PEEZ & KAHLEN, 1977), moist meadows and xerothermous grassland (ASSING, 1994; HORION, 1967; KORGE, 1991; SCHOLZE & JUNG, 1994; WITTWER, 1993), gravel pits, various urban biotopes (ASSING, 1988; PEEZ & KAHLEN, 1977), arable land (HORION, 1967; KORGE, 1991; WITTWER, 1993; ZIMMERMANN & BÜCHS, 1993), dune areas (GRÄF, 1987; SMOLEŃSKI, 1997), beech forests, *Quercus ilex* forests, mixed deciduous forests, and xerothermous forests on loess (VOGEL, 1982). Most records, however, are from unforested biotopes on moist soils (clay, etc.) (BENICK & LOHSE, 1959; HORION, 1967; KIENER, 1986; KOCH, 1968). In Niedersachsen, NW-Germany, *C. obscurus* is not uncommon on loess, clay, and calcareous soils, whereas it is absent from heathland biotopes on sandy soils, which have been studied extensively (ASSING, unpubl.).

On several occasions, adult specimens were collected in nests of ants (*Lasius fuliginosus*, *L. brunneus*) and small mammals (*Talpa europaea*, *Apodemus* sp.), in fox burrows, in compost, and in faeces; see also HORION (1967), OSELLA & ZANETTI (1975), PALM (1968), and SCHOLZE & JUNG (1994). According to BENICK & LOHSE (1974), *C. obscurus* may be associated with burrows of subterranean mammals, but there is little evidence supporting this assumption; the species was only rarely found in systematic studies of the nests of *Talpa europaea* and other mammals.

Adults of *C. obscurus* have been taken throughout the year, except for November, though the vast majority of records are from the period from March through May (Fig. 6). Teneral specimens were observed in May and July, suggesting that reproduction takes

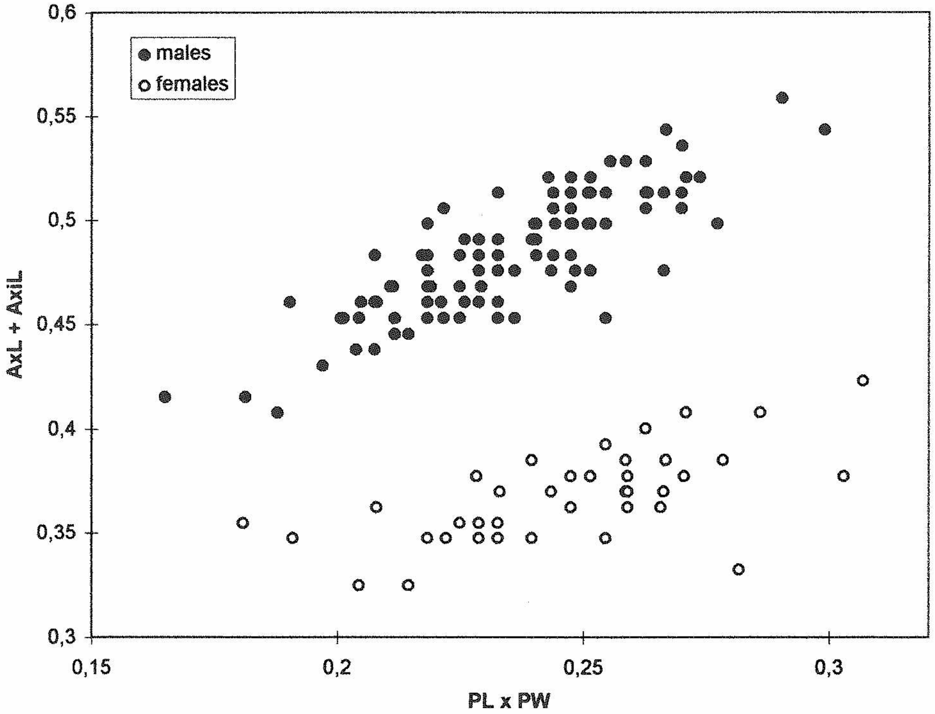

Fig. 4: *Callicerus obscurus* GRAVENHORST. Variation of the combined length of antennomeres X and XI in relation to pronotum size in males and females.

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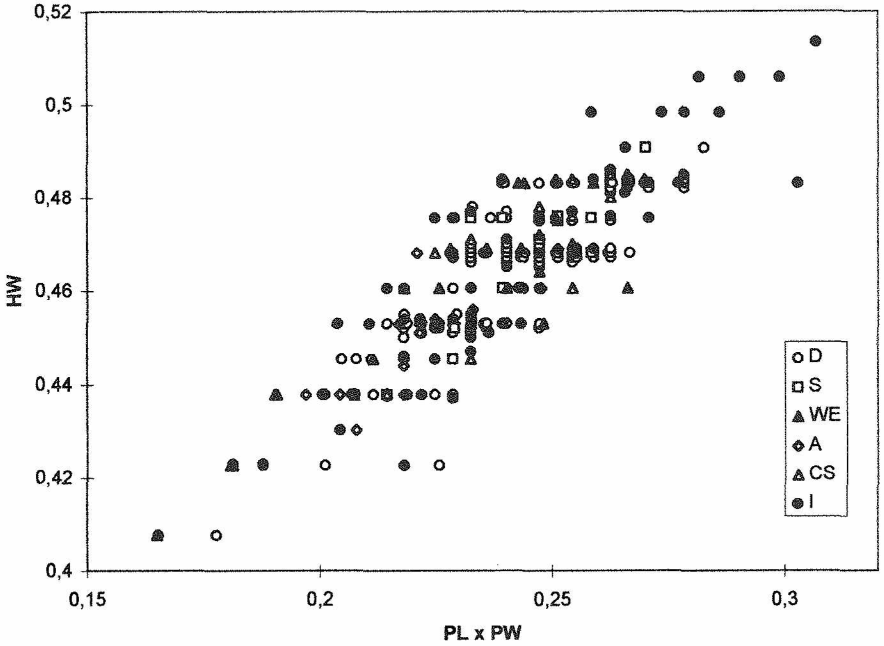

Fig. 5: *Callicerus obscurus* GRAVENHORST. Variation of head width (HW) in relation to pronotum size in material from Germany (D), Sweden (S), Western Europe (WE), Austria and Switzerland (A), the Czech Republic (CS), and Italy (I).

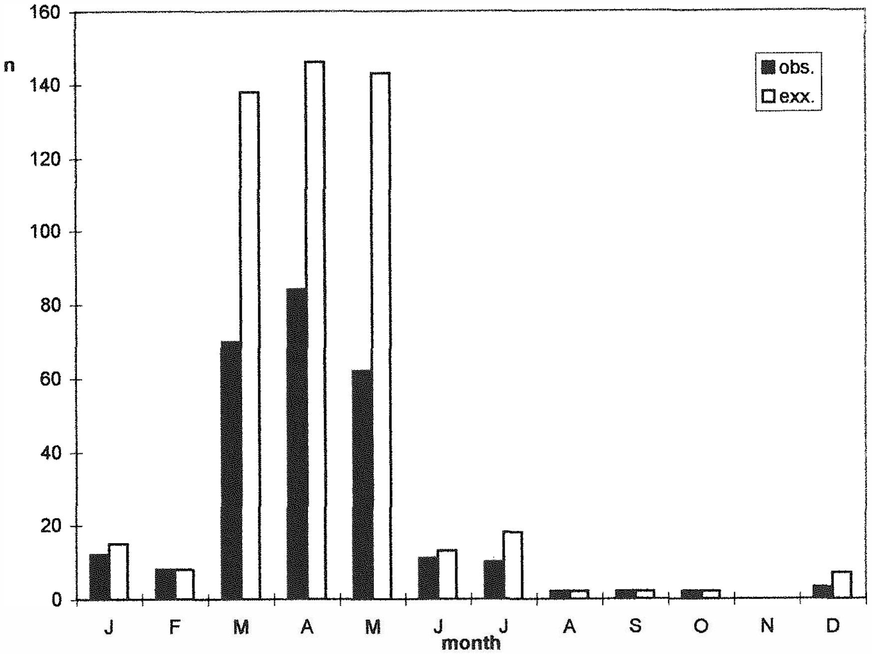

Fig. 6: *Callicerus obscurus* GRAVENHORST. Seasonal phenology based on material examined. Abbreviations: obs. = number of observations or samples; exx. = number of specimens.

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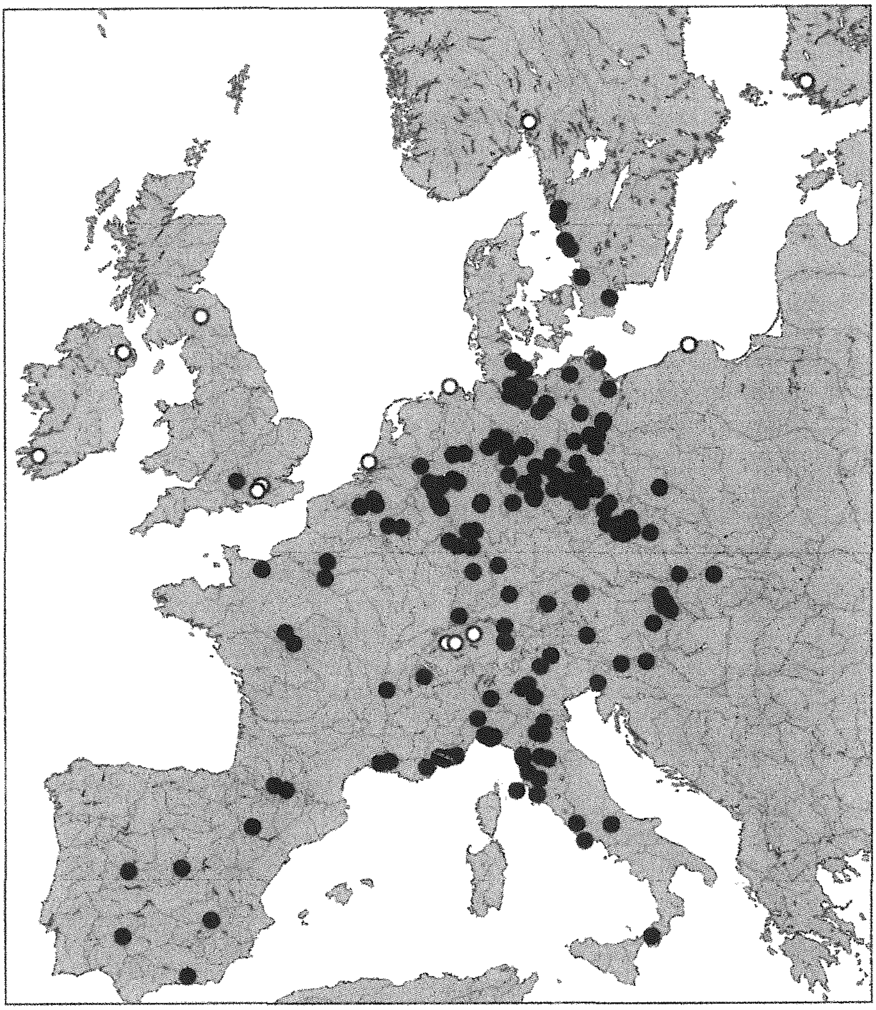

Map 1: Distribution of *Callicerus obscurus* GRAVENHORST based on revised records (filled circles) and selected reliable literature records (open circles).

place in early spring and pre-imaginal development is completed in late spring and early summer. As can be inferred from several flight-interception trap and car-net records, dispersal by flight occurs from March through May, with the majority of records in March; for additional data see HORION (1967), OWEN (1993), and ZERCHE (1979). On several occasions large numbers of *C. obscurus*, almost exclusively ♂♂, have been swept from vegetation during the period from April through June (see also DELAHON (1930), HORION (1967), PEEZ & KAHLEN (1977), and WITTWER (1993)). DELAHON (1930) states that when touching the beetles they smell of formic acid. CURTIS (1833) observes: "...; before the vernal equinox it occurs occasionally in the shelter of furze bushes; in the first burst of spring I have found it abundant on the fresh grass of sunny banks, ...: as summer advances it disappears entirely. While it is in motion the antennae and especially

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the thick joints of the tip are continually quivering in an extraordinary degree ...". Epigeic activity was recorded by pitfall trapping from March through July, the majority of specimens caught in June were ♀♀. The data on the labels attached to the comparatively few adults taken in winter indicate or suggest that they were either collected from flood debris or sifted from forest leaf litter. The larva and the food of *C. obscurus* are unknown. In many respects, the observations outlined above resemble those for species of *Ilyobates* KRAATZ (ASSING, 1999), with which *C. obscurus* also shares certain external similarities, e. g. the massive antennae and the body shape. As is the case with *Ilyobates*, there is no conclusive evidence regarding the real habitat of the species. Apparently, this habitat is cryptic and subterranean, which is suggested by the rarity of autumn and winter records, but it seems unlikely that *C. obscurus* is a regular in burrows and nests of subterranean mammals, as suggested in the literature. It seems that the species inhabits other crevices in the soil, which are left only for reproduction and dispersal or from which they are washed out during floods. This would also explain why *C. obscurus* was not or only rarely (dispersal? accidental records?) found on sandy soils.

4.4.2. *Callicerus muensteri* BERNHAUER, 1900

Figs. 7a-l, 9-10, Map 2

Callicerus (*Semiris*) *muensteri* BERNHAUER, 1900: 533f.
Callicerus (*Semiris*) *muensteri*: SCHEERPELTZ, 1956: 36.

Type examined

Lectotype ♀, here designated: Genzano Roma. 1899 / Münster. / Münsteri Bnh Type / Chicago NHMus., M. Bernhauer Collection / Lectotypus ♀ *Callicerus muensteri* Bernhauer, desig. V. Assing 2000 (FMNH).

Additional material examined

France: Corse: 3♂♂, 1♀ [1♂, 1♀ teneral], Val d´Ese, E Bastelica, 41°59´33N, 9°07´15E, 1550m, bank of stream, below *Fagus* and *Alnus viridis*, 21.VII.1998, leg. Zerche (DEI, cAss); 3♂♂, 1♀ [1♀ teneral], Haute-Corse, Mte. Renoso, Bergeries de Capannelle SW Ghisoni, 42°05N, 09°09E, 1610m, bank of stream, below *Alnus viridis*, 23.VII.1998, leg. Zerche & Ruch (DEI, cAss); 3♀♀ [1♀ with mature egg in ovaries], Mte. Renoso, Capannelle, 1600m, 10.IV.1990, leg. Wunderle (cWun); 1♀, Castaniccia, Erbajolo, 20km SE Corte, bank of stream, 12.IV.1990, leg. Assing (cAss); 1♀, 1905, Folelli (DEI); 1♀ [identification uncertain], N Vizzavona, Col de Foce, VI.1955, coll. Ochs (MHNG).
Italy: Toscana: 1♂, NE Firenze, Mt. Calvana (FI), Mugnone, chestnut forest, 650m, 1.V. 1991, leg. Wunderle (cWun); 1♀, Padule di Fucecchio (FI), 1.III.1994, leg. Bordoni (cWun); 1♀♀, Pisa, San Rossore, 30.I.1969, leg. Santini (MHNG, cWun); 6♂♂, 3♀♀, S Lucca, Monte Pisano ["Mte. Pisani"], leg. Linke (NHMW, SMTD, NMP, cAss); 2♀♀, Lucca (HNHM); 2♂♂, Alpi Apuane, 20 km E Massa, Grotta di vento, 44°01´24N, 10°21´53E, 700m, beechwood, 6.VI.2000, leg. Wunderle (cWun, cAss); 1♂, "Toscana" (DEI). **Abruzzo:** 1♂, 2♀♀, S Castel di Sangro, leg. Paganetti (DEI, NHMW); 1♂, 1♀ [♂ teneral], Prov. di l´Aquila, 10 km SE Castel di Sangro, Mte. Pagano, leg. Paganetti (NHMB, cAss). **Locality not specified:** 1♂, "Ital. Reitter" (DEI); 1♂, "Italia, Merkl" (DEI).

Redescription

Measurements (mm) and ratios (range, arithmetic mean; n = 36): AL ♂: 1.46 - 1.71, 1.63; AL ♀: 1.34 - 1.67, 1.58; AxL ♂: 0.11 - 0.15, 0.12; AxL ♀: 0.08 - 0.11, 0.10; AxiL ♂: 0.26 - 0.39, 0.31; AxiL ♀: 0.26 - 0.33, 0.28; HW: 0.46 - 0.57, 0.51; PW: 0.51 - 0.66, 0.59; PL: 0.46 - 0.59, 0.52; EL: 0.44 - 0.60, 0.53; HTiL ♂: 0.64 - 0.80, 0.73; HTiL ♀: 0.60 - 0.79, 0.67; HTaL ♂: 0.44 - 0.56, 0.50; HTaL ♀: 0.40 - 0.53, 0.46; ML: 0.47 - 0.51, 0.50; TL: 2.6 - 4.2, 3.4; PW/HW: 1.08 - 1.26, 1.16; PW/PL: 1.07 - 1.20, 1.13; EL/PL: 0.95 - 1.09, 1.02; HTaL/HTiL ♂: 0.64 - 0.77, 0.70; HTaL/HTiL ♀: 0.64 - 0.73, 0.67; AxiL/AxL ♂: 2.30 - 2.93, 2.60; AxiL/AxL ♀: 2.53 - 3.40, 2.87.

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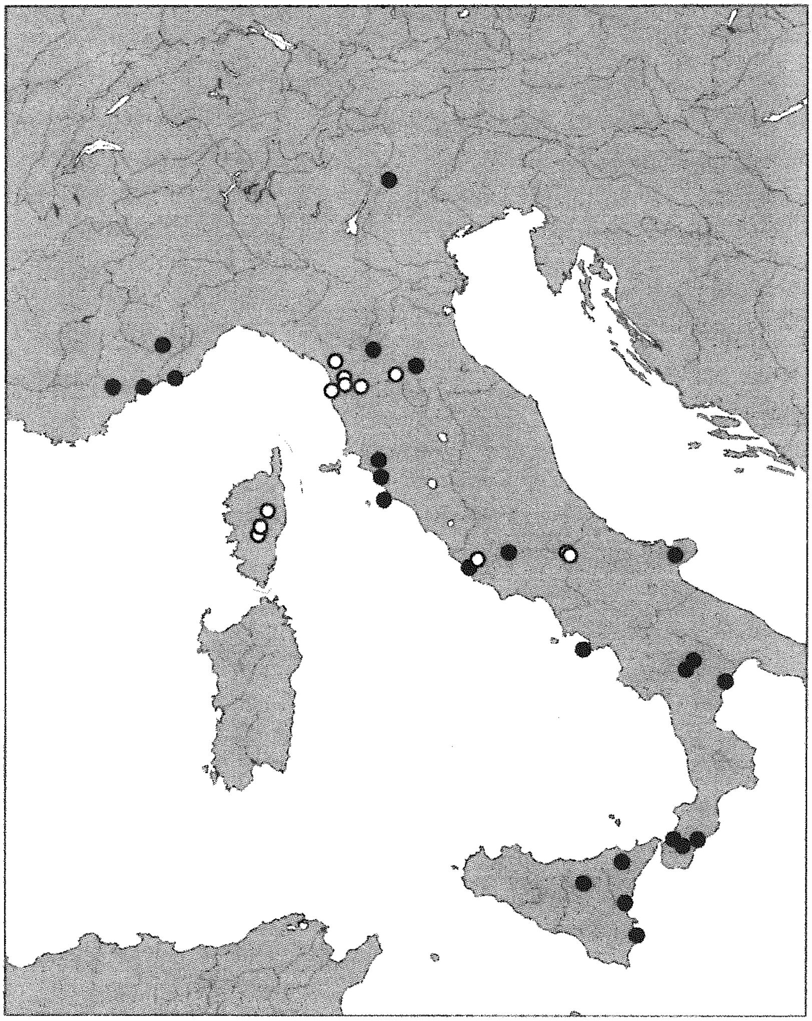
In external morphology very similar to *C. obscurus*, but distinguished as follows: Forebody on average with weaker microsculpture and with more shine; usually more distinctly bicoloured, with the elytra yellowish brown to castaneous and the abdominal segments III-V partly or completely lighter than VI-VII; antennae usually brown, rarely blackish. Body size on average greater (see measurements).

Antennae longer, antennomeres III-IX less transverse; sexual dimorphism much less pronounced than in *C. obscurus*: in ♂ with weakly to moderately oblong, in ♀ with usually weakly transverse to subquadrate antennomere X (Figs. 7j-l, 9).

Pronotum usually with shallow, but distinct longitudinal impression along median line, on average wider in relation to head (see ratio PW/HW).



Map 2: Distribution of *Callicerus muensteri* BERNHAUER (open circles) and *C. atricollis* (AUBÉ) (filled circles) based on revised records.

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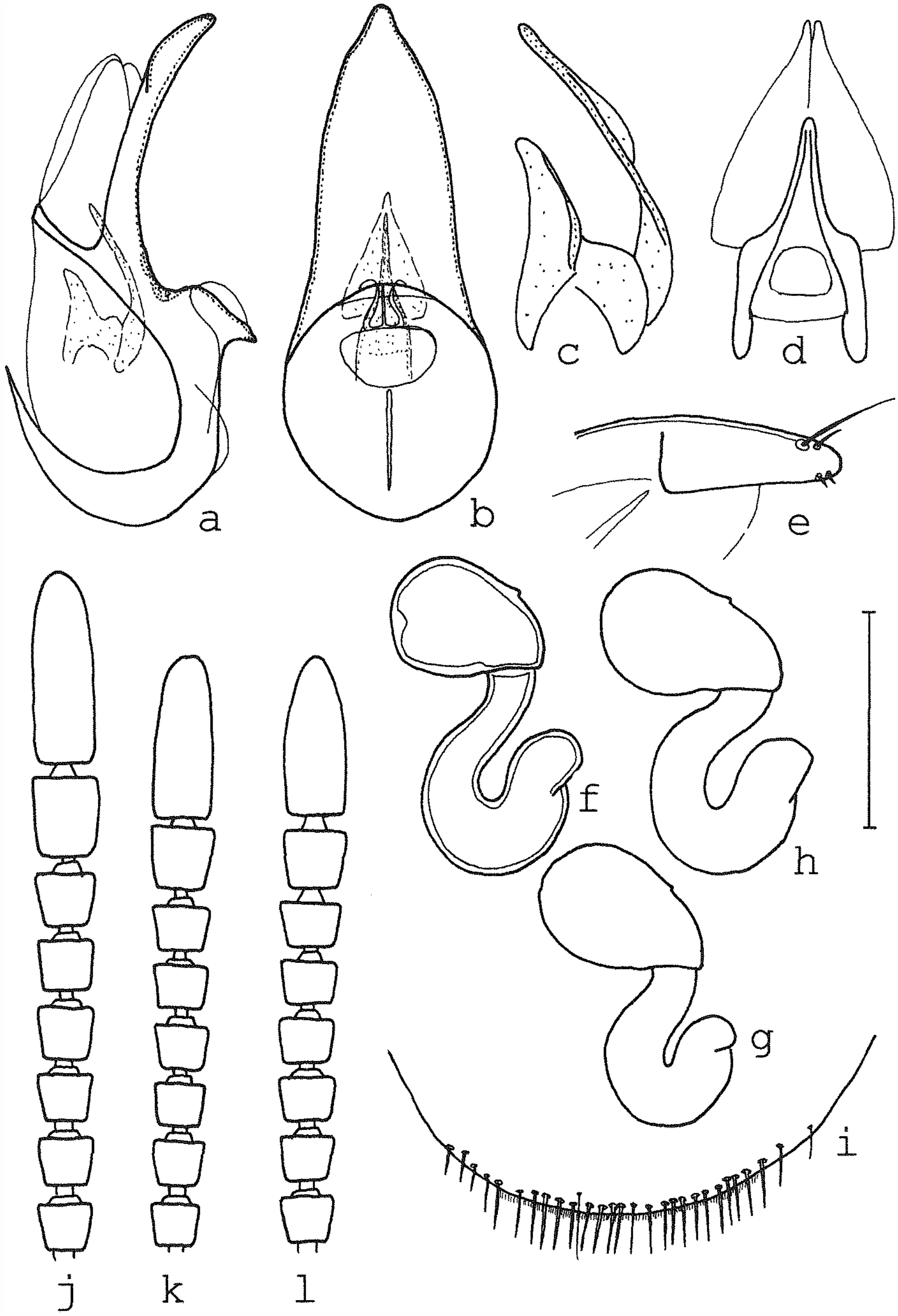

Figs. 7a - l: *Callicerus muensteri* BERNHAUER. Median lobe of aedeagus in lateral (**a**) and in ventral view (**b**); internal structures of aedeagus in lateral (**c**) and in ventral view (**d**); apical lobe of paramere (**e**); spermathecae of ♀♀ from Toscana (**f**) and Corsica (**g, h**); posterior margin of ♀ sternum VIII (**i**); apical part of antenna of ♂♂ from Toscana (**j**) and Corsica (**k**); apical of part ♀ antenna (Corsica) (**l**). Scales: c - e: 0.1 mm; a - b, f - i: 0.2 mm; j - l: 0.4 mm.

Legs on average longer (see measurements); on average slightly longer in ♂ than in ♀.
♂: hind margin of sternum VIII with relatively short pubescence; aedeagus of similar morphology as in *C. obscurus* (Figs. 7a-e), but larger (see measurements, no overlap).
♀: spermatheca of somewhat variable shape, but usually with longer capsule (Figs. 7f-h).

Intraspecific variation and comparative notes

Most external characters are moderately variable; specimens from Corsica tend to be on average darker than those from Italy. Considerable variation was observed for the length of the legs, for the shape of the spermatheca (Figs. 7f-h), and for the shape and length of the antennomeres (Fig. 7j-l, 9), especially antennomere X, which is shorter in specimens from Corsica than in material from Italy and which ranges from indistinctly to distinctly oblong in ♂♂ and from moderately transverse to subquadrate in ♀♀. While *C. muensteri* is readily distinguished from *C. obscurus* (see description above), a separation from *C. atricollis*, especially when based on single ♀♀, is sometimes difficult (see remarks below *C. atricollis*).

Comments

The original description of *C. muensteri* is based on two syntypes, one in the Bernhauer and one in the Münster collection. According to the curator in charge at the Zoological Museum Oslo, it was not possible to locate the syntype in the Münster collection (SÖLI, pers. comm.). *Callicerus* species are highly similar and have frequently misidentified, so that the possibility that this syntype refers to a different species cannot be ruled out. In order to secure the present interpretation of the species, the syntype in the Bernhauer collection is here designated as lectotype.

Distribution and bionomics

C. muensteri is currently known only from central Italy (Toscana, Abruzzo, Lazio) and from Corsica (Map 2). The record of *C. clavatus* from Caporalino, Corsica (SAINTE-CLAIRE DEVILLE, 1914), probably refers to this species. Based on the shape of the spermatheca, the E from Vizzavona (Corsica) listed above is here tentatively attributed to *C. muensteri*. However, in size and antennal morphology this specimen is more similar to *C. atricollis*. As there is some doubt regarding the identity of this specimen, it is included neither in Map 2 nor in the measurements.
The material listed above was found near banks of streams, in litter of *Alnus viridis*, in beech and in chestnut forests at altitudes of up to 1600m. The beetles were collected in January and during the period from March through July. One ♀ taken in April had a mature egg in the ovaries, another ♀ collected in July was teneral, suggesting that the life history of *C. muensteri* is similar to that of *C. obscurus*.

4.4.3. *Callicerus atricollis* (AUBÉ, 1850)

Figs. 8a-k, 9-10, Map 2

Calodera atricollis AUBÉ, 1850: 303.
Callicerus atricollis: Kraatz in BAUDI (1869).
Callicerus obscurus var. *pedemontanus* BAUDI, 1869: 374; synonymy by KRAATZ in BAUDI (1869), here confirmed.
Callicerus (s. str.) *atricollis*: GANGLBAUER (1895).
Callicerus (s. str.) *atricollis*: SCHEERPELTZ (1956).
Callicerus clavatus ROTTENBERG, 1870: 27, **syn. n.**

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Types examined

Calodera atricollis AUBÉ: Lectotype ♂, here designated: 1694 / Muséum Paris 1869, Coll. Ch. Aubé / Type / Lectotypus ♂ *Calodera atricollis* Aubé, desig. V. Assing 2000 / Callicerus atricollis Aubé det. V. Assing 2000 (MNHNP). Paralectotype ♀: Alpes du Piemont / 1694 / Muséum Paris 1869, Coll. Ch. Aubé / Type / Paralectotypus ♀ *Calodera atricollis* Aubé, desig. V. Assing 2000 / Callicerus atricollis Aubé det. V. Assing 2000 (MNHNP).
Callicerus obscurus var. *pedemontanus* BAUDI: Lectotype ♂, here designated: atricollis Aubé, Piemont / coll. Kraatz / coll. DEI Eberswalde / Lectotypus ♂ *Callicerus obscurus* var. *pedemontanus* Baudi desig. V. Assing 2000 / Callicerus atricollis Aubé det. V. Assing 2000 (DEI).
Callicerus clavatus ROTTENBERG: Lectotype ♂, present designation: Syrac / Calicerus [sic] clavatus Rottbg Type / obscurus det. Bernhauer / Syntypus / Coll. Rottenberg / coll. DEI Eberswalde / Lectotypus ♂ *Callicerus clavatus* Rottenberg desig. V. Assing 2000 / Callicerus atricollis Aubé det. V. Assing 2000 (DEI). Paralectotype ♂ [damaged]: Catan / Callicerus clavatus m / Syntypus / Coll. Rottenberg / coll. DEI Eberswalde / Callicerus clavatus Rottb / Paralectotypus ♂ *Callicerus clavatus* Rottenberg desig. V. Assing 2000 / Callicerus atricollis Aubé det. V. Assing 2000 (DEI).

Additional material examined

France: Provence: 2♂♂, 1♀, Alpes-Maritimes, Siagne, leg. Grouvelle (DEI, cAss); 2♂♂, 1♀, Alpes-Maritimes, Nice, 1882, leg. Bedel (MHNG, cAss).
Italy: Trentino - Alto Adige: 1♂, 1♀ [both teneral; the ♀ teratological], Vigalzano near Pergine Valsugana (TN), Lago Pudro, 500m, meadow, pitfall, 14.VI.-1.VII.1989, leg. Ferini (cZan). **Piemonte:** 1♂, Alpi marittime, Limone, Santa Anna, 1000-1200m, 15.VI.1951, leg. Fagel (IRSNB); 1♂, "Pedemont (Stentz)", coll. v. Heyden (DEI); 2♂♂, "Piemont Baudi" (DEI, NHMW); 2♂♂, "piemt. Baudi.", coll. Stierlin (DEI); 1♀, "Pedemont, Baudi", coll. Koltze (DEI); 1♂, "Piemont, Fauvel" (NHMW); 2♂♂, 1♀, "Piemont" (DEI). **Liguria:** 5♂♂, Imperia, San Remo, leg. Schneider (DEI, MNHUB, NHMW, NMP). **Emilia-Romagna:** 1♂, San Godenzo, Passo del Muraglione (prov. Forlì), 30.IV.1983, leg. Sama (cAss); 1♂, Porretta Terme, leg. Pirazzoli (NHMW); 1♂, Sala [second half of locality illegible], leg. Fiori (MNHUB); 3♀♀, Bazzano, 6.III.1903, leg. Sekera (HNHM); 2♀♀, same data, but 10.IV.1906 (HNHM, cAss); 4♀♀, Bazzano, leg. Reitter (NHMB, NHMW). **Toscana:** 1♂, 1♀, Alberese (GR), Azienda, V.1988, leg. Ganzi (cZan); 5♂♂, Lucca, leg. Reitter (NHMW, cAss); 1♂, Lucca, leg. Ragusa (HNHM); 1♂, Mte. Argentario, IV.1907, leg. Stolz (SMTD); 1♀, Mte. Argentario, leg. Moczarski (NHMW); 1♀, Grosseto, Braccagni, t. Sovata, 20.IV.1995, leg. Rößler (cVog); 3♀♀, locality not specified (FIS, HNHM); 3♂♂, locality not specified, leg. Bertolini, Merkl (NHMW, cAss). **Puglia:** 1♀, Monte Gargano, 2.V.1907, leg. Hilf (DEI); 1♀, same data, but 17.IV.1907 (cAss); 1♀, Mt. Gargano (NMP). **Campania:** 1♂, Napoli, Sorrento, leg. Zimmermann (NHMW). **Lazio:** 2♂♂, W Fiuggi, Colle Forno, 29.III.1974, leg. Rossi (cZan); 1♀, Ardea, 8.V.1975, leg. Rossi (cZan). **Basilicata:** 1♀, Accettura, t. Saladrella (MT), 525m, Quercetum, 9.IV.198 [sic], leg. Angelini (cAss); 1♀, Corleto Perticata (PZ), 920m, 26.VI.1989, leg. Angelini (cAss); 2♂♂, Lucania, Policoro (MT), 31.V.1976, leg. Angelini (cZan). **Calabria:** 1♀, Aspromonte, Piani Aspr. (RC), 1000m, palude, 1.V.1993, leg. Angelini & Sabella (cWun); 1♀, ca. 10km S Palmi, Sant´Eufemia d´Aspromonte, leg. Paganetti (SMTD); 1♂, 1♀, Gerace, leg. Paganetti (SMTD, cAss). **Sicilia:** 1♀ [with mature egg in ovaries], Sicilia, Bosco Marabotta, Montalbano (ME), 12.VI.1982, leg. Angelini (cAss); 1♀, Nicosia (EN), F. Salso, 2.VI.1983, leg. Gerecke (cZan); 1♂, "Sizilien" (IRSNB). **Locality ambiguous, illegible, or not specified:** 1♂, Mentoni (?), leg. Brenske (NHMW); 1♀, "Imegna" (NMP); 1♂, "57", coll. Kraatz (DEI); 1♀, "Ital." (DEI); 1♂, 1♀, "Italia, Reitter" (DEI, NHMW); 2♂♂, 1♀, "Italia" (IRSNB, FIS);.

Redescription

Measurements (mm) and ratios (range, arithmetic mean; n = 61): AL ♂: 1.63 - 1.98, 1.84; AL ♀: 1.52 - 1.87, 1.77; AxL ♂: 0.14 - 0.22, 0.17; AxL ♀: 0.11 - 0.14, 0.13; AxiL ♂: 0.35 - 0.48, 0.40; AxiL ♀: 0.32 - 0.39, 0.36; HW: 0.53 - 0.65, 0.60; PW: 0.63 - 0.77, 0.70; PL: 0.57 - 0.68, 0.63; EL: 0.54 - 0.74, 0.65; HTiL ♂: 0.77 - 0.94, 0.86; HTiL ♀: 0.74 - 0.92, 0.85; HTaL ♂: 0.53 - 0.68, 0.60; HTaL ♀: 0.54 - 0.60, 0.58; ML: 0.51 - 0.60, 0.55; TL: 2.9 - 4.7, 3.7; PW/HW: 1.12 - 1.27, 1.18; PW/PL: 1.07 - 1.18, 1.12; EL/PL: 0.92 - 1.11, 1.03; HTaL/HTiL ♂: 0.68 - 0.75, 0.71; HTaL/HTiL ♀: 0.65 - 0.69, 0.77; AxiL/AxL ♂: 2.09 - 2.70, 2.38; AxiL/AxL ♀: 2.33 - 3.00, 2.80.

In external morphology similar to *C. obscurus* and *C. muensteri* but distinguished as follows:

Size greater (see measurements; no overlap with *C. obscurus*). Coloration variable, ranging from completely blackish, with only the legs brown, to bicoloured, with head and pronotum usually brown to dark brown, and the elytra, legs, and antennae distinctly lighter.

Antennae somewhat resembling those in *C. obscurus*, also usually with distinct sexual dimorphism, but much longer (see measurements) and antennomeres IV-IX not or only weakly transverse (Figs. 8i-j, 9).

Legs more slender than in *C. obscurus* (see measurements and Fig. 8k), sexual dimorphism indistinct, but metatarsus in ♂ on average longer in relation to metatibia than in ♀ (see ratio HTaL/HTiL).

♂: hind margin of sternum VIII as in *C. obscurus*; aedeagus distinctly larger than in *C. obscurus* and *C. muensteri* (see measurements and Fig. 10) and, in ventral view, wider (Figs. 8a-b); internal structures and apical lobe of paramere as in Figs. 8c-d.

♀: sternum VIII similar to that in *C. obscurus* (Fig. 8h); spermatheca with longer capsule and longer duct than in *C. obscurus* (Figs. 8e-g).

Intraspecific variation and comparative notes

The extent of intraspecific variation in *C. atricollis* is similar to that in *C. obscurus*. In Sicily, the species is usually smaller and has shorter antennae. The length and shape of the antennomeres (especially antennomere X) and the coloration are particularly variable (see measurements and ratios); aberrant specimens were observed especially in the south of the range of distribution (Puglia, Calabria, Sicily). In contrast to *C. obscurus*, specimens with reduced microsculpture of the forebody were not observed.

While *C. atricollis* is readily distinguished from *C. obscurus* by size alone (Figs. 9-10), a separation from *C. muensteri*, whose range of distribution widely overlaps with that of *C. atricollis* (Map 2), is sometimes difficult. *C. atricollis* differs from *C. muensteri* by greater average size, the more pronounced sexual dimorphism of the antennae (especially in ♂♂), the longer antennae and legs, the usually more pronounced microsculpture of the forebody, the larger and wider median lobe of the aedeagus, and the usually somewhat longer duct and more slender capsule of the spermatheca. There is, however, some overlap and considerable intraspecific variation of size-related parameters and other external characters, and the spermatheca as well as the the apical antennomeres vary considerably in shape (Fig. 9). The aedeagus is usually larger in *C. atricollis* than in *C. muensteri*, but this distinction is not clear-cut (Fig. 10).

Comments

In the original description of *C. atricollis*, AUBÉ (1850) specified neither a holotype nor the number of type specimens. In view of the frequent confusion of *Callicerus* species and in order to fix a single name-bearing type, the male syntype from the Aubé collection is here designated as lectotype.

In distinguishing his material of *Callicerus* from Piemonte from typical *C. obscurus* and naming it var. *pedemontanus* Fauvel i. l., BAUDI (1869) established an available species group name. According to the original description, syntypes were given to Kraatz and

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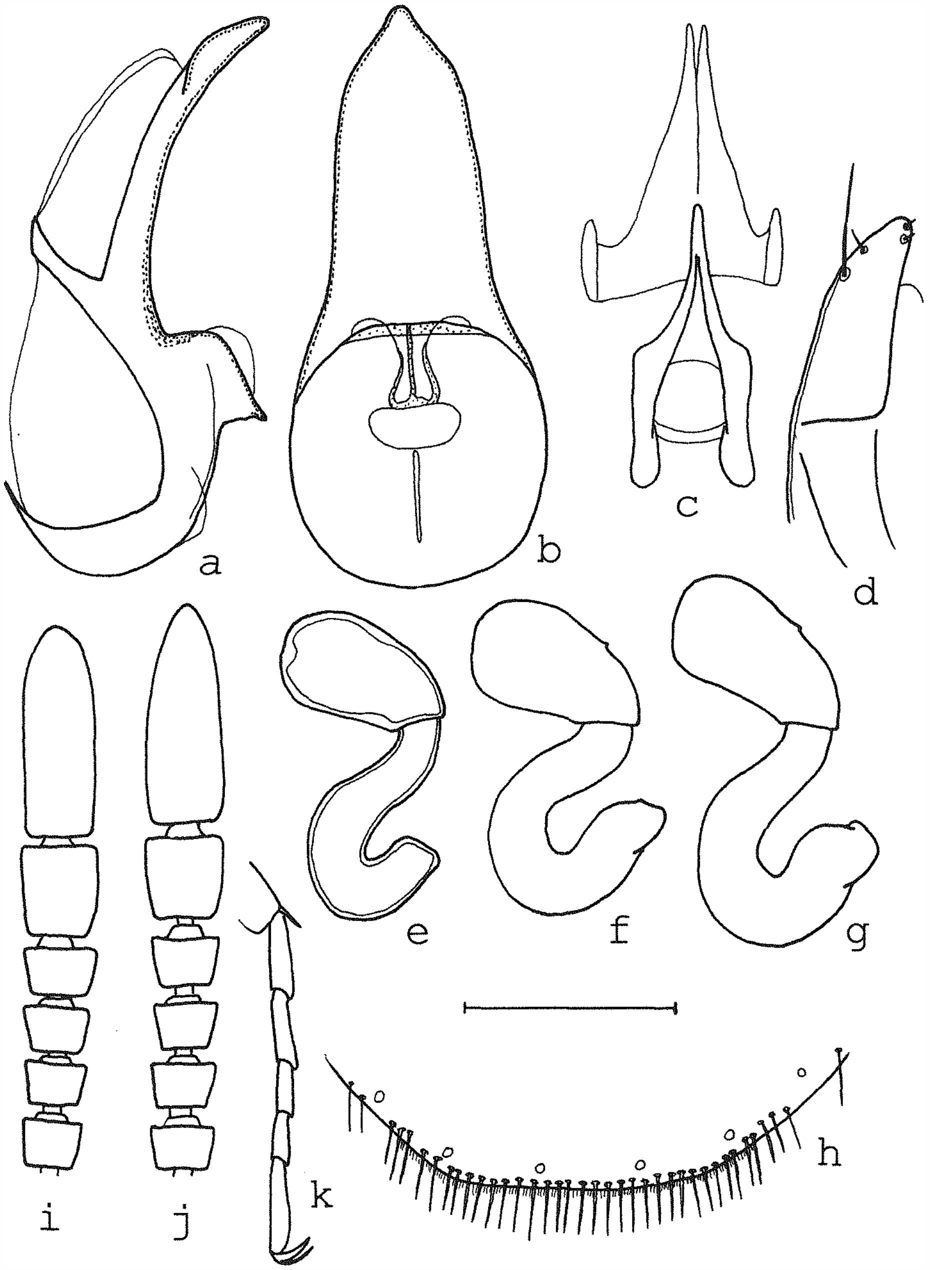

Figs. 8a - k: *Callicerus atricollis* (AUBÉ). Median lobe of aedeagus in lateral (**a**) and in ventral view (**b**); internal structures of aedeagus in ventral view (**c**); apical lobe of paramere (**d**); spermathecae of 3 ♀♀ (**e - g**); posterior margin of ♀ sternum VIII (**h**); apical part of ♂ antenna (**i**); apical part of ♀ antenna (**j**); metatarsus (**k**). Scales: c - d: 0.1 mm; a - b, e - h: 0.2 mm; i - k: 0.4 mm.

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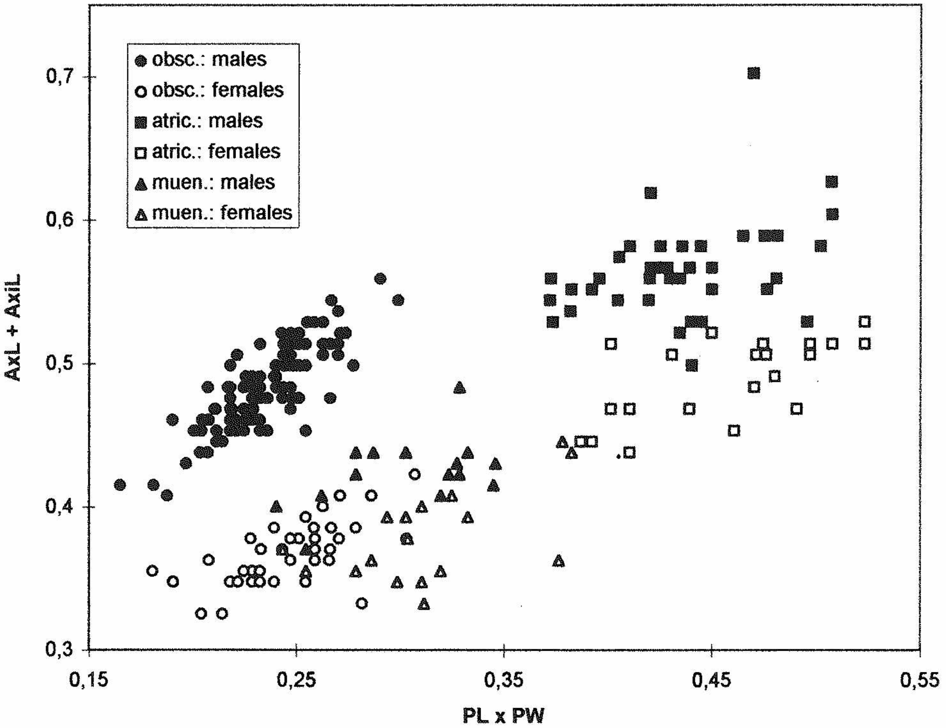

Fig. 9: *Callicerus obscurus* GRAVENHORST, *C. muensteri* BERNHAUER, and *C. atricollis* (AUBÉ). Variation of the combined length of antennomeres X and XI (AxL + AxiL) in relation to pronotum size in males and females. Abbreviations: obsc. = *C. obscurus*; atric. = *C. atricollis*; muen. = *C. muensteri*.

Curtis ("Typicis a DD. Kraatz et Curtis donatis"). One of these types was found in the Kraatz collection. Additional specimens collected by Baudi in Piemonte were located in the Stierlin collection (DEI), but their type status must be considered doubtful. In order to fix a single name-bearing type and to secure the synonymy indicated above, the male syntype from the Kraatz collection is here designated as lectotype. The longstanding synonymy of *C. pedemontanus* with *C. atricollis* (AUBÉ) is here confirmed.

The original description of *C. clavatus* is based on two syntypes from Sicily ("Syr. und Cat. je 1 Ex.") (ROTTENBERG, 1870), both of which were found in the collections of the DEI. In order to fix a single name-bearing type, the male syntype in better condition was designated as lectotype. The name was previously treated as a synonym of *C. obscurus* GRAVENHORST (e. g. BERNHAUER & SCHEERPELTZ, 1926; SCHEERPELTZ, 1956), but an examination of the types revealed that they are in fact conspecific with *C. atricollis* (AUBÉ), which is the senior name.

Distribution and bionomics

As can be inferred from the material examined, *C. atricollis* is an Adriatomediterranean faunal element sensu LATTIN (1967). The distribution ranges from the Alpes maritimes and Trentino in the northwest and north to Sicily in the south (Map 3); for additional records see BORDONI (1973, 1974) and FOCARILE (1964). The presence of *C. atricollis* in Corsica is doubtful (see notes below *C. muensteri*).

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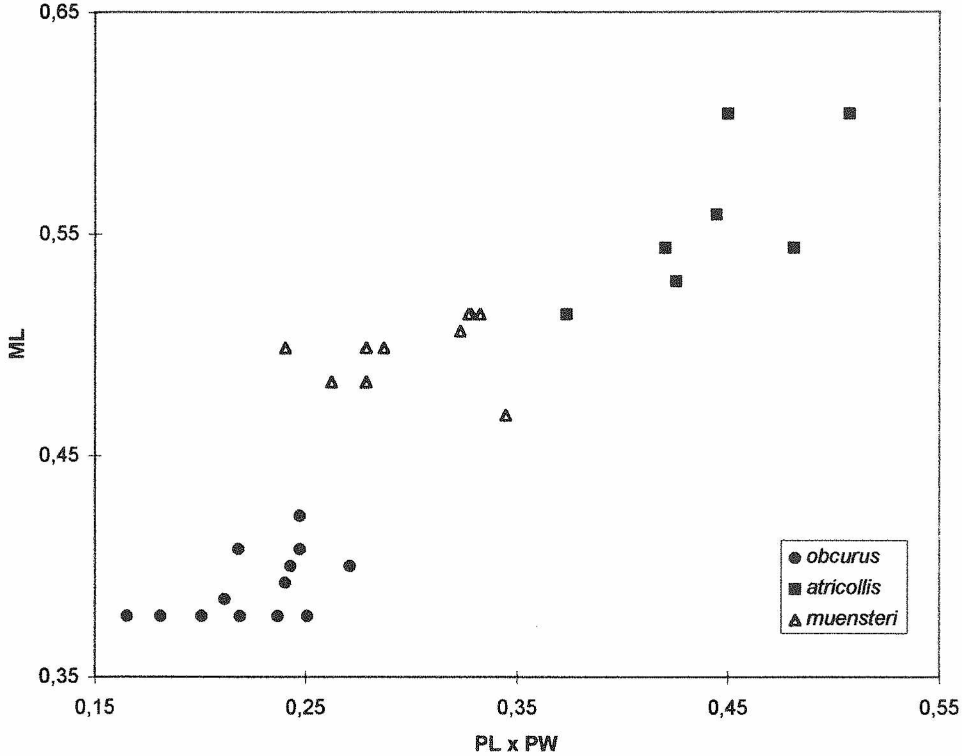

Fig. 10: *Callicerus obscurus* GRAVENHORST, *C. muensteri* BERNHAUER, and *C. atricollis* (AUBÉ). Variation of the length of the median lobe of the aedeagus (ML) in relation to pronotum size.

As indicated on the labels attached to the material examined, the species has been found on river banks, in meadows, swamps, and in forests at elevations of up to 1200m and during the period from March through June. Two specimens caught by pitfall trapping in the second half of June were teneral; the ovaries of a female taken in the beginning of June contained a mature egg. Apparently, the life history of *C. atricollis* is similar to that of *C. obscurus*. OSELLA & ZANETTI (1975) observed a specimen in a nest of *Talpa europaea* in February.

4.4.4. *Callicerus appenninus* sp. n.

Figs. 11a-c

Holotype ♀: I. Abruzzi, Mte. Terminillo, Fagetum, 27.VII.77, Brandmayr / Holotypus ♀ *Callicerus appenninus* sp. n. det. V. Assing 2000 (cAss).

Description

Measurements (mm) and ratios: AL: 1.17; AxL: 0.06; AxiL: 0.21; HW: 0.41; PW: 0.45; PL: 0.40; EL: 0.39; HTiL: 0.50; HTaL: 0.35; TL: 2.86; PW/HW: 1.11; PW/PL: 1.13; EL/PL: 0.98; HTaL/HTiL: 0.70; AxiL/AxL: 3.50.
Externally similar to *C. obscurus*, but distinguished as follows:
Body size small, size parameters at low end of range of *C. obscurus*.

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Microsculpture of forebody present and isodiametric, but much weaker; surface more shining and puncturation more distinct.

Eyes smaller than in *C. obscurus*, only slightly more than half the length of postgenae in dorsal view; antenna in ♀ with shorter antennomere XI and with distinctly transverse antennomere X (see measurements), the latter only indistinctly longer than IX (Fig. 11c); shape of antennae somewhat resembling that in *C. sparsicollis*.

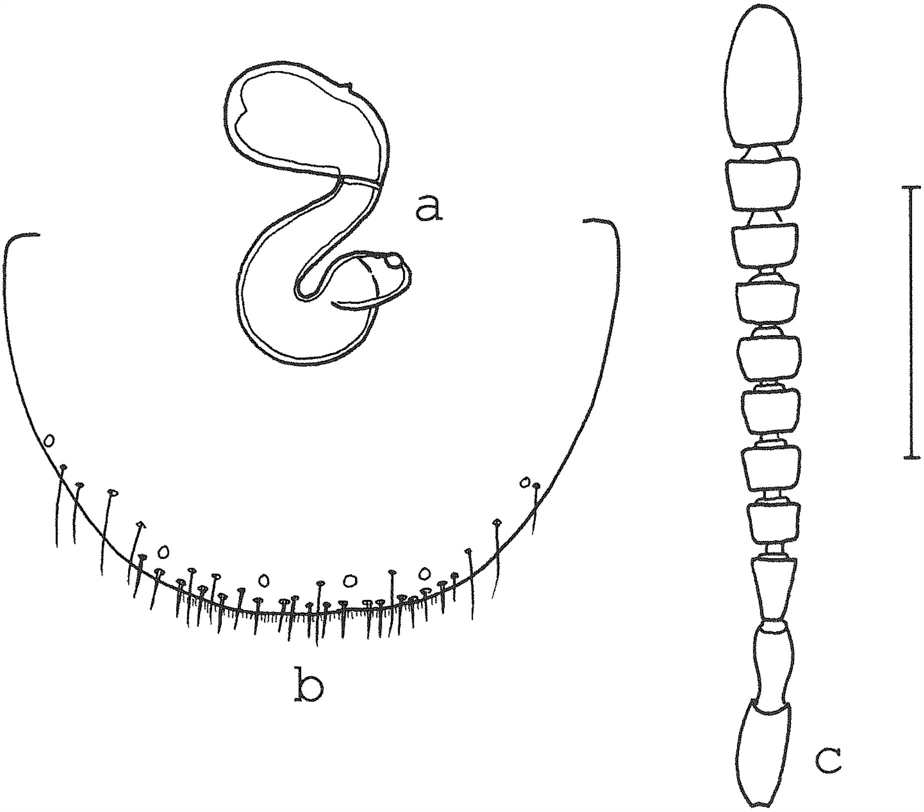
Hind wings fully developed.

♂: unknown.

♀: posterior margin of sternum VIII with shorter and finer setae (Fig. 11b); proximal part of spermathecal duct with distinct torsion (Fig. 11a).

Comparative notes and comments

From all congeners of small body size, apart from *C. sparsicollis* (see comparative notes below that species), *C. appenninus* is readily distinguished by the weak microsculpture and the more shining forebody, and especially by the distinctly transverse antennomere X and the short antennomere XI.



Figs. 11a - c: *Callicerus appenninus* sp. n. Spermatheca (**a**); outline of ♀ sternum VIII (**b**); ♀ antenna (**c**). Scales: a - b: 0.2 mm; c: 0.4 mm.

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It has not been possible to find more specimens of *C. appenninus* in the great number of collections examined, so that the holotype was initially suspected to represent an aberrant specimen of *C. obscurus*. However, there are several characters evidently separating *C. appenninus* from *C. obscurus*, especially the morphology of the antennae (Fig. 11c), the smaller eyes, the twisted duct of the spermatheca, and also the weaker microsculpture of the forebody, suggesting that this specimen in fact represents a distinct species. Moreover, most species of the genus are rare or very rare, and only few records of *Callicerus* have become known from the central and southern Apennines.

Distribution and bionomics

The holotype was collected with pitfall traps in a beech forest on the Monte Terminillo (RI), Lazio.

4.4.5. *Callicerus sparsicollis* BERNHAUER, 1915

Figs. 12a-j, Map 3

Callicerus (*Sphaerotaxus*) *sparsicollis* BERNHAUER, 1915: 77f.
Callicerus (*Sphaerotaxus*) *sparsicollis*: SCHEERPELTZ (1956)

Types examined

Lectotype ♀, present designation: Krivosije Paganetti / sparsicollis Bernh. Typus / Chicago NHMus, M. Bernhauer Collection / Lectotypus ♀ *Callicerus sparsicollis* Bernhauer desig. V. Assing 2000 (FMNH).
Paralectotypes: 1♀: Krivosije Paganetti / sparsicollis Brh Cotypus / Chicago NHMus, M. Bernhauer Collection / Paralectotypus ♀ *Callicerus sparsicollis* Bernhauer desig. V. Assing 2000 (FMNH); 1♀: ♂ / Krivosije Paganetti / COTYPUS Callicerus sparsicollis Bernhauer (NHMW); 1♀: ♂ / Krivosije Paganetti / Callicerus sparsicollis Bh. / Dr. M. Bernhauer donavit / COTYPUS Callicerus sparsicollis Bernhauer / ex coll. Scheerpeltz (NHMW)

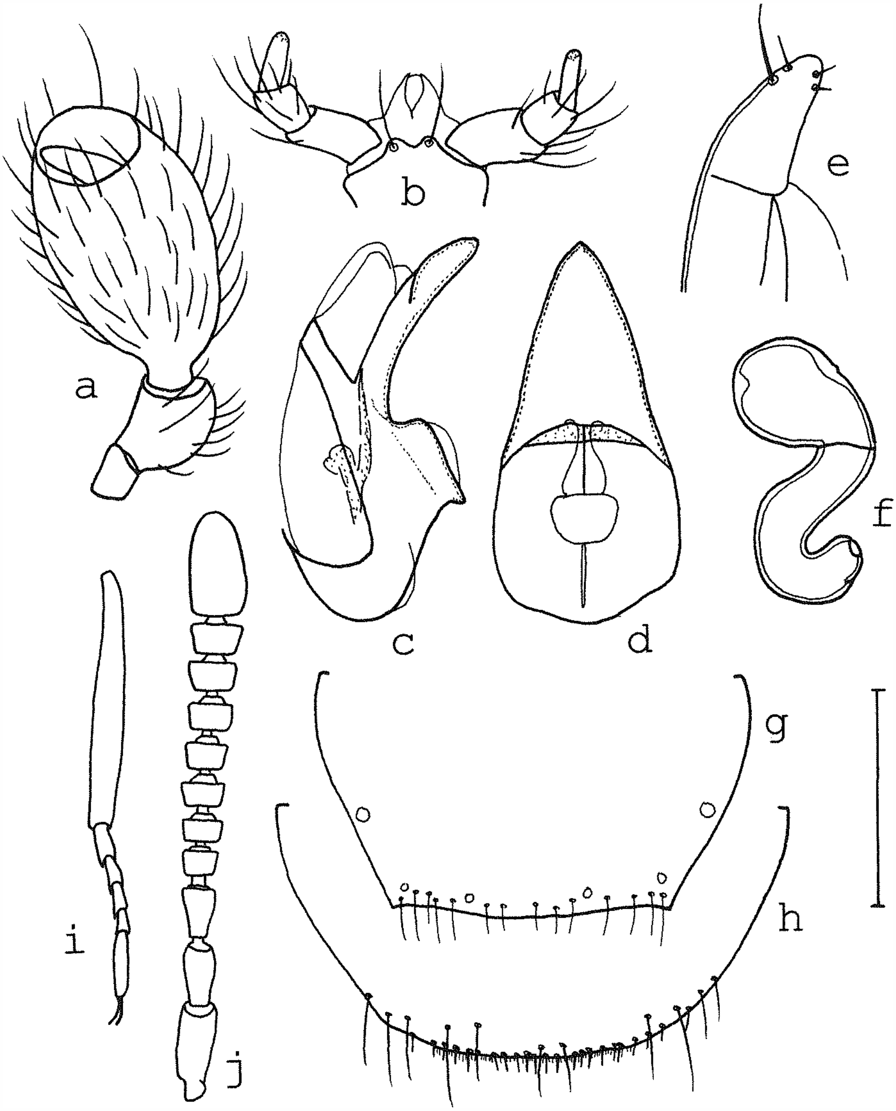
Additional material examined

Bosnia-Herzegovina: 1♀ [teneral], Sarajevo env., Gromiljak, 300m, 5.V.1990, leg. Wunderle (cWun).
Yugoslavia: 1♂, Serbia, Rtanj planina near Vrmdža, leg. Breit (cAss).

Redescription

Measurements (mm) and ratios (range; n=6): AL: 1.05 - 1.28; AxL: 0.05 - 0.06; AxiL: 0.20 - 0.21; HW: 0.38 - 0.42; PW: 0.44 - 0.53; PL: 0.37 - 0.44; EL: 0.32 - 0.41; HTiL: 0.42 - 0.51; HTaL: 0.27 - 0.31; ML: 0.37; TL: 2.4 - 3.2; PW/HW: 1.14 - 1.26; PW/PL: 1.16 - 1.22; EL/PL: 0.86 - 0.96; HTaL/HTiL: 0. 59 - 0.66; AxiL/AxL: 3.25 - 3.86.
Most similar in size and other external characters to *C. appenninus*, but distinguished from that species as follows:
Body colour lighter, light brown to brown, with the head and the preapical abdominal segments weakly or distinctly infuscate; elytra sometimes yellowish, legs testaceous.
Head dorsally with distinct longitudinal or oval median impression; eyes somewhat smaller and less bulging, in dorsal view ca. 1/2 the length of postgenae; antennae of similar morphology as in *C. appenninus* (Fig. 12j), without sexual dimorphism; maxillary palpi with the second and especially the third joint shorter and relatively wider (Fig. 12a); labium as in Fig. 12b.

Pronotum more transverse and relatively wider (see ratios PW/PL and PW/HW); in ♀ with shallow and narrow median impression, in the only ♂ available with extensive and more distinctly sulcate median impression.
Elytra relatively short (see ratio EL/PL); brachypterous species, hind wings ca. 1.5 times the length of elytra.



Figs. 12a - j: *Callicerus sparsicollis* BERNHAUER. Maxillary palpus (**a**); labium (**b**); median lobe of aedeagus in lateral (**c**) and in ventral view (**d**); apical lobe of paramere (**e**); spermatheca (**f**); outline of ♀ tergum VIII (**g**) and ♀ sternum VIII (**h**); metatibia and metatarsus (**i**); ♀ antenna (**j**). Scales: a - b, e: 0.1 mm; c - d, f - h: 0.2 mm; i - j: 0.4 mm.

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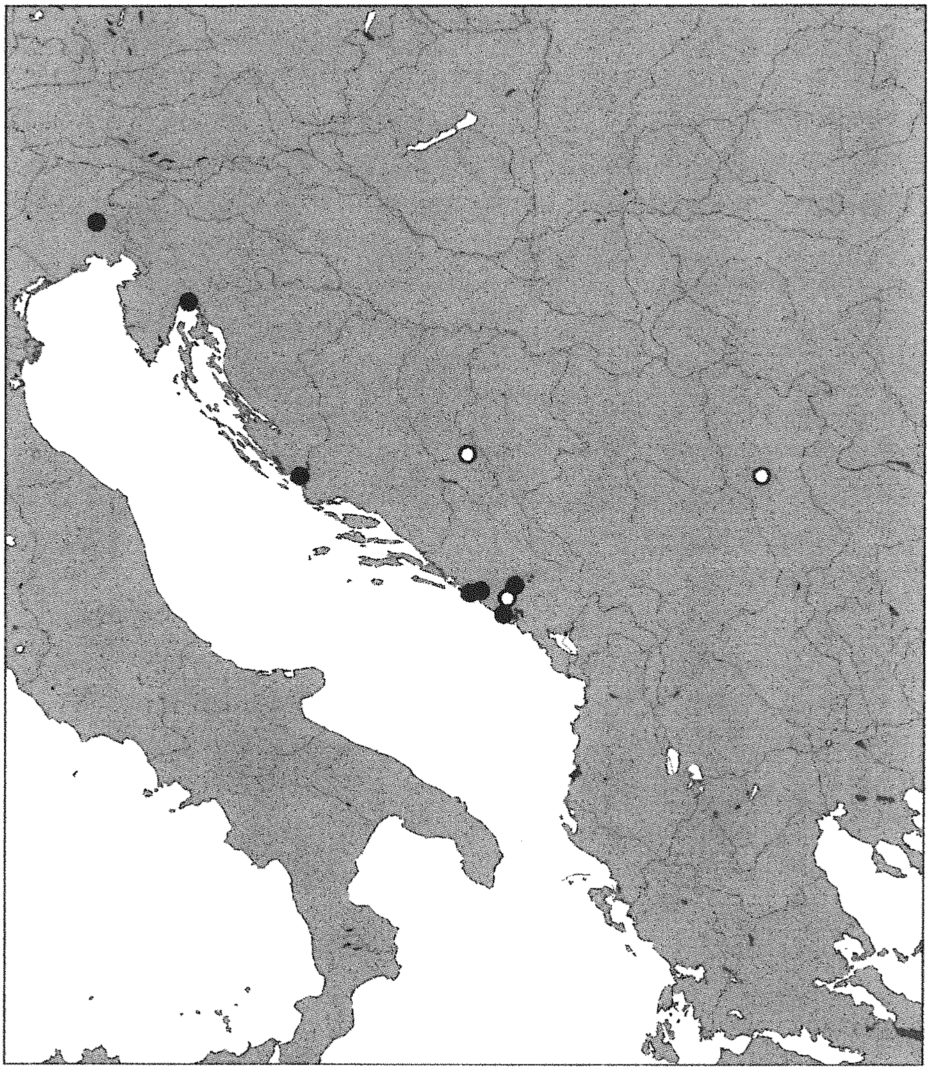
Tarsi, especially metatarsomeres I-IV, shorter (see measurements and Fig. 12i).
♂: tergum VIII truncate posteriorly; posterior margin of sternum VIII convex and with row of short fine setae; median lobe of aedeagus small, its ventral process shorter and broader than in *C. obscurus* (Figs. 12c-d); apical lobe of paramere with setae similar to those in *C. obscurus*, but shape broader and shorter (Fig. 12e).
♀: tergum VIII as in Fig. 12g; hind margin of sternum VIII with very short and thin setae (Fig. 12h); spermatheca similar to that in *C. obscurus* (Fig. 12f).



Map 3: Distribution of *Callicerus sparsicollis* BERNHAUER (open circles) and *C. fulvicornis* (EPPELSHEIM) (filled circles) based on revised records.

Comparative notes and systematics

For distinction from *C. appenninus* see description above. From all other congeners, *C. sparsicollis* differs in the shorter and stouter maxillary palpi, the short tarsi, the weak microsculpture and more shining integument of the forebody, the reduced hind wings, the short antennae, and especially the distinctly transverse antennomere X.

Comments

In the original description, which is based on few specimens ("in wenigen Stücken"), a holotype is not specified. In order to fix a single name-bearing type and to secure the present interpretation of the species, the female syntype in better condition from the Bernhauer collection was designated as lectotype. The possibility that additional unexamined syntypes exist cannot be ruled out.

Distribution and bionomics

The currently known distribution of *C. sparsicollis* is confined to three localities in Bosnia-Herzegovina and Yugoslavia (Montenegro, Serbia) (Map 3). One of the specimens examined was teneral; it was collected in May at an altitude of 300m. No further ecological data have become available.

4.4.6. *Callicerus fulvicornis* EPPELSHEIM, 1883

Figs. 13a-g, Map 3

Callicerus atricollis var. *fulvicornis* EPPELSHEIM, 1883: 255.
Callicerus (*Semiris*) *fulvicornis*: GANGLBAUER (1895).
as synonym of *C. clavatus*: SAINTE-CLAIRE DEVILLE (1914).
Callicerus (*Semiris*) *fulvicornis*: SCHEERPELTZ (1956).
Callicerus (*Semiris*) *gagliardii* SCHEERPELTZ, 1956: 37, 42ff., **syn. n.**

Types examined

Callicerus fulvicornis EPPELSHEIM: Lectotype ♂, here designated: Hergowina Drieno. [=Drijeno] Reitter / 20. / fulvicornis mihi. / Collect. Eppelsh. / COTYPUS / Lectotypus ♂ *Callicerus fulvicornis* Eppelsheim, desig. V. Assing 2000 / Callicerus fulvicornis Eppelsheim, det. V. Assing 2000 (NHMW).

Paralectotype ♀: Locaia / 68. / fulvicornis mihi. Hungar. mer. v. Bodemeyer / Collect. Eppelsh. / fulvicornis Epp. Deuts. ent. Zeit. 1881. p. 78 / TYPUS / Paralectotypus *Callicerus fulvicornis* Eppelsheim, desig. V. Assing 2000 / Callicerus rigidicornis (Erichson) det. V. Assing 2000 (NHMW).

Callicerus gagliardii SCHEERPELTZ: Holotype ♀: Udine, IV.-27, A. Gagliardi / Callicerus sp. n. / TYPUS Callicerus (Semiris) Gagliardii O. Scheerpeltz / Holotypus Callicerus gagliardii Scheerpeltz rev. V. Assing 2000 (MCSNT).

Additional material examined

Yugoslavia: 1♂, Montenegro, Kameno, leg. Paganetti (MHNG); 1♀, Montenegro, Herceg-Novi (NHMW); 1♂, 1♀, "Dalm. m. Radostak" [=Radovii near Herceg-Novi], leg. Moczarski (NHMW, cAss).
Croatia: 2♂♂, Sibenik, Sebenico, leg. Weirather (SMTD); 1♂, 2♀♀, Rijeka (SMTD); 2♀♀, Dubrovnik ["Ragusa"] (NHMW).
Bosnia-Herzegovina: 1♀, locality not specified (NMP).

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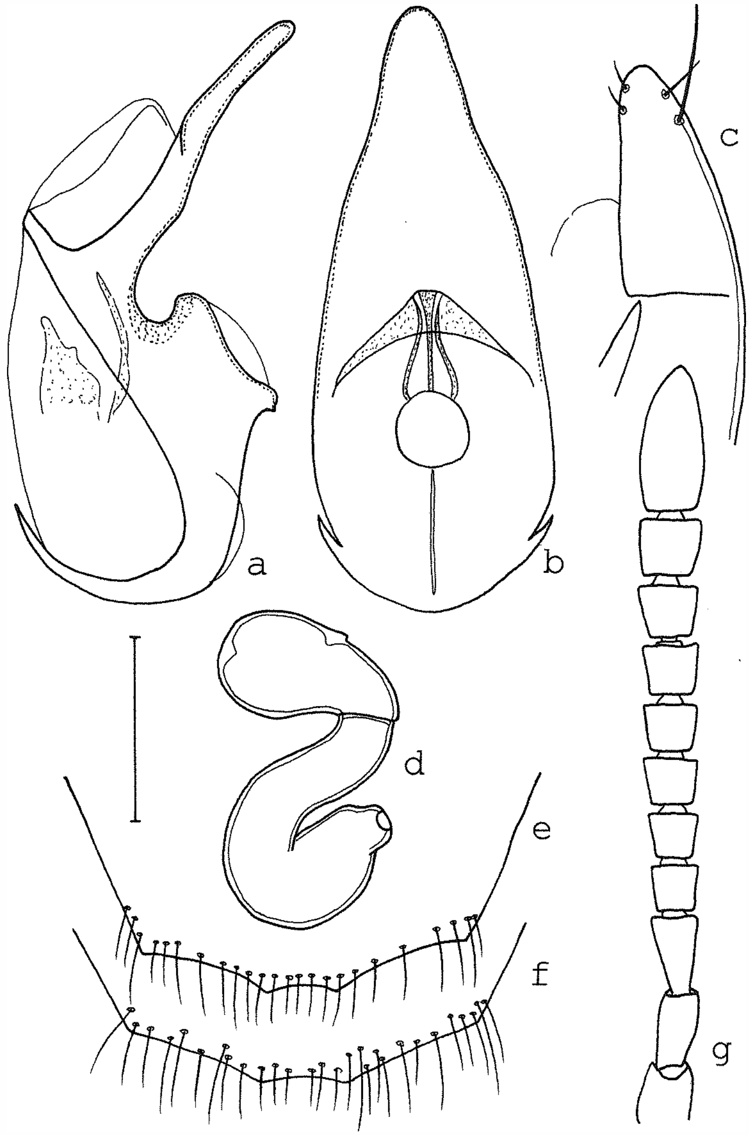

Figs. 13a - g: *Callicerus fulvicornis* EPPELSHEIM. Median lobe of aedeagus in lateral (**a**) and in ventral view (**b**); apical lobe of paramere (**c**); spermatheca (**d**); posterior margin of ♂ tergum VIII (**e**) and ♀ tergum VIII (**f**); antenna (**g**). Scales: c: 0.1 mm; a - b, d - f: 0.2 mm; g: 0.4 mm.

Redescription

Measurements (mm) and ratios (range; n=12): AL: 1.67 - 1.90; AxL: 0.11 - 0.12; AxiL: 0.26 - 0.31; HW: 0.51 - 0.62; PW: 0.63 - 0.80; PL: 0.54 - 0.65; EL: 0.51 - 0.74; HTiL: 0.65 - 0.86; HTaL: 0.38 - 0.50; ML: 0.63 - 0.65; TL: 3.0 - 4.9; PW/HW: 1.22 - 1.32; PW/PL: 1.14 - 1.26; EL/PL: 0.94 - 1.14; HTaL/HTiL: 0.58 - 0.64; AxiL/AxL: 2.43 - 2.86.

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Distinctly larger than *C. obscurus*; coloration similar, but antennae ferrugineous and legs testaceous to light brown; more distinctly bicoloured, with the hind margins of the abdominal segments and elytra, especially near suture, distinctly lighter than the dark brown to blackish head and pronotum.

Head of similar shape as in *C. obscurus*; eyes slightly smaller and more weakly bulging than in *C. obscurus*; antennae without sexual dimorphism; antennomere III slightly longer than II, IV-X ± subquadrate, weakly oblong, or more rarely weakly transverse; XI approximately as long as the combined length of IX and X (Fig. 13g).

Pronotum more transverse, wider in relation to head and elytra than in *C. obscurus* (see ratios PW/PL and PW/HW), and only weakly tapering posteriorly; dorsal surface ± flattened, in posterior half ± extensively impressed, sulcate, and/or with coarser microsculpture along midline; midline in posterior half usually without puncturation; surface without appreciable shine; puncturation of similar density as in *C. obscurus*, but, owing to the very pronounced microsculpture, rather indistinct; pubescence pattern similar to that in *C. obscurus*.

Elytra approximately as long as pronotum, with distinct microreticulation and dense puncturation; hind wings fully developed.

Legs as in *C. obscurus*, but tarsi relatively shorter (see ratio HTiL/HTaL).

Abdomen finely and not very densely punctate; microsculpture shallow, mostly composed of short transverse meshes.

♂: tergum VII near middle of posterior margin with pair of small granula; tergum VIII of characteristic shape, hind margin centrally strongly projecting and in the middle shallowly concave (Fig. 13e); posterior margin of sternum VIII obtusely pointed or strongly convex; aedeagus with median lobe of distinctive shape, ventral process relatively longer and more slender than in other congeners (Figs. 13a-b); apical lobe of paramere with longer apical setae than in *C. obscurus* and related species (Fig. 13c).

♀: tergum VIII of similar shape as in ♂ (Fig. 13f); posterior margin of sternum VIII weakly convex, marginal setae relatively thin; spermatheca with short and wide duct (Fig. 13d).

Intraspecific variation

High intraspecific variation was observed especially for body size, proportions, coloration, and the extent and shape of the pronotal impression.

Comments

Callicerus fulvicornis was originally described as a variety of *C. atricollis* (AUBÉ), but regarded as a distinct species by subsequent authors. The two syntypes are not conspecific: the specimen from "Locaia" is a nanistic *C. rigidicornis* (ERICHSON), whereas the specimen from "Drieno" agrees with *C. fulvicornis* of most subsequent authors. Therefore, and in order to preserve Eppelsheim´s name, which would otherwise become a synonym of *C. rigidicornis* (ERICHSON), the latter syntype was designated as lectotype. The holotype of *C. gagliardii* is conspecific with the lectotype of *C. fulvicornis*, so that *C. gagliardii* SCHEERPELTZ is placed in the synonymy of *C. fulvicornis* EPPELSHEIM.

Distribution and bionomics

Based on verified records, the *C. fulvicornis* is known from a few localities in northeastern Italy, Croatia, Bosnia-Herzegovina, and Yugoslavia (Montenegro) (Map 3). The record from the Netherlands (HORION, 1935) is doubtlessly based on a misidentification (see

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also HORION, 1967). RAMBOUSEK (1916) reports the species from the surroundings of Prilep in Macedonia, but this record should be considered doubtful, as *C. fulvicornis* has frequently been confused with *C. rigidicornis*. Ecological data are specified neither in the literature nor on the labels attached to the material examined.

4.4.7. *Callicerus rigidicornis* (ERICHSON, 1839)

Figs. 14a-u, 15-18, Map 4

Homalota rigidicornis ERICHSON, 1839: 82f.
Callicerus rigidicornis: KRAATZ (1856).
Semiris fusca HEER, 1839: 343; synonymy by KRAATZ (1856).
Calodera unicarinata FAIRMAIRE & LABOULBÈNE, 1854: 378.
Callicerus (*Semiris*) *rigidicornis*: MULSANT & REY (1874).
Callicerus (*Semiris*) *rigidicornis*: GANGLBAUER (1895).
Callicerus (*Semiris*) *rigidicornis*: SCHEERPELTZ (1956).
Callicerus (*Semiris*) *mandli* SCHEERPELTZ, 1956: 38, 44ff., **syn. n.**
Callicerus (*Semiris*) *beieri* SCHEERPELTZ, 1959: 411ff., **syn. n.**

Types examined

H. rigidicornis ERICHSON: holotype ♂ [remounted]: 5351 / rigidicornis Er. Geneva Schüpp / Hist.-Coll. (Coleoptera) Nr. 5351, Homalota rigicornis Erichs. Geneva, Schüpp., Zool. Mus. Berlin / Holotypus *Homalota rigidicornis* Erichson, rev. V. Assing 2000 / Callicerus rigidicornis (Erichson), det. V. Assing 2000 (MNHUB).
C. mandli SCHEERPELTZ: holotype ♀: Kalofer, Umg. Blg. Tundscha-Bach 900m, Mandl / leg. C. Mandl V.-VI.1941 / TYPUS Callicerus (Semiris) Mandli O. Scheerpeltz / ex coll. Scheerpeltz / Callicerus ridicornis (Erichson) ♀ det. V. Assing 2000 (NHMW).
C. beieri SCHEERPELTZ: holotype ♂: ♀ [sic] / Mittel-Griechenland Dr. M. BEIER, 6.VI.33 / Nisista, Xeravunei 700-800m Gesiebe / TYPUS Callicerus Beieri O. Scheerpeltz / ex coll. Scheerpeltz / Callicerus ridicornis (Erichson) ♂ det. V. Assing 2000 (NHMW).

Additional material examined

Denmark: 1♀, Lolland, Nørreballe, 27.V.1979, leg. Prizel (cGil).
Portugal: 2♂♂ [teneral], Aveiro, Luso, mata de Bucaco, V.1959, leg. Fagel (IRSNB, cAss).
Spain: Asturias:1♂, Peña Ubiña, Puerto Ventana, 1600m, 2.VI.1998, leg. Hetzel (cFel); 1♂, same locality, 1400m, beech forest and pasture, 43°03N, 06°00W, 2.VI.1998, leg. Lompe (cAss). **Galicia:** 1♂, Lugo, Louzarela, Pto. El Poyo Cabeza Grande, 42°42N, 07°09W, 1050m, 31.V.1998, leg. Lompe (cAss); 1♂, Sierra de Ancares, Degrada Monte da Varg, 42°49N, 06°53W, below *Ilex*, 29.V.1998, leg. Lompe (cAss). **Castilla-León:** 1♀, Zamora, ca. 10 km W Ribadelago, Sierra Segundera, 31.VII.1983, leg. Otero (MNHUB). **Cataluña:** 1♂, Segretal near Martinet, leg. Franz (MHNG); 1♂, Gerona env., leg. Franz (MHNG); 1♂, NE Roses, Cadaqués, leg. Franz (MHNG); 1♀, Barcelona env., Tordera, bank of stream, 2.IV.1986, leg. Sprick (cAss); 1♂, Tordera, 28.III.1984, leg. Hebauer (cVog); 1♀, Barcelona, Puerto Ordal, 12.III.1959, leg. Besuchet (MHNG).
France: 1♀, Hautes Pyrénées, road to Col de Tourmalet, above Bareges, 1500m, 23.V.1994, leg. Schülke & Grünberg (cAss); 1♀, Hautes Pyrénées (IRSNB); 3♂♂ [1♂ teneral], Languedoc-Roussillon, Pyrénées orientales, Mt. Alberes, Forêt de Sorede, 400m, 11.-13.VI.1999, leg. Wolf (cSch, cAss); 1♀, Pyrénées orientales, Gorge de Lavall, leg. Löbl (MHNG); 1♂, "Pyr. or.", coll. Kraatz (DEI); 1♂, Midi-Pyrénées, Millau, 1941(?), coll. Ochs (MHNG); 1♂, Gironde, Bordeaux, Gradignan, garden, V.1976, leg. Tempère (cVog); 1♂, Dept. Ardèche, SW Les Vans, Naves: Grte. Jean-Claude, 3.IV.1990, leg. Scheuern (cWun); 1♂, Centre, Perrusson (I. L.), leg. Méquignon (MHNG); 1♂, Champagne-Ardennes, Marne, Fismes, V.1917, leg. Méquignon (MHNG); 1♂, Rhône-Alpes, Lyon (MNHUB); 2♀♀, Lyon, leg. Rey (NHMW); 1♀, Alsace, Strasbourg (FIS); 1♂, "Gallia" (DEI). **Locality ambiguous or not specified:** 1♀, Cambes, 26.III.1936, leg. Giraud (MHNG); 1♂, Cazaux, 22.V.1904, leg. Giraud (MHNG); 1♀, Luz [?], leg. Giraud (MHNG); 2♂♂, "Frankreich", leg. Guillebeau (NHMW); 1♂, locality illegible, 10.VI.1932, leg. Giraud (MHNG).
Belgium: 1♂ [nanistic], Maasmechelen, Eydengroeve, pitfall, V.1987, leg. Crevecoeur (cCre).

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British Isles: England: 2♀♀, Surrey, Ashtead, damp wood on clay, pitfall, VI.1995 & VII.1996, leg. Owen (cOwe); 1♂, Surrey, Cobham, flood debris, 22.XII.1989, leg. Mole (cOwe); 1♀, Surrey, Leatherhead, V.1979, leg. Owen (cOwe); 1♀, Surrey, Mickleham, wood on chalk downs, flight interception trap, 17.IV.1991, leg. Owen (cOwe); 1♀, Berkshire, Windsor, V.1983, leg. Owen (cOwe); 1♂, locality not specified (DEI). **Scotland:** 1♀, Dumfries & Galloway, Dumfries, sandy river bank, VII.1982, leg. Owen (cOwe); 1♂, Highland, Evanton, in moss on sand, VIII.1981, leg. Owen (cOwe); 1♂, Highland, Nethy Bridge, from moss in pine wood on sand, IX.1979, leg. Owen (cAss); 1♀, same locality, pine wood on sand, pitfall, IX.1984, leg. Owen (cOwe).

Germany: Nordrhein-Westfalen: 1♀, Eifel, Euskirchen, Kirchheim, 8.VI.1988, leg. Fritz (cKöh); 1♀, Brühl near Köln, Staatsforst Ville, 26.III.1989, leg. Köhler (cKöh); 1♀, Hürth near Köln, Tagebau Ville, 30.IV.1989, leg. Köhler (cKöh); 1♀, Erfstadt, Kiesgrube Herrig, 27.VII.1994, leg. Köhler (cKöh); 2♀♀, Höxter, Mesobrometum, 8.VI.1989 (cAss); 1♂ [teneral], Kreis Unna, Geisecke, pitfall, 12.-26.VI.1996, leg. Flake (cFel); 1♀, Marsberg (8.50E, 51.58N), Kregenberg, pitfall, 24.VII.1994, leg. Lückmann (cFel); 1♀, same data, but 23.V.1992; 6♂♂, 2♀♀, Waltrop, Zeche Waltrop, 1996, leg. Schwerk (cTer, cAss); 1♀, Warburg, Ossendorf, Heinberg, pitfall, 31.V.1981, leg. Renner (cRen). **Hessen:** 2♂♂, Marburg/Lahn, garden, 3.IV.1985, leg. Assing (cAss); 1♀ [nanistic specimen], Hochheim/M., II.1990, leg. Hetzel (cFel); 2♀♀, Wiesbaden, grassland, pitfall trap, 1985, leg. Steinwarz (cKöh, cWun); 2♀♀, same data, but VII.1985; 1♂, Wiesbaden, Frauenstein, leg. Müller (MHNG); 1♀, SW Frankfurt/M., Flörsheim, 1894, leg. Sattler (DEI); 1♀, Lich, 4.IV.1965, leg. Berger (MHNG). **Rheinland-Pfalz:** 1♀, N Kaiserslautern, Dielkirchen, grassland, pitfall trap, 18.V.1989, leg. Niehuis (cAss); 1♂, Bacharach, Steeg Weinberge, 16.IV.1996, leg. Köhler (cKöh); 1♂, Gau Algesheim, 8.IV.1899 (FIS); 1♂, Ahrweiler, leg. Fuss (NHMW); 1♂, Ahrweiler (FIS). **Baden-Württemberg:** 1♂, Rheinwald near Weinstetten, gravel pit, 6.IV.1985, leg. Pankow (cPan); 1♀, Hoffenheim, 29.IV.1986, leg. Maid (cVog); 1♀, W Freiburg, Breisach, Rheinwald, 30.IV.1983, leg. Maus (cMau). **Bayern:** 1♀, "Bavar. Waltl" (DEI). **Thüringen:** 1♀, Hörningen, Sattelköpfe, 22.V.1998, leg. Sparmberg (cApf).

Poland: 1♀, Silesia, Wleń ["Lähn"] (DEI).

Switzerland: Basel: 1♂, Basel env., IV.1925, leg. Heinze (DEI); 2♂♂, Basel env., Wiesenthal, leg. Zipper (cVog, cAss). **Bern:** 1♂, Aarberg, 16.IV.1987, leg. Feller (MNHUB). **Valais:** 1♂, Bouveret, 350m, 14.IV.1984, leg. Feller (cVog). **Vaud:** 1♂, 1♀, Montreux, leg. Rottenberg (NHMW).

Austria: Vorarlberg: 1♀, Altach, Kopfloch West, 415m, pitfall, 15.V.-9.VI.1989, leg. Kopf (cKap); 1♂, ca. 4 km SE Götzis, Weiler Kesselschlucht, 600m, sifted, 16.IV.1990, leg. Kapp (cKap). **Locality ambiguous:** 1♂, "Tyrol bor." (NHMW).

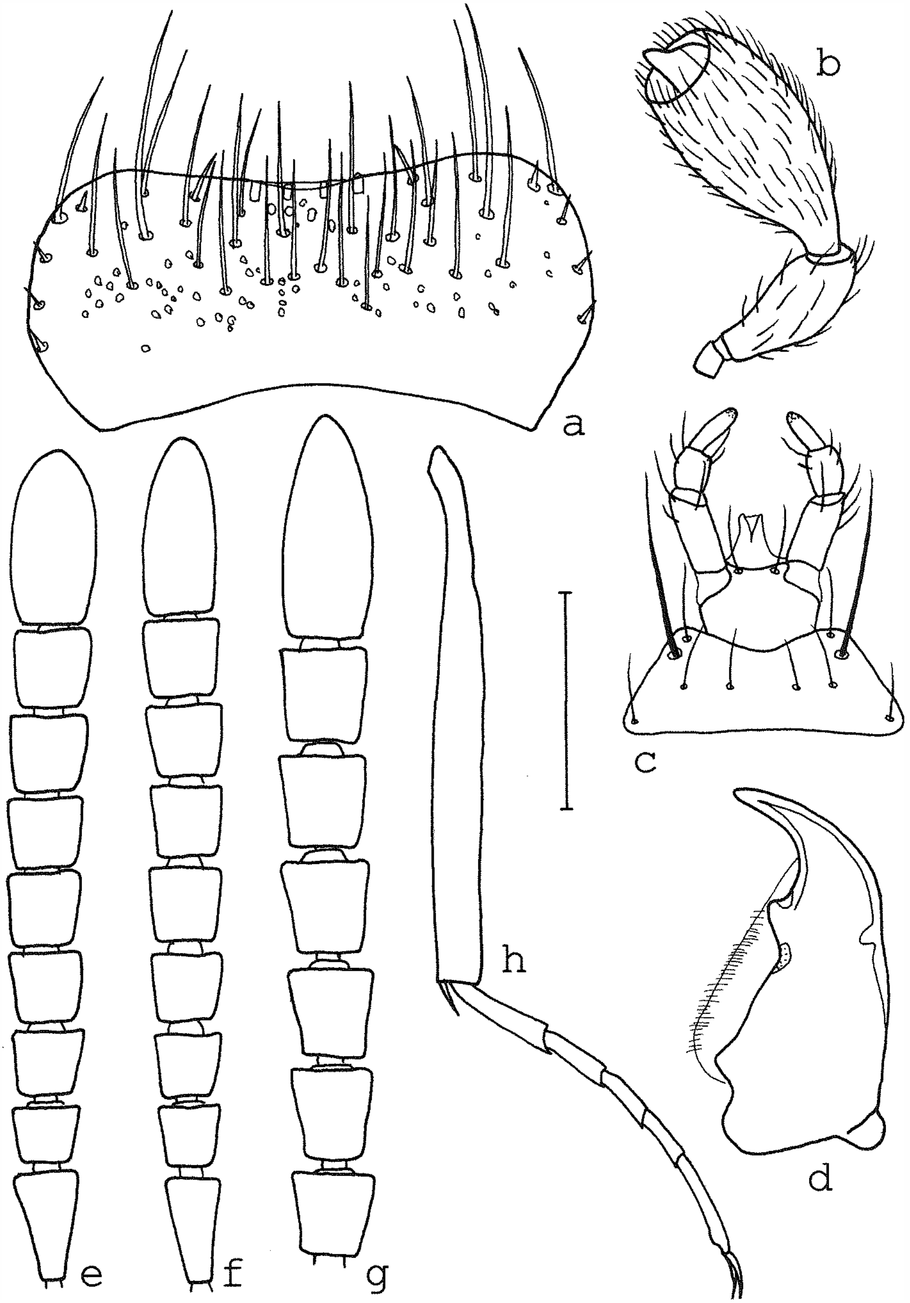
Slovakia: 1♂, 1♀ [teratogical], Košice, 1926 & 1930, leg. Machulka (NMP, cAss); 1♂, Muráň (NMP).

Italy: Liguria: 1♀, Busalla, 4.VIII.1897, leg. Fiori (MNHUB). **Emilia-Romagna:** 1♀, ca. 15 km SW Bedonia, Santa Maria del Taro (PR), 24.VII.1910, leg. Fiori (MNHUB). **Toscana:** 1♀ [with egg in ovaries], Firenze, Madonna di Sasso, 500m, 8.V.1991, leg. Wunderle (cWun); 1♂, Firenze, Mt. Faggiola, 850m, 1.V.1991, leg. Wunderle (cWun); 1♂, Firenze, Mt. Calvana, 650m, 1.V.1991, leg. Wunderle (cAss); 1♂, Passo Futa (FI), 850m, beechwood, 30.IX.1984, leg. Zoia (cZan); 1♀, Alpi Apuane, Carrara, 500m, litter of *Castanea*, 4.IV.1990, leg. Wunderle (cAss); 1♀, Alpi Apuane, 20 km E Massa, Grotta di vento, 44°01´24N, 10°21´53E, 700m, beechwood, 6.VI.2000, leg. Wunderle (cWun); 1♀, Alpi Apuane, M. Pisanino, 1700m, 24.VI.1987, leg. Daccordi (cZan); 1♀, S Lucca, Monte Pisano ["Mt. Pisani"], leg. Linke (SMTD). **Umbria:** 1♂, 10km W Città di Castello, Lippiano, leg. Martelli (SMTD). **Basilicata:** 1♀, Mt. Pollino, beechwood, pitfall, 11.VII.1977, leg. Brandmayr (cAss).

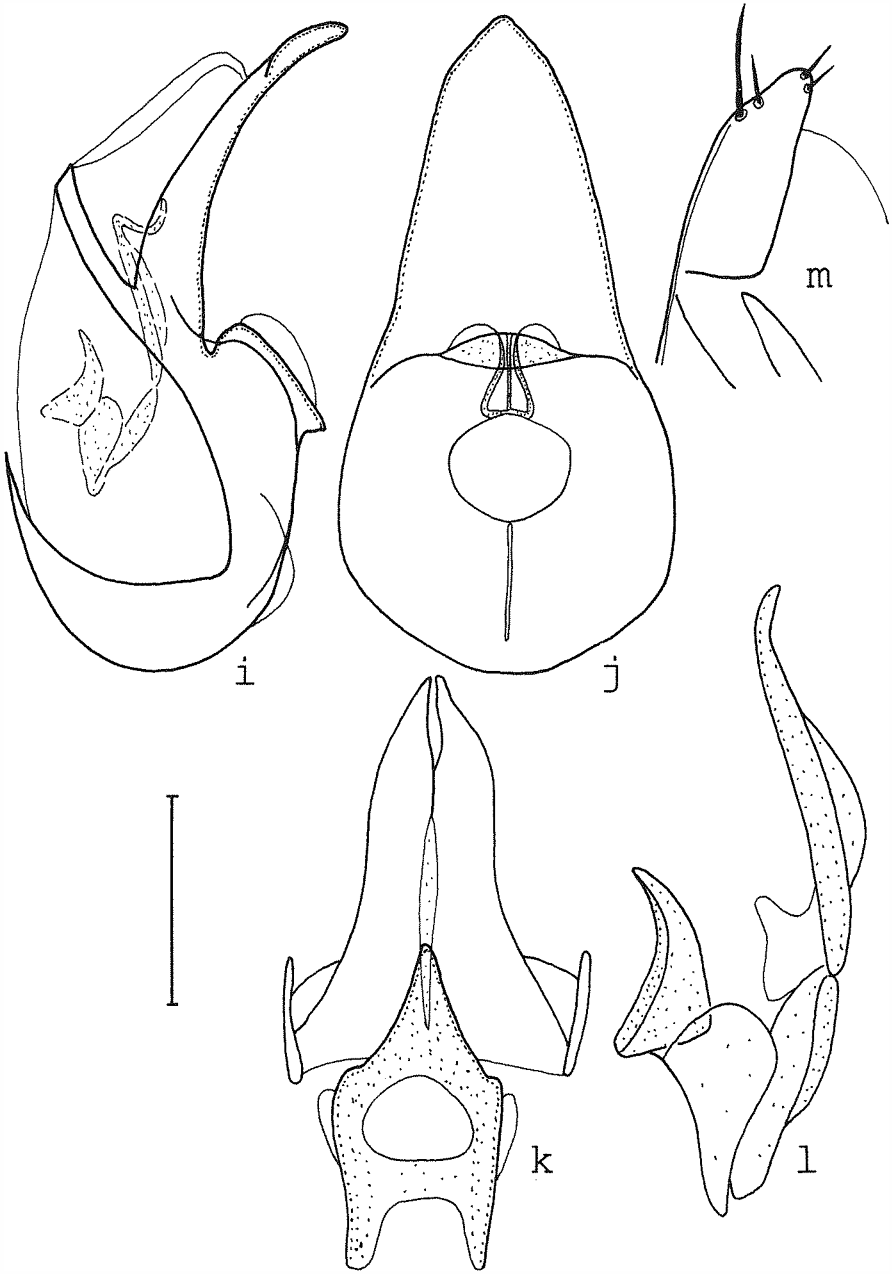
Romania: 2♂♂, 4♀♀, Băile Herculane ["Herkulesbad"], 1909, leg. Hilf (DEI, cAss); 2♂♂, 1♀, same data, but 7.VI.1909 (DEI, cAss); 1♂, 4♀♀, Băile Herculane, leg. Breit, Deubel, Machulka, Winkler (NHMB, NHMW, NMP); 1♂, 1♀, Băile Herculane, 1895, leg. Ganglbauer (NHMW); 1♂, Băile Herculane, V.1928, leg. Stolz (NHMW); 1♀, Băile Herculane, "Pudinalarge", 8.VI.1932 (MNHUB); 1♂, 1♀, Băile Herculane, "Cernatal", 21.V.1931 (MNHUB, cAss); 1♀, Sinaia, leg. Montandon (IRSNB); 1♂, ca. 40km NW Craiova, Motrului, leg. Winkler (NHMB); 1♀, Gorj, Cloşani, VI.1928, leg. Stolz (NHMW); 2♀♀, Gorj, Tismana, leg. Winkler (NHMW); 1♂, Mehadia, leg. v. Hopffgarten (NHMW); 2♂♂, 3♀♀, Bihor, Fânate, VI.1922, leg. Jeannel & Winkler (NHMW, cAss); 1♀, Bihor (NHMW); 1♀, "Siebbürg", leg. Reitter (DEI); 1♀, "Transsylv.", leg. Reitter (DEI).

Bosnia-Herzegovina: 1♀, W Sarajevo, Prozor, 1902, leg. Leonhard (DEI); 1♂, pass near Gornji Vakuf, 16.VIII.1977, leg. Lohse (cAss); 2♀♀, Maklen-Pass, sifted leaf litter, 22.VI.1902, leg. Leonhard (DEI); 1♀, N Tuzla, Majevica planina (NHMW); 1♂, N Bjelašnica planina, Ivan, leg. Reitter (HNHM); 1♀, Bjelašnica planina near Gacko (MHNG); 2♀♀, Bjelašnica planina (NHMW); 1♀, Trebević, leg. Matzenauer (NMP).

Yugoslavia: 1♀, Montenegro, Budva, leg. Liebmann (DEI); 1♀, "Stolivo sp., Boc. di Cattaro", V.1916 (NMP).



Figs. 14a - h: *Callicerus rigidicornis* (ERICHSON). Labrum (**a**); maxillary palpus (**b**); labium (**c**); right mandible (**d**); apical part of antenna of specimens from Germany (**e, f**) and Italy (**g**); metatibia and metatarsus (**h**); Scale: a: 0.1 mm; b - d: 0.2 mm; e - h: 0.4 mm.



Figs. 14i - m: *Callicerus rigidicornis* (ERICHSON). Median lobe of aedeagus in lateral (**i**) and in ventral view (**j**); internal structures of aedeagus in lateral (**k**) and in ventral view (**l**); apical lobe of paramere (**m**); Scale: k - m: 0.1 mm; i - j: 0.2 mm.

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Bulgaria: 4♂♂, Trevna [= Tryavna], V-VI.1912, leg. Hilf (MHNG, NHMW, cAss); 1♀, Bachkovo, 1937, leg. Jureček (NMP); 6♂♂, 5♀♀, Bachkovo, leg. Machulka (NMP); 1♀, Stara Planina, E Aprilzi, Batoschewski Monastir, 42°52´40N, 25°02´16E, 600m, deciduous forest, 28.VI.1997, leg. Zerche & Behne (DEI); 1♀, Stara Planina, S Ostrez near Aprilzi, 42°46´19N, 24°59´17E, 1010m, 26.VI.1997, leg. Zerche & Behne (DEI).
Macedonia: 1♀, plain of Vardar river, leg. Schatzmayr (NHMW).
Greece: Mainland: 1♀, Makedhonía, NW Kavála, Pangéo, road to skiing centre, beechwood, 1350m, 28.V.1999, leg. Wunderle (cWun); 2♀♀, Makedhonía, Athos, leg. Schatzmayr (DEI, NMP); 1♀, Thessalía, Pílion range, Zagora, 15.V.1997, leg. Wolf (cSch); 1♂, Thessalia, Pílion (NHMW). **Pelopónnisos:** 1♂, Ahaïa, Kaliphoni range, Vlasia, 37°57´41N, 21°53´54E, 1450m, *Abies* forest, N-slope, 25.IV.1999, leg. Behne (DEI); 1♀, Cumani (NMP). **Islands:** 1♂, 2♀♀, Kerkíra [Corfu] (DEI); 2♂♂, 1♀, Kerkíra, Gasturi (FIS, cAss); 1♀, Kerkíra, Ropa valley (NHMW); 1♀, Kerkíra, Canone, leg. Woerz (NHMW); 2♂♂, 2♀♀, Kerkíra, leg. Hummler, Paganetti, Reitter (SMTD, NHMW).
Turkey: Anatolia: 1♀, Bolu, Abant Dağlari (N Mudurnu), 1400-1550m, V.1967, leg. Fagel (IRSNB); 2♀♀ [1♀ with mature egg in ovaries], Bursa, S Bursa, 500m, 17.V.1976, leg. Besuchet & Löbl (MHNG, cAss); 1♀, "Asia minor" (SMTD).
Caucasus region: W-Caucasus: 1♀, Krasnodarskiy Kray, Mt. Alons pass, 1500m, 20.VI.-1.VIII.1992, leg. Shchurov (NHMB); 1♂, 2♀♀, upper source of Bolshaya Laba river, Mt. Zagedan, 1700m, forest litter, 17.VIII.1995, leg. Solodovnikov (cSol, cAss); 1♂, "Circassien", leg. Reitter (NHMW). **Caucasus Minor:** 3♀♀, "Meskisches Geb." [=Meskhetskiy range], leg. Leder, Reitter (HNHM, cAss). **Locality not specified:** 1♀, "Kaukasus" (MNHUB).
Locality not indicated, not identified, or ambiguous: 1♀ [with worker of *Lasius fuliginosus* attached to the same pin], "Wgth. 08, Jablanica" (NHMB); 1♂, "Hung. m." (MNHUB); 1♀, "Petite Grave, bord de mare", 30.III.1958, leg. Rehfous (NHMW); 1♂, "Süd-Ungarn", leg. Merkl (NHMW); 1♀, coll. Kraatz (DEI); 1♀, coll. Künnemann (DEI); 1♂, 1♀ (FIS, NHMW).
See also paralectotype of *C. fulvicornis* EPPELSHEIM.

Redescription

Measurements (mm) and ratios (range, arithmetic mean; n=207): AL: 1.32 - 2.46, 1.96; AxL: 0.08 - 0.18, 0.12; AxiL: 0.23 - 0.41, 0.32; HW: 0.48 - 0.77, 0.64; PW: 0.57 - 1.08, 0.84; PL: 0.47 - 0.92, 0.71; EL: 0.47 - 0.89, 0.69; HTiL: 0.57 - 1.21, 0.92; HTaL: 0.41 - 0.85, 0.64; ML: 0.56 - 0.86, 0.72; TL: 2.7 - 6.1, 4.5; PW/HW: 1.19 - 1.44, 1.31; PW/PL: 1.10 - 1.25, 1.18; EL/PL: 0.88 - 1.09, 0.96; HTaL/HTiL: 0.62 - 0.90, 0.70; AxiL/AxL: 2.08 - 3.33, 2.50.
Large species, but size subject to considerable variation (see measurements). Facies as in Fig. 1. Usual coloration: body dark brown to blackish, with the elytra (especially the area near suture) and the hind margins of the abdominal terga and sterna somewhat lighter, ferrugineous to castaneous; antennae ferrugineous or reddish brown; legs testaceous to yellowish brown. Exceptionally, the body may be ± uniformly dark brown to blackish, with only the appendages lighter, and the antennae may be infuscate to various degrees.
Head of similar shape as in *C. obscurus*, but postgenae in dorsal view less strongly convex; posterior constriction less pronounced, shorter and wider, ca. 0.7x the width of head; eyes also large, but less strongly convex; microsculpture distinct and isodiametric, but on average less coarse; dorsal surface in most specimens at least with subdued shine. Antennae very long, without sexual dimorphism; antennomere III longer and at apex wider than II, approximately as long as I; antennomeres IV-X slightly increasing in width, weakly transverse to moderately oblong; antennomere XI approximately as long as the combined length of the two preceding antennomeres or slightly longer (Figs. 14e-g; see also meeasurements). Mouthparts similar to those in *C. obscurus* (Figs. 14a-d).
Pronotum more transverse and wider in relation to head and elytra than in *C. obscurus* (see ratios PW/PL and PW/HW), less strongly tapering posteriorly, and maximal width more distant from anterior angles, usually closer to middle than to anterior angles; dor-

sal surface usually weakly convex in cross-section, sometimes ± flattened (especially in specimens from Italy, France and the Iberian Peninsula) or more distinctly convex (often in specimens from the Balkans and Romania), but always less so than in *C. obscurus*; along median line, especially in posterior half, often sulcate and/or with shallow and ± extensive impression; microsculpture distinctly isodiametric, but weaker than on head and much less pronounced than in *C. obscurus*, dorsal surface with some shine; punctuation distinct and dense (much more so than in *C. obscurus*), usually ± granulose; pubescence similar to that in *C. obscurus*, but in central area directed ± uniformly caudad or, at most, only weakly latero-caudad.

Elytra at suture approximately as long as pronotum; densely and ± granulosely punctured; microsculpture distinctly isodiametric, but shallow; hind wings fully developed.

Legs, especially the tarsi, very long and slender (more so than in *C. obscurus*); first metatarsomere clearly longer than second, almost as long as fifth metatarsomere (Fig. 14h).

Abdomen with the puncturation much denser and more distinct than in *C. obscurus*; posterior segments less densely punctured than the anterior ones; microsculpure composed of fine and distinctly transverse meshes.

♂: tergum III usually with distinct central longitudinal elevation or granulum near hind margin, which may be reduced to various degrees; rarely a similar, but weaker granulum is present also on tergum IV; exceptionally (especially in large ♂♂) tergum VII, too, with ± distinct longitudinal or subcircular granulum near hind margin; posterior margin of tergum VIII in the middle ± pointed (Fig. 14r) or - rarely - with pair of obtuse processes (almost as in *C. fulvicornis*, but less distinct and processes closer together, see Fig. 14s); posterior margin of sternum VIII distinctly convex, with a row of shorter and a row of longer thin setae (Fig. 14t); aedeagus large; shape and internal structures as in Figs. 14i-l; apical lobe of paramere with the three apical setae much longer than in *C. obscurus* and related species (Fig. 14m).

♀: tergum III usually without or, less frequently, with weakly pronounced longitudinal granulum; posterior margin of sternum moderately convex and with row of relatively long, moderately stout setae (Fig. 14u); spermatheca with bulbous capsule and short wide duct (Fig. 14n-q).

Intraspecific variation

The species is even more variable than *C. obscurus*. The extent of the variation of size and size-related parameters is similar to that observed for species of *Ilyobates* KRAATZ (ASSING, 1999); the maximum/minimum ratios for the measured body parts and ratios are: AL: 1.86; AxL: 2.18; AxiL: 1.80; HW: 1.62; PW: 1.88; PL: 1.97; EL: 1.90; HTiL: 2.11; HTaL: 2.07; ML: 1.54; TL: 2.29; PW/HW: 1.20; PW/PL: 1.14; EL/PL: 1.24; HTiL/HTaL: 1.45; AxiL/AxL: 1.60. Pronounced intraspecific variation was observed also for various other characters, especially coloration, shape and length of the antennomeres (Figs. 14e-g, 15), morphology of the pronotum (shape, impressions), the modifications of tergum III (often ± reduced in specimens from Greece), and the shape of the internal structures of the aedeagus. Both clinal variation and variation within populations was observed. In Italy - to a lesser extent also in the southwest of its range of distribution - *C. rigidicornis* tends to be larger, to have a more massive and flatter pronotum, longer antennae and legs, and a larger aedeagus (Figs. 15-17).

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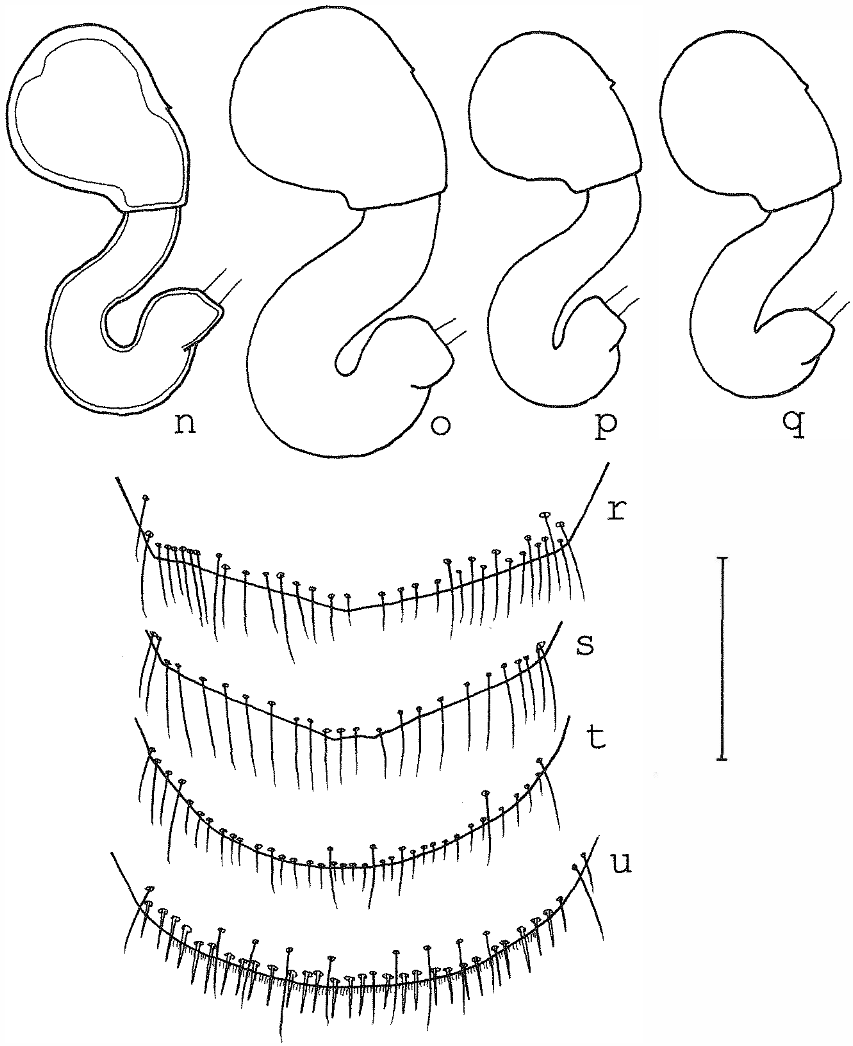

Figs. 14n - u: *Callicerus rigidicornis* (ERICHSON). Spermathecae of ♀♀ from Toscana (**n**), Basilicata (**o**), Greece (**p**), and the Caucasus (**q**); posterior margins of ♂ tergum VIII (**r, s**), ♂ sternum VIII (**t**), and of ♀ sternum VIII (**u**). Scale: n - u: 0.2 mm.

Comments

The syntypes of *Semiris fusca* HEER were looked for, but not found, in the Heer collection in Zürich and in the collections of the BMNH, where, according to HORN et al. (1990), part of the Heer collection is kept (BRENDELL, pers. comm.; MÜLLER, pers. comm.). A neotype designation is here refrained from, since the original description of *S. fusca* leaves no doubt that the syntypes are conspecific with *C. rigidicornis* ERICHSON. According to the curator in charge, it was not possible to locate the holotype of *Calodera*

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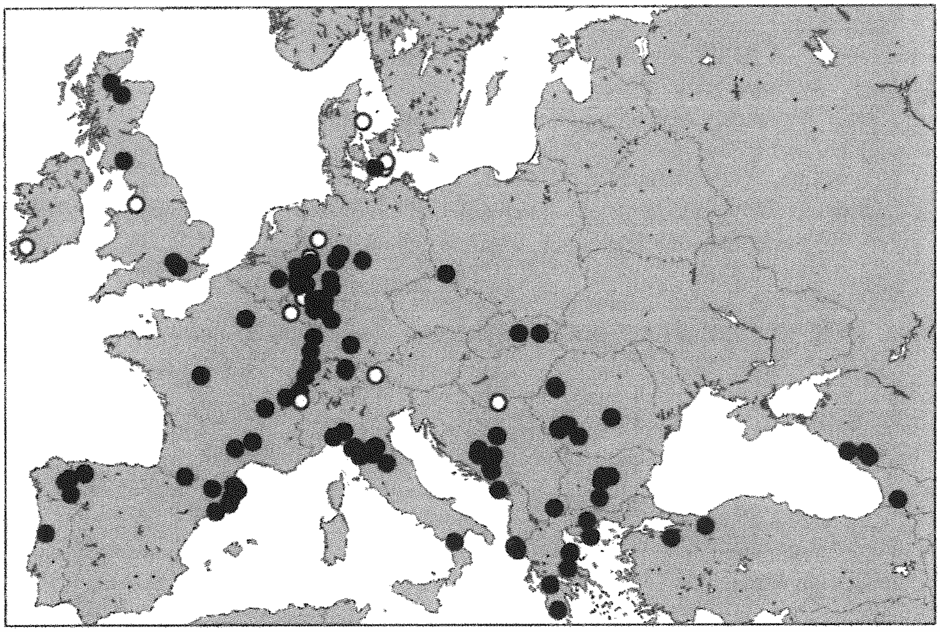
unicarinata in the collections of the MNHNP (BERTI, pers. comm.). However, it can be inferred from the original description (FAIMAIRE & LABOULBÈNE, 1854) that the previously established synonymy with *Callicerus rigidicornis* (see FOWLER, 1988; BERNHAUER & SCHEERPELTZ, 1926) is correct.

In the original description of *C. mandli*, SCHEERPELTZ (1956) distinguished the species from *C. rigidicornis* based on the shape of the head, the eyes, and the pronotum. Regarding these and other characters, however, the holotype was found to be well within the range of the variable *C. rigidicornis*, so that *C. mandli* SCHEERPELTZ is here placed in the synonymy of that species.

According to the original description of *C. beieri*, the species is externally similar to *C. fulvicornis* EPPELSHEIM, but distinguished by the puncturation of the abdomen and by the shape of the elytra (SCHEERPELTZ, 1959). An examination of the external and sexual characters of the ♂ holotype - note that according to the original description the type is a ♀ - showed that it is a small male with an unmodified tergum III of *C. rigidicornis*, with which *C. beieri* is here synonymized.

Distribution and bionomics

The vast distribution of *C. rigidicornis* (Map 4), apparently an expansive Pontomediterranean faunal element sensu LATTIN (1967), ranges from Portugal and Spain in the southwest to Anatolia and the Caucasus in the east and includes the British Isles, all of France, Belgium, the Netherlands, Germany except for the north and east, southern Poland, Switzerland, Austria, Slovakia, the Czech Republic, Hungary, Italy, Romania, Bulgaria, Croatia, Bosnia-Herzegovina, Yugoslavia, Macedonia, Greece, Turkey, and the western



Map 4: Distribution of *Callicerus rigidicornis* (ERICHSON) based on revised records (filled circles) and selected reliable literature records (open circles).

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Caucasus region (material examined); for additional records see ÁDÁM (1992), ASSING (1989), BULLOCK (1914), DENNISON & HODKINSON (1983a), ERBELING & DREES (1992), FELDMANN & LÜCKMANN (1998), FOWLER (1888), FRANZEN (1991), GREDLER (1866), HORION (1967), JELÍNEK (1993), JOY (1932), KACHE & ZUCCHI (1993), KOCH (1968), KÖHLER (1996, 1997), KÖHLER & KLAUSNITZER (1998), MULSANT & REY (1874), OWEN (1993), PUTHZ (1981), RENNER & GRUNDMANN (1984), SCHEERPELTZ (1968), VIT & HOZMAN (1980), and WAGNER (1997). The presence of *C. rigidicornis* in Italy has been considered doubtful (PORTA, 1926; ZANETTI, 1995), although the species has been collected in various localities from Liguria in the north to Basilicata in the south. According to HORION (1967) and SCHEERPELTZ (1968), *C. rigidicornis* has been recorded in Austria also from Burgenland, Niederösterreich, Oberösterreich, Kärnten, and Salzburg; however, the reference specimens were not in the Scheerpeltz collection at the NHMW, where they are supposedly deposited (HORION, 1967). Similarly, there is apparently no Czech material in the NMP, although JELÍNEK (1993) indicates records from Bohemia and Moravia.

In the northwest, the range of *C. rigidicornis* extends north as far as Ireland and Scotland (material examined and literature cited above). In Germany, it occurs in the southwest, with the northernmost records from Nordrhein-Westfalen, southern Niedersachsen (reference specimen not available), Hessen, and western Thüringen; it is unknown from the north, northeast, and east (material examined and literature cited above). The record from Sachsen by LINKE (1907) (see also HORION, 1967) is based on a misidentification (LINKE, 1913).

Remarkably, however, *C. rigidicornis* has become known from various localities in Denmark, which are separated from the nearest German locality by some 400 km: in East Jutland, in Lolland, Falster, Møn, and in South Zealand (BANGSHOLT, 1981; HANSEN, 1996; HANSEN et al. 1990, 1997; MAHLER, 1987). The species is apparently absent from the remainder of Scandinavia, although in Scotland it has been recorded from as far north as 57°40´ northern latitude.

C. rigidicornis apparently occurs in a wide variety of habitats on various soils (clay, chalk, sand, etc). It has been collected in various forest types (beech, chestnut, fir, birch, willow, pine, etc.) (material examined; see also DENNISON & HODKINSON (1983a), STUMPF (1998)) and in unforested biotopes (material examined; additional literature references are given in brackets): e. g. banks of streams (HANSEN et al. 1990), various types of grassland (ERBELING & DREES, 1992; FELDMANN & LÜCKMANN, 1998; RENNER & GRUNDMANN, 1984), arable land (KÖHLER, 1997), fallows and other ruderal biotopes (KOCH, 1968; STUMPF, 1998), gardens (ASSING, 1989; BANGSHOLT, 1981; KACHE & ZUCCHI, 1993; WAGNER, 1997), and in gravel pits (KÖHLER, 1996). On rare occasions, the species was found in decaying plant debris (HORION, 1967; KOCH, 1968), and in nests of *Talpa europaea* (OSELLA & ZANETTI, 1975) and of ants (*Tapinoma* sp., *Formica* sp.) (BANGSHOLT, 1981; KOCH, 1968). Apparently, most specimens were collected by sifting leaf litter and by pitfall trapping. In Germany, near the northern limit of its range, the species seems to be confined to xerothermous habitats, especially calcareous grassland in southern exposition, gravel pits, and urban biotopes. Most of the revised records are from lower elevations. Only in the south of its range has the species been collected at altitudes above 1000m, with the highest records at 1600m (Spain), 1500m (French Pyrénées), 1700m (Italy), 1450m (Greece), ca. 1500m (Anatolia), and 1700m (W-Caucasus). In an English woodland, DENNISON & HODKINSON (1984b) calculated densities between 0.17 and 4.25 adults/m^2.

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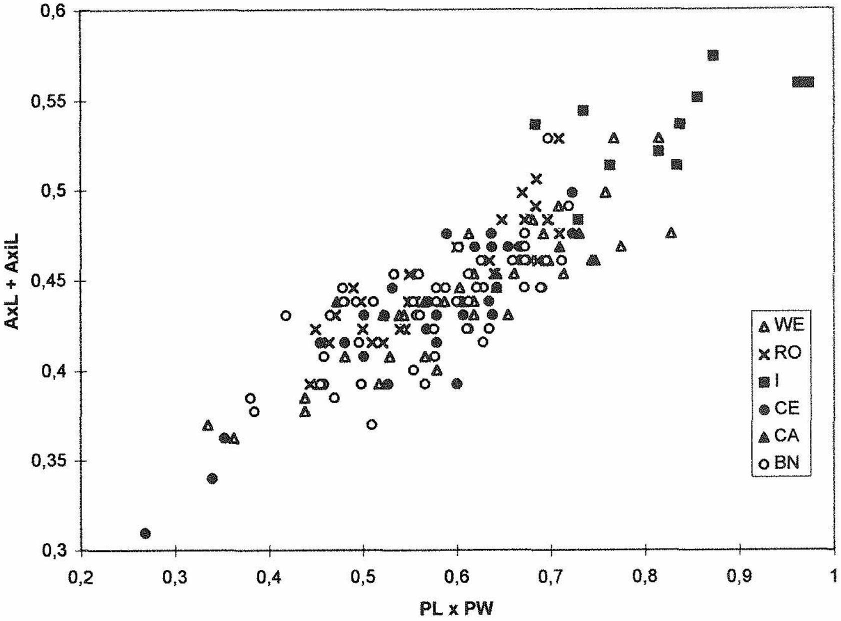

Fig. 15: *Callicerus rigidicornis* (ERICHSON). Variation of the combined length of antennomeres X and XI (AxL + AxiL) in relation to pronotum size in material from western and northwestern Europe (WE), Romania (RO), Italy (I), Central Europe (CE), the Caucasus (CA), and the Balkans (BN).

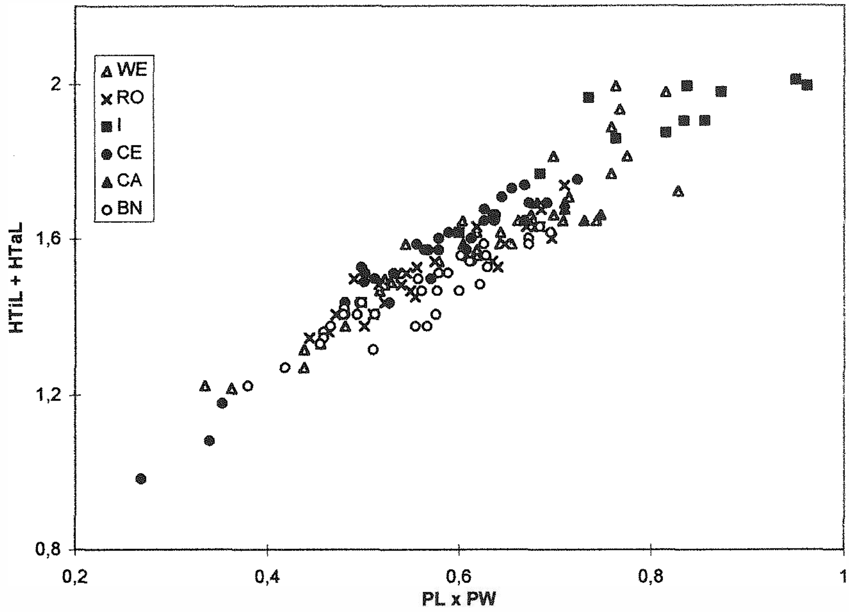

Fig. 16: *Callicerus rigidicornis* (ERICHSON). Variation of the combined length of metatibia and metatarsus (HTiL + HTaL) in relation to pronotum size in material from western and northwestern Europe (WE), Romania (RO), Italy (I), Central Europe (CE), the Caucasus (CA), and the Balkans (BN).

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Adults of *C. rigidicornis* have been recorded during the period from February through September and in December, with a maximum from April through June (Fig. 18). DENNISON & HODKINSON (1984a) indicate activity peaks for February and June, but these observations are based on only few specimens. Two ♀♀ collected in May each had a mature egg in the ovaries; teneral beetles were observed in May and June (material examined). As can be inferred from these data, the life history of *C. rigidicornis* is similar to that of *C. obscurus*. The fact that adults are only rarely found (compared to other soil-dwelling Staphylinidae) and that autumn and winter records are almost (December, February, March) or completely (October - November, January) absent, suggests that *C. rigidicornis* reproduces and overwinters in an unknown subterranean habitat and is epigeically active only for dispersal and in search for mates. The single specimen taken in December was collected from flood debris and had presumably been washed out of its cryptic habitat.

Two specimens were apparently caught flying, one with a flight interception trap in April (OWEN, 1993; specimen examined) and one with a malaise trap in May (KÖHLER, 1997). DENNISON & HODKINSON (1983b) observed mainly diurnal, but also some crepuscular and nocturnal activity.

According to a study using a precipitin test the food of *C. rigidicornis* includes Nematoda, Acari, and Diptera (DENNISON & HODKINSON, 1983a). On one occasion, male aggressive behaviour was observed (ASSING, 1989).

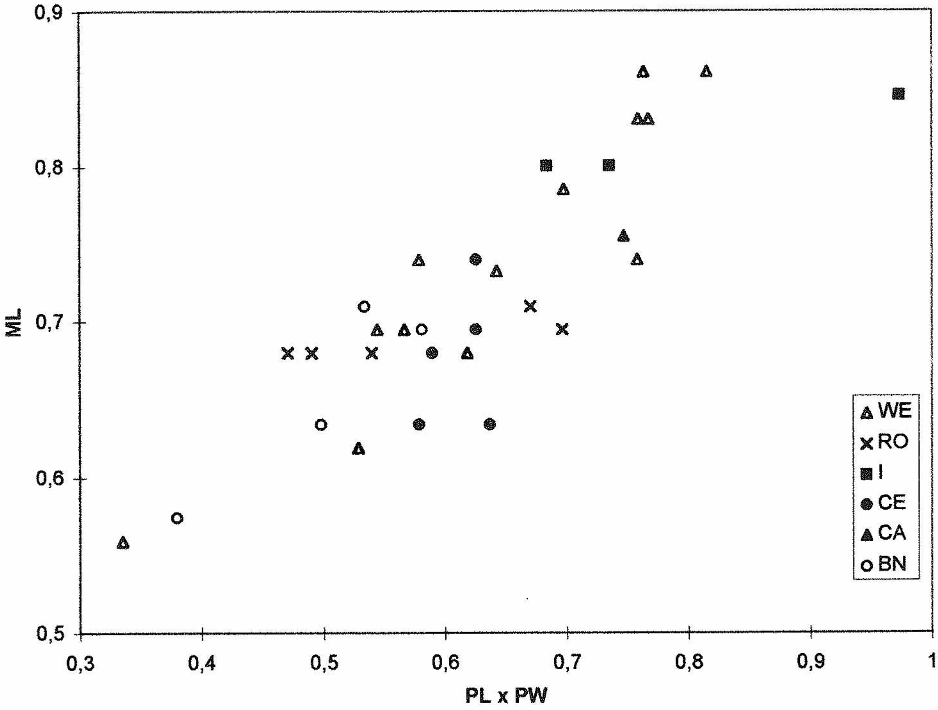

Fig. 17: *Callicerus rigidicornis* (ERICHSON). Variation of the length of the median lobe of the aedeagus (ML) in relation to pronotum size in material from western and northwestern Europe (WE), Romania (RO), Italy (I), Central Europe (CE), the Caucasus (CA), and the Balkans (BN).

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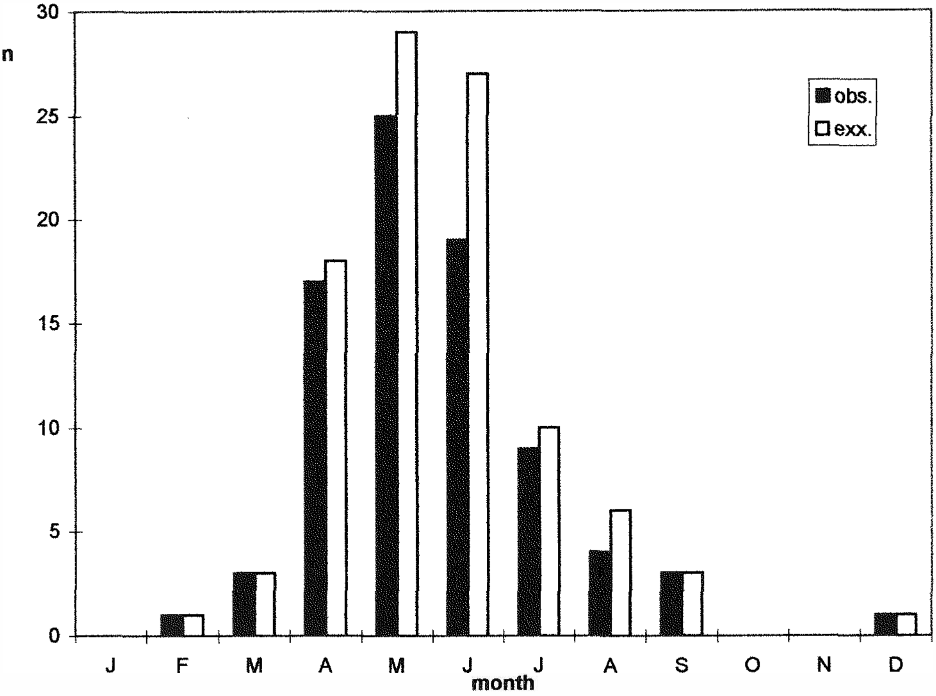

Fig. 18: *Callicerus rigidicornis* (ERICHSON). Seasonal phenology based on material examined. Abbreviations: obs. = number of observations or samples; exx. = number of specimens.

4.5. Key to the species of *Callicerus*

In contrast to many other Athetini, the morphology of the aedeagus and of the spermatheca of most species are not very distinctive and consequently often of minor signifance for the identification of *Callicerus* species. Exceptions are the males of *C. sparsicollis* and of *C. fulvicornis*. In *C. obscurus* and allied species, the size of the median lobe of the aedeagus is a useful character. The male secondary sexual characters, on the other hand, are in most species highly distinctive. For an explanation of the abbreviations see section 2; the measurements are given in mm.

1. Antennomere X distinctly transverse, more than 1.5 times as wide as long (Figs. 11c, 12j). Small species (AL: <1.28; HW: <0.43; PW: <0.54; PL: <0.45). 2

\- Antennomere X weakly transverse to oblong. Larger species. 3

2. Colour of forebody brown. Brachypterous species, hind wings of reduced length; elytra relatively shorter (EL/PL: <0.97). Pronotum more transverse (PW/PL: >1.14) and wider in relation to head (PW/HW: >1.13). Metatarsi shorter (HTaL: <0.32). Third joint of maxillary palpi shorter and stouter (Fig. 12a). Aedeagus and spermatheca as in Figs. 12c-d, f. Balkans (Map 3). ....
.... ***C. sparsicollis*** BERNHAUER

DOI: 10.21248/contrib.entomol.51.2.247-334

- Colour of forebody blackish. Macropterous species, hind wings fully developed; elytra longer (EL/PL: >0.97). Pronotum less transverse (PW/PL: <1.13) and more slender in relation to head (PW/HW: <1.12). Metatarsi longer (HTaL: >0.33). Third joint of maxillary palpi more slender, of similar shape as in *C. obscurus*. Spermatheca as in Fig. 11a. Italy: Apennines. .... ***C. appenninus*** sp. n.

3. Posterior constriction of head shorter and broader, ca. 0.7 times as wide as head. Larger species (but size highly variable!). Antennae without sexual dimorphism. Pubescence of central area of pronotum directed ± uniformly caudad. ♂: tergum III usually with small median tubercle near posterior margin; aedeagus large (Figs. 14k-l). ♀: spermatheca with more bulbous capsule (Figs. 14n-q). Widespread, from the Iberian Peninsula to the Caucasus region (Map 4). .... ***C. rigidicornis*** (ERICHSON)

- Posterior constriction of head more pronounced, longer and narrower, ca. 0.6 times as wide as head. Slightly or distinctly smaller species. Antennae with or without sexual dimorphism. Pubescence on either side directed ± diagonally latero-caudad. ♂: tergum III without tubercle; aedeagus smaller. ♀: spermatheca with more slender capsule. 4

4. On average larger species. Antennae without sexual dimorphism. Pronotum on average more transverse and wider in relation to head (PW/HW: 1.22-1.23; PW/PL: 1.14-1.26), dorsal surface ± flattened, in posterior half ± extensively impressed, sulcate, and/or with coarser microsculpture along midline; midline in posterior half usually without puncturation. Posterior margin of tergum VIII centrally distinctly projecting and in the middle shallowly concave (Figs. 13e-f). ♂: tergum VII near middle of posterior margin with pair of small granula; aedeagus with median lobe of distinctive shape, ventral process relatively longer and more slender (Figs. 13a-b); apical lobe of paramere with longer apical setae (Fig. 13c). ♀: spermatheca as in Fig. 13d. Balkans, northeastern Italy (Map 3). .... ***C. fulvicornis*** EPPELSHEIM

- On average smaller species. Antennae at least with weak sexual dimorphism. Pronotum usually more slender and narrower in relation to head, its dorsal surface more convex and less extensively impressed. ♂: tergum VII without granula, tergum VIII less distinctly projecting and without median concavity; median lobe with much shorter and less slender ventral process; apical setae of apical lobe of paramere shorter. Species absent from the Balkans. 5

5. Antennae with weak sexual dimorphism, antennomere X in ♂ weakly to moderately oblong, in ♀ usually weakly transverse to subquadrate; antennomere IX weakly transverse, not or only slightly shorter than X (Figs. 7j-l). ♂: aedeagus as in Figs. 7a-b, ML: 0.47-0.51. Corsica, Italy from Toscana in the north to Lazio in the south (Map 2). .... ***C. muensteri*** BERNHAUER

- Antennae with distinct sexual dimorphism, antennomere X in ♂ distinctly, in ♀ at least weakly oblong; antennomere IX distinctly transverse and clearly shorter than X. ♂: median lobe of aedeagus either smaller (ML: <0.43) or larger (ML: >0.50). 6

6. Smaller species (AL: <1.60; HW: <0.52; PW: <0.60; PL: <0.53). Sexual dimorphism of antennae very pronounced (Figs. 2s-t). ♂: median lobe of aedeagus as

in Figs. 2e-f, ML: <0.43. ♀: spermatheca smaller and usually with shorter duct (Figs. 2j-m). Widespread: Europe except for the southeast, the east, and northern Scandinavia (Map 1). .... ***C. obscurus*** GRAVENHORST

- Larger species (AL: >1.51; HW: >0.52; PW: >0.62; PL: >0.56). Sexual dimorphism of antennae less pronounced (Figs. 8i-j). ♂: median lobe of aedeagus as in Figs. 8a-b, ML: >0.50. Distribution confined to Italy and the southeast of France (Map 2). .... ***C. atricollis*** (AUBÉ)

5. The genus *Pseudosemiris* MACHULKA, 1935

Pseudosemiris MACHULKA, 1935: 88f.
Callicerodes JABLOKOW-KHNZORIAN, 1960: 1883; synonymy implied by FAGEL (1966)

5.1. Redescription

Microsculpture of forebody distinctly isodiametric and coarse, that of abdomen very shallow, either completely isodiametric or, in the posterior areas of terga III-VI, composed of transverse meshes. Puncturation on head and pronotum at least weakly, on elytra usually more distinctly granulose; abdomen finely, not granulosely punctate.
Head without distinct posterior constriction, only with narrow margined ridge (Fig. 21f); dorsal surface posteriorly ± abruptly sloping downwards towards constriction; pubescence of vertex predominantly directed diagonally medio-caudad; dorsal area of vertex ± flattened or impressed; eyes moderately large, their diameter usually at least slightly shorter than temples in dorsal view; in most species bulging, i. e. distinctly projecting from lateral outline of head; postgenae carinate, in dorsal view moderately convex; gular sutures widely separated.
Antennae long and relatively massive; without sexual dimorphism; antennomere III distinctly coniform (Fig. 19o). Penultimate joint of maxillary palpi very long and slender, 3.5 - 5x longer than wide, densely pubescent; apical joint relatively short and distinctly dilated at base (Fig. 19b); mandibles apically distinctly bent and acute, right mandible with obtuse molar tooth, without distinct teeth in dorsal molar region (Fig. 19d); ligula short and wide-based, apically weakly bifid with the tips connected by a membrane (Fig. 19c); labrum with numerous setae, chaetotaxy similar to that in *Callicerus* (Fig. 19a).
Pronotum wider than head, but rather slender; posterior angles obtuse, but usually distinct; maximal width in anterior half, usually nearer to middle than to anterior angles; in ♂ often centrally impressed or sulcate in posterior half; pubescence directed caudad along median line, diagonally latero-caudad in anterior lateral region, diagonally latero-caudad or medio-caudad in posterior lateral region, and transversely laterad near hind margin. Hypomera distinctly visible in lateral view.
Elytra wider than pronotum and of moderate length; hind wings developed; mesosternum not carinate; mesosternal process shorter than in *Callicerus* and apically rounded; mesocoxal cavities delimited from metasternum by carina.
Legs long and slender; first metatarsomere usually at least slightly longer than second (Fig. 19p); relative length of tarsomere subject to some intraspecific variation.
Abdominal terga III-V with deep anterior impression; tergum IV with shallow impression; tergum VIII posteriorly convex, with ± long and very thin setae; tergum and sternum VIII distinctly transverse; tergum X with dense pubescence (Fig. 19e).

DOI: 10.21248/contrib.entomol.51.2.247-334

♂: tergum VII in most species with a median granulum near hind margin; posterior margin of tergum VIII with a pair of obtuse projections in the middle (e. g. Fig. 19k); sternum VIII posteriorly without micropubescence, hind margin strongly convex or obtusely pointed, with one row of long and one row of shorter thin setae (e. g. Fig. 19l); aedeagus without conspicuous modifications, of the usual athetine morphology, shape similar to that in species of *Aloconota*, internal structures similar to those in *Callicerus*, flagellum very short (e. g. Figs. 19f-h). Apical lobe of paramere relatively short and stout, with two long subapical and 2 shorter apical setae (e. g. Figs. 19i, 21c).

♀: sternum VIII with weakly convex hind margin, posteriorly with row of relatively thin, only weakly modified setae and with very fine and short micropubescence (e. g. Fig. 19n); spermatheca rather strongly sclerotized, capsule ± oval, distinctly delimited from duct, the latter relatively short and wide; capsule in lateral view with relatively long and acute cuticular intrusion; duct rather short, proximally widened and obliquely truncate; proximal opening subapical, forming a well-delimited short tube on the side of the proximal part of duct (e. g. Figs. 19j, 21d).

5.2. Comments on nomenclature

When describing *Semiris*, HEER (1839) included only the type species *S. fusca*, so that the gender of the genus is feminine (Article 30.2.3. of the ICZN). Consequently, according to Article 30.1.1. of the Code (ICZN 1999), the gender of the compound *Pseudosemiris*, too, is to be treated as feminine. FAGEL (1966) evidently regarded *Pseudosemiris* as a masculine name, since two of the species described by him have adjectival names with a masculine Latin ending; these errors are corrected below. For details regarding the synonymy of *Callicerodes* JABLOKOW-KHNZORIAN with *Pseudosemiris* MACHULKA see comments below *P. circassica* FAGEL.

5.3. Distribution and bionomics

After the revision, seven valid species are recognized, not counting the doubtful *P. velox* JABLOKOW-KHNZORIAN (see comments below *P. circassica*). All *Pseudosemiris* are apparently extremely rare, even more so than *Callicerus*, with the known material of five species represented only by their respective holotypes. As far as is currently known, *Pseudosemiris* is a Western Palaearctic genus and distributed in the eastern Mediterranean from Sicily to Lebanon, in the Balkans, and in the Caucasus region; only one species is apparently more widespread, its distribution ranging from Anatolia in the southeast to Austria, the Czech Republic, and southern Poland in the northwest. Next to nothing is known about the bionomics of the species.

5.4. The species of *Pseudosemiris*

5.4.1. *Pseudosemiris kaufmanni* (EPPELSHEIM, 1887)

Figs. 19a-p, 20, Map 5

Callicerus kaufmanni EPPELSHEIM, 1887: 231f.
Callicerus (*Semiris*) *kaufmanni*: GANGLBAUER (1895).
Pseudosemiris kaufmanni: MACHULKA (1935).
Pseudosemiris kaufmanni: SCHEERPELTZ (1956).
Callicerus (*Pseudosemiris*) *kaufmanni*: LOHSE (1989).

Types examined

Lectotype ♂, here designated (remounted): ♂ / Fünfkirchen [= Pécs], Hungaria. Dr. Kaufmann. / Collect. Eppelsh. / Kaufmanni Epp. Wien. ent. Zeit. 1887. p. 231. / TYPUS / Lectotypus ♂ *Callicerus kaufmanni* Eppelsh., desig. V. Assing 2000 (NHMW). Paralectotype ♂ (slightly damaged): ♂ / Fünfkirchen, Hungaria. Dr. Kaufmann. / Kaufmanni / COTYPUS / Paralectotypus ♂ *Callicerus kaufmanni* Eppelsh., desig. V. Assing 2000 (NHMW).

The original description is based on two male syntypes. In order to fix a single name-bearing type and because one of the syntypes is somewhat damaged, the male in better condition is here designated as lectotype.

Additional material examined

Austria: 1 ♀, Wien, leg. Reitter (FIS).

Poland: 1 ♀, Silesia, Wleń ["Lähn"], coll. Letzner (DEI); 1 ♂, Kraków district, Wola Justowska, leg. Stobiekki ? (ISEA); 1 ♂, Przemyśl, leg. Trella (ISEA).

Czech Republic: 1 ♂, Slezsko Skalice near Frýdek-Mistek, 9.V.1963, leg. Nohel (NHMW); 1 ♂, Brandýs n.L., leg. Skalitzky (NHMW).

Slovakia: 1 ♂, Silica, j. Silická Iadnica, 16.VI.1992, leg. Klíma (cAss); 1 ♂, 1 ♀, "Plateau Silicense", 1926, leg. Machulka (NMP); 1 ♂, Muráň, leg. Machulka (NMP); 1 ♂, Gemer, leg. Machulka (FIS).

Slovenia: 1 ♀, Maribor, leg. Penecke (NHMW).

Hungary: 2♂♂, Bükki National Park, Nagyvisnyó, 650m, Phyllitidi-Aceretum, 13.VII.1983, leg. Ádám (HNHM, cAss); 1 ♀, Bükki N. P., Cserépfalu, Hór-völgy, 250m, Quercopetraeae-Carpinetum, 11.V.-13.VI.1984, leg. Merkl (HNHM); 1 ♂, Szabolcs, Bátorliget near Nyirbátor, Bátorligeti-láp, 19.III.-11.VI.1990, leg. Loksa (HNHM).

Romania: 1 ♀, Bihor, Băiţa-Plai ["Rezbanya"], leg. Breit (NHMW).

Yugoslavia: Serbia: 1 ♀, Fruska Gora (IRSNB). **Montenegro:** 1 ♀ [teneral], Budva, 12.V.1939, leg. Liebmann (DEI).

Turkey: Anatolia: 2♂♂, Mu la, Marmaris, Çetibeli, 1.V.1975, leg. Besuchet & Löbl (MHNG, cAss).

Ukraine: 2♂♂, Ternopil ["Tarnopol"], leg. Rybinski (ISEA, cAss); 1 ♀, L´vov (=Lwiw) ["Lemberg"] (NHMW).

Locality not identified: 1 ♀, "P. Rus, Kuzy, V. Bockov" (NMP)

Redescription

Measurements (mm) and ratios (range, arithmetic mean; n=26): AL: 1.72 - 2.06, 1.88; AxL: 0.10 - 0.14, 0.11; AxiL: 0.32 - 0.39, 0.36; HW: 0.59 - 0.72, 0.66; PW: 0.71 - 0.94, 0.84; PL: 0.63 - 0.83, 0.73; EL: 0.56 - 0.74, 0.67; HTiL: 0.85 - 1.03, 0.95; HTaL: 0.57 - 0.72, 0.65; ML: 0.54 - 0.56; TL: 3.4 - 5.8, 4.5; PW/HW: 1.16 - 1.35, 1.27; PW/PL: 1.09 - 1.20, 1.15; EL/PL: 0.84 - 0.98, 0.92; HTaL/HTiL: 0.66 - 0.74, 0.69; AxiL/AxL: 2.78 - 3.57, 2.22.

Relatively large species (see measurements). Usual coloration similar to *Callicerus rigidicornis*, i. e. head, pronotum, and abdomen dark brown to blackish, with the elytra - at least the area near the posterior sutural angle - slightly or distinctly lighter, ferrugineous or brown; occasionally the whole body is ± uniformly brown with the head and most of the abdomen slighly darker; antennae, legs and maxillary palpi testaceous to reddish brown legs testaceous to yellowish brown.

Head of similar shape as in *C. rigidicornis*, along midline often with shallow impression; eyes in dorsal view slightly shorter than temples; head in dorsal view weakly dilated behind eyes, widest a short distance behind eyes, but width across eyes only slightly lower than width across postgenae; surface coarsely microreticulated, without appreciable shine; puncturation granulose, but hardly visible due to the coarse microsculpture. Antennae very long and massive, without sexual dimorphism; antennomere III only slightly shorter than I, as long as and at apex wider than II; antennomeres IV-X slightly

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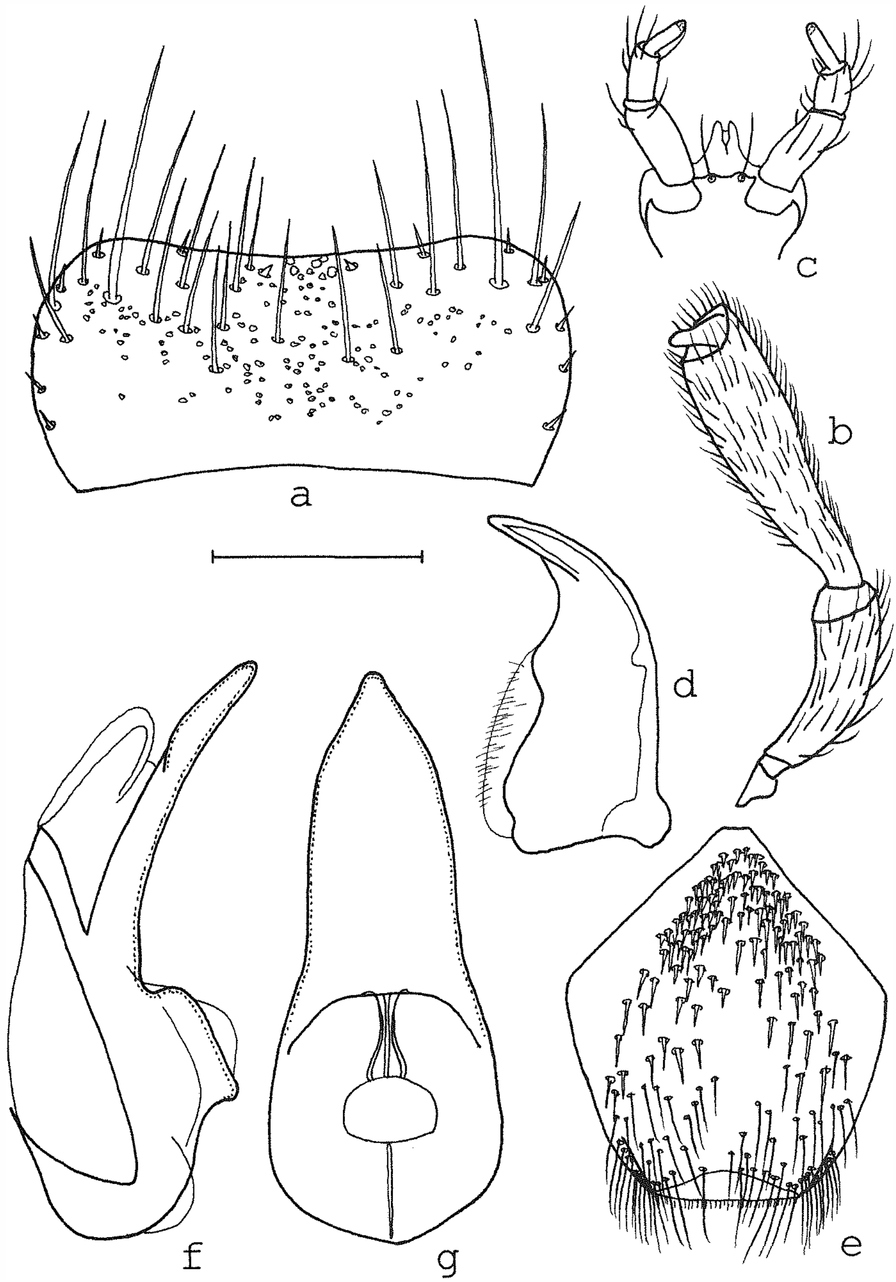

Figs. 19a - g: *Pseudosemiris kaufmanni* (EPPELSHEIM). Labrum (**a**); maxillary palpus (**b**); labium (**c**); right mandible (**d**); tergum X (**e**); median lobe of aedeagus in lateral (**f**) and in ventral view (**g**); Scale: a: 0.1 mm; b - g: 0.2 mm.

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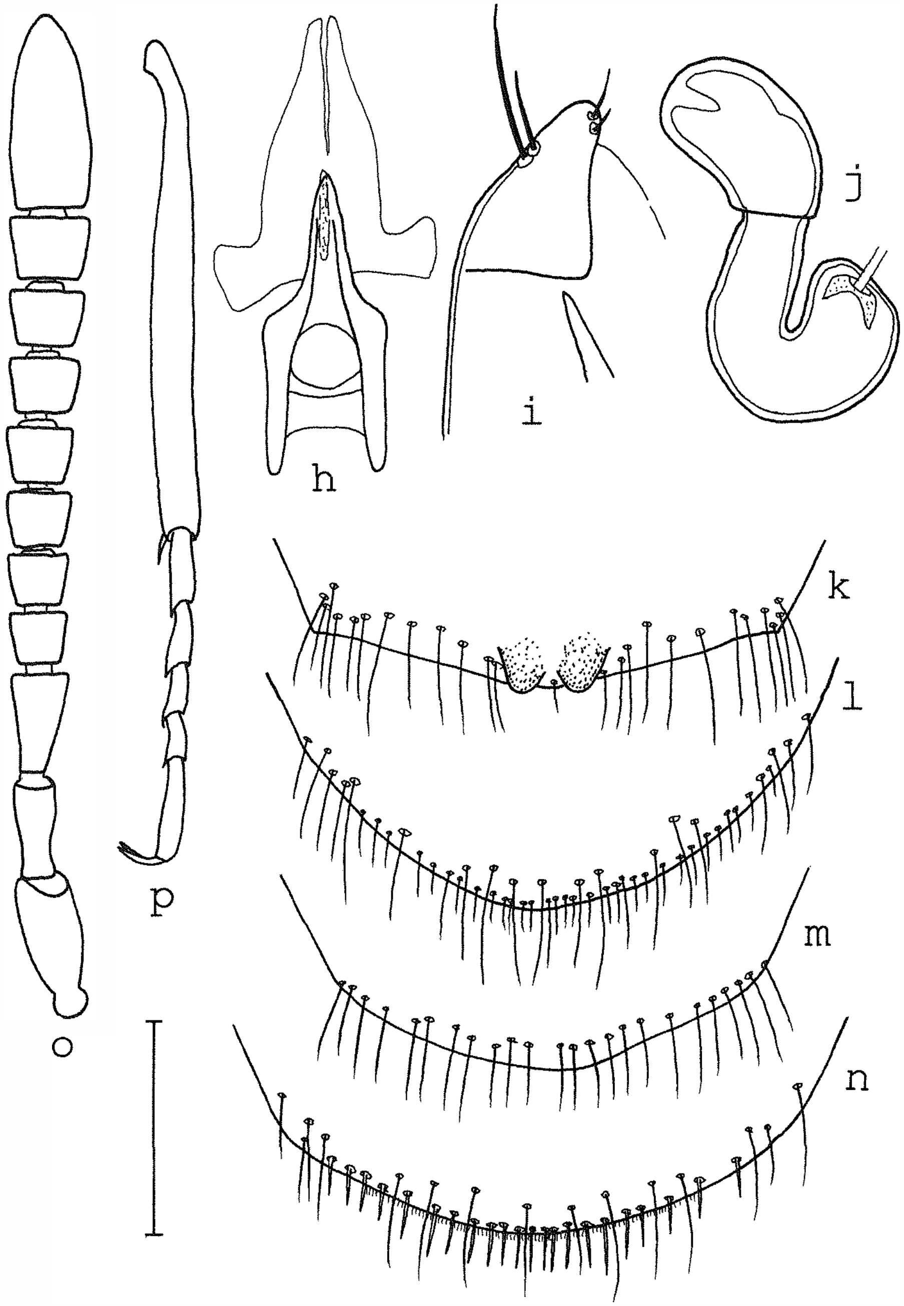

Figs. 19h - p: *Pseudosemiris kaufmanni* (EPPELSHEIM). Internal structures of aedeagus in ventral view (**h**); apical lobe of paramere (**i**); spermatheca (**j**); posterior margins of ♂ tergum VIII (**k**), ♂ sternum VIII (**l**), ♀ tergum VIII (**m**), and of ♀ sternum VIII (**n**); antenna (**o**); metatibia and metatarsus (**p**). Scale: h - i: 0.1 mm; j - n: 0.2 mm.

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increasing in width, subquadrate to weakly transverse; antennomere XI approximately as long as or slightly longer than the combined length of the two preceding antennomeres (Fig. 19o). Mouthparts as in Figs. 19a-d.

Pronotum moderately transverse and wider than head (see ratios PW/PL and PW/HW), maximal width in anterior half, but nearer to middle than to anterior angles; posteriorly tapering; dorsal surface usually weakly to moderately convex in cross-section; in ♂ ± depressed, in posterior half of midline with ± shallow and often weakly sulcate impression, which is deeper and wider posteriorly than anteriorly; microsculpture distinctly isodiametric and coarse; puncturation relatively dense and finely granulose; surface only with subdued shine; pubescence in and near midline directed ± caudad, near anterior angles diagonally latero-caudad, in lateral areas predominantly diagonally mediad, and near hind margin transversely laterad.

Elytra at suture nearly as long as pronotum (see measurements and Fig. 20); puncturation dense, ± well-defined, distinctly granulose, and fine; microreticulation distinct, but surface with slightly more shine than head and pronotum; hind wings fully developed.

Legs, especially the tarsi, very long and slender (in this respect similar to *C. rigidicornis*); first metatarsomere approximately as long as or somewhat longer than second, but distinctly shorter than fifth metatarsomere (Fig. 19p).

Abdominal terga III-VI with moderately dense and very fine puncturation; terga VII-VIII with very sparse and fine puncturation; microsculpure isodiametric, in posterior areas of terga III-VI predominantly composed of transverse meshes.

♂: tergum VII with ovoid or longitudinal smooth granulum near hind margin; tergum VIII in the middle of hind margin with pair of weakly projecting elevations (Fig. 19k); posterior margin of sternum VIII distinctly convex to weakly pointed, with a row of shorter and a row of longer thin setae (Fig. 19l); aedeagus with shape and internal structures as in Figs. 19f-h; apical lobe of paramere of ± triangular shape, with two longer subapical and two shorter apical setae (Fig. 19i).

♀: terga VII and VIII unmodified; tergum VIII with convex or obtusely pointed hind margin (Fig. 19m); posterior margin of sternum VIII convex and with row of moderately long, weakly modified (i. e. relatively thin) setae (Fig. 19n); spermatheca with bulbous capsule and short wide duct, which is ± abruptly narrowed a short distance from capsule (Fig. 19j).

Intraspecific variation

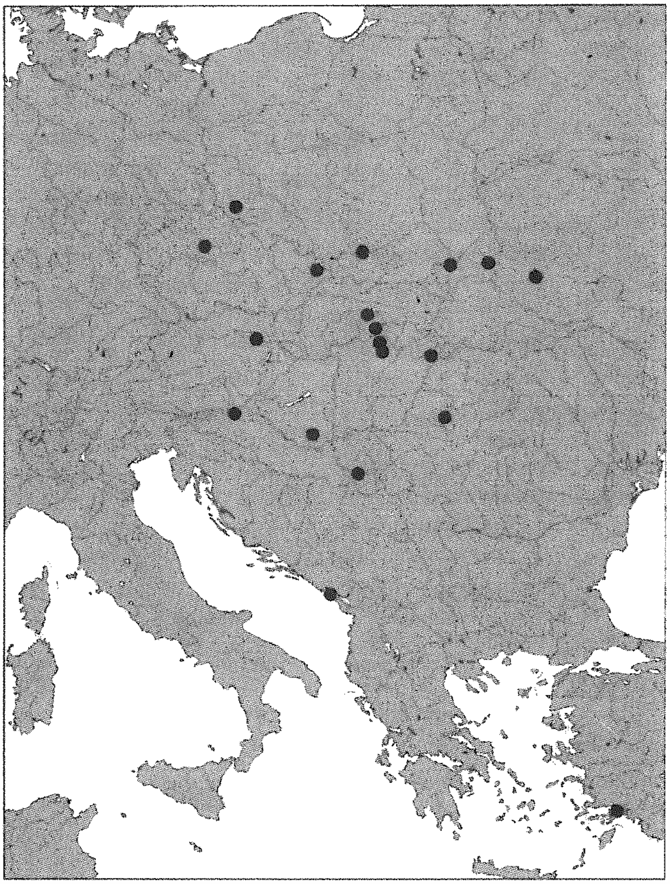
Some intraspecific variation was observed especially for the coloration, the density of the puncturation of the forebody, the relative length of the elytra (Fig. 20) and the relative length of the tarsomeres. Variation of size and other size-related parameters was within the usual range in Aleocharinae.

Distribution and bionomics

P. kaufmanni is by far the most widespread species of the genus and a Pontomediterranean faunal element sensu LATTIN (1967). Based on revised records, its area of distribution ranges from Anatolia and Ukraine in the southeast and east to Austria, Slovakia, the Czech Republic, and southern Poland in the northwest and north, including Yugoslavia (Serbia, Montenegro), Romania, Hungary, and Slovenia (Map 5). According to ZANETTI (1995) it is present in southern Italy and in Sardinia, but these records are very likely to be based on misidentifications (possibly confused with *Callicerus rigidicornis*); none of the collections examined contained a single Italian specimen. HORION (1967) and BENICK

& LOHSE (1974) report the species from Sachsen (Germany), based on a record by LINKE (1907), but the reference specimen is not in Linke´s collection, so that the presence of *P. kaufmanni* in Germany must remain doubtful. In Austria, the species is indicated also from Steiermark, Burgenland, and Kärnten (SCHEERPELTZ, 1968). The reference specimens, however, which are supposedly kept in the Scheerpeltz collection (HORION, 1967), were not found in the collections of the NHMW. A third locality in the Ukraine ("Gorgany Mts.") is reported by SMOLEŃSKI (1995).

Little is known regarding the bionomics of the species. Those specimens whose labels specify ecological data were collected from March through July (maximum in May) and at low elevations (maximum: 650m). One beetle collected in May was teneral. The specimen from Bátorliget (Hungary) was found in a marshy area of a fen (MERKL, pers. comm.). According to HORION (1967), *P. kaufmanni* occurs on banks of rivers and in woodland leaf litter. The fact that it has been collected so rarely, however, leaves little doubt that its real habitat is cryptic and subterranean.



Map 5: Distribution of *Pseudosemiris kaufmanni* (EPPELSHEIM) based on revised records.

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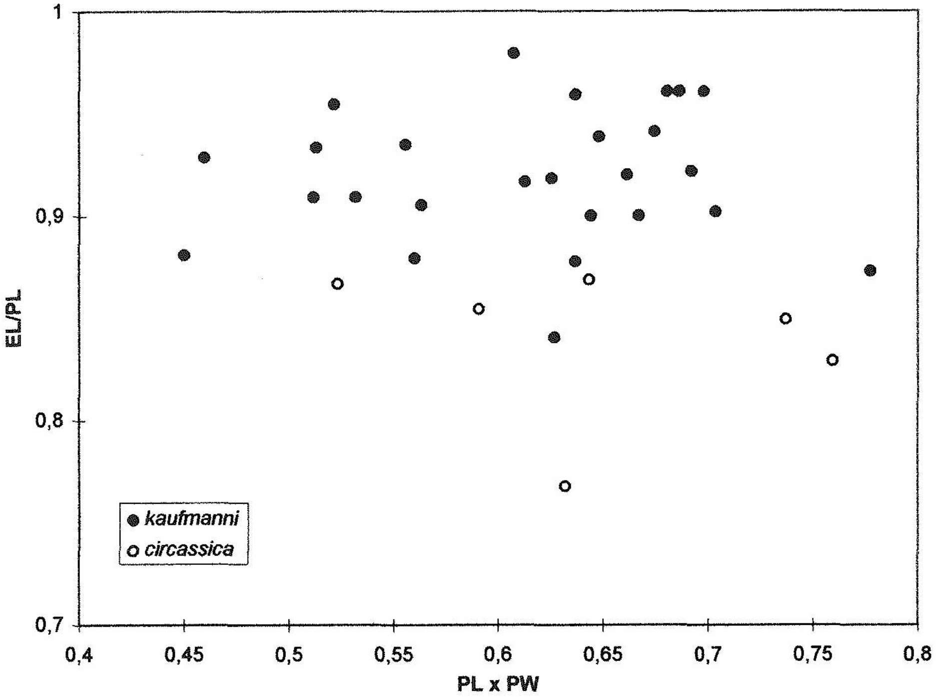

Fig. 20: *Pseudosemiris kaufmanni* (EPPELSHEIM) and *P. circassica* FAGEL. Variation of relative elytral length (EL/PL) in relation to pronotum size.

5.4.2. *Pseudosemiris circassica* FAGEL, 1966

Figs. 20, 21a-f

Pseudosemiris circassicus FAGEL, 1966: 52ff.

Type examined

Holotype ♀ [dissected]: Circassia Rost / G. Fagel det., Pseudosemiris circassicus n. sp. / Type / Holotypus ♀ Pseudosemiris circassica Fagel, rev. V. Assing 2000 (IRSNB).

Additional material examined

Caucasus region: 1♂, Republic of Adygea, S Maykop, near Novoprokhladnoe, 600-800m, 2.-4.VI.1995, leg. Solodovnikov (cSol); 1♂, Republic of Adygea, S Maykop, Mt. Bolshoy Tkhach, N-slope, 1200-1750m, 5.VI.1995, leg. Solodovnikov (cSol); 1♀, Krasnodar Territory, near Elizavetinskaya, 16.IV.1995, leg. Solodovnikov (cAss); 1♀, Krasnodar Territory, 23 km NE Lazarevskoe, 600m, forest litter, 30.V.1995, leg. Solodovnikov (cSol); 1♂: "Circassia Rost" (MNHUB).

Redescription

Measurements (mm) and ratios (range; n=6): AL: 1.79 - 2.20; AxL: 0.11 - 0.14; AxiL: 0.32 - 0.45; HW: 0.62 - 0.68; PW: 0.77 - 0.92; PL: 0.68 - 0.84; EL: 0.57 - 0.69; HTiL: 0.89 - 1.10; HTaL: 0.65 - 0.79; ML: 0.56 - 0.58; TL: 4.7 - 5.9; PW/HW: 1.24 - 1.39; PW/PL: 1.08 - 1.15; EL/PL: 0.77 - 0.87; HTaL/HTiL: 0.69 - 0.75; AxiL/AxL: 2.80 - 3.50.

Highly similar to *P. kaufmanni*, distinguished from that species only by the following character combination:

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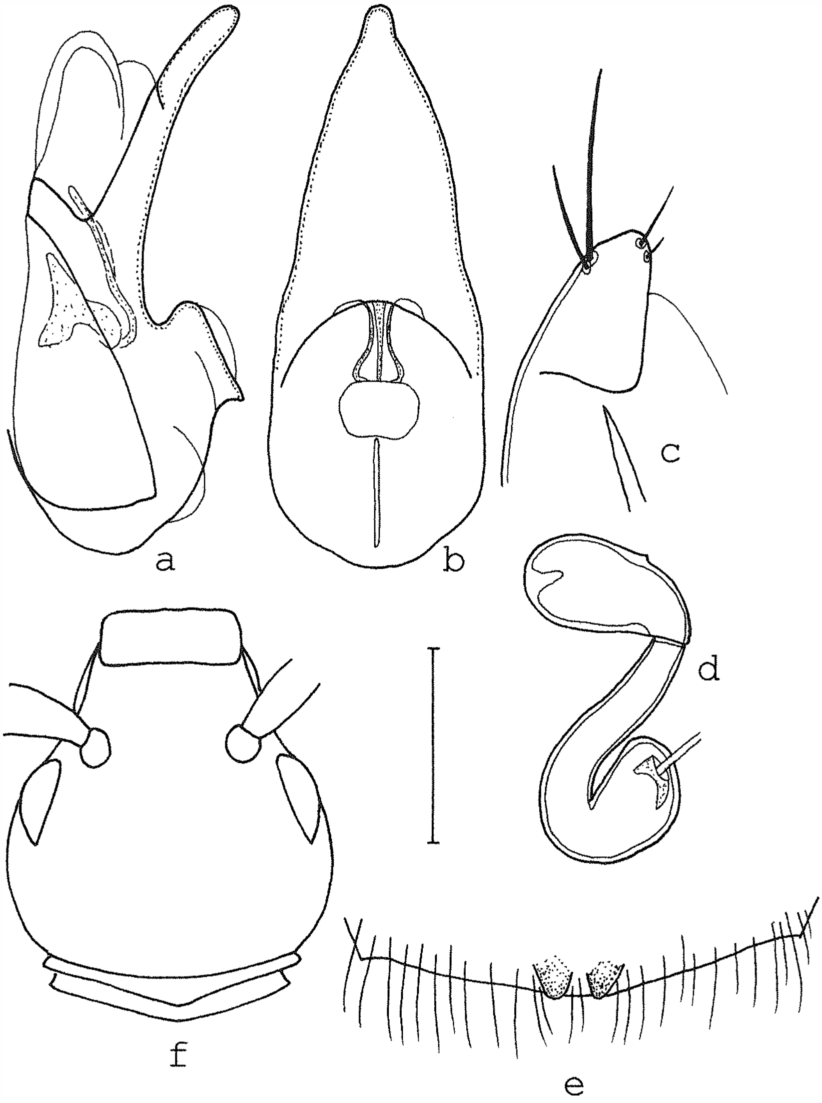
Head with eyes slightly smaller and less bulging; postgenae in dorsal view more strongly convex, width across eyes therefore distinctly lower than width across postgenae (Fig. 21f); puncturation finer than in *P. kaufmanni*, barely noticeable in the coarse microsculpture. Elytra shorter in relation to pronotum (see ratio EL/PL and Fig. 20), puncturation less well-defined and less distinctly granulose.



Figs. 21a - f: *Pseudosemiris circassica* FAGEL. Median lobe of aedeagus in lateral (**a**) and in ventral view (**b**); apical lobe of paramere (**c**); spermatheca (**d**); posterior margin of ♂ tergum VIII (**e**), outline of head (**f**). Scales: c: 0.1 mm; a - b, d - e: 0.2 mm; f: without scale.

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♂: tergum VIII with posterior pair of longitudinal granula less strongly developed (Fig. 21e); aedeagus as in *P. kaufmanni* (Figs. 21a-c).
♀: secondary sexual characters similar to those in *P. kaufmanni*; spermatheca with longer and more slender duct (Fig. 21d).

Intraspecific variation

Considerable intraspecific variation was observed especially for the shape and relative size of head and pronotum.

Comments

Based on a single type specimen from Achtala, Armenia, JABLOKOW-KHNZORIAN (1960) described *Callicerus velox*, which he attributed to the new subgenus *Callicerodes*. FAGEL (1966), however, concluded from the details indicated in the original description that the species in fact referred to *Pseudosemiris*, thus implicitly synonymizing *Callicerodes* with *Pseudosemiris*. He also distinguished *P. circassica*, which he described in the same paper, based on "caractères spécifiques" and on an illustration of the facies in the original description of *C. velox*. However, neither the morphological details nor the poor sketch of the habitus can rule out the possibility that *P. circassica* and *C. velox* are conspecific and that the former is a junior synonym of the latter. A loan of the holotype of *C. velox* was requested, but according to the curator in charge, the specimen is apparently not in the collection of Jablokow-Khnzorian and probably lost (AMIRYAN, pers. comm.). Until material of *Pseudosemiris* from the vicinity of the type locality becomes available and a neotype can be designated, *C. velox* is treated as a species dubia.

Distribution and bionomics

The species is currently known only from several localities in the western Caucasus, where it was collected at altitudes between 600 and 1750m.

5.4.3. *Pseudosemiris breiti* SCHEERPELTZ, 1956

Figs. 22a-c

Pseudosemiris breiti SCHEERPELTZ, 1956: 39, 47ff.

Type examined

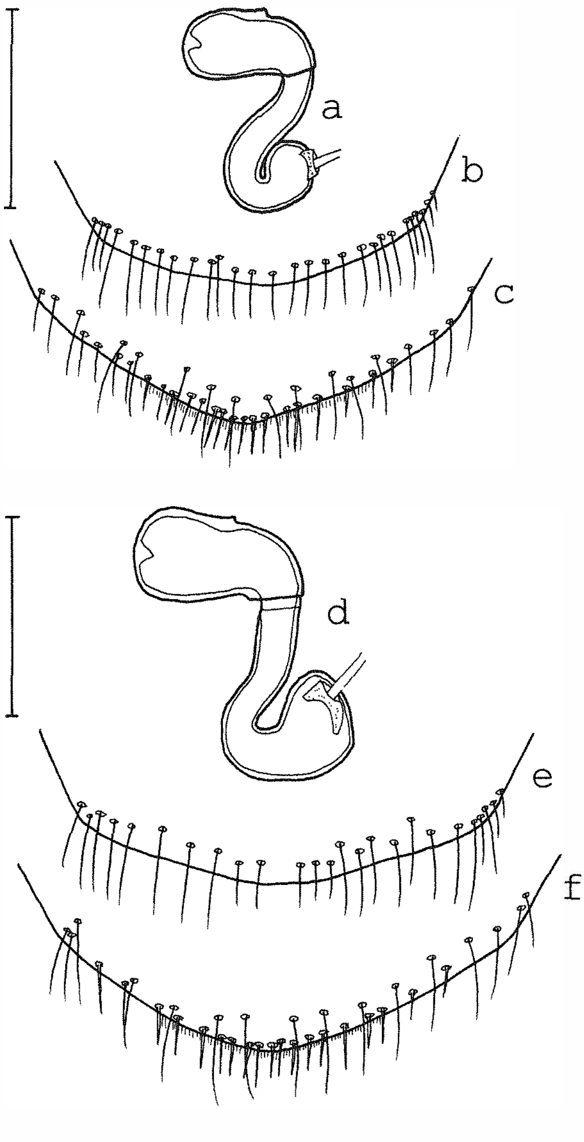
Holotype ♀: ♀ / Klst. Kokos Dobrutscha [=Dobrudscha], Breit / TYPUS Pseudosemiris Breiti O. Scheerpeltz / Pseudosemiris breiti Scheerpeltz ♀ det. V. Assing 2000 (NHMW).

Redescription

Measurements (mm) and ratios of holotype: AL: 1.32; AxL: 0.07; AxiL: 0.23; HW: 0.51; PW: 0.62; PL: 0.53; EL: 0.44; HTiL: 0.63; HTaL: 0.44; TL: 3.2; PW/HW: 1.22; PW/PL: 1.17; EL/PL: 0.83; HTaL/HTiL: 0.69; AxiL/AxL: 3.44.
Morphologically highly similar to *P. kaufmanni*, but much smaller (see measurements). Pronotum and anterior abdominal segments brown, head and preapical abdominal segments slightly darker brown, elytra light brown, mouthparts and appendages testaceous. Head of similar shape as in *P. kaufmanni*, dorsally with shallow median impression; surface slightly less mat than in *P. kaufmanni*; antennae shorter than in *P. kaufmanni* and with more distinctly transverse antennomeres V - X.

DOI: 10.21248/contrib.entomol.51.2.247-334

Pronotum of similar shape as in *P. kaufmanni*, but more convex in cross-section, with less dense and more distinct, weakly granulose puncturation, and more shine due to weaker microsculpture; in posterior half with shallow, but rather extensive median impression. Elytra relatively shorter than in *P. kaufmanni* (see ratio EL/PL); surface without appreciable microsculpture and therefore distinctly more shining; puncturation less dense and more distinctly granulose.



Figs. 22a - f: *Pseudosemiris breiti* SCHEEPELTZ (holotype) (**a - c**) and *P. fulgida* sp. n. (holotype) (**d - f**). Spermatheca (**a, d**); posterior margins of ♀ tergum VIII (**b, e**) and sternum VIII (**c, f**). Scales: 0.2 mm.

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Abdomen less densely punctured than in *P. kaufmanni*.

♂: unknown.

♀: tergum VIII weakly convex posteriorly (Fig. 22b); hind margin of sternum VIII obtusely pointed, marginal setae rather thin, weakly modified (Fig. 22c); spermatheca distinctly smaller than in *P. kaufmanni* and with more slender duct (Fig. 22a)

Comments

The possibility that the holotype of *P. breiti* in fact represents an aberrant specimen of *P. kaufmanni* cannot be ruled out completely. However, in view of the little material available both of *P. kaufmanni* and especially of *P. breiti,* and the number and nature of the distinguishing characters, the specific status of *P. breiti* is here maintained.

Distribution and bionomics

The species is known only from the type locality in eastern Romania. Ecological data are indicated neither in the original description nor on the labels attached to the holotype.

5.4.4. *Pseudosemiris fulgida* sp. n.

Figs. 22d-f

Holotype ♀: ♀ / ASIA MINOR GOEK-DAGH v. BODEMEYER / rigidicornis Er. / ex coll. Scheerpeltz / Klein-Asien / Holotypus ♀ *Pseudosemiris fulgida* sp. n., det. V. Assing 2000 (NHMW).

Description

Measurements (mm) and ratios of holotype: AL: 1.83; AxL: 0.11; AxiL: 0.32; HW: 0.68; PW: 0.86; PL: 0.73; EL: 0.68; HTiL: 0.95; HTaL: 0.66; TL: 4.4; PW/HW: 1.27; PW/PL: 1.18; EL/PL: 0.93; HTaL/HTiL: 0.70; AxiL/AxL: 3.00.

Externally highly similar to *P. kaufmanni*, but distinguished as follows:

Pronotum somewhat more convex in cross-section; microsculpture much weaker, surface therefore with some shine; puncturation less dense and more distinct.

Elytra with weaker microsculpture and more shining.

First metatarsomere distinctly (ca. 1.5x) longer than second, approximately as long as fifth metatarsomere.

Abdomen with slightly denser and more distinct puncturation, especially on terga III and IV.

♂: unknown.

♀: tergum VIII weakly convex posteriorly (Fig. 22e); hind margin of sternum VIII obtusely pointed (Fig. 22f); spermatheca with longer and more slender duct than in *P. kaufmanni* (Fig. 22d).

Derivatio nominis: The name (Lat.: shining) refers to the weak microsculpture and shining appearance, characters distinguishing this species from the similar *P. kaufmanni.*

Comparative notes

From all its congeners the new species is distinguished by the relatively longer first metatarsomere and, except for *P. breiti* and *P. granulosa*, by the more shining pronotum and elytra. In the much smaller *P. breiti* the puncturation of the pronotum is less dense, the elytra are relatively shorter, the abdomen is less densely punctured, and the spermatheca is smaller. *P. granulosa* differs especially in the more strongly granulose puncturation.

DOI: 10.21248/contrib.entomol.51.2.247-334

Distribution and bionomics

The type locality of the new species is ca. 30 km SSE Izmit. The labels attached to the holotype do not specify any ecological data.

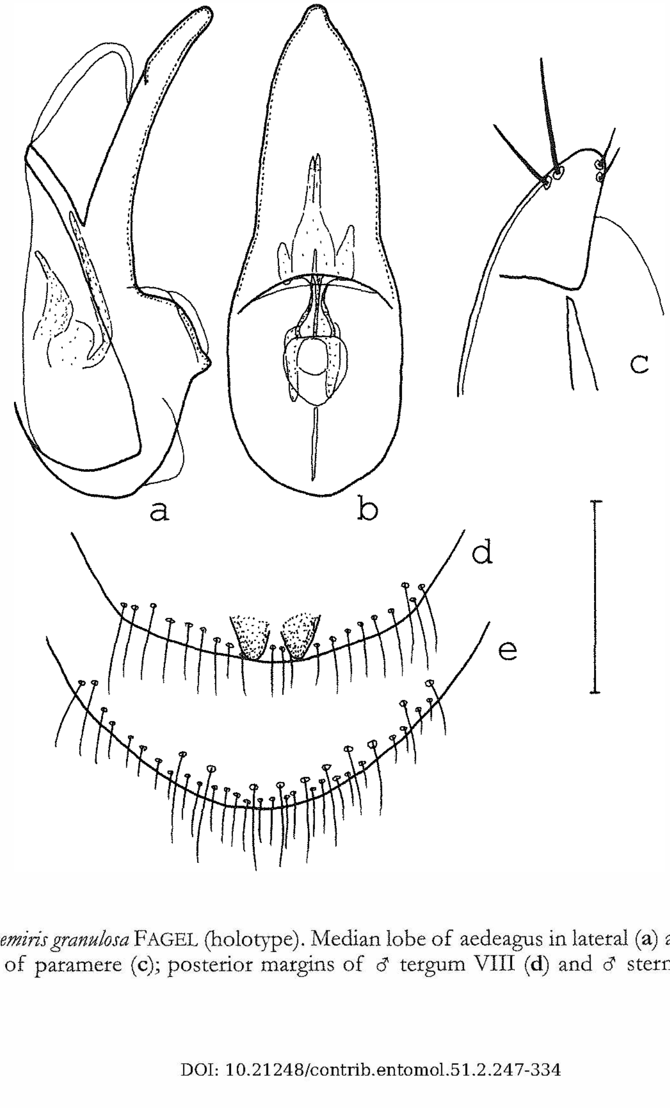
5.4.5. *Pseudosemiris granulosa* FAGEL, 1966

Figs. 23a-e

Pseudosemiris granulosus FAGEL, 1966: 50ff.

Type examined

Holotype ♂ [terminal antennomeres missing, aedeagus dissected]: ♂ / Liban: Moukhtara, 800m, V.1964, G. Fagel / G. Fagel det., Pseudosemiris granulosus n. sp. / Type / Holotypus Pseudosemiris granulosa Fagel, rev. V. Assing 2000 (IRSNB).



Figs. 23a - e: *Pseudosemiris granulosa* FAGEL (holotype). Median lobe of aedeagus in lateral (**a**) and in ventral view (**b**); apical lobe of paramere (**c**); posterior margins of ♂ tergum VIII (**d**) and ♂ sternum VIII (**e**). Scale: 0.2 mm.

DOI: 10.21248/contrib.entomol.51.2.247-334

Redescription

Measurements (mm) and ratios of holotype: HW: 0.60; PW: 0.73; PL: 0.60; EL: 0.56; HTiL: 0.80; HTaL: 0.57; ML: 0.51; TL: 3.8; PW/HW: 1.21; PW/PL: 1.22; EL/PL: 0.94; HTaL/HTiL: 0.72.

Smaller than average *P. kaufmanni* (see measurements). Coloration darker than in average *P. kaufmanni*, elytra indistinctly lighter only near suture.

Head of similar shape as in *P. kaufmanni*, but puncturation sparser and more distinct; vertex with extensive impression.

Pronotum shaped as in *P. kaufmanni*, but with much coarser and sparser, distinctly granulose puncturation; microsculpture weaker, surface therefore with some shine; at least in ♂ along midline with extensive, in the middle weakly sulcate impression; posterior half of midline without punctures.

Elytra with dense puncturation, which is coarser and more distinctly granulose than in *P. kaufmanni*.

Puncturation of abdominal terga III-V somewhat denser than in *P. kaufmanni*.

♂: primary and secondary sexual characters similar to *P. kaufmanni* (Figs. 23a-d), but marginal setae of sternum VIII longer (Fig. 23e).

♀: unknown.

Comparative notes

From all other congeners, *P. granulosa* is readily distinguished by the strongly granulose puncturation of the pronotum alone.

Distribution and bionomics

Like the preceding and the following species, *P. granulosa* is known only from the type locality in Lebanon. Neither the labels attached to the holotype nor the original description specify any ecological data.

5.4.6. *Pseudosemiris stricticornis* FAGEL, 1966

Figs. 24a-e

Pseudosemiris stricticornis FAGEL, 1966: 48ff.

Type examined

Holotype ♂: Liban: Laklouk, 1500-1800m, V.1964 - G. Fagel / G. Fagel det., Pseudosemiris stricticornis n. sp. / Type / Holotypus Pseudosemiris stricticornis Fagel, rev. V. Assing 2000 (IRSNB).

Redescription

Measurements (mm) and ratios of holotype: AL: 1.60; AxL: 0.09; AxiL: 0.28; HW: 0.57; PW: 0.68; PL: 0.58; EL: 0.57; HTiL: 0.73; HTaL: 0.50; ML: 0.53; TL: 3.7; PW/HW: 1.18; PW/PL: 1.17; EL/PL: 0.98; HTaL/HTiL: 0.69; AxiL/AxL: 3.68.

Small species (see measurements). Coloration as in dark *P. kaufmanni*, but elytra lighter, yellowish brown, more strongly contrasting with the rest of the body; legs light brown; antennae brown, antennomeres IV-XI almost dark brown; maxillary palpi distinctly infuscate, third joint less elongated than in *P. kaufmanni* and other congeners.

Head without distinct dorsal impression; puncturation fine, sparse, and not distinctly granulose; microsculpture weaker than in *P. kaufmanni*; eyes large, approximately as long

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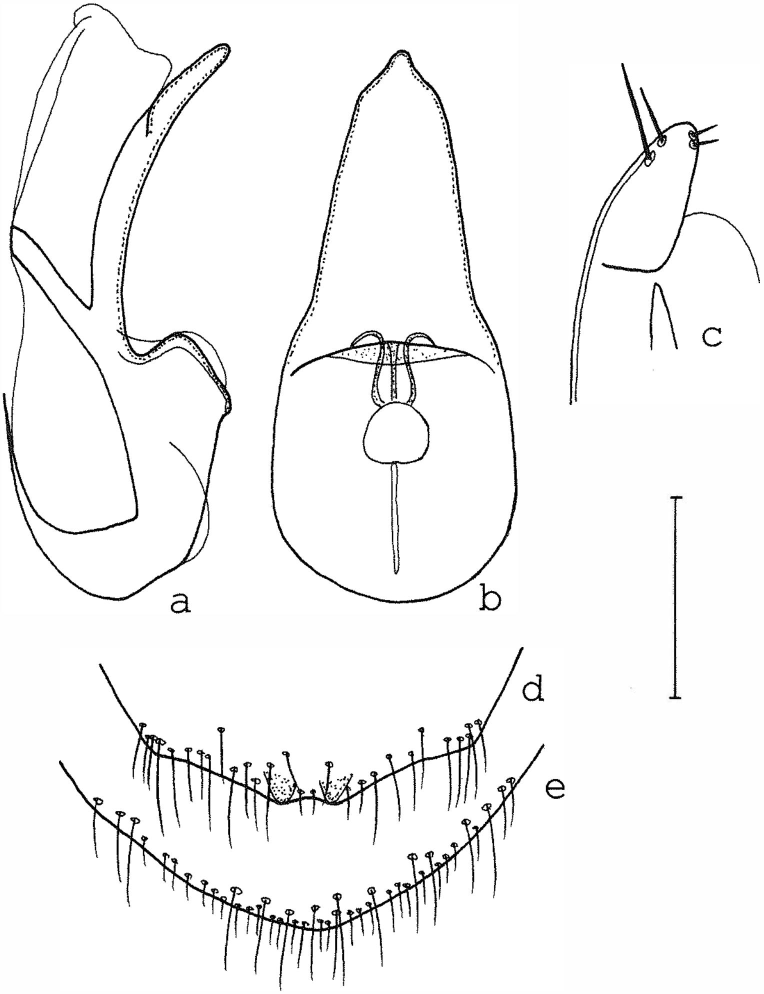


Figs. 24a - e: *Pseudosemiris stricticornis* FAGEL (holotype). Median lobe of aedeagus in lateral (**a**) and in ventral view (**b**); apical lobe of paramere (**c**); posterior margins of ♂ tergum VIII (**d**) and ♂ sternum VIII (**e**). Scale: 0.2 mm.

as temples in dorsal view, but less bulging than in the preceding congeners, only very weakly projecting from lateral outline of head; antennae much more slender than in other species of the genus, especially antennomeres III-X narrower and less transverse, subquadrate to weakly oblong.

Pronotum without dorsal impression, only posterior half of midline very weakly sulcate; puncturation weakly granulose and not very dense; microreticulation much shallower than in *P. kaufmanni*; pubescence pattern different from that of the preceding species, pubescence in posterior lateral area not directed diagonally mediad, but diagonally latero-caudad.

DOI: 10.21248/contrib.entomol.51.2.247-334

Elytra with puncturation distinctly granulose, rather dense, coarser than in *P. kaufmanni*, but less dense and coarse than in *P. granulosa*; microsculpture very weak, only visible at high magnifications; surface shining. First metatarsomere short, approximately as long as second metatarsomere.

Abdomen with puncturation very fine and sparser than in the preceding species.

♂: tergum VII unmodified; posterior margin of tergum VIII only with very weak pair of tubercles in the middle (Fig. 24d); sternum VIII weakly pointed posteriorly (Fig. 24e); aedeagus as in Figs. 24a-c.

♀: unknown.

Comparative notes

From all other congeners, *P. stricticornis* is distinguished by numerous characters, especially the darker colour of the antennae and the maxillary palpi, the lighter and more strongly contrasting colour of the elytra, the distinctly more slender antennae, the fine puncturation of the head and the pronotum, the pronotal pubescence pattern (see description), the sparse puncturation of the abdomen, and the unmodified ♂ tergum VII.

Comments

In the original description FAGEL (1966) states that the holotype is a female, very likely because of the unmodified tergum VII.

Distribution and bionomics

P. stricticornis has been recorded only from the type locality in Lebanon. Ecological data are not available.

5.4.7. *Pseudosemiris zanettii* sp. n.

Figs. 25a-c

Holotype ♀: SICILIA Nebrodi, Valle Caronia, P. Scorciavacca, 15.VII.1991, leg. Zanetti / Callicerus sp. det. Zanetti 94/ Holotypus ♀ *Pseudosemiris zanettii* sp. n., det. V. Assing 2000 (cZan).

Description

Measurements (mm) and ratios of holotype: AL: 1.49; AxL: 0.08; AxiL: 0.29; HW: 0.54; PW: 0.73; PL: 0.57; EL: 0.47; HTiL: 0.73; HTaL: 0.53; TL: 3.6; PW/HW: 1.35; PW/PL: 1.28; EL/PL: 0.82; HTaL/HTiL: 0.73; AxiL/AxL: 3.80.

Small species (see measurements). Pronotum, elytra, and abdominal segments III-V castaneous, otherwise coloured like *P. kaufmanni*.

Head with large eyes, which are approximately as long as temples in dorsal view, but only weakly projecting from lateral outline of head; vertex with shallow circular central impression; puncturation very fine, not granulose; microsculpture much weaker than in *P. kaufmanni*, surface with subdued shine. Antennae distinctive, relatively short and with antennomeres IV-X distinctly transverse.

Pronotum relatively larger and much more transverse than in other congeners; without dorsal impression; puncturation distinct, granulose, coarser than in *P. kaufmanni*; microsculpture extremely shallow, barely noticeable; surface shining; pubescence pattern as in *P. stricticornis*.

Elytra relatively short in relation to pronotum (cf. ratio EL/PL); with dense and coarse granulose puncturation; surface with some shine due to shallow microsculpture.

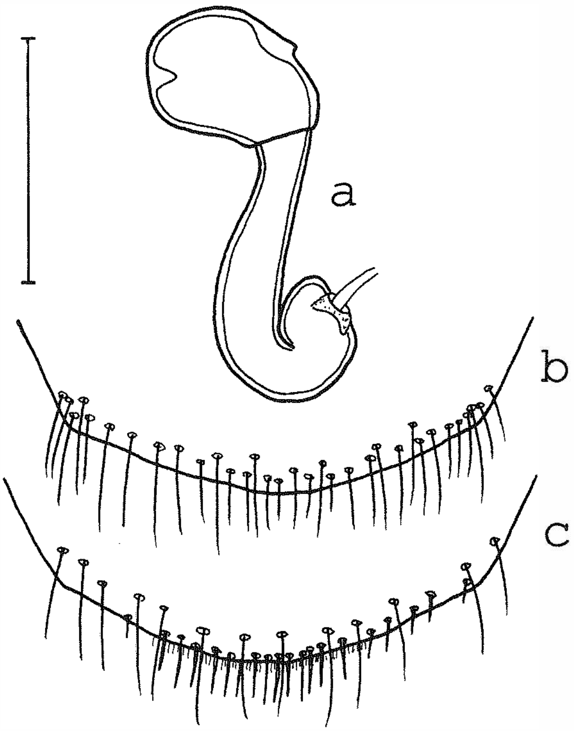
Abdomen with slightly less dense puncturation and more shine than in *P. kaufmanni*; microsculpture of terga III-VII composed of ± transverse meshes.
♂: unknown.
♀: tergum VIII as in Fig. 25b; sternum VIII with weakly modified (i. e. relatively thin) marginal setae (Fig. 25c); spermatheca of similar shape as in *P. circassica*, but smaller and duct proximally less strongly dilated (Fig. 25a).

Comparative notes

From all other congeners, the new species is separated especially by the stout antennae (see description) and the relatively large and transverse pronotum.

Distribution and bionomics

P. zanettii is presumably endemic to Sicily. The holotype was collected at an altitude between 800 and 1200m in a *Fagus* wood on sandstone (ZANETTI, pers. comm.).



Figs. 25 a - c: *Pseudosemiris zanettii* sp. n. (holotype). Spermatheca (**a**); posterior margins of ♀ tergum VIII (**b**) and ♀ sternum VIII (**c**). Scale: 0.2 mm.

DOI: 10.21248/contrib.entomol.51.2.247-334

5.5. Key to the species of *Pseudosemiris*

In the following key, the doubtful *P. velox*, whose type is apparently lost, is not accounted for; for details see comments below *P. circassica*. For explanations of the abbreviations used in the key, section 2 is referred to; the measurements are given in mm.

1. Very small species (AL: <1.5; HW: <0.53; PW: <0.65; PL: <0.55); antennomeres V - X distinctly transverse; pronotum and elytra shining. ♀: spermatheca small (Fig. 22a). Romania. .... ***P. breiti*** SCHEERPELTZ

\- Larger species (AL: >1.5; HW: >0.53; PW: >0.65; PL: >0.55); either antennomeres V - X at most weakly transverse or pronotum and elytra mat. ♀: spermatheca larger. 2

2. Antennomeres IV - X all distinctly transverse. Pronotum relatively large and strongly transverse, PW/PL: 1.28. ♀: spermatheca as in Fig. 25a. Presumably endemic to Sicily .... ***P. zanettii*** sp. n.

\- Antennomeres IV - X at most weakly transverse. Pronotum relatively smaller and less transverse, PW/PL: <1.22. Distribution different 3

3. Small species (holotype: AL: 1.60; HW: 0.57; PW: 0.68; PL: 0.58). Elytra yellowish brown, strongly contrasting with the dark head and pronotum; antennomeres IV - XI and maxillary palpi dark brown. Antennae slender, antennomeres IV - X subquadrate to weakly oblong. Pronotal pubescence in posterior lateral area directed diagonally latero-caudad. Abdomen with sparse puncturation and very shiny; microsculpture not visible at lower magnifications (<60x). ♂: vertex without impression; tergum VII unmodified (Fig. 24d); median lobe of aedeagus and paramere as in Figs. 24a-b. Lebanon. .... ***P. stricticornis*** FAGEL

\- Larger species (AL: >1.70; HW: >0.59; PW: >0.72; PL: >0.59). Elytra often lighter than head and pronotum, but less strongly contrasting; antennae and maxillary palpi ferrugineous to brown, not infuscate. Antennae distinctly more massive, antennomeres IV - X subquadrate to weakly transverse. Pronotal pubescence in posterior lateral area directed diagonally medio-caudad. Abdomen with much denser puncturation; microsculpture at least indistinctly visible at a magnification of 60x. ♂: vertex usually with distinct impression; tergum VII with small tubercle near hind margin. 4

4. Pronotum and elytra with weak microsculpture and ± shining; pronotal puncturation well-delimited and distinct. 5

\- Pronotum and elytra mat or nearly so; pronotal puncturation fine, usually difficult to see owing to the coarse microsculpture. 6

5. Pronotum with coarsely granulose puncturation; first metatarsomere only barely longer than second. ♂: aedeagus as in Figs. 23a-b. Lebanon. .... ***P. granulosa*** FAGEL

\- Pronotum with finer puncturation; first metatarsomere distinctly (ca. 1.5x) longer than second. ♀: spermatheca as in Fig. 22d. NW-Anatolia. .... ***P. fulgida*** sp. n.

6. Head with more distinct puncturation; eyes more bulging; width across eyes almost equal to width across postgenae; elytra relatively longer (Fig. 20) and with more well-defined granulose puncturation. ♂: tergum VIII with more pronounced pair of posterior longitudinal granula at hind margin (Fig. 19k); aedeagus as in Figs. 19f-g. ♀: spermatheca with shorter and wider, distally abruptly narrowed duct (Fig. 19j). Southeast of Central Europe, southeastern Europe, Anatolia (Map 5). .... ***P. kaufmanni*** (EPPELSHEIM)

\- Head with barely noticeable puncturation; eyes less bulging; width across eyes distinctly lower than width across postgenae (Fig. 21f); puncturation of elytra less well-defined and not distinctly granulose. ♂: tergum VIII with less pronounced granula (Fig. 21e); aedeagus not distinctive (Figs. 21a-b). ♀: spermatheca with longer and more slender duct (Fig. 21d). Western Caucasus region....................... .... ***P. circassica*** FAGEL

6. The genus *Saphocallus* SHARP, 1888

Saphocallus SHARP, 1888: 287f.

6.1. Redescription

Microsculpture of head coarsely isodiametric, interstices of pronotum and elytra without distinct microsculpture, abdomen very shining, completely without microsculpture.

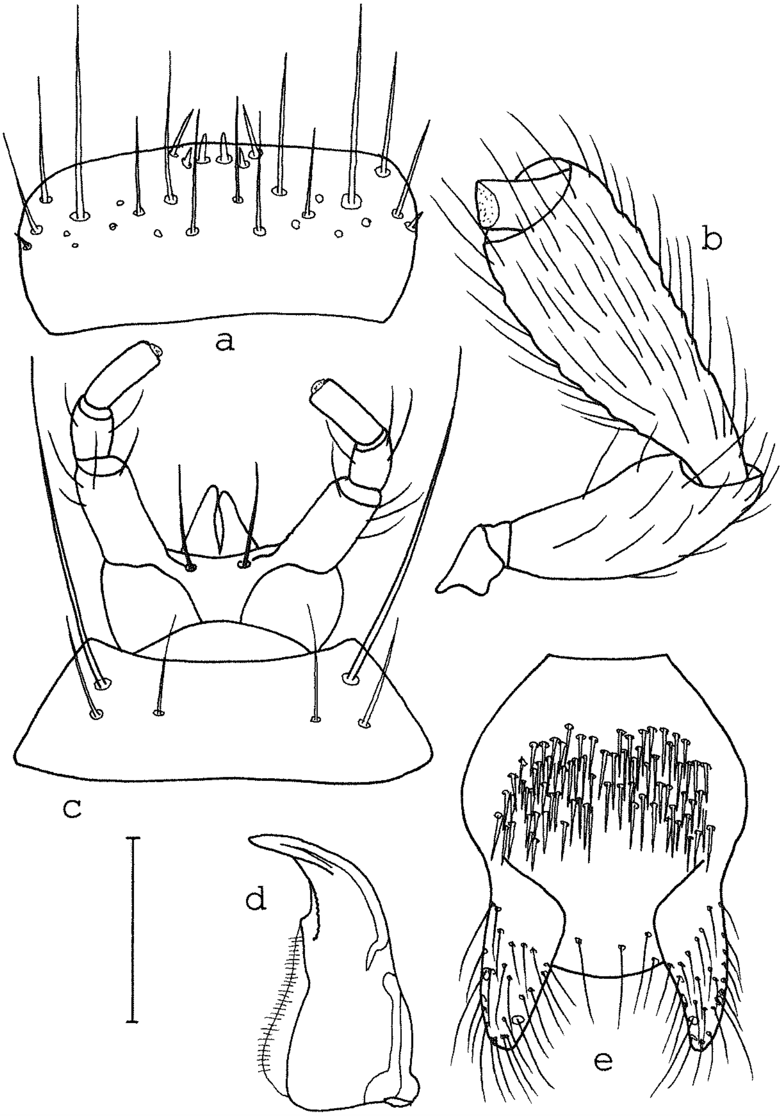
Punctures on head dense, areolate and large, but shallow, therefore weakly delimited from the coarse microsculpture; pronotum with extremely dense, areolate, and coarse puncturation, interstices reduced to narrow ridges; punctures on elytra coarse and very dense, especially near anterior margin, but less so and less distinctly areolate than on pronotum, elytral surface in central and posterior area with some shine; abdominal terga III-VI in the central area of anterior impressions with coarse, very dense, and areolate puncturation (similar to that of pronotum), on remainder of tergal surface sparse and fine, but distinct; abdominal tergum V with moderately dense and fine puncturation.

Head with short distinct posterior constriction (similar to *Callicerus*); dorsal surface posteriorly ± smoothly sloping downwards towards constriction. Pubescence of vertex predominantly directed transversely mediad, in anterior half of midline caudad, and in posterior half of midline anterad. Eyes large, their diameter approximately as long as temples in dorsal view, strongly bulging and distinctly projecting from lateral outline of head. Genae ventrally not delimited by carina, outline in dorsal view moderately convex. Gular sutures widely separated. Dorsal area of vertex ± flattened, not impressed.

Antennae relatively long and stout, but less so than in *Callicerus* and *Pseudosemiris*; antennomere III coniform; antennomeres I-III oblong, subequal in length; IV-X weakly coniform, gradually increasing in width apically, slightly oblong, penultimate antennomeres at most weakly transverse; antennomere XI shorter than in *Callicerus* and *Pseudosemiris*, shorter than the combined length of the two preceding antennomeres; apical antennomeres without sexual dimorphism.

Penultimate joint of maxillary palpi long and slender, but less so than in *Pseudosemiris*, apical joint subcylindrical, relatively short (Fig. 26b); mandibles apically distinctly bent and acute, right mandible with obtuse molar tooth, faintly serrate in dorsal molar region (Fig. 26d); ligula short and wide, bifid, and membranous (Fig. 26c); mentum with shape

DOI: 10.21248/contrib.entomol.51.2.247-334



Figs. 26a - e: *Saphocallus parviceps* SHARP. Labrum (**a**); maxillary palpus (**b**); labium (**c**); right mandible (**d**); tergum X (**e**); Scale: a - c: 0.1 mm; d - e: 0.2 mm.

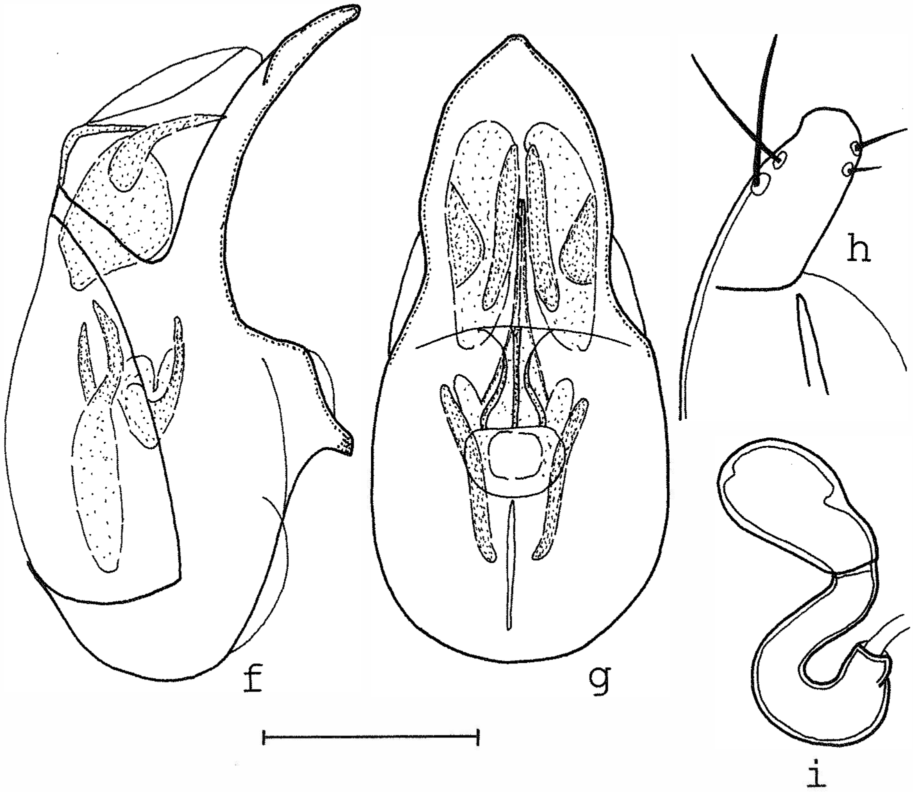
and chaetotaxy similar to that in *Callicerus*; labrum with short and stout modified setae near the middle of anterior margin (Fig. 26a).

Pronotum wider than head, but rather slender; posterior angles obtuse; maximal width near anterior angles; without sexual dimorphism; pubescence predominantly directed ± caudad, and transversely laterad near hind margin. Hypomera distinctly visible in lateral view. Prosternum without distinct median carina.

Elytra wider than pronotum and rather long, at suture as long as or slightly longer than pronotum; hind margin near posterior angle strongly sinuate; with sexual dimorphism: in ♂ with pronounced tubercle near posterior sutural angle; hind wings fully developed; mesosternum not carinate; mesosternal process acute, but shorter than in *Callicerus*, not reaching halfway between mesocoxae; mesocoxal cavities delimited from metasternum by carina.

Legs long and slender; metatarsi only slightly shorter than metatibiae; first metatarsomere very long and slender (much more so than in *Callicerus* and *Pseudosemiris*), approximately as long as the combined length of the metatarsomeres II and III; metatarsomere II distinctly oblong, longer than III, the latter longer than IV; metatarsomere V shorter than I.

Abdominal terga III-VI with deep anterior impressions; posterior surface of terga IV-VI with sexual dimorphism: in ♂ with somewhat sparser puncturation; sterna IV-VI constricted anteriorly; terga VII and VIII and sternum VIII with distinct sexual dimorphism; tergum VIII posteriorly concave; tergum X strongly modified, with pronounced and erect posterior projections in both sexes, in posterior half almost without pubescence (Fig. 26e).



Figs. 26f - i: *Saphocallus parviceps* SHARP. Median lobe of aedeagus in lateral (**f**) and in ventral view (**g**); apical lobe of paramere (**h**); spermatheca (**i**); Scale: h: 0.1 mm; f - g, i: 0.2 mm.

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♂: tergum VII near hind margin with ± pronounced median tubercle of variable shapes; tergum VIII distinctly and irregularly serrate posteriorly (Figs. 26j-k); hind margin of sternum VIII moderately convex (Fig. 26l); median lobe of aedeagus of similar morphology as in *Callicerus*, but with internal structures of different shape (Figs. 26f-g); apical lobe of paramere subcylindrical and apically almost truncate (Fig. 26h).
♀: tergum VIII not serrate posteriorly (Fig. 26m); hind margin of sternum VIII with pronounced median incision, rather long modified setae, and somewhat modified, short and spinose micropubescence (Fig. 26n); spermatheca of similar morphology as in *Callicerus* (Fig. 26i).

6.2. Systematics

Saphocallus is characterized by numerous obvious and conspicuous autapomorphies separating the genus from both *Callicerus* and *Pseudosemiris*, especially the extremely dense and areolate puncturation particularly of the pronotum and of the anterior transverse impressions of the abdominal terga III-VI, the pubescence pattern of the head, the absence of a genal carina, the chaetotaxy of the labrum, the strongly sinuate posterior margin and the sexual dimorphism of the elytra, the much longer and more slender tarsi, the extremely long first metatarsomere, the presence of a deep anterior impression on abdominal tergum VI, the sexual dimorphism of abdominal terga IV-VI, the distinctly concave posterior margin of tergum VIII, the modifications on the ♂ terga VII and VIII, the strongly modified tergum X, and the modified micropubescence as well as the pronounced median incision of the posterior margin of the ♀ sternum VIII. In addition, it is distinguished from *Callicerus* and *Pseudosemiris* by other characters, which are either plesiomorphic or of doubtful phylogenetic polarity, such as the less massive antennae, the short terminal antennomere, the not distinctly modified third joint and the subcylindrical fourth joint of the maxillary palpus, the internal structures of the aedeagus, and the shape of the apical lobe of the paramere. On the other hand, *Saphocallus* shares several characters with *Callicerus*, *Pseudosemiris*, as well as with *Aloconota/Disopora*, especially the morphology of the primary sexual characters and of the ligula, but also the long and relatively stout antennae as well as the morphology of the ventral aspect of the thorax and of other mouthparts (mandibles, labrum).
For fully assessing the phylogenetic affiliations of the taxa treated in this paper, a comprehensive study of all allied Athetini would be essential. Based on a cursory examination of Aleocharinae from the Himalayas and China I suspect that many more similar, probably undescribed taxa occur particularly in the Eastern Palaearctic region.

6.3. Distribution and bionomics

The genus currently includes only the type species *S. parviceps* SHARP, which has become known only from Japan. Nearly nothing is known about its bionomics.

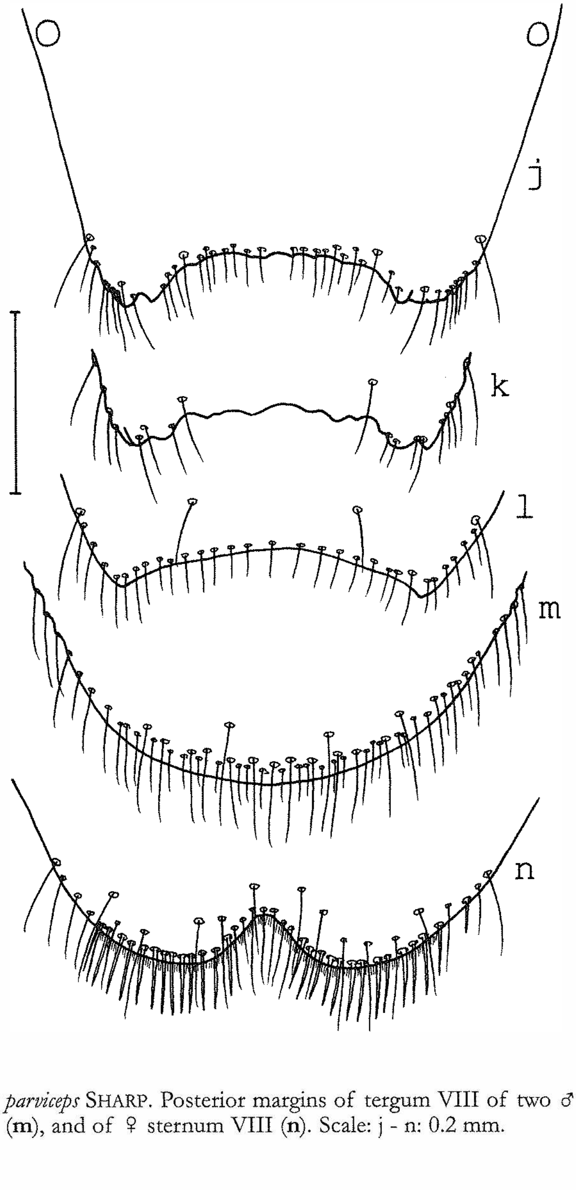
6.4. *Saphocallus parviceps* SHARP, 1888

Figs. 26a-n

Saphocallus parviceps SHARP, 1888: 288.

Type examined

Holotype ♂: Saphocallus parviceps Type D.S. Nagasaki 6.4.81 / Type / Nagasaki 13.II.-21.IV. 81 / Japan. G. Lewis. 1910-320 (BMNH).



Figs. 26j - n: *Saphocallus parviceps* SHARP. Posterior margins of tergum VIII of two ♂♂ (**j, k**), ♀ tergum VIII (**l**), ♂ sternum VIII (**m**), and of ♀ sternum VIII (**n**). Scale: j - n: 0.2 mm.

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Additional material examined

Japan: Honshū: 1♂, Fukui pref., Miyazaki-mura, Jôzan, 26.IV.1981, leg. Sasaji (cNao); 1♂, Kyoto pref., Iwakura, 11.IV.1981, leg. Ogata (cAss). **Kyūshū:** 1♂, Nagasaki pref., Shikamachi-cho, Shitonezaki, 1.IV.1988, leg. Nomura (cNao); 1♀, Nagasaki pref., Ohmura C., Tanoo, 5.VI.1983, leg. Imasaka (cNao); 1♀, Oita pref., Kuju, Mt. Kurodake, 28.IV.1985, leg. Nomura (cAss); 1♂, Fukuoka pref., Mt. Tachibana, 21.VII.1986, leg. Naomi (cNao); 1♀, Fukuoka pref., Kasuii (?), 24.IV.1992, leg. Konishi (cNao).

Redescription (see also description of genus)

Measurements (mm) and ratios (range; n=8): AL: 1.37 - 1.74; AxL: 0.08 - 0.11; AxiL: 0.18 - 0.23; HW: 0.50 - 0.61; PW: 0.63 - 0.85; PL: 0.57 - 0.77; EL: 0.57 - 0.79; HTiL: 0.71 - 0.98; HTaL: 0.56 - 0.79; ML: 0.57 - 0.65; TL: 3.2 - 5.3; PW/HW: 1.20 - 1.41; PW/PL: 1.08 - 1.17; EL/PL: 1.00 - 1.08; HTaL/HTiL: 0.79 - 0.83; AxiL/AxL: 1.71 - 2.31.

Colour of head, pronotum, and most of abdomen black; elytra of variable colour, ferrugineous to pitchy brown; legs and the narrow hind margins of the abdominal segments ferrugineous to castaneous; maxillary palpi dark brown; base of antennae (usually antennomeres I-III) dark brown to blackish, apical part ± ferrugineous.

Head with shape somewhat resembling that in *Callicerus obscurus*; eyes in dorsal view approximately as long as temples; head in dorsal view narrowed behind eyes, widest across the strongly bulging eyes.

Pronotum ± transverse, tending to be more transverse in larger than in smaller specimens, and wider than head (see ratios PW/PL and PW/HW), maximal width a short distance behind anterior angles, posteriorly weakly narrowed in ± straight line; dorsal surface weakly convex in cross-section.

Elytra wider than pronotum, in ♂ ± depressed along suture, with pronounced unpunctured, ± coniform tubercle in posterior sutural angle, this tubercle more pronounced in large than in small ♂♂.

Abdomen almost parallel, only weakly tapering posteriorly.

♂: tergum VII with median tubercle of variable shape near posterior margin, in large ♂♂ forming a pronounced transverse, apically ± serrate ridge or blade, in small ♂♂ reduced to a minute, ± acute granulum; tergum VIII broadly concave and coarsely serrate posteriorly (Figs. 26j-k); posterior margin of sternum VIII smoothly convex and with long thin setae (Fig. 26m); median lobe of aedeagus and apical lobe of paramere as in Figs. 26f-h.

♀: tergum VIII broadly concave, but not serrate posteriorly (Fig. 26l); sternum VIII with deep median incision (Fig. 26n); spermatheca as in Fig. 26i.

Intraspecific variation

Apart from the coloration of the elytra, considerable intraspecific variation was observed especially for body size, the relative width of the pronotum (see ratio PL/PW), and the ♂ secondary sexual characters. In large specimens the pronotum tends to be more transverse, and in small ♂♂ the elytral tubercles are smaller and the tubercles on tergum VII are strongly reduced. These reductions were observed only in two of the ♂ specimens, among them the holotype; in the remaining three ♂♂, the tubercles are fully developed. Although no ♂ with intermediate conditions was seen, the different shapes of the ♂ secondary sexual characters are here interpreted as an expression of intraspecific rather than interspecific variation, particularly because no convincing differences in other external or sexual characters were found.

Distribution and bionomics

Based on the revised records, the distribution of *S. parviceps* is confined to the Japanese islands Honshū and Kyūshū. However, the long hind wings and elytra suggest that this species is an active flyer, so that its presence in other Japanese islands and perhaps also in the Russian Far East would not be surprising. The specimens listed above were collected in April, June, and July.

7. Species transferred to other genera

Three species previously attributed to or described in *Callicerus* are here assigned to other genera: *Callicerus toroenensis* (BERNHAUER), which was transferred to *Callicerus* by SAWADA (1984), *C. caliginosa* (STEPHENS), which has been regarded as a synonym of *C. obscurus* by various previous authors, and *Callicerus smetanai* SCHEERPELTZ.

7.1. *Homoiocalea toroenensis* (BERNHAUER, 1943)

In the original description, BERNHAUER (1943) attributed the species to the new subgenus *Homoiocalea*, which he referred to the genus *Atheta* THOMSON. Later, based on an examination of the mouthparts and other morphological characters, SAWADA (1984) transferred the species to *Callicerus* GRAVENHORST. However, as will be argued below, there are serious doubts that it is correctly placed in either *Atheta* or *Callicerus*, so that it is here attributed to *Homoicalea* BERNHAUER, which is raised to generic rank.

7.1.1. The genus *Homoiocalea* BERNHAUER, 1943, stat. n.

Homoiocalea BERNHAUER, 1943: 186f.

7.1.1.1. Redescription

For additional figures illustrating the mouthparts and sexual characters see SAWADA (1984). Species of intermediate size. Whole body with pronounced shine; microsculpture very weak (head) or absent (remainder of body). Puncturation fine, not granulose.

Head with posterior constriction; dorsal surface posteriorly sloping downwards towards constriction in smooth curve; vertex ± flattened and with small median impression; eyes large, weakly convex, not distinctly bulging; postgenae not carinate, in dorsal view moderately to distinctly convex; gular sutures widely separated.

Antennae long and stout, but less massive than in *Callicerus*, all antennomeres oblong.

Maxillary palpi with third joint distinctly dilated, but relatively less massive than in *Callicerus*; fourth joint short, coniform, and basally dilated; ligula wide and bifid, apical joint of labial palpi slender; mandibles apically acute, right mandible with weak tooth, not distinctly serrate in dorsal molar region; labrum anteriorly distinctly concave and in the middle membranous.

Pronotum wider than head, but relatively slender, on the whole larger in relation to head than in *Callicerus*; posterior angles obtuse, but distinct; maximal width near anterior angles; pubescence directed caudad in midline, ± diagonally latero-caudad to almost caudad in lateral areas, and transversely laterad near posterior margin; hypomera visible in lateral view.

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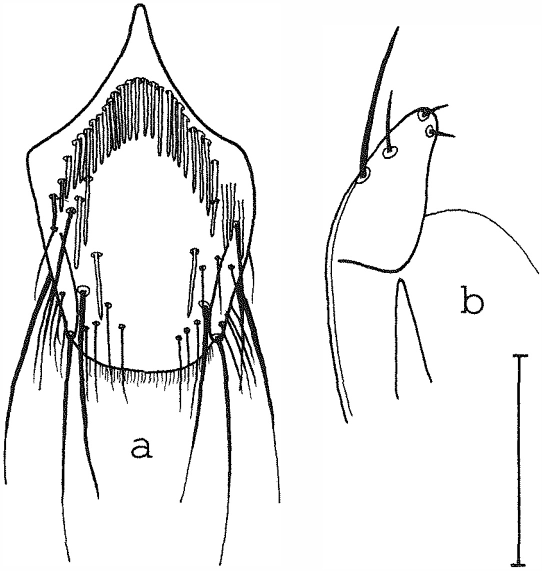
Elytra long, wider than pronotum; hind wings fully developed. Mesosternum without median carina, mesosternal process long and acute, mesocoxal cavities delimited from metasternum by carina. Legs long and slender; first metatarsomere slightly longer than second.

Abdomen with fine and sparse puncturation; terga III-V with deep and impunctate, tergum VI without anterior impression; tergum VIII less transverse than in *Callicerus*, posteriorly strongly convex, with ± long and very thin setae; tergum X with very distinctive chaetotaxy: anteriorly with dense row of long, stout, and parallel-sided setae, with 8 very long dark setae and additional, moderately long thin setae (Fig. 27a).

♂: tergum VIII unmodified; sternum VIII oblong, posteriorly strongly convex, more so than in *Callicerus*; aedeagus without conspicuous modifications, of similar morphology as in *Callicerus*; apical lobe of paramere as in Fig. 27b.

♀: unknown.



Figs. 27a - b: *Homoiocalea toroenensis* (BERNHAUER). Tergum X (**a**); apical lobe of paramere (**b**). Scale: b: 0.1 mm; a: 0.2 mm.

7.1.1.2. Systematics

As can be concluded from the redescription above, *Homoiocalea* is indeed closely allied to *Callicerus*, with which it shares several presumable apomorphies, especially the relatively massive antennae with a distinctly coniform antennomere III, the dilated third joint of the maxillary palpi, the posteriorly constricted head, the reduced carinae of the postgenae, and the distinctly convex posterior margin of tergum VIII. In addition, both taxa share various further similarities, which are either plesiomorphic or of doubtful polarity: the shape of the ligula, the labial palpi, and the mandibles, the morphology of the ventral aspect of the thorax, the slender legs, and the morphology of the aedeagus. However, there are reasonable doubts that *Callicerus* and *Homoiocalea* are, in fact, adelphotaxa.

DOI: 10.21248/contrib.entomol.51.2.247-334

First, many Eastern Palaearctic Aleocharinae have not yet been studied and there may be other taxa more closely related to either *Callicerus* or *Homoiocalea*. Second, the possibility that the characters here presumed to represent apomorphies are in fact homoplastic cannot be ruled out, so that, based on the evidence currently available, it cannot be decided with sufficient certainty whether *Callicerus* is more closely allied to *Pseudosemiris* or to *Homoiocalea*. Third, there are numerous significant characters distinguishing *Homoiocalea* from *Callicerus*, especially the remarkably shining integument and the near absence of microsculpture, the non-granulose puncturation of the forebody, the shape and chaetotaxy of the labrum, and the chaetotaxy of tergum X (Fig. 27a). In addition, the eyes are less convex, the antennae are less massive, the third joint of the maxillary palpi is less strongly dilated, the elytra are longer, and the abdominal segment VIII is less transverse. The final argument is a biogeographical one: it does not seem very likely that the adelphotaxon of the Western Palaearctic *Callicerus* should occur in Taiwan. Therefore, it appears to be the best solution to regard *Homoiocalea* as a distinct genus.

7.1.1.3. Distribution

The only species attributed to the genus occurs in Taiwan.

7.1.2. *Homoiocalea toroenensis* (BERNHAUER, 1943), comb. n.

Figs. 27a-b

Atheta (*Homoiocalea*) *toroenensis* BERNHAUER, 1943: 186f.
Callicerus toroenensis: SAWADA (1984); unintentional lectotype designation.
Atheta (*Liogluta*) *formosae* CAMERON, 1949: 474f.; synonymy by SAWADA (1984).

Types examined

Lectotype ♂ [mouthparts, terminalia, and aedeagus dissected by SAWADA]: Toroen, 17.XI. 1926, Col. J. Söhan / toroenensis Brnh. Typus Homoiocalea / Homoiocalea toroenensis Brnh. nov. gen. / Chicago NHMus M. Bernhauer Collection / Lectotypus ♂ Atheta toroenensis Bernhauer rev. V. Assing 2000 / Homoiocalea toroenensis ♂ (Bernhauer) det. V. Assing 2000 (FMNH). Paralectotype ♂ [heavily damaged: most of antennae, right elytron, part of head, mouthparts missing; mouthparts dissected prior to present study]: Toroen, 17.XI.1926, Col. J. Söhan / toroenensis Brnh. Cotypus Homoiocalea / Chicago NHMus M. Bernhauer Collection / Paralectotypus ♂ Atheta toroenensis Bernhauer rev. V. Assing 2000 / Homoiocalea toroenensis ♂ (Bernhauer) det. V. Assing 2000 (FMNH).

In referring to the dissected syntype from the Bernhauer collection as the "type", SAWADA (1984) unintentionally designated a lectotype.

Redescription

Measurements (mm) and ratios (lectotype, paralectotype): AxL: 0.12, - ; AxiL: 0.23, - ; HW: 0.54, - ; PW: 0.77, 0.78; PL: 0.72, 0.73; EL: 0.71, 0.68; HTiL: 0.91, 0.86; HTaL: 0.66, 0.66; ML: 0.53, 0.54; TL: 4.3, 4.4; PW/HW: 1.42, - ; PW/PL: 1.07, 1.06; EL/PL: 0.99, 0.93; HTaL/HTiL: 0.73, 0.77; AxiL/AxL: 1.88, -.
Colour of body dark brown to blackish, with the elytra and the hind margins of the abdominal terga and sterna lighter, yellowish to reddish brown; legs light brown.

DOI: 10.21248/contrib.entomol.51.2.247-334

Head subcircular, about as wide as long (length measured from anterior margin of labrum to occiput); eyes large, approximately as long as postgenae; postgenae in dorsal view smoothly curved; occiput constricted, 0.65x the width of head including eyes, and distinctly delimited from epicranium; dorsal central surface somewhat flattened and with shallow median impression; puncturation extremely fine, barely noticeable; microsculpture isodiametric, very shallow; integument with distinct shine; postgenae without carina. Antennae with antennomere I very long, III coniform, ca. 2.5x as long as wide, and ca. 1.5x as long as II; IV distinctly shorter than III, but clearly oblong, V-X weakly oblong and only indistinctly increasing in width, XI approximately as long as the combined length of the two preceding antennomeres.

Pronotum distinctly wider than head (see ratio PW/HW) and weakly transverse (see ratio PW/PL); margins finely carinate; maximal width near anterior angles; posterior angles marked and obtuse; without dorsal impression; integument without microsculpture and with pronounced shine; puncturation very fine.

Elytra almost as long as pronotum; puncturation fine, but somewhat more distinct than that of pronotum; pubescence decumbent and directed ± caudad; microsculpture absent; hind wings fully developed.

Legs slender; tibiae long, metatibia distinctly longer than metatarsus; all metatarsomeres distinctly oblong, metatarsomere I slightly longer than II, II longer than III, III and IV of equal length, V longer than I and almost as long as the combined length of III and IV.

Abdomen with pronounced shine; anterior 1/3 to 1/2 of terga impuncate, puncturation fine, on posterior 1/3 of terga III - V moderately sparse, on terga VI - VII very sparse; tergum VII with palisade fringe; posterior margin of tergum VIII convex and with long thin setae; tergum X as in Fig. 27a.

♂: posterior margin of sternum VIII strongly convex and with long thin setae; aedeagus with median lobe of similar morphology as in *Callicerus* (see figure 1I in SAWADA (1984)); apical lobe of paramere as in Fig. 1b.

♀: unknown.

Distribution

H. toroenensis has become known only from Taiwan (BERNHAUER, 1943; CAMERON, 1949).

7.2. *Aloconota gregaria* (ERICHSON, 1839), nomen protectum

Homalota gregaria ERICHSON, 1839: 87f.
Aleochara caliginosa STEPHENS, 1832: 122f., **syn. n. (nomen oblitum)**
Bolitochara caliginosa: STEPHENS, 1835: 431.
Callicerus caliginosus: BERNHAUER & SCHEERPELTZ (1926); SCHEERPELTZ (1956).

Type examined

Aleochara caliginosa STEPHENS: Lectotype ♂, here designated: Standing as Bolitochara caliginosa Steph. Stephens Coll. / ?SYNTYPE Aleochara caliginosa Steph. / Lectotypus ♂ *Aleochara caliginosa* Stephens, desig. V. Assing 2000 / Aloconota gregaria (Erichson) det. V. Assing 2000 (BMNH).

Comments

As can be inferred from the punctuation code in STEPHENS (1829) and the original description, Stephens had at least one specimen in his collection; the number of synty-

DOI: 10.21248/contrib.entomol.51.2.247-334

pes is not specified. In the Stephens collection, three specimens standing as *Bolitochara caliginosa* STEPHENS were located (SHUTE, pers. comm.). (Numerous species originally described in the genus *Aleochara* by Stephens were subsequently attributed to *Bolitochara* by the same author (STEPHENS, 1835)). The said three specimens were examined and were found to belong to three different species of three different genera: *Aloconota gregaria* (ERICHSON), *Callicerus obscurus*, and *Geostiba circellaris* (GRAVENHORST). The original description of *C. caliginosa*, however, neither matches with *Geostiba circellaris* nor with *Callicerus obscurus*, but can only be referred to the specimen of *Aloconota gregaria*: "Black, rather shining, ... head narrower than the thorax, suborbiculate: thorax ... somewhat depressed, with a faint dorsal furrow, terminating behind in a slight fovea: ...antennae rather long, slender, ..., entirely black, the terminal joint obtuse". Consequently, *Aleochara caliginosa* STEPHENS and *Homalota gregaria* ERICHSON must be regarded as synonyms. Although the latter is the junior name, it is here maintained and given precedence according to Article 23.9 of the current International Code of Zoological Nomenclature (ICZN, 1999). As will be shown, both conditions for the application of Article 23.9 are met. To my knowledge, the senior synonym *Aleochara caliginosa* has not been used as a valid name after 1899. *A. gregaria* (ERICHSON), in contrast, has been used as the valid name of a very common species in a great number of works by clearly more than 10 authors in the past 50 years. In order to fulfil the requirements of the Code, a selection of 26 publications (a multitude of additional works could be found without great effort), in which *A. gregaria* is used as the valid name of the species in question, is here listed: ANDERSEN (1982, 1985), ASSING (1988, 1992, 1994), BAUER (1989), BENICK & LOHSE (1959, 1974), BORDONI (1982), BRENNER (1993), FELDMANN & LÜCKMANN (1998), GRÄF (1987), HANSEN (1996), HERNANDEZ et al. (1994), KACHE & ZUCCHI (1993), KOCH (1968), KÖHLER (1988), KÖHLER & KLAUSNITZER (1997), OSELLA & ZANETTI (1975), PEEZ & KAHLEN (1977), RENNER (1985), ROSE (1995), RUTANEN & MUONA (1982), SCHILLER (1989), SILFVERBERG (1992), ZANETTI (1995).

In conclusion, based on Article 23.9 of the Code, the following synonymy is established: *Homalota gregaria* ERICHSON, 1839 (nomen protectum) = *Aleochara caliginosa* STEPHENS, 1832 (nomen oblitum), syn. n.

7.3. *Aloconota (Disopora) montenegrina* (BERNHAUER, 1899)

Figs. 28a-d

Atheta (Disopora) montenegrina BERNHAUER, 1899: 427f.
Callicerus (s. str.) *smetanai* SCHEERPELTZ, 1967: 527ff., **syn. n.**

Types examined

Atheta montenegrina BERNHAUER: Lectotype ♂, here designated: Podgorica, leg. Mustajbeg / montenegrina Brnh. Apflb. Type / Chicago NHMus. M. Bernhauer Collection / Lectotypus ♂ *Atheta montenegrina* Bernhauer, desig. V. Assing 2000 / Aloconota (Disopora) montenegrina (Bernh.) det. V. Assing 2000 (FMNH). Paralectotype ♂: same labels as lectotype, but "Paralectotypus ..." (FMNH).

Callicerus smetanai SCHEERPELTZ: Lectotype ♂, here designated: ♂ / Albania mer. Butrint, Smetana 1958 / ex coll. Scheerpeltz / TYPUS Callicerus Smetanai O. Scheerpeltz / Lectotypus ♂ *Callicerus smetanai* Scheerpeltz, desig. V. Assing 2000 / Aloconota (Disopora) montenegrina (Bernh.) det. V. Assing 2000 (NHMW). Paralectotypes: 1 ♀, same labels as lectotype, but "Paralectotype ..." (NHMW); 1 ♀, same labels as lectotype, but "COTYPUS ... / Paralectotypus ..." (NHMW); 1 ♂: Albania mer. Butrint, Smetana 1958 /

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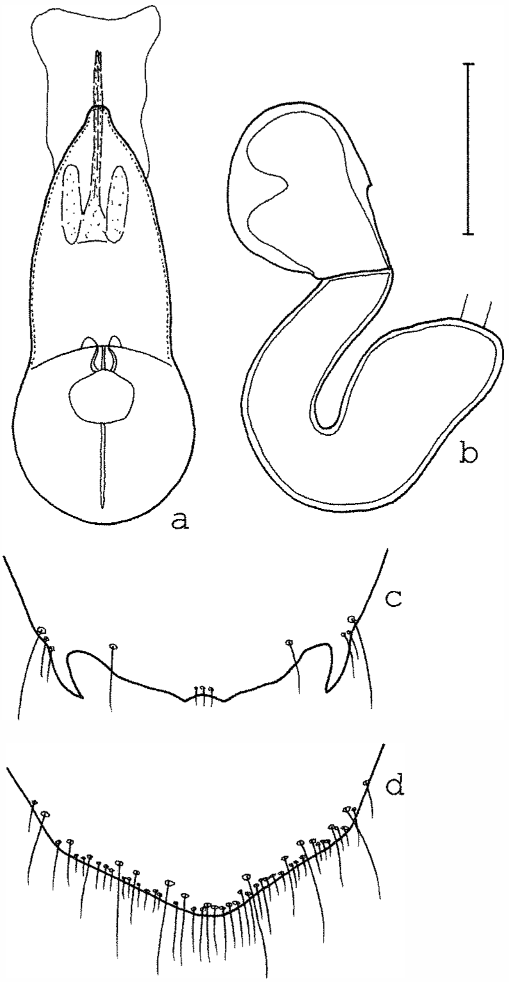
TYPUS Callicerus Smetanai O. Scheerpeltz / Callicerus (Callicerus s. str.) Smetanai n. sp. det. Scheerpeltz, 1962 / HOLOTYPE, CNC No. 17833 (CNC); 1♀: Albania mer. Butrint, Smetana 1958 / TYPUS Callicerus Smetanai O. Scheerpeltz / ALLOTYPE, CNC No. 17833 (CNC); 1♀: Albania mer. Butrint, Smetana 1958 / COTYPUS Callicerus Smetanai O. Scheerpeltz / PARATYPE, CNC No. 17833 (CNC).

Additional material examined

1♂, Corfu, leg. Paganetti (FMNH).



Figs. 28a - d: *Aloconota montenegrina* (BERNHAUER). Median lobe of aedeagus in ventral view (**a**); spermatheca (**b**); posterior margins of ♂ tergum VIII (**c**) and of ♂ sternum VIII (**d**). Scales: b: 0.1 mm; a, c - d: 0.2 mm.

DOI: 10.21248/contrib.entomol.51.2.247-334

An examination of the types listed above showed that they are conspecific. Consequently, *C. smetanai* SCHEERPELTZ is here placed in the synonymy of *Aloconota montenegrina* (BERNHAUER). The original description of *C. smetanai* is based on seven syntypes. In order to unambiguously define the name and refer it to a single name-bearing type, one of the males labelled by Scheerpeltz as "TYPUS" was selected as lectotype. The original description of *Atheta montenegrina* is based on an unspecified number of syntypes ("In wenigen Stücken"). Since there may be additional unexamined syntypes, the ♂ syntype in better condition from the Bernhauer collection was designated as lectotype to preserve the present interpretation of the species.

Among the species of the subgenus *Disopora* THOMSON, *A. montenegrina* is distinguished as follows:

Body size large, approximately as in *A. ultima* BENICK & LOHSE. General appearance as in *A. ultima* and *A. languida* (ERICHSON), but antennae more massive and much more strongly incrassate apically; temples longer, approximately as long as or slightly longer than eyes in dorsal view; elytra at suture distinctly elevated.

♂: tergum VII with long and very pronounced median keel; hind margins of tergum and sternum VIII as in Figs. 28c-d; median lobe of aedeagus as in Fig. 28a.

♀: spermatheca as in Fig. 28b.

Acknowledgements

I am most grateful to the numerous colleagues indicated in section 2 for the loan of types and non-type material and for helpful information on the material under their care. HEINRICH MEYBOHM (Stelle), JOHN OWEN, VOLKER PUTHZ (Schlitz), HARALD SCHILLHAMMER, LUDGER SCHMIDT (Hannover), MICHAEL SCHÜLKE, and LOTHAR ZERCHE kindly provided me with some literature references. CLEMENS BRANDSTETTER (Bürs), GIULIO CUCCODORO, OTTO MERKL, JOHN OWEN, VOLKER PUTHZ, MICHAEL SCHÜLKE, ALEXEY SOLODOVNIKOV, PETR ŠTOURAČ (Praha), and ADRIANO ZANETTI were of invaluable help in the identification of various obscure localities. In particular, I would like to extend my sincere thanks to PAUL WUNDERLE for the elaborate habitus drawing of *Callicerus rigidicornis* (Fig. 1) and to MICHAEL SCHÜLKE for critically reading and commenting on the manuscript.

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DOI: 10.21248/contrib.entomol.51.2.247-334

Zeitschrift/Journal: Beiträge zur Entomologie = Contributions to Entomology

Jahr/Year: 2001

Band/Volume: 51

Autor(en)/Author(s): Assing Volker

Artikel/Article: A revision of Callicerus GRAVENHORST, 1802, Pseudosemiris Machulka, 1935, and Saphocallus Sharp, 1888 247-334