

**On the true authorship and taxonomic history of
Euscorpium germanus (C. L. Koch, 1837) (*nec*
C. L. Koch, 1836; *nec* Schaeffer, 1766)
(Scorpiones: Chactidae)**

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Summary

Confusion exists in the taxonomic literature concerning the author of a common European scorpion species, *Euscorpium germanus*. Schaeffer (1766) may have depicted this species but never published a binominal name for it. Carl L. Koch (1837 [not 1836, see Brignoli, 1985: 415]) was the first to create the name as *Scorpius germanus* and must thus be credited with its authorship. C. L. Koch's reference to Schaeffer's work (1766), however, created widespread and lasting confusion. The present paper also reviews the historical treatment of this species.

Introduction

One of the five common European scorpion species of the genus *Euscorpium* Thorell, 1876 (Scorpiones, Chactidae), *Euscorpium germanus* is found in the mountainous areas of northern Italy, southern Switzerland, Austria, Slovenia, Croatia, Bosnia, and Bulgaria (di Caporiacco, 1950; Bonacina, 1980; Fet, 1993). The taxonomic scope and geographical range of this species were recently restricted by Bonacina (1980) who confirmed *Euscorpium mingrelicus* Kessler, 1874 (Balkan peninsula, Turkey and Caucasus) as a separate species. Over the last 130 years, the authorship of *E. germanus* has been credited either to J. C. Schaeffer (1766) or C. L. Koch (1837) [not 1836, see Brignoli, 1985: 415]. We attempted to discover the reasons for the existing confusion.

Discussion

In the *Elementa Entomologica*, Schaeffer's original work of 1766, we find only a very brief description and illustrations of an unnamed scorpion (plate 2, figs. 3–5, and plate 113, figs. 1–3). These drawings undoubtedly show a representative of the genus *Euscorpium* but no name or locality is listed. Because no Latin binomen was used, Schaeffer cannot be credited with authorship of the species.

In the following year, Linnaeus (1767: 1038), in the 12th edition of his *Systema Naturae*, mentioned Schaeffer's illustrations (plate 113) under "*Scorpio europaeus*". This name, introduced previously by Linnaeus (1758: 625), most likely refers to *Isometrus maculatus* De Geer, as correctly quoted by Thorell (1876: 8) and Lönnberg (1898: 86–87), but Kraepelin (1899: 163, 164) considered *Scorpio europaeus* to be a *nomen nudum*. In

any case, judging from its description, the Linnean name *Scorpio europaeus* definitely does not refer to any of the *Euscorpium* species, although it was used as such by Scopoli (1763: 404) and some later authors, leading to further confusion. On the same page, Linnaeus (1767: 1038) also created the first species name which is still valid for the modern genus *Euscorpium*; he described *Scorpio carpathicus* L., 1767 from Romania (now *Euscorpium carpathicus*).

The name *carpathicus* was repeated by Füssly (1775: 61) who combined it with a reference to Schaeffer's (1766) drawings. However, Füssly's specimen was from Cleven (now Chiavenna, Italy) where *E. italicus* and *E. germanus* are distributed, but most likely not *E. carpathicus*. Also Fabricius (1775: 400 and 1781: 551) and Latreille (1804: 119) both mentioned Schaeffer's figures under "*Scorpio europaeus*", obviously following Linnaeus (1767). Latreille, when he discussed the drawings, suggested that they refer to the same species as the Linnean *carpathicus*, but considered them both synonyms of "*europaeus*".

Herbst (1800: 71) created another name, *Scorpio germanicus*, describing this species, with a reference to Schaeffer's publication, from Tyrol ("Germania australis") which is the historical Austrian Tyrol, the southern part of which since 1919 has belonged to Italy (the modern province of Trentino-Alto Adige). However, the description given by Herbst (1800: 71–73) does not match that of *Euscorpium germanus*, but that of *E. carpathicus* (as was noted by C. L. Koch (1836: 107–108) and Kraepelin (1894: 158)). *E. carpathicus* is found in Trentino-Alto Adige, at least in its southern part (di Caporiacco, 1950: 71; Guerra, 1979: 73 and 1980: 12). The name given by Herbst, being so closely spelled to *germanus*, added further to the confusion, although it has subsequently been mentioned only by Hahn (1834: 52) and Simon (1879: 4).

Ehrenberg (in Hemprich & Ehrenberg, 1829: 350) (Braunwalder & Fet, in press) established a new genus *Scorpius*, separating it from *Scorpio* Linnaeus 1758. In 1837, C. L. Koch (1837: 110–112) created a new name, *Scorpius germanus* (although his corresponding figure legends to plate 108, figs. 250–252 still carried the old generic name "*Scorpio*"). This species "from southern Tyrol and northern Italy" was described clearly and in detail; among its characters, C. L. Koch noticed, for the first time, "5 trichobothria on the ventral side of the pedipalp tibia". This has since become an important diagnostic character for *E. germanus* and one of the few characters clearly separating it from *E. carpathicus*. Koch (1837: 110) furthermore mentioned Schaeffer's publication but made it clear that Schaeffer did not create any Latin binominal name. In his later general list of taxa (C. L. Koch, 1850: 86) he repeated the name *Scorpius germanus* without any reference to Schaeffer.

Also, C. L. Koch (1836: 107–108) clearly did not consider the description of *Scorpio germanicus* Herbst to be that of the true "Tiroler Scorpion" (i.e. his *Scorpius germanus*). In fact, Koch synonymised *Scorpio germanicus* Herbst, 1800 with his other new species, *Scorpius tergestinus* Koch, 1836 from Trieste. Although Herbst's

name would have, in this case, priority over Koch's, *Scorpius tergestinus* itself is considered to be a synonym (maybe a valid subspecies) of *Euscorpius carpathicus* (L.). Therefore, Koch's name "*Scorpius germanus*" is not a misspelled "*germanicus*" of Herbst, but an entirely new name. Since C. L. Koch was the author who used, for the first time, the specific epithet "*germanus*", he should be credited with the species authorship.

Possibly because C. L. Koch mentioned Schaeffer's publication, many later authors (who were unfamiliar with the original of Schaeffer's work) considered Schaeffer to be the original author of this species. Milde (1865: 962) quoted "*Scorpius germanus* Schaeffer" from Meran (now Merano, Italy). Doleschal (1852: 639) and Ausserer (1867: 160) in his list of Tyrol fauna preferred the old (Linnean) generic name in the combination "*Scorpio germanus* H. Schäffer", and Fanzago (1872) in the first review of Italian scorpions listed "*Scorpius germanus* Schaeffer" in the text (p. 13), but "*germanus* Koch" in the plate legend (fig. 8). In their accounts of the fauna of Tyrol, Ludwig Koch (1876: 282), Dalla Torre (1881: 69) and Heller & Dalla Torre (1883: 50) used another confusing combination, "*Scorpio germanicus* Schaeffer".

Meanwhile, Thorell (1876: 15) created a new genus *Euscorpius* with a type species *Euscorpius carpathicus* (L.). Simon (1879: 113) then listed "*Euscorpius germanicus* Herbst" as a senior synonym of the names used by C. L. Koch (1837) and Fanzago (1872). Müller & Schenkel (1895: 822) used the combination "*Euscorpius germanus* Herbst" for scorpions reported from the Puschlav Valley in Switzerland. Interestingly, Karsch (1881: 90) in his overview of European scorpions avoided mentioning either of the two disputed names, possibly considering them both as invalid.

Kraepelin (1894, 1899), in a comprehensive and detailed revision of all scorpion species, restored C. L. Koch's authorship of the discussed species under its modern name, *Euscorpius germanus* (C. L. Koch). Diagnosis of the species was correctly extended to "5, selten 6 Grübchen" (trichobothria on the ventral side of the pedipalp tibia) (Kraepelin, 1894: 158 and 1899: 164) so as to accommodate geographical variation which, as we know now, exists within *E. germanus*. Also, Kraepelin followed C. L. Koch and placed *Scorpio germanicus* Herbst as a probable synonym of *Euscorpius carpathicus* (L.).

Unfortunately, Kraepelin (1894, 1899) did not discuss or even mention the work of Schaeffer (1766), and the confusion about authorship in the literature continued. For example, Bourgeois (1911: 42) and Bialynicki-Birula (1917: 166) still considered Schaeffer to be the true author of *E. germanus*; di Caporiacco (1927: 71) used the combination "*E. germanus* Ausserer" (!) and Marcuzzi (1956: 95), obviously following Dalla Torre (1881), listed "*Scorpio germanicus* Schaeffer (= *germanus* Koch)". Nevertheless, most authors after Kraepelin (1899) followed his authority in listing C. L. Koch as the valid author of *Euscorpius germanus*.

Unfortunately, in recent times, Kinzelbach (1975: 26) again quoted Schaeffer (1766) and ascribed to him the

authorship of "*Scorpio germanus*". This was obviously a misunderstanding since, as mentioned above, Schaeffer's original text does not contain a Latin binomen. The only authors who used the combination "*Scorpio germanus*" appear to be C. L. Koch himself (1837: plate 108, figs. 250–252, figure legends) and Ausserer (1867: 160). Despite the evident lack of a Latin binomen, Jaques (Vachon & Jaques, 1977: 432) synonymised Schaeffer's specimen and Koch's "*germanus*" and attributed to Schaeffer the valid senior authorship. A few years later, Vachon (1981: 193–194) first followed Kinzelbach in declaring: "De 1766, date de la création par Schaeffer de *Scorpio germanus*, premier représentant du futur genre *Euscorpius* . . ." and then, just a few lines below quoted ". . . *germanus* Koch 1836 (nec *germanus* Schaeffer 1766), . . .". The authorship of the first described species in the genus *Euscorpius*, however, still belongs to Linnaeus (1767), as explained above.

The confusion still continues. Some authors (Kofler, 1977: 2; Bonacina, 1980: 75; Crucitti, 1993: 289) have recognised C. L. Koch's authorship, whereas others (Thaler, 1979: 53; Scherabon, 1987: 80; Fet, 1989: 133 and 1993: 5) have preferred Schaeffer's name which seemed, according to the authorities of Kinzelbach (1975) and Vachon (1981), to represent a valid senior authorship.

Conclusions

Our analysis of the original publications of Schaeffer (1766) and C. L. Koch (1837), as well as of all subsequent relevant literature, clearly indicates that the authorship of the disputed taxon *Euscorpius germanus* belongs to C. L. Koch (1837). Unfortunately, the types of C. L. Koch, formerly in J. Sturm's collection in Nuremberg (Bialynicki-Birula, 1917), are presumed lost. Since Koch did not specify the type locality for *Euscorpius germanus*, further taxonomic goals are to designate a type locality for this species (probably in Trentino-Alto Adige, Italy) and to describe a neotype. Such goals, however, can be achieved only after a detailed study of intraspecific variation of *E. germanus*, which currently includes four valid subspecies (Bonacina, 1980; Fet, 1993).

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References

- AUSSERER, A. 1867: Die Arachniden Tirols nach ihrer horizontalen und verticalen Verbreitung. *Verh. zool.-bot. Ges. Wien* **17**(1): 137–170.
- BIALYNICKI-BIRULA, A. A. 1917: *Faune de la Russie et des pays limitrophes fondée principalement sur les collections du Musée zoologique de l'Académie des Sciences de Russie. Arachnides. (Arachnoidea), Volume 1. Scorpions.* 227 pp. Petrograd. (in Russian.)
- BONACINA, A. 1980: Sistematica specifica e sottospecifica del complesso "*Euscorpius germanus*" (Scorpiones, Chactidae). *Riv. Mus. civ. Scienze nat. Caffi* **2**: 47–100.

- BOURGEOIS, J. 1911: Supplément aux notes sur quelques espèces de Coléoptères de la faune alpine. *Mitt. schweiz. ent. Ges.* **12**(2): 41–42.
- BRAUNWALDER, M. E. & FET, V. (in press): On publications about scorpions (Arachnida, Scorpiones) by Hemprich and Ehrenberg (1828–1831). *Bull. Br. arachnol. Soc.*
- BRIGNOLI, P. M. 1985: On the correct dates of publication of the arachnid taxa described in some works by C. W. Hahn and C. L. Koch (Arachnida). *Bull. Br. arachnol. Soc.* **6**(9): 414–416.
- CAPORIACCO, L. di 1927: Secondo saggio sulla fauna aracnologica della Carnia e regioni limitrofe. *Memorie Soc. ent. ital.* **5**(1): 70–130.
- CAPORIACCO, L. di 1950: Le specie e sottospecie del genere “*Euscorpis*” viventi in Italia ed in alcune zone confinanti. *Atti Accad. naz. Lincei Memorie* (ser. 8) **2**(4): 159–230.
- CRUCITTI P. 1993: Distribution and diversity of Italian scorpions. *Redia* **76**(2): 281–300.
- DALLA TORRE, K. W. 1881: Beiträge zur Arthropoden-Fauna Tirols. *Ber. naturw.-med. Ver. Innsbruck* **11**: 32–73.
- DOLESCHAL, L. 1852: Systematisches Verzeichniss der im Kaiserthum Österreich vorkommenden Spinnen. *Sber. Akad. Wiss. Wien* **9**(1–2): 622–651.
- FABRICIUS, J. C. 1775: *Systema Entomologiae, sistens Insectorum classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus*. In *Officina Libraria Kortii, Flensburgi et Lipsiae* (Leipzig).
- FABRICIUS, J. C. 1781: *Species Insectorum, exhibentes eorum differentias specificas, synonyma, auctorum, loca natalia, metamorphosin adiectis observationibus, descriptionibus*. Impensis Carol. Ernest. Bohnii, Hamburgi et Kilonii (Kiel).
- FANZAGO, F. 1872: Sugli scorpioni italiani. *Atti Soc. ven.-trent. Sci.* **1**: 75–89.
- FET, V. 1989: A catalogue of scorpions (Chelicerata: Scorpiones) of the USSR. *Riv. Mus. civ. Scienze nat. Caffi* **13**: 73–171.
- FET, V. 1993: Notes on *Euscorpis mingrelicus* (Kessler, 1874) (Scorpiones: Chactidae) from the Caucasus. *Riv. Mus. civ. Scienze nat. Caffi* **16**: 1–8.
- FÜESSLY, J. C. 1775: *Verzeichnis der ihm bekannten Schweitzerischen Insekten*. H. Steiner, Zürich and Winterthur.
- GUERRA, M. 1979: Catalogo genere *Euscorpis*. *Riv. Mus. civ. Scienze nat. Caffi*. 294 pp.
- GUERRA, M. 1980: Catalogo genere *Euscorpis*. Vol. 2. Supplemento. *Riv. Mus. civ. Scienze nat. Caffi*. 94 pp.
- HAHN, C. W. 1834: *Gründliche Anweisung Krustenthiere, Vielfüsse, Asseln, Arachniden und Insekten aller Klassen zu sammeln, zu präpariren, aufzubewahren und zu versenden*. E. H. Zeh’schen Buchhandlung, Nürnberg.
- HELLER, C. & DALLA TORRE, C. 1883: Über die Verbreitung der Thierwelt im Tiroler Hochgebirge. *Sber. Akad. Wiss. Wien* (Abt. I) **86**: 8–53.
- HEMPRICH, F. W. & EHRENBERG, C. G. 1829: Vorläufige Uebersicht der in Nord-Afrika und West-Asien einheimischen Scorpione und deren geographischen Verbreitung. *Verh. Ges. naturf. Freunde Berl.* **1**(6): 348–362.
- HERBST, J. F. H. 1800: *Natursystem der ungeflügelten Insekten. Heft 4: Naturgeschichte der Skorpionen*. 86 pp. Gottlieb August Lange, Berlin.
- KARSCH, F. 1881: Uebersicht der europäischen Skorpione. *Berl. ent. Z.* **25**: 89–91.
- KINZELBACH, R. 1975: Die Skorpione der Ägäis. Beiträge zur Systematik, Phylogenie und Biogeographie. *Zool. Jb. (Syst.)* **102**: 12–50.
- KOCH, C. L. 1836: *Die Arachniden* **3**(1–5): 17–109. C. H. Zeh’schen Buchhandlung, Nürnberg.
- KOCH, C. L. 1837: *Die Arachniden* **3**(6): 110–115. C. H. Zeh’schen Buchhandlung, Nürnberg.
- KOCH, C. L. 1850: Scorpionen. In: *Uebersicht des Arachnidensystems* **5**: 86–92. J. L. Lotzbeck, Nürnberg.
- KOCH, L. 1876: Verzeichniss der in Tirol bis jetzt beobachteten Arachniden nebst Beschreibungen einiger neuer oder weniger bekannten Arten. *Z. Ferdinand. Tirol* **20**(3): 219–354.
- KOFLER A. 1977: Zur Verbreitung des deutschen Skorpions in Osttirol. *Osttiroler Heimatblätter* **45**(1): 1–2.
- KRAEPELIN, K. 1894: Revision der Scorpione. II. Scorpionidae und Bothriuridae. *Jb. hamb. wiss. Anst.* **11**: 1–248.
- KRAEPELIN, K. 1899: Scorpiones und Pedipalpi. *Tierreich* **8**: 1–265.
- LATREILLE, P. A. 1804: Histoire des Scorpions. In: *Histoire naturelle, générale et particulière, des Crustacés et des Insectes* **7**: 110–129. F. Dufart, Paris.
- LINNAEUS, C. 1758: *Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Tomus I. Editio decima, reformata*. 821 pp. Impensis Direct. Laurentii Salvii, Holmiae (Stockholm).
- LINNAEUS, C. 1767: *Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Tomus I. Pars II. Editio duodecima reformata*. 533–1327. Impensis Direct. Laurentii Salvii, Holmiae (Stockholm).
- LÖNNBERG, E. 1898: A revision of the Linnaean type specimens of Scorpions and Pedipalps in the Zoological Museum of the Royal University of Uppsala. *Ann. Mag. nat. Hist. (7)* **1**: 82–89.
- MARCUZZI, C. 1956: Fauna delle Dolomiti. *Memorie Ist. veneto Sci. (Mat. Nat.)* **31**: 94–95.
- MILDE, J. 1865: Zoologische Mittheilungen aus Meran. *Verh. zool.-bot. Ges. Wien* **15**: 961–962.
- MÜLLER, F. & SCHENKEL, F. 1895: Verzeichnis der Spinnen von Basel und Umgebung. *Verh. naturf. Ges. Basel* **10**: 691–824.
- SCHAEFFER, J. C. 1766: *Elementa entomologica Einleitung in die Insectenkenntnis*. Typis Weissianis, Ratisbonae (Regensburg).
- SCHERABON, B. 1987: Die Skorpione Oesterreiches in vergleichender Sicht unter besonderer Berücksichtigung Kärntens. *Carinthia II* **45**: 77–154.
- SCOPOLI, J. A. 1763: *Entomologica Carniolica, exhibens Insecta Carniolae indigena et distributa in ordines, genera, species, varietates. Methodo Linnaeana*. Typis Ioannis Thomae Trattner, Vindobonae (Vienna).
- SIMON, E. 1879: *Les Arachnides de France* **7**: 1–332. Roret, Paris.
- THALER, K. 1979: Fragmenta Faunistica Tirolensia, IV. Arachnida. *Veröff. Mus. Ferdinandeum Innsb.* **59**: 49–83.
- THORELL, T. 1876: On the classification of scorpions. *Ann. Mag. nat. Hist. (4)* **17**: 1–15.
- VACHON, M. & JAQUES, M. 1977: Recherches sur les Scorpions appartenant ou déposés au Muséum d’Histoire naturelle de Genève. *Revue suisse Zool.* **84**(2): 409–436.
- VACHON, M. 1981: Remarques sur la classification sous-spécifique des espèces appartenant au genre *Euscorpis* Thorell, 1876 (Scorpionida, Chactidae). [*Comptes rendus VIème Colloque d’Arachnologie d’expression française.*] *Atti Soc. tosc. Sci. nat. (Memorie B, suppl.)* **88**: 193–203.