

Scorpion *Euscorpium (Euscorpium) tergestinus* (Scorpiones: Euscorpidae) in central Bohemia

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Abstract. The scorpion population recorded from central Bohemia, Czech Republic, does not belong to *Euscorpium carpathicum* (Linné, 1767) as previously maintained in the literature, but to *E. tergestinus* (C. L. Koch, 1837).

Taxonomy, distribution, Scorpiones, *Euscorpium tergestinus*, *Euscorpium carpathicum*, Czech Republic, Palaearctic region

INTRODUCTION

Táborský (1959, 1960) and Lang (1960) first published information about the presence of the scorpion *Euscorpium carpathicum* (Linné, 1767) on the banks of the Slapy dam near the village of Nebřich. Information about the presence of this scorpion species in Bohemia was summarized by Kovařík (1992, 1998, 1999, 2000, 2002).

The most recent revision of *Euscorpium carpathicum* (Fet & Soleglad 2002), species complex which included a study of the holotype, limited *E. carpathicum* to Romania (the type locality). Populations from other regions formerly classified under this name form a species complex and are currently under investigation (Fet et al. in press).

One of the species already confirmed by Fet & Soleglad (2002) as a valid taxon inhabiting southern and central Europe (France, Italy, Slovenia, Croatia, Austria) is *E. tergestinus* (C. L. Koch, 1837) (type locality: Trieste). Three isolated populations from Austria (two in Carinthia and one in Krems, Lower Austria; Scherabon, 1987) were recently characterized by genetic data (Huber et al. 2001). These populations belong to *E. tergestinus* as most recently defined by Fet & Soleglad (2002). In this paper we report new taxonomic data on the Bohemian population.

RESULTS

We examined 34 specimens (5 males and 29 females) from Nebřich (map square no. 6252, 49° 46' 00" N, 14° 25' 36" E, 394 m a.s.l. see Pruner & Míka 1996) deposited in the National Museum in Prague (4 males and 24 females; see Kovařík, 1992: 184) and in the collection of F. Kovařík (1 male, leg. Lang; 5 females, April 24, 1960, leg. J. Voděra) (Figs 1, 3–4). Their morphology matches that of Austrian populations described in detail by Scherabon (1987).

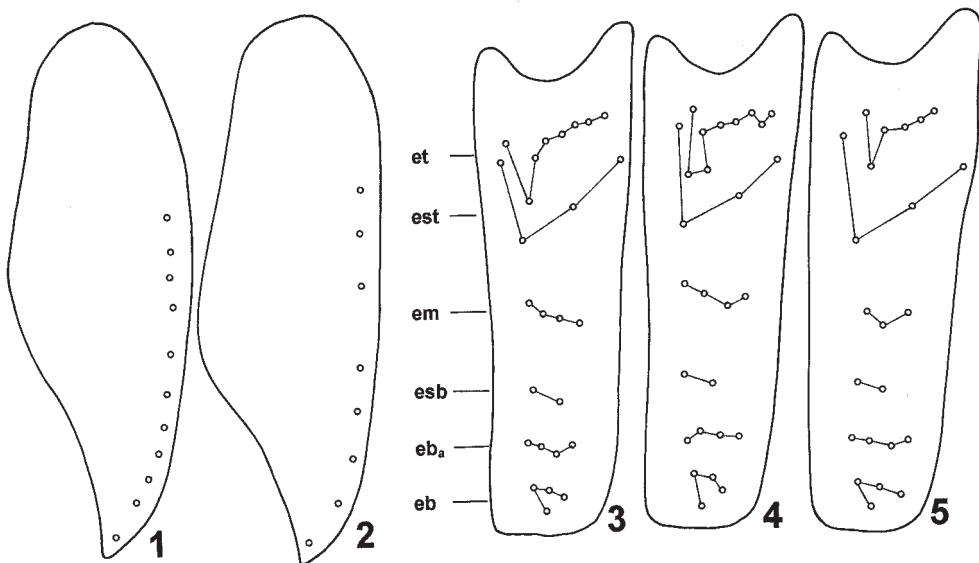
Fet & Soleglad (2002) demonstrated a diagnostic difference in the number of trichobothria in *em* series on the external aspect of the of the pedipalp patella, of which there are three in *E. carpathicum* (Fig. 5) and four in *E. tergestinus* (Figs 3 and 4). In contrast, the position of some trichobothria and, more importantly, the numbers of trichobothria in *et* series are variable even within a population

(Figs 3 and 4). Another character used earlier by Kinzelbach (1975) to diagnose species (the number of trichobothria on the ventral surface of the pedipalp patella) is also variable geographically and within populations, and therefore has only limited diagnostic value. *E. carpathicus* usually has 7 or 8 of these trichobothria (Fig. 2), whereas *E. tergestinus* has 8 to 12 (Fig. 1). Specimens of *E. tergestinus* in the eastern part of its range (Adriatic coast of Slovenia and Croatia) tend to have higher numbers of ventral trichobothria.

In the analysed Bohemian specimens, the pectinal tooth count was 9 (n=5) and 10 (n=3) in males and 7 (n=12), 8 (n=35) and 9 (n=11) in females. In 68 pedipalps analysed, the number of trichobothria on the ventral surface of the pedipalp patella (v) was 9 (n=1), 10 (n=29), 11 (n=36) and 12 (n=2); the number of trichobothria in the *et* series on the external surface of the pedipalp patella was 6 (n=11), 7 (n=20), 8 (n=33) and 9 (n=7); the number of trichobothria in the *est* (=4), *em* (=4), *esb* (=2) and *eb_a* (=4) series on the external surface of the pedipalp patella was constant.

For comparison, 72 specimens from Austria studied by Scherabon (1987) had pectinal tooth count 9 (n=61) and 10 (n=51) in males and 7 (n=20) and 8 (n=42) in females; the number of trichobothria on the ventral surface of the pedipalp patella (v) was 9 (n=9), 10 (n=90) and 11 (n=45); the number of trichobothria in the *et* series was 5 (n=1), 6 (n=4), 7 (n=64), 8 (n=72) and 9 (n=3); the number of trichobothria in the *est* (=4), *em* (=4), *esb* (=2) and *eb_a* (=4) series on the external surface of the pedipalp patella also was constant.

According to the diagnostic criteria given by Fet & Soleglad (2002), especially the trichobothrial numbers and pattern on external aspect of the pedipalp patella and well-expressed metasomal carination, it is clear that the scorpion population in central Bohemia belongs to *E. tergestinus*.



Figs 1–5. Patella of pedipalp, ventral view (1–2). 1 – *Euscorpium tergestinus* (C. L. Koch) male from Nebřich, Bohemia; 2 – *E. carpathicus* (Linné) male from Romania. Patella of pedipalp, external view (3–5). 3, 4 – Two females of *E. tergestinus* from Nebřich, Bohemia; 5 – *E. carpathicus* male from Romania.

DISCUSSION

When Karel Táborský of the National Museum in Prague identified the first two females brought to him on August 31, 1959 by a student J. Gottlieb, he had four known species of the genus *Euscorpius*, 1876 to choose from: *E. carpathicus*, *E. flavicaudis* (De Geer, 1778), *E. germanus* (C. L. Koch, 1837), and *E. italicus* (Herbst, 1800). At that time he correctly identified the specimen as *E. carpathicus*. (Táborský 1959, 1961) As the study of the European populations of *E. carpathicus* continued, this species came to be treated as a complex which includes several species. Its various subspecies have been either synonymized or elevated to species (Gantenbein et al. 2001; Fet & Soleglad 2002).

Fet & Soleglad (2002) give the diagnostic criteria for the five European species currently recognized in the *Euscorpius carpathicus* complex: *Euscorpius carpathicus* (Linné, 1767); *E. tergestinus*; *E. balearicus* Caporiacco, 1950; *E. hadzii* Caporiacco, 1950; and *E. koschewnikowi* Birula, 1900. In addition, Fet et al. (in press) supply further criteria for distinguishing *E. sicanus* (C. L. Koch, 1837) from southern Europe, which belongs to the same species complex. The name *E. tergestinus* has been cited by Fet & Sissom (2000) as valid species, but its taxonomic and geographic limits were not clear at that time. Fet & Sissom (2000) included under this name also the morphologically distinct form from Greece, characterized by Kinzelbach (1975) as a separate species and identified as *E. mesotrichus* Hadži, 1929. However, current studies (Fet et al. in press) show that this Greek form, together with a number of other southern European populations, belongs not to *E. tergestinus* but to *E. sicanus* (C. L. Koch, 1837). Additional populations from Europe included by Kinzelbach (1975) in *E. mesotrichus* belong to a number of species. The major taxonomic criteria used by Kinzelbach (1975) (number of ventral trichobothria on pedipalp patella) are not diagnostic for those species.

Examination of specimens from Nebřich deposited in the National Museum in Prague and in the collection of F. Kovařík (Figs 1, 3–4) convinces us that the Bohemian population belonged to *E. tergestinus* and delineated the northern limit of its distribution. Huber et al. (2001) suggested that the occurrences in Austria are possibly due to human introduction. The same has been repeatedly proposed for the occurrence at Nebřich, where, however, introduction cannot be demonstrated. Unfortunately, the unique locality at Nebřich was destroyed by commercial development and its adverse effect on the vegetation cover, and *Euscorpius* has not been found there since September 13, 1983.

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REFERENCES

- FET V., GANTENBEIN B., SOLEGLAD M. E., VIGNOLI V., SALOMONE N., FET E. V. & SCHEMBRI P. J. (in press): New molecular and morphological data on the “*Euscorpius carpathicus*” species complex (Scorpiones: Euscorpiidae) from Italy, Malta, and Greece justify the elevation of *E. c. sicanus* (C. L. Koch, 1837) to the species level. *Rev. Suisse Zool.*
- FET V. & SISSOM W. D. 2000: Family Euscorpiidae. Pp.: 355–381. In: FET V., SISSOM W. D., LOWE G. & BRAUNWALDER M. E. (eds): *Catalog of the Scorpions of the World (1758–1998)*. New York: New York Entomological Society, 690 pp.
- FET V. & SOLEGLAD M. E. 2002: Morphology analysis supports presence of more than one species in the “*Euscorpius carpathicus*” complex (Scorpiones: Euscorpiidae). *Euscorpius* 3: 1–51.

- GANTENBEIN B., SOLEGLAD M. E. & FET V. 2001: *Euscorpium balearicum* Caporiacco, 1950, stat. nov. (Scorpiones: Euscorpiidae): molecular (allozymes and mtDNA) and morphological evidence for an endemic Balearic Islands species. *Organisms, Diversity & Evolution* **1**: 301–320.
- HUBER D., GANTENBEIN B., FET V. & SCHERABON B. 2001: *Euscorpium carpathicum* (L.) from Austria (Scorpiones: Euscorpiidae): phylogenetic position clarified by mitochondrial DNA analysis Pp.: 273–278. In: FET V. & SELDEN P. A. (eds.): *Scorpions 2001. In memoriam of Gary A. Polis*. Burnham Beeches, Bucks: British Arachnological Society, 404 pp.
- KINZELBACH R. 1975: Die Skorpione des Ägais. Beiträge zur Systematik, Phylogenie und Biogeographie. *Zool. Jb. Syst.* **102**: 12–50.
- KOVAŘÍK F. 1992: A check list of scorpions (Arachnida: Scorpiones) in the collections of the Zoological Department, National Museum in Prague. *Acta Soc. Zool. Bohemoslov.* **56**: 181–186.
- KOVAŘÍK F. 1998: *Štíři [Scorpiones]*. Jihlava: Publ. House Madagascar, 176 pp (in Czech).
- KOVAŘÍK F. 1999: Review of European scorpions, with a key to species. *Serket* **6**: 38–44.
- KOVAŘÍK F. 2000: [European scorpions of the genus *Euscorpium*]. *Akvárium Terárium* **43**: 53–58 (in Czech).
- KOVAŘÍK F. 2002: [Population of scorpions in Bohemia]. *Vesmír* **81**: 596 (in Czech).
- LANG J. 1960: [Occurrence of *Euscorpium carpathicum* L. in Bohemia]. *Věst. Čs. Společ. Zool.* **24**: 162–166 (in Czech).
- PRUNER L. & MIKA P. 1996: List of Settlements in the Czech Republic with associated map field codes for faunistic grid mapping system. *Klapalepiana* **32** (Suppl.): 1–119 (in Czech, English abstr.).
- SCHERABON B. 1987: Die Skorpione Österreichs in vergleichender Sicht unter besonderer Berücksichtigung Kärntens. *Carinthia II* **45**: 78–158.
- TÁBORSKÝ K. 1959: [First finding of *Euscorpium carpathicum* (L.) in Bohemia]. *Čas. Nár. Mus.* **128**: 211 (in Czech).
- TÁBORSKÝ K. 1961: Einige Bemerkungen zuz Oekologie *Euscorpium carpathicum* (L.) von Slapy-Talsperre in Böhmen. *Čas. Nár. Musea* **130**: 7–21 (in Czech, German title).