

On the new record of the sheet-web spider *Erigonoplus foveatus* comb. nov. from Slovakia, with comments on *Erigonoplus simplex* (Araneae: Linyphiidae)

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Abstract. *Mecynargus foveatus* (Dahl, 1912) was recorded in the territory of Slovakia for the first time. Within two years of spider research, a single adult male was collected by beating branches of Scots pine (*Pinus sylvestris*) in the Borská nížina lowland. We also discovered that specimens of *Erigonoplus simplex* Millidge, 1979 from Bulgaria were misidentified as *M. foveatus*. Therefore, we suggest to consider *E. simplex* as a new record for Bulgaria and to exclude *M. foveatus* from the spider fauna of Bulgaria. A revised distribution of both species is presented and discussed. Based on the high similarity to *Erigonoplus*, *M. foveatus* is transferred to this genus as *Erigonoplus foveatus* (Dahl, 1912) **comb. nov.**

Keywords: Erigoninae, first records, faunistics, Scots pine, Southern Bulgaria, Western Slovakia

Zusammenfassung. Erstnachweis der Zwergspinne *Erigonoplus foveatus* comb. nov. für die Slowakei, mit Anmerkungen zu *Erigonoplus simplex* (Araneae: Linyphiidae). *Mecynargus foveatus* (Dahl, 1912) wurde erstmals in der Slowakei gefunden. Bei zweijährigen Untersuchungen wurde ein einziges Männchen erfasst, per Klopfen an Ästen der Waldkiefer (*Pinus sylvestris*) im Borská nížina lowland (Tiefland von Zahorie, im weiteren Sinne zum Wiener Becken gehörend). Weiterhin stellte sich heraus, dass Exemplare von *Erigonoplus simplex* Millidge, 1979 aus Bulgarien als *M. foveatus* fehlbestimmt waren. Daher betrachten wir *E. simplex* als neuen Nachweis für Bulgarien und *M. foveatus* muss für die bulgarische Fauna gestrichen werden. Die Verbreitung beider Arten wurde überarbeitet, wird als Karte präsentiert und diskutiert. Basierend auf der Ähnlichkeit mit der Gattung *Erigonoplus*, wird *M. foveatus* zu dieser Gattung als *Erigonoplus foveatus* (Dahl, 1912) **comb. nov.** gestellt.

During a long-term research project on arboreal spiders from pines, a new species for Slovakia was found in the Borská nížina lowland. A single male identified as *Mecynargus foveatus* (Dahl, 1912) was collected by beating pine branches at the end of July 2014. Up to now only two species from this genus are known from Slovakia: *M. longus* (Kulczyński, 1882) and *M. morulus* (O. P.-Cambridge, 1873). Both are considered as rare and endangered species that occur in the alpine zone of the High Tatra Mts. (Gajdoš & Svatoň 1994, Svatoň & Kovalčík 2006). The original description of *M. foveatus* was based on females collected on the sunny meadow Herrscherberg (Brodowin) in Germany (Dahl 1912). The currently known distribution of *M. foveatus* is in Europe from France to Central European Russia (Nentwig et al. 2015).

During our detailed research, we also discovered that specimens of the similar species, *Erigonoplus simplex* Millidge, 1979, from Bulgaria were mistaken as *M. foveatus*. The former taxon is considered to be a Mediterranean species (Schröder et al. 2011), which has been reported only from Italy, France and Greece so far (Nentwig et al. 2015). The female of *E. simplex* has not been formally described, however it seems to have been collected by several arachnologists (e.g. Murphy & Murphy 1984, Russell-Smith 2014). Only one species of this genus, *Erigonoplus spinifemoralis* Dimitrov, 2003 has been as yet reported from Bulgaria (Blagoev et al. 2015).

In the present study we provide a short description of the morphology of *M. foveatus* and compare its distribution with that of *E. simplex*. Moreover, we suggest excluding *M. foveatus*

from the spider fauna of Bulgaria and to include *E. simplex* as a new species for Bulgaria. We also propose the new combination *Erigonoplus foveatus*, comb. nov.

Material and methods

A managed Scots pine forest close to the Záhorie Protected Landscape Area was examined. About 100-year old pine trees with grassy undergrowth are located north of the village of Studienka (N48.540°, E17.141°, 216 m a.s.l.) near a meadow (Fig. 1). The study plot has been visited in approximately monthly intervals since 2013. Material was collected using the beating method and spiders were fixed in 70% ethanol directly in the field. Microphotographs were made using the EOS Utility software and a digital camera (Canon EOS 100D) connected to a stereomicroscope (Intraco Micro STM 823 5410). Photographs and figures were made by the second author, unless indicated otherwise. Identification of spiders was carried out according to the online key of Nentwig et



Fig. 1: The 100 year-old Scots pine forest at the study plot, near the village of Studienka (SW Slovakia), where *Erigonoplus foveatus* was collected (photo by M. Kulfan)

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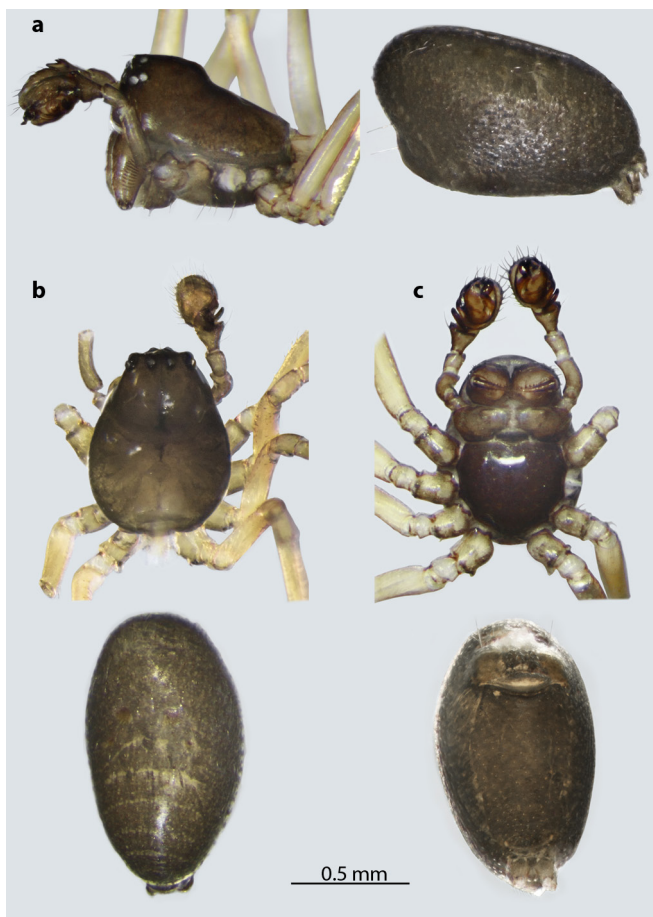


Fig. 2: Male habitus of *Erigonoplus foveatus* from Slovakia; **a.** lateral view; **b.** dorsal view; **c.** ventral view

al. (2015). Palpal morphology follows Hormiga (2000) and nomenclature follows the World Spider Catalog (2015). The single specimen of *M. foveatus* discovered here is deposited in the Western Slovakian Museum in Trnava. For more details about collection and the study plot of *E. simplex* [misidentified as *M. foveatus*] see Lazarov (2005).

Results and discussion

***Erigonoplus foveatus* (Dahl, 1912) comb. nov.**

Figs 2–4

Savignia foveata Dahl, 1912

For a complete list of references, see the World Spider Catalog (2015).

Material examined: A single male was collected by the first author on 26th July 2014 by beating Scots pine near Studienka village (Western Slovakia). Unfortunately we cannot be sure about the geographic coordinates of the exact place of collection, because there are ten randomly numbered samples from this locality.

Comment on taxonomy, new combination

The taxonomic status of *M. foveatus* within the genus *Mecynargus* was previously discussed. This species has already been combined with several other genera, such as *Savignia*, *Rhabothorax* and *Eboria* (Moritz 1973, World Spider Catalog 2015). Murphy & Murphy (1984) considered *M. foveatus* to be a synonym of *Erigonoplus simplex*. They discussed this problem with Dr. A. F. Millidge who, however, did not confirm

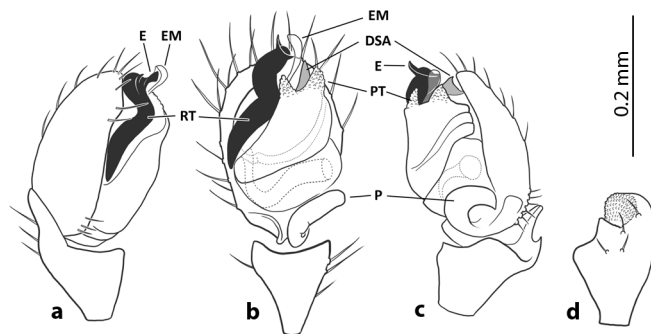


Fig. 3: Male left palp of *Erigonoplus foveatus* from Slovakia; **a–c.** bulbus and tibia; **a.** prolateral view; **b.** retrolateral view; **c.** ventral view; **d.** dorsal view of palpal tibia. DSA = distal suprategular apophysis; E = embolus; EM = embolic membrane; P = paracymbium; PT = protegulum; RT = radical tailpiece

the synonymy but agreed that *M. foveatus* is closely related to *E. simplex* and should be placed in the genus *Erigonoplus*. The male of *M. foveatus* has outstanding copulatory organs and hence cannot be mistaken for any other species of the genus *Mecynargus*, although it is closely related to the genus *Erigonoplus* (with its type species *E. inclarus* (Simon, 1881), see Millidge 1975) and we herewith transfer it to this genus as *Erigonoplus foveatus* (Dahl, 1912), **comb. nov.**

Diagnosis

Erigonoplus foveatus can be confused with the rare Mediterranean species *Erigonoplus simplex* Millidge, 1979. Unlike *E. foveatus*, *E. simplex* lacks the elevated head region (Fig. 4), and can be distinguished by its larger body size. Males of *E. simplex* are ca 2.45 mm long in comparison to *E. foveatus* which is 1.9–2.0 mm long (Nentwig et al. 2015). Male palps of both species are very similar.

Description of the Slovakian *Erigonoplus foveatus* sample

Male (Fig. 2): Total length 1.84 mm, carapace length 0.77 mm and width 0.6 mm.

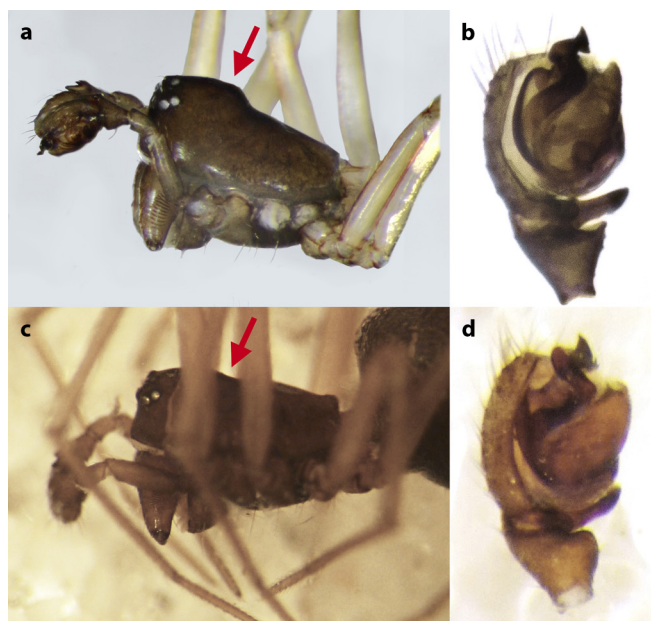


Fig. 4: Comparison of *Erigonoplus foveatus* (Slovakia) with *E. simplex* (Bulgaria, photo by C. Deltchev). Arrows point to the head elevation. **a–b.** *E. foveatus*; **c–d.** *E. simplex*; **a, c.** lateral view; **b, d.** ventral view of male palp

Tab. 1: Distribution and habitat preferences of *Erigonoplus foveatus*

| State | Habitat | References |
|----------------|---|--|
| Austria | rocky and grassy steppe, alpine zone | Thaler (1969), Murphy & Murphy (1984), Milasowsky et al. (2009) |
| Belarus | fields | Eskov (1988), Lukashevich (pers. comm) |
| Czech Republic | open sunny habitats (aeolian sands, sandpits with <i>Pinus silvestris</i>) | Buchar & Růžička (2002), Heneberg & Řezáč (2014) |
| Denmark | steep, south-facing coastal sandy and loamy hills with occasional slides | Scharff & Gudik-Sørensen (2011), Lissner & Scharff (2015), Lissner (pers comm.) |
| Estonia | moors and shores of rivers | Vilbaste (1987) |
| Finland | open peat bogs | Koponen (2002), Albrecht et al. (2011), Koponen et al. (2013) |
| France | dry grassland and pine forest | Ledoux et al. (2003), Le Peru (2007), C.E.N. Midi-Pyrénées (2014) |
| Germany | sunny grassy locations (grasslands, grass steppe) | Staudt (2015) |
| Italy | dry and semi-dry grasslands | Thaler (1969), Steinberger (2008) |
| Latvia | fixed coastal dunes with herbaceous vegetation (grey dune) | Cera & Spungis (2013) |
| Lithuania | meadow of the river terraces | Biteniekė & Relys (2004) |
| Poland | sunny and open habitats, xerothermic grassland, orchards | Rozwałka et al. (2014) |
| Russia | grass and rocky steppe, oligotrophic bog-forest (<i>Pinus silvestris</i>) | Tanasevitch (2011), Kamayev (2012), Tanasevitch & Alekseenko (2012), Tuneva & Eyunin (2012), Martynovchenko & Mikhailov (2014) |
| Serbia | meadow-steppe | Grbić et al. (2015), Grbić (pers. comm.) |
| Slovakia | pine forest (<i>Pinus silvestris</i>) on sand dunes | present paper |
| Slovenia | grassland | Čandek et al. (2013) |
| Switzerland | dry, mosaic of sedges and moors | Hänggi (1993), CSCF-karch (2015) |
| Ukraine | grasslands, pastures | Evtushenko (1993), Evtushenko et al. (2012) |

Dark brown shiny carapace with elevated head and shallow medial groove; chelicerae on outer side with distinct stridulatory organ; dark brown shiny sternum; legs yellow, coxa 4 with small conical spur. Abdomen dark grey, without pattern, book lung opercula with highly developed stridulatory areas.

Male palp (Fig. 3): Pedipalp tibia with complex apophysis consists of larger concave rounded one with small pointed spur. Protegulum with a small process; radical tailpiece spiral; embolic membrane present; embolus barely visible.

Biological and ecological notes

Erigonoplus foveatus is considered to be a xerophilous photobiont species (Thaler 1969, Rozwałka et al. 2014). Although, *E. foveatus* was recorded from peat bogs in Finland and Karelia (NW Russia), it seems to prefer sunny and grassy biotopes in highlands and lowlands (see Tab. 1). This spider was also collected on agrocenoses such as orchards (Rozwałka et al. 2014), pastures (Ratschker & Roth 2000, Evtushenko et al. 2012) and fields (Eskov 1988, Lukashevich pers. comm.). Interestingly some of the records were associated with Scots pine, similar to the present record from Slovakia (see Tab. 1). Although we consider our finding in such a habitat acciden-

tal, *E. foveatus* may be a constant species of the Slovak spider fauna as it is known from neighbouring countries (Fig. 5). With regard to previous records, *E. foveatus* may be found in the nearby meadows or on other grassy localities.

This species builds webs usually among the base of grass tussocks (Buchar & Růžička 2002, Ledoux et al. 2003) and in depressions on the bare or sparsely-vegetated ground (Lissner pers. comm.). Adults occur from May to August, with the most active period around June and July (e.g. Thaler 1969, Moritz 1973, Vilbaste 1987, Hänggi 1993, Gnelitsa 2011). Females were also collected in the winter period (Hänggi 1993).

Distribution

Erigonoplus foveatus is a rare species occurring in Europe from southern France (Pyrenees) to Russia (Karelia, Ural and Caucasus) (Fig. 5, Tab. 1). In cooperation with Dr. Christo Deltshv we revised the Bulgarian material published by Lazarov (2005) and *Erigonoplus simplex* was misidentified as *E. foveatus*. Consequently, we argue that *E. simplex* should be treated as a new record for Bulgaria and that *E. foveatus* has not yet been recorded there.

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Tab. 2: Distribution and habitat preferences of *Erigonoplus simplex*

| State | Habitat | References |
|----------|---|--|
| Bulgaria | Submediterranean climate | Lazarov (2005) |
| France | unknown | Murphy & Murphy (1984), Le Peru (2007) |
| Greece | in grass undergrowth in old olive grove, under rocks below waterfall, on the rocks on the coast | Schröder et al. (2011), Lecigne (2013), Russell-Smith (2014) |
| Italy | unknown | Millidge (1979) |

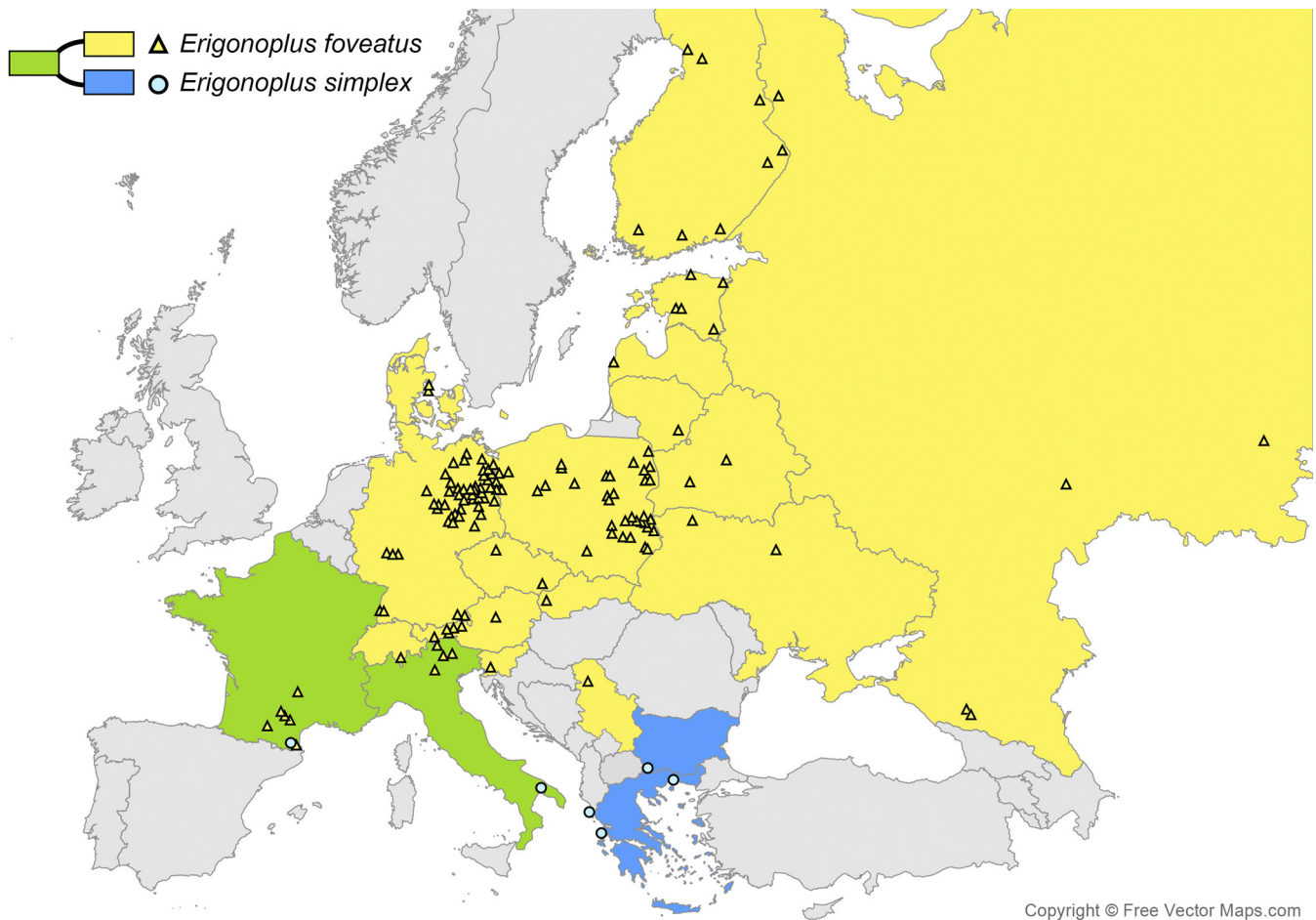


Fig. 5: Distribution of *Erigonopus foveatus* and *E. simplex* (for references see Tabs 1, 2)

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