

***Mycula mossakowskii*, a new genus and species of erigonine spider from ombrotrophic bogs in southern Germany (Araneae: Linyphiidae)**

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Summary

Mycula mossakowskii, a new and very small erigonine spider of a new genus, possibly allied to *Glyphesis* and *Paraglyphesis*, is described from bog sites in southern Germany. Taxonomic relationships are discussed, and notes are given on distribution, maturity period, habitat and microhabitat.

Introduction

There are few spiders known from Europe which have a body length of less than 1.0 mm in both sexes. Most of them are little known and only rarely found. It would not be surprising if their apparent rarity is related to their small size. A minute new erigonine spider of a new genus is described here, which might escape attention even in the course of routine sorting of catches from pitfall traps. Abbreviations: AME (PME) = anterior (posterior) median eyes, OTB = ombrotrophic bog (German: Regenwasser- bzw. Hochmoor), SBMF = Senckenberg Museum, Frankfurt, CKTH = collection Konrad Thaler, Innsbruck, CHBS = author's collection. All measurements are in mm.

Genus *Mycula*, new genus

Type species: Mycula mossakowskii n.sp.

Etymology: Latin: *mica*, -ae (feminine noun, used in amendment) = small grain, granule; -ulus, -a, -um = diminutive form, expressing similarity. The generic epithet alludes to the very small body size of the type species.

Diagnosis: Very small, pale-coloured erigonine spiders. Females can be diagnosed by the combination of trichobothriotaxy, overall size, and the epigynum (Figs. 9–10). Apart from trichobothriotaxy and size, males are diagnosed by the unmodified prosoma (Figs. 1–2), palpal characters (Figs. 5–8), and association with the female.

Description: Total length 0.82–0.95. Male and female prosoma unmodified, its cephalic portion not elevated, without postocular sulci or pits (Figs. 1–4). Chelicerae unmodified, 4 promarginal teeth, rather weak lateral files in both sexes. Dorsal tibial spines 2211, metatarsi I–III with a trichobothrium, TmI c. 0.32. Tarsal claws slightly serrated (slide preparations: magnification 400×). Abdomen unmodified.

Male palpal tibia bifurcate, one rounded stout and one curved slender apophysis (Fig. 8), with a single trichobothrium; paracymbium medium-sized, branching from cymbium (Fig. 5). Tegulum projecting ventrally, suprategular apophysis membranous, large and rather

complex (Figs. 5–7). Embolic division with radical part cylindrical at proximal end, and discoidal distally below squat screw-like embolus (Figs. 6–7). Epigynum posteriorly with a trapeziform plate, protruding somewhat from epigastric fold, anterior part of plate with duct openings; ducts with coiled internal structure, receptacula rounded, close to each other or nearly touching (Figs. 9–10).

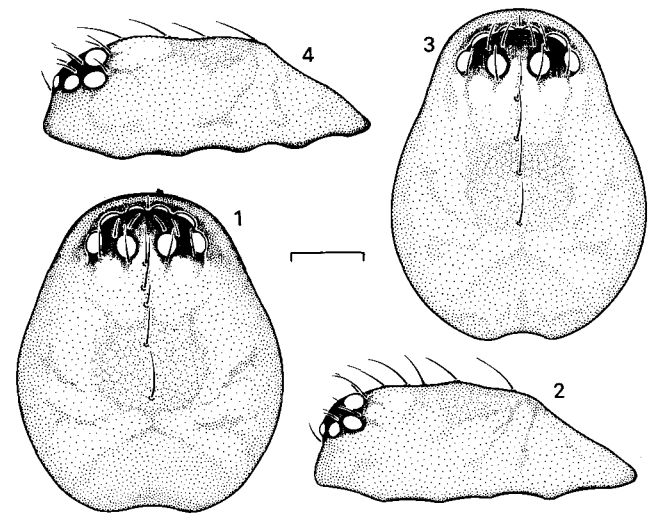
Included species: Only the type species.

Distribution: Known only from S Germany and NE Italy.

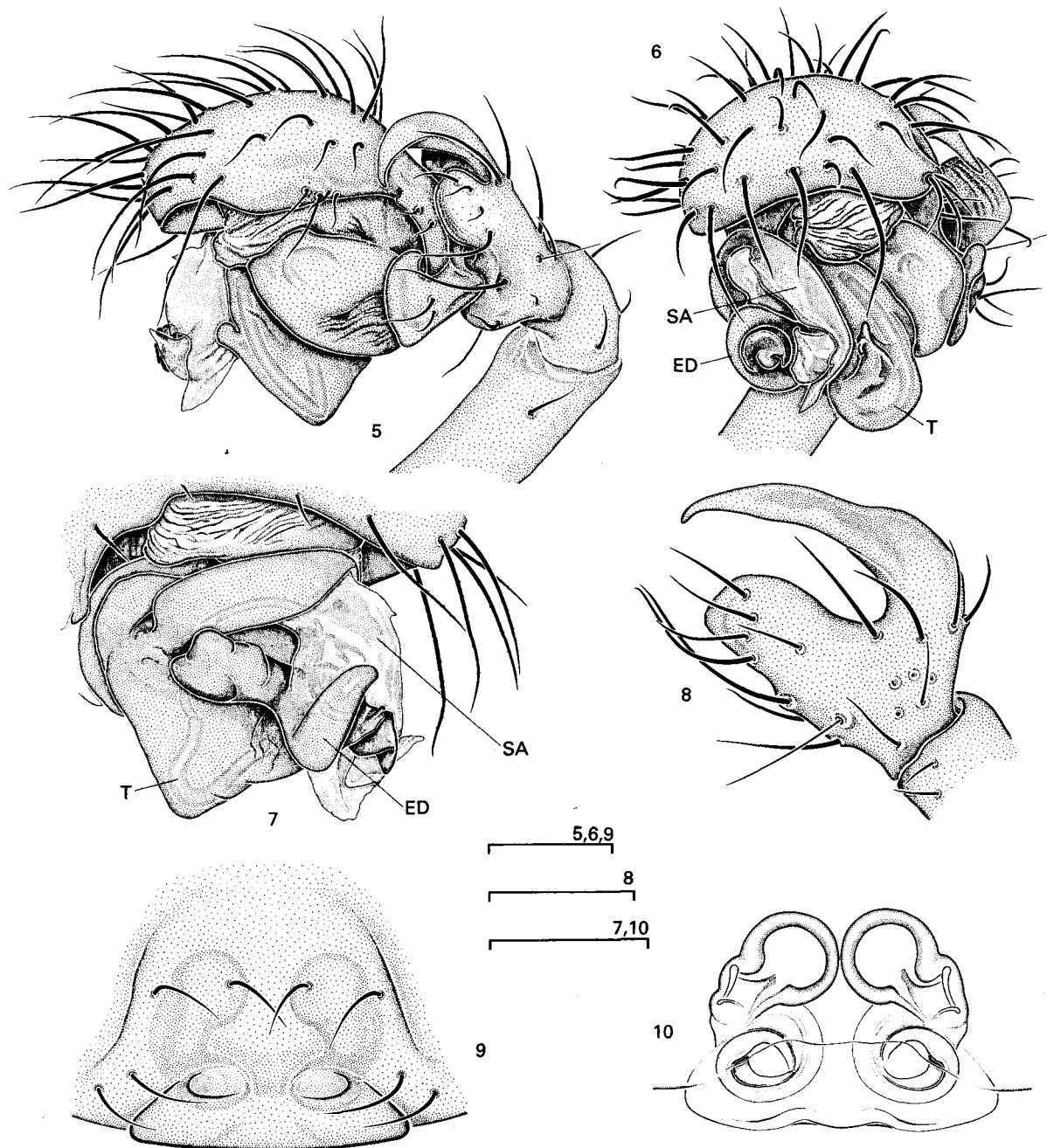
Taxonomic relationships: The genus is clearly erigonine in respect of the genitalia and somatic characters. Within the Erigoninae, *Mycula* is similar to *Jacksonella* Millidge, 1951 and *Carorita* Duffey & Merrett, 1963 in chaeto- and trichobothriotaxy, but differs clearly by the genitalia. Relationship to *Glyphesis* Simon, 1926 is suggested by the chaetotaxy and male palpal characters, and to *Paraglyphesis* Eskov, 1991 additionally by the unmodified male prosoma (possibly *Paraglyphesis* is synonymous with *Glyphesis*, see Eskov, 1991). *Mycula* seems more closely related to *Paraglyphesis* than to any other known genus, but is distinguished from the latter particularly by the very different epigynal structures and a comparatively low value of TmI.

***Mycula mossakowskii*, new species (Figs. 1–10)**

Types: Holotype ♂ and allotype ♀, both in good condition; southern Germany, Wurzach Ried (650 m above sea-level; OTB), c. 2 km north-west of Bad Wurzach, SE Baden-Württemberg (47°56'N, 9°53'E), together in one pitfall trap, 14 September–28 October 1968, coll. D. Mossakowski, deposited in SBMF. Paratypes: Locality as above, pitfall traps: 4 ♂, 30 March–27 April; 1 ♂, 14 September–28 October 1968. Southern Germany: Sindelsbach Filz (600 m above sea-level; OTB), 3 km west of Benediktbeuern, S Bavaria (47°43'N, 11°21'E), pitfall trap: 1 ♂, 12 April–end June 1968. Southern Germany: Rottauer Filz (530 m above



Figs. 1–4: *Mycula mossakowskii* n.sp. 1 Male prosoma, dorsal view; 2 Ditto, lateral view; 3 Female prosoma, dorsal view; 4 Ditto, lateral view. Scale line = 0.1 mm.



Figs. 5–10: *Mycula mossakowskii* n.sp. **5** Left male palpus, ectal view; **6** Ditto, frontal view; **7** Palpal bulb, mesal view; **8** Male palpal tibia, dorsal view (Figs. 5–8 male paratype); **9** Epigynum (female allotype), ventral view; **10** Vulva (female paratype), dorsal view, KOH-treated and cleared. Abbreviations: ED = embolic division, SA = suprategular apophysis, T = tegulum. Scale lines = 0.05 mm.

sea-level; OTB), 2 km south-east of Bernau, Lake of Chiem, SE Bavaria (47°49'N, 12°24'E), pitfall traps: 1 ♂ 1 ♀, 27 September–5 December 1967; 1 ♂, 5 December 1967–26 March 1968; 9 ♂, 26 March–2 July 1968. All paratypes coll. D. Mossakowski, partly deposited in SBMF, CKTH, CHBS.

Etymology: The specific name is dedicated to Prof. Dr Dietrich Mossakowski (Bremen) who collected all the specimens in the course of his former bog-beetle studies.

Diagnosis: The female is readily diagnosed by the combination of very small body size and distinct epigynal characters (Figs. 9–10); the male is diagnosed by the overall size, trichobothriotaxy, unmodified, pale-coloured prosoma, and palpal characters (Figs. 1–2, 5–8).

Male holotype: Total length 0.89. Prosoma (Figs. 1–2) very pale amber-coloured and diaphanous, anteriorly with an orange tinge; 0.45 long, 0.35 wide, mid-dorsal patch pale grey and reticulated. Five forward-directed bristles in a line between last third of prosoma and PME. Eye region suffused with black, with 8 hairs, eyes unequal in size. Clypeus width 1.4 times width of AME, clypeus slightly protruding. Chelicerae unmodified, 4 promarginal teeth, weak lateral files occupying about two-thirds of cheliceral length. Sternum smooth, pale grey-green with margin slightly darkened, posteriorly broadly extending between coxae IV. Legs 1423, coloration whitish and translucent, all segments ventrally with 2 rows of stronger hairs, somewhat shorter than respective diameters of the segments. Dorsal tibial spines

2211, metatarsi I (0.32) to III (0.33) with trichobothrium, tarsi I–III (IV) 1.10–1.12 (1.00) times length of respective metatarsi. Tarsal claws slightly serrated. Legs fairly short and stout, with tibia I $l/d = 4.5$. Palpal tibia with 2 apophyses (Fig. 8). Coloration of cymbium like prosoma, bulbous whitish with sclerotised structures reddish brown, embolus black; paracymbium branching from cymbium (Fig. 5). Tegulum, suprattegulum, embolic division and embolus as in Figs. 5–7. Abdomen dorsally whitish grey-green, with scattered pale bristles and faint pattern on distal half. Pattern composed of faint whitish patches, forming two scratch-like longitudinal and several transverse rows.

Allotype female: Total length 0.92. Prosoma length/width 0.44/0.34, coloration, bristles and eye-region as in male (Figs. 3–4). Clypeus width 1.2 times width of AME, clypeus slightly protruding. Chelicerae unmodified, very weak lateral files, 4 promarginal teeth. Sternum as in male. Legs 4123, whitish and translucent, tarsi distally reddish, hairs, tibial spines and tarsal claws as in male. Metatarsi I (0.34) to III (0.33) with trichobothrium, tarsi I–III (IV) 1.10–1.08 (1.03) times length of respective metatarsi. Legs fairly short and stout, with tibia I $l/d = 3.9$. Abdomen pale whitish grey with scattered pale hairs, dorsal pattern hardly discernible; ventrally somewhat darkened. Epigyne not pigmented and diaphanous, inner structures reddish brown; copulatory ducts coiled, receptacula close to each other (Fig. 9).

Variation: *Males*: Total length 0.82–0.95 ($n = 18$; mean: 0.89). Prosoma length/width 0.42–0.49/0.34–0.39 (mean: 0.45/0.37), pale whitish yellow (young reproductive specimens) to pale amber-coloured, cephalic portion with orange tinge. One male intense brown-orange, probably the result of insufficiently concentrated catching liquid. Pattern of abdomen frequently more distinctive than in holotype. $TaI/MtI = 1.05$ – 1.10 , $TmI = 0.29$ – 0.35 (mean: 0.32).

Females: Total length of both specimens 0.92, prosoma length/width 0.44/0.34–0.35. Coloration of female paratype similar to allotype. $TmI = 0.32$ and 0.34 . Receptacula close to each other or nearly touching (Fig. 9 cf. 10).

Distribution: Apart from the type localities in the northern hill terrace of the Alps (for further information see Mossakowski, 1970, 1973), the species is at present only known from Borgo Valsugana, Val Sugana, C.S. Pietro (400–800 m above sea-level), c. 30 km east of Trento (Trient), Trentino, N Italy. Single ♀ (CKTH), "Kolliner Buschwald und Ericaceen "heide", in Blockwällchen 24 September 1965" (K. Thaler, in litt.).

Ecology and habitat: *Mycula mossakowskii* n.sp. seems to be distributed at altitudes between 400 and 800 m above sea-level (see Types, Distribution). According to pitfall trap results from southern Germany, the spider is possibly diplochronous, having two periods of adult locomotory activity in autumn (September–November) and spring (March–May; see Types), which are interrupted by the winter.

The specimens were caught mainly on hummocks (German: Bulten) of the open plain of ombrotrophic

bogs (see Types). These extremely nutrient-poor sites were characterised by the dominance of typical peat-mosses (*Sphagnum magellanicum*, *S. rubellum*; cover abundance 75–90%) and dwarf shrubs (mainly *Calluna vulgaris*, cover abundance 30–50%) (Mossakowski, 1973: 259, table 1, column 10; D. Mossakowski, pers. comm.). A single male (Wurzacher Ried) was found outside the pristine bog area on excavated dry peat, sparsely overgrown with *C. vulgaris* and *Molinia caerulea*.

Because of the close similarities in surface structure and the dynamics of microclimate, hummock sites of bogs constitute a patchy subunit of one type of xerothermic habitat, which also occurs in, e.g., central European *Calluna* heaths, alpine dwarf shrub heaths, steppe-heaths or dry meadows (Bauchhenss, 1990). It remains to be seen, if *M. mossakowskii* n.sp. is possibly associated with xerothermic habitats; the record from Trentino (see Distribution) might support this assumption.

Further uncommon species, occurring together in the traps with *M. mossakowskii* n.sp., were the linyphiid spiders *Carorita limnaea* (Crosby & Bishop), *Glyphesis cottonae* (La Touche), and *Meioneta mossica* Schikora (Schikora, 1993) as well as *Altella biuncata* (Miller; Dictynidae), *Theonoe minutissima* (O.P.-C; Theridiidae) and *Arctosa alpigena lamperti* (Dahl; Lycosidae).

It should be noted, that it is easy to overlook *M. mossakowskii* n.sp. even whilst sorting catches from pitfall traps, owing to the pale coloration and the very small size. Nearly all specimens of this spider were found by checking the detritus from traps (e.g. dead leaflets of *Sphagnum* or *Calluna*) separately under a stereoscopic microscope.

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