

## SHORT COMMUNICATION

### DISTINGUISHING THE FEMALES OF *TROCHOSA TERRICOLA* AND *TROCHOSA RURICOLA* (ARANEAE, LYCOSIDAE) FROM POPULATIONS IN ILLINOIS, USA

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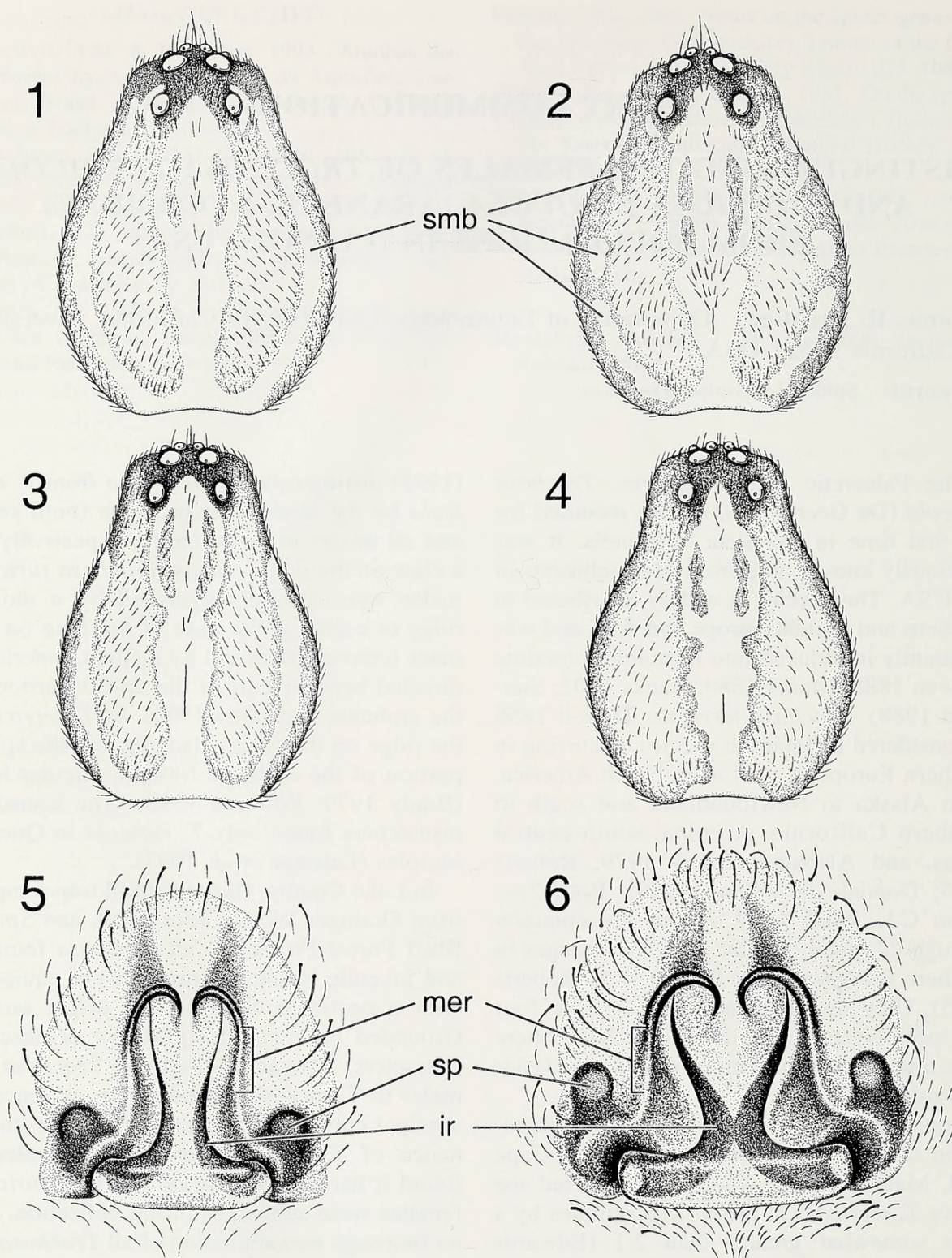
The Palearctic lycosid species, *Trochosa ruricola* (De Geer 1778), is here recorded for the first time in the State of Illinois. It was previously known only from Massachusetts in the USA. The species is widely distributed in northern and middle Europe and Asia and was apparently introduced into Bermuda sometime prior to 1888 (Marks 1889; Banks 1902; Sierwald 1988). *Trochosa terricola* Thorell 1856 is considered a Holarctic species, occurring in northern Europe as well as in North America, from Alaska to Newfoundland and south to northern California, Arizona, south-central Texas, and Alabama (Brady 1979; Roberts 1985; Dondale & Redner 1990). Both *Trochosa* C.L. Koch 1847 species are common throughout much of their respective ranges in northern Europe and the British Isles (Roberts 1995). They are the most prevalent of the four European congeners in the British Isles where they often occur in sympatry (Roberts 1985; Edwards 1993).

Sometime prior to 1993, a thriving population of *T. ruricola* was discovered in Cape Cod, Massachusetts, which outnumbered the native *T. terricola* in pitfall trap samples by a ratio somewhat greater than 2:1 (Edwards 1993). In 1994, the first known specimens were collected in Canada (L'Acadie, Quebec) (Lalongé et al. 1997). During a 1999 biodiversity study (funded by Chicago Wilderness) within three forest preserves in Lake County, Illinois, both *T. ruricola* and *T. terricola* were discovered in sympatry. In this study, however, *T. terricola* outnumbered the non-native *T. ruricola* by a factor of approximately 2.5:1 (males–1.9:1; females–4.25:1). Edwards

(1993) distinguished *T. terricola* from *T. ruricola* by the absence or presence (both sexes and all instars in either case), respectively, of a claw on the palpal tarsus. *Trochosa ruricola* males were also distinguished by a unique ridge or carina at the base of the fang on the outer (convex) face and by a slight, anteriorly directed bend or curl of the apical portion of the embolus (Edwards 1993). In *T. terricola*, the ridge on the fang is lacking and the apical portion of the embolus forms a circular loop (Brady 1979; Edwards 1993). The Canadian researchers found only *T. ruricola* in Quebec samples (Lalongé et al. 1997).

In Lake County, Illinois pitfall trap samples from Grainger Woods, Elm Road, and Spring Bluff Forest Preserves, all *Trochosa* females and juvenile instars examined were equipped with a pectinate claw on the palpal tarsus. Grounded on Edwards' presence or absence characters, I began to assign all *Trochosa* females to *T. ruricola*, based on the presence of a palpal claw. However, in light of the dominance of *T. terricola* males in samples, I found it hard to believe that only *T. ruricola* females were subject to pitfall collection. After thorough reexamination of all *Trochosa* females, I discovered that, in some specimens, there was relatively wide and usually unbroken, light-colored submarginal band on the carapace (Fig. 1). In others, the band was somewhat narrower and broken in several places (Fig. 2) or was barely discernible. Re-examination of the males revealed a similar difference in banding patterns. In *T. ruricola* males, this band was relatively wide and often unbroken (Fig. 3) or, if broken, only faintly





Figures 1–6.—*Trochosa ruricola* and *T. terricola* from Lake County, Illinois. 1, 3, 5, *T. ruricola*. 1. Female carapace; 3. Male carapace; 5. Epigynum, ventral. 2, 4, 6, *T. terricola*. 2. Female carapace; 4. Male carapace; 6. Epigynum, ventral. Abbreviations: ir = internal longitudinal ridge; mer = medial portion

so and in few places. In *T. terricola* males, the band was usually narrow and widely broken in several places by the dark pubescence of the submedial regions of the carapace or was not discernable (Fig. 4). Females were

tentatively separated on the basis of the similarity of their bands to the respective male pattern. Those with a wide and largely unbroken band were determined as *T. ruricola* and those without an apparent band or with a nar-



row, largely broken band determined as *T. terricola* (the submarginal bands of the *T. ruricola* specimens illustrated in Figs. 1 & 3 were unusually narrow).

Substantiation of the female submarginal band configurations appeared to be confirmed, not only by the corresponding male patterns, but also by the details of the ventral views of the respective epigyna (internal structural differences were found to be unreliable). Both Roberts' illustrations and those presented here clearly show that, in *T. ruricola*, the orientation of the spermathecae is directed lateroanteriorly (obliquely oriented) to the termini of the transverse portion of the median septum (Fig. 5; compare to Roberts 1985, fig. 62c). In *T. terricola*, the orientation is directed anteriorly to the termini (Fig. 6; compare to Roberts 1985, fig. 62e). In *T. ruricola*, the internal longitudinal ridges (darkened tube-like structures visible at the lateral edges of the longitudinal portion) are generally separated medially toward the posterior end of the longitudinal portion of the septum. They usually do not impinge on the posterior border of the transverse portion where they merge with the copulatory tubes (Fig. 5). In *T. terricola*, the internal ridges are usually contiguous (or nearly so) medially and are usually visible (ventral view) near the posterior border of the septum (Fig. 6). The transverse portion of the septum is relatively short (relative to the length of the longitudinal portion) and the anterior margins only slightly concave to moderately straight in *T. ruricola* (Fig. 5). By comparison, the transverse portion is relatively long and the anterior margins generally concave in *T. terricola* (Fig. 6). The median ectal rim portions of the paired hood cavities are directed posteriorly (median lateral edges parallel) or medioposteriorly in *T. ruricola* (Fig. 5; Roberts 1985, fig. 62c) but are usually directed lateroposteriorly (oblique) in *T. terricola* (Fig. 6; Roberts 1985, fig. 62e).

Differentiation of the Lake County *Trochosa* females was generally conclusive by employing only the submarginal band character (epigynal characters were also used to confirm placement). However, this banding pattern may appear to be somewhat subjective to future workers if only females of one of the two species occur in northern Illinois samples. But even in *T. terricola* females with well-developed submarginal bands, the pattern is almost

always widely broken in at least one region or more narrowly broken in several regions. In doubtful cases, especially in instances in which the epigyna of the respective females are very similar, a combination of the epigynal details (ventral view) and submarginal configuration may have to be used to separate the species. In regions of North America where *T. terricola* females lack a palpal claw, Edwards' characters should suffice to separate the two *Trochosa* females.

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