

SHORT COMMUNICATION

Trachyzelotes minutus, a new zelotine ground spider (Araneae: Gnaphosidae: Zavattarininae) species from southern Portugal

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Abstract. A new *Trachyzelotes* spider species, *Trachyzelotes minutus* n. sp. is described. The new species likely belongs to the “*barbatus* group”, based on the rounded embolus base and terminal apophysis, as well as the anterolaterally expanded copulatory ducts. *Trachyzelotes minutus* may be a sister species of *T. fuscipes*, given the similarities of the embolus and terminal apophysis.

Keywords: Iberian Peninsula, Mediterranean, taxonomy

The genus *Trachyzelotes* Lohmander 1944 is a well-known genus of the gnaphosid subfamily Zavattarininae Caporiacco 1941 (Platnick 1992). It was initially designated as a subgroup of the large genus *Zelotes* Gistel 1848 by Lohmander and was elevated to genus status by Platnick & Murphy (1984), who revised the genus as well. Additional species were described later through isolated descriptions by several other authors (Xu 1991; Tuneva & Eshyunin 2002; Ponomarev & Tsvetkov 2006; Levy 2009) and two species, *T. cumensis* (Ponomarev 1979) and *T. glossus* (Strand 1915), were transferred from *Zelotes* Gistel 1848 (Ponomarev & Tsvetkov 2004; Levy 1998, respectively).

Spiders of this genus can be diagnosed by a cluster of dense stiff setae on the anteromedian surface of the chelicerae. Platnick & Murphy (1984) also distinguished three groups of species according to genitalic morphology: a monospecific group with the type species, *T. pedestris* (C.L. Koch 1837), in which males show an elongated terminal apophysis and females display massive and fused anterior epigynal ducts; the *lyonneti* group, in which males exhibit obliquely oriented terminal apophyses and embolar bases and females show a semicircular anterior epigynal margin; finally, the *barbatus* group, in which males carry rounded terminal apophyses and embolar bases and females have anterolaterally expanded epigynal ducts.

Trachyzelotes species, like typical gnaphosid ground spiders, are mostly active at night, wandering at ground level and are likely generalist predators. The genus is present throughout both Old and New World; however, it does show a greater diversity of species in the Old World, with only four species cited to the New World (*T. barbatus* (L. Koch 1866), *T. jaxartensis* (Kroneberg 1875), *T. kulczynskii* (Bösenberg 1902) and *T. lyonneti* (Audouin 1826)), all of which are presumed native to Europe or to the Mediterranean (Platnick & Murphy 1984). In general, of the total 18 species currently described, 12 are Mediterranean. Possibly some older descriptions of *Zelotes* species outside the Mediterranean may actually be *Trachyzelotes*. In Portugal, six species are currently known, and all but one are members of the *barbatus* group: *T. fuscipes* (L. Koch 1866), *T. holosericeus* (Simon 1878), *T. pedestris* (C.L. Koch 1837), *T. bardiae* (Caporiacco 1928), *T. mutabilis* (Simon 1878), and *T. barbatus* (L. Koch 1837), with the most common species being *T. fuscipes* (see Cardoso 2010).

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TAXONOMY

Trachyzelotes Lohmander 1944

Type species.—*T. pedestris* (C.L. Koch 1837)

Trachyzelotes minutus Crespo, new species
(Figs. 1–9)

Material examined.—PORTUGAL: Évora: Holotype male, Corval, Reguengos de Monsaraz County, coordinates 29SPC26 (UTM, 10 × 10 km squares). Female paratypes (two specimens, one of which has the epigynum removed; the latter was accidentally lost) from Montoito, Redondo County, Évora District, coordinates 29SPC17. Sara Mendes collected all specimens in pitfall traps on 2–16 June 2008 at two sites, both cork oak (*Quercus ilex* L.) woodland with scattered shrubs. We found a considerable number of specimens of rockrose *Cistus ladanifer* L. in Corval.

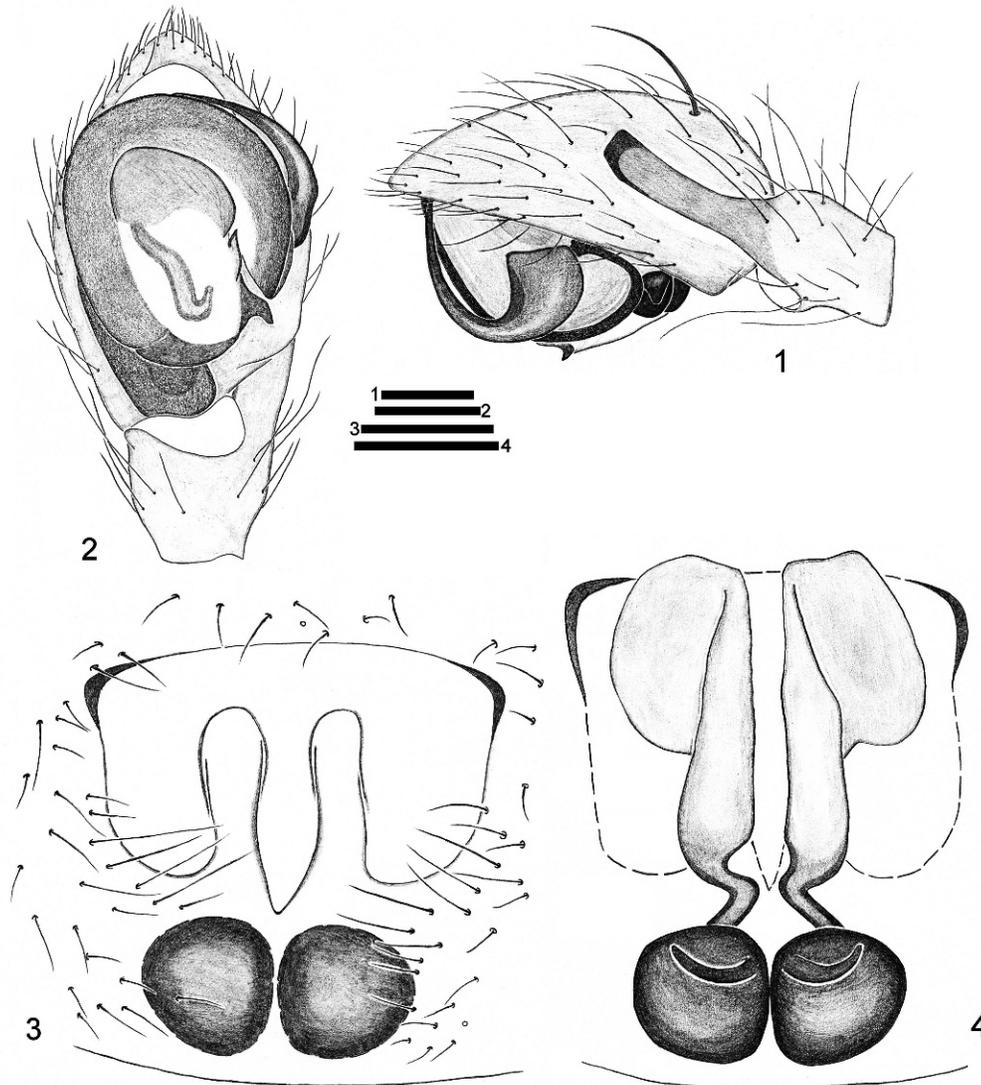
Depository.—All three specimens are deposited in the Zoological Museum of Copenhagen. The male holotype is catalogued as ZMUC00012693 and the female paratypes are catalogued as ZMUC00012694.

Etymology.—The name refers to the species’ small size, making it the smallest known species of *Trachyzelotes*.

Other material.—*T. bardiae*: Paúl de Arzila Natural Reserve, 1 male, 1 female, 31 May 2006, hand collected; 1 male, 28 May 2008, pitfall trap, collected by the author. *T. fuscipes*: Paúl de Arzila Natural Reserve, 1 female, 2 July 2006, hand collected; 1 male, 28 May 2008, pitfall trap, collected by the author and colleagues. *T. holosericeus*: Paúl de Arzila Natural Reserve, 1 male, 1 female, 31 May 2006, pitfall trap, collected by the author.

Diagnosis.—This species can be distinguished from all other *Trachyzelotes* by its small size, by the male palp that shows a basally wide embolus curving 180° retrolaterally and gradually narrowing toward the tip, and also by its obliquely elongated tibial apophysis that carries a blunt tip. Females can be identified by the touching spermathecae and the very short spermathecal ducts that converge up to two-thirds of their total length and diverge in the final third.

Description.—Total length: 2.38 (male), 2.36–2.97 (females); Prosoma: 0.95 long, 0.72 wide (male), 0.98–1.11 long, 0.76–0.88 wide (females). Eyes: AME 0.02 (male), 0.03 (females); ALE 0.03 (male), 0.05 (females); PLE 0.04; PME 0.04 (male), 0.05 (females); PME–PME 0.03; PME–PLE 0.02 (male), 0.03 (females); PLE–ALE 0.01; AME–AME 0.02 (male), 0.03 (female); AME–ALE 0.01 (male), touching in females; AME–PME 0.04; AME dark, rounded, others light, oval; PER slightly procurved; AER straight. Carapace oval, truncated anteriorly and posteriorly, with widest point at



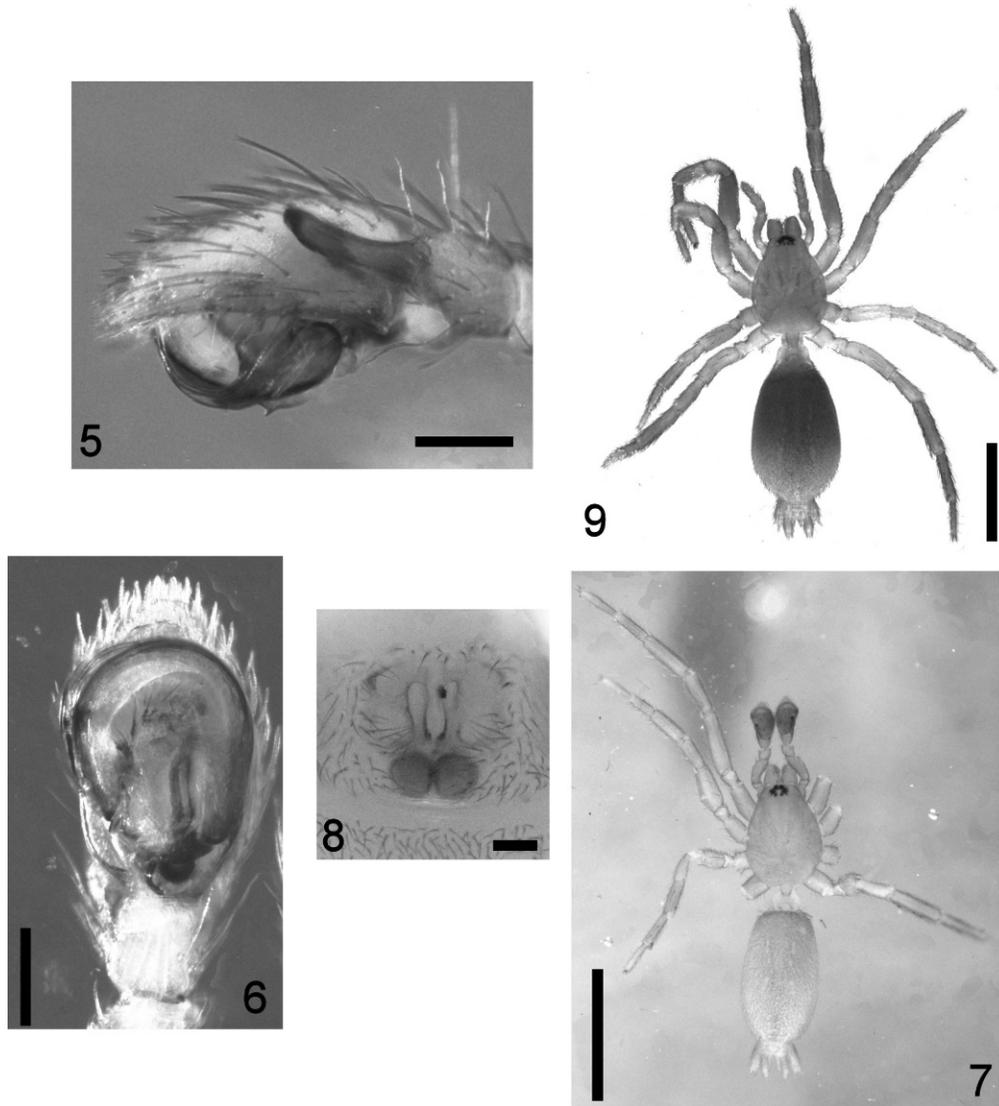
Figures 1–4.—Drawings of adult *Trachyzelotes minutus*. 1. Retrolateral aspect of left pedipalp of male from Corval; 2. Ventral aspect of left pedipalp of male from Corval; 3. Ventral aspect of epigynum of female from Montoito; 4. Dorsal aspect of the vulvar structure of female from Montoito. Scale bars = 0.1 mm.

superior limit of coxa III; yellow-grayish with some ill-defined gray stripes radiating towards legs, with sparse simple hairs. Clypeal height at AME two times their diameter; at ALE about two-thirds their diameter. Sternum oval, anteriorly truncated, with no sclerotized extensions to coxae, with hairs present uniformly around margin, sparsely in middle section. Labium 0.16 wide basally, 0.13 long (male), 0.14–0.19 wide basally, 0.15–0.18 long (females), with anterior margin convex, each maxilla converging up to one-third of labium width, in one female less convergent. Chelicerae: retromargin without teeth, promargin with 3 small teeth. Cluster of stiff setae present but not very dense. Opisthosoma: Gray, with simple hairs throughout most of its extension, but for anterodorsal region, which presents serrated long hairs, male presents a rudimentary yellowish triangular scutum; both sexes present two parallel lines of intermittent small regions with no hairs in middle dorsal opisthosoma. Legs: Yellow-grayish, with terminal segments only very slightly darker; metatarsal comb present; pilosity irregularly scattered, with hair patterns visible on ventrolateral surface of femora as continuous rows of hairs that may or may not occupy full length of femur, as rings of hairs on distal margin and ventrolateral

surface of each segment other than femora; tarsal claws with 3 teeth on ventral surface; see leg sizes in Table 1 and spination in Table 2. Male palp (Figs. 1, 2, 5, 6): pedipalp with obliquely elongated tibial apophysis with darkened blunt tip. Embolus basally wide, narrowing toward tip while curving 180° retrolaterally, embolus base rounded. Terminal apophysis rounded, below with small spur directed anteriorly and outward, median apophysis hook-shaped, distally truncated ventrally. Epigynum (Figs. 3, 8): Epigynal ridge subrectangular, wider than long, with two long prongs emerging from posterior margin, directed anteriorly, reaching about two-thirds of total ridge length. Vulva (Fig. 4): Spermathecae roughly quadrangular, small, touching; spermathecal ducts very small, converging up to two-thirds of their length, diverging in last third into copulatory ducts that are tubuliform, elongated at their posterior end, gradually narrowing to constriction that expands anterolaterally into irregular ovoid shape.

DISCUSSION

This species is clearly a member of the *barbatus* group, given the rounded embolus base and terminal apophysis, as well as the



Figures 5–9.—Photographs of adult *Trachyzelotes minutus*. 5–7. Male from Corval: 5. Retrolateral aspect of left pedipalp; 6. Ventral aspect of right pedipalp; 7. Habitus. 8, 9. Female from Montoito: 8. Ventral aspect of epigynum; 9. Habitus. Scale bars = 0.1 mm (5, 6, 8); 1 mm (7, 9).

anterolaterally expanded copulatory ducts. Within the group, it seems that the species might be closest to *T. fuscipes* given the similarities of the embolus base, terminal apophysis and median apophysis. This close relationship to *T. fuscipes* is mirrored in the females as well with

the touching spermathecae and the two prongs in the posterior margin of the epigynal ridge. However, characters like the small size, the spermathecal and copulatory ducts in the female, and the embolus or the tibial apophysis in the male clearly separate these two species.

Table 1.—Size of pedipalps and legs in *Trachyzelotes minutus*. For each measurement, value for holotype male is shown above those for two paratype females.

	Coxa	Femur	Patella	Tibia	Metatarsus	Tarsus
Pedipalp	0.12 0.14	0.34 0.33	0.13 0.12, 0.14	0.1 0.11, 0.13	- -	0.3 0.20, 0.28
Leg I	0.35 0.33	0.67 0.71, 0.76	0.43 0.43	0.5 0.50, 0.52	0.38 0.38	0.42 0.41, 0.42
Leg II	0.28 0.24, 0.27	0.57 0.59, 0.64	0.38 0.33, 0.41	0.41 0.38	0.35 0.35, 0.36	0.38 0.35, 0.38
Leg III	0.2 0.21, 0.24	0.48 0.48, 0.50	0.23 0.30, 0.35	0.3 0.31, 0.41	0.33 0.30, 0.40	0.3 0.34, 0.38
Leg IV	0.33 0.33, 0.37	0.67 0.68, 0.76	0.39 0.31, 0.41	0.57 0.52	0.56 0.50, 0.52	0.39 0.37, 0.45

Table 2.—Leg spination of *Trachyzelotes minutus*. For each measurement, holotype male is shown on top of the two paratype females, and the spine formula should be interpreted as (dorsal–prolateral–retrolateral–ventral); a ‘p’ stands for pair and parentheses indicate a variable spine formation. A sequence is indicated by a ‘x+y’ from proximal to distal length. Segments that do not bear any spine are not shown.

	Femur	Tibia	Metatarsus
Leg I	1-0-0-0	-	-
	1-0-0-0	-	-
Leg II	1-0-0-0	-	-
	1-0-0-0	-	0-0-0-1(0)
Leg III	2-1-0-0	0-2-1-1+1p	0-1-2-0
	2-1-0(1)-0	0-2(3)-2-1+1p(2p)	0-1(4)-2(3)-0
Leg IV	2-0-1-0	0-3-4-1+2p	0-4-4-0
	2-0-1-0	0-3-4(3)-1+2p(3p)	0-4(7)-4-0

Four species were described after the revision by Platnick & Murphy (1984), *T. baiyuensis* Xu 1991, *T. chybyndensis* Tuneva & Esyunin 2002, *T. cumensis* (Ponomarev 1979) and *T. glossus* (Strand 1915). Literature containing the descriptions of these species was obtained to compare each species with the hereby described material, and the differences in the morphology of the genitalia are clear.

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LITERATURE CITED

Cardoso, P. 2010. Portugal spider catalogue (version 2.0). Online at <http://www.ennor.org/catalogue.php>.
 Levy, G. 1998. The ground-spider genera *Setaphis*, *Trachyzelotes*, *Zelotes* and *Drassyllus* (Araneae: Gnaphosidae) in Israel. *Israel Journal of Zoology* 44:93–158.
 Levy, G. 2009. New ground-spider genera and species with annexed checklist of the Gnaphosidae (Araneae) of Israel. *Zootaxa* 2066:1–49.
 Platnick, N. 1992. On the spider family Zavattaricinae (Araneae, Gnaphosidae). *Journal of New York Entomological Society* 100:178–179.
 Platnick, N. & J. Murphy. 1984. A revision of the spider genera *Trachyzelotes* and *Urozelotes* (Araneae, Gnaphosidae). *American Museum Novitates* 2792:1–30.
 Ponomarev, A.V. & A.S. Tsvetkov. 2004. The generalized data on spiders (Aranei) of the Nature Research “Rostovski”. *Trudy Gosudarstvennogo Zapovednika “Rostovskii”* 3:84–104.
 Ponomarev, A.V. & A.S. Tsvetkov. 2006. New and rare spiders of the family Gnaphosidae (Aranei) from a southeast of Europe. *Caucasian Entomological Bulletin* 2:5–13.
 Tuneva, T.K. & S.L. Esyunin. 2002. A review of the family Gnaphosidae in the fauna of the Urals (Aranei), 2. New and rare genera. *Arthropoda Selecta* 10:217–224.
 Xu, Y.J. 1991. Studies on the family Gnaphosidae from Anhui (Part II). *J. Huizhou Teacher’s School* 1:37–41.

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