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Authors: Lissner, Jørgen, and Chatzaki, Maria

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A new spider species, *Zelotes acarmanicus* sp. n. (Araneae: Gnaphosidae), from mainland Greece

Jørgen Lissner & Maria Chatzaki



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Abstract. A new gnaphosid spider species, *Zelotes acarmanicus* sp. n., is described from a male and female collected on the Perganti Mountain of the Acarnanian Mountains range in mainland Greece.

Keywords: new species, *subterraneus* group, spiders, taxonomy, zelotines

Zusammenfassung. Eine neue Spinnenart, *Zelotes acarmanicus* sp. n. (Araneae: Gnaphosidae), vom griechischen Festland. Eine neue Gnaphosiden-Art, *Zelotes acarmanicus* sp. n., wird nach einem Männchen und einem Weibchen beschrieben, die auf dem griechischen Festland auf dem Berg Perganti in den Akarnanischen Bergen gesammelt wurden.

The area of western mainland Greece belongs to a poorly studied part of Europe in terms of arachnological research. In the district of Aetolia-Acarnania in the south-west mainland 36 species are recorded in total, among which only six belong to the family Gnaphosidae (Chatzaki et al. 2015). In the course of a field trip by the first author, 24 spider species were collected in the Acarnanian Mountains. A Gnaphosidae species belonging to *Zelotes* was only identifiable to genus level and is considered new to science. The aim of this study is to describe this new species.

Material and methods

The spiders were collected on the northern slopes of the limestone mountain of Perganti situated in the Acarnanian Mountains of the north-western part of the Aetolia-Acarnania district in western Greece. Specimens were collected by hand under stones on the ground, in leaf litter, ant nests or shaken from vegetation. Habitus photos of live, adult specimens were taken tabletop. Illustrations were created from photos of selected features using a Leica 205 stereomicroscope fitted with a Leica DFC450 digital camera. The microscope was connected to a computer with Leica Application Suite software, Zerene Stacker software and the vector graphics editor Inkscape. All measurements are given in mm. The numbers of spines on the proximal, median, and distal thirds of a given surface of a leg segment are presented using the system of Platnick & Shadab (1975).

Abbreviations. d: dorsal; p: prolateral; v: ventral; r: retrolateral; NHMD: Natural History Museum of Denmark.

Results

Zelotes acarmanicus sp. n. Figs 2-6

Holotype. ♂, GREECE: Aetolia-Acarnania, Aktio-Vonitsa, Thyrio, Acarnania Mountains (38.8314°N, 20.9750°E), rock-steppe and phrygana (950–1060 m a.s.l., Fig. 1), 10.VII.2011, leg. Jørgen Lissner, Coll. JL8046, deposited at the NHMD.

Paratype. 1♀, same locality and date as for holotype, leg. Jørgen Lissner, Coll. JL8046, deposited at the NHMD.

Diagnosis. This species belongs to the *subterraneus* group (for group delimitation see Senglet 2004). Among species of

this group, it bears a close resemblance to *Z. subterraneus* (C. L. Koch, 1833), *Z. fuscus* (Thorell, 1875), *Z. sula* Lowrie & Gertsch, 1955, *Z. fratris* Chamberlin, 1920 and *Z. pyrenaeus* Di Franco & Blick, 2003. From all of these, males of *Z. acarmanicus* sp. n. differ by the longer embolus, diving well down the cymbium at least 1/3 of its length and turning dorsally in a large loop and then slightly at its tip. The embolar base of *Z. acarmanicus* sp. n. bears an apical crest and a dorsal flip at its end, not present in any other of the compared species; the embolar base of *Z. fratris* and *Z. fuscus* also form a prolateral ridge which is however at the outer edge of the structure and it is rounded rather than pointed as in *Z. acarmanicus* sp. n. Additionally, *Z. acarmanicus* sp. n. differs from *Z. pyrenaeus* and *Z. fratris* by the waved shape of the terminal apophysis, also evident in *Z. subterraneus*, *Z. fuscus* and *Z. sula*.

Females are distinguished by the anterior epigynal margins, in *Z. acarmanicus* sp. n. forming larger pockets than in *Z. subterraneus*, *Z. fratris* and *Z. pyrenaeus*; additionally, in *Z. acarmanicus* sp. n. the epigynal plate is longer than wide, contrary to *Z. fratris* and *Z. fuscus*, and its lateral margins are almost parallel (or barely curved) in contrast to all compared species in which they converge anteriorly. Finally, the copulatory ducts of *Z. acarmanicus* sp. n. are transverse and similar to *Z. subterraneus*, contrary to all other species which resemble more the form of *Z. apricorum* (L. Koch, 1876) by having a more prominent vertical part and less distinct horizontal part. **Etymology.** The species is named after the mountain range in which it was found.

Description

Male (holotype)

Measurements. Body length 7.45, carapace length 3.26, width 2.62, opisthosoma length 4.04.

Colour. The whole spider is black when seen in dorsal view, except for dark orange-brown metatarsi and orange-brown tarsi (Fig. 2). Venter of prosoma, coxae and opisthosoma slightly lighter than carapace, only lung opercula and area between them orange-brown.

Prosoma. Carapace with dense clothing of fine black hairs. Stronger black hairs are distributed along striae. Fovea present. From above, posterior eye row slightly procurved or straight (Fig. 2). Anterior eye row recurved and nearly as wide as posterior. Posterior median eyes pearly and slightly oblique, anterior median eyes black. Chelicerae with strong forward projecting setae of varying lengths on prolateral surfaces. Pro-margin with four teeth, retromargin with two teeth distrib-

Jørgen LISSNER, Natural History Museum Aarhus, Wilhelm Meyers Allé 210, Universitetsparken, 8000 Aarhus C, Denmark; E-mail: lissner@natlist.dk
Maria CHATZAKI, Department of Molecular Biology and Genetics, Democritus University of Thrace, Dragana, 68100 Alexandroupolis, Greece;
E-mail: maria.chatzaki@gmail.com

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Fig. 1: Satellite image of Perganti Mt. covering the type locality of *Zelotes acarmanicus* **sp. n.** The area sampled for spiders is enclosed by the red line and covers approximately 25 hectares of rock-steppe and phrygana habitat situated 950–1060 m above sea level. Most specimens at this locality were sampled near the red circle (38.8314°N, 20.9750°E)



Fig. 2: *Zelotes acarmanicus* **sp. n.** Habitus of holotype

uted as in Fig. 3c. Sternum ovoid, truncated anteriorly, very slightly projecting between coxae IV. Maxillae constricted at middle. Labium ligulate, about twice as long as wide.

Legs. Leg formula 4-1-2-3. Metatarsus III and less distinct in IV ventrally-apically with a preening comb. Tarsi I and II scopulated, tarsi III and IV less so. Leg spination pattern (only segments bearing spines listed): femur: I d 1-1-0; II d 1-1-0, p 0-0-1; III d 1-1-0, p 0-1-1, r 0-1-1; IV d 1-1-0, p 0-1-1, r 0-1-1; patella: III r 0-1-0; tibia: III p 1-1-1, v 2-2-2, r 1-1-1; IV p 1-1-1, v 2-2-2, r 1-1-1; metatarsus: II v 2-0-0; III p 1-2-2, v 2-2-1, r 1-1-2; IV p 1-2-2, v 2-2-1, r 1-2-2.

Opisthosoma. Densely covered with very fine hairs and with additional medium-long hairs scattered along the entire surface. Scutum distinct only in preserved specimen, approximately triangular, slightly truncated posteriorly, occupying approximately $\frac{1}{4}$ of abdominal length. Posterior lateral spinnerets with seven piriform spigots. Genital pore distinct,

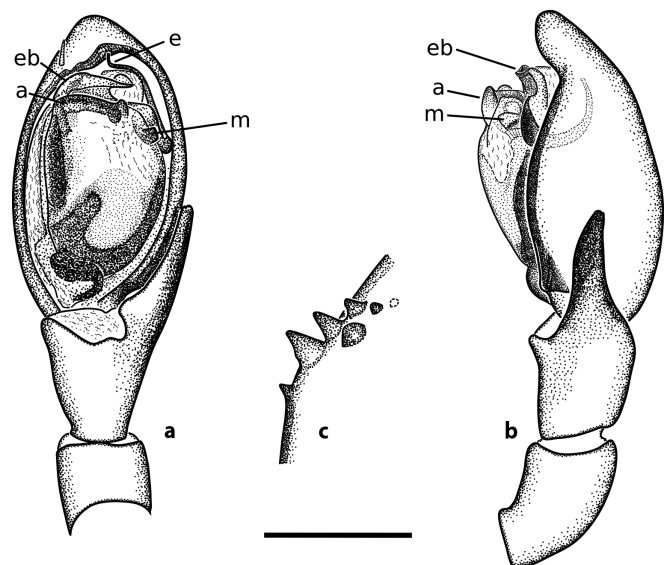


Fig. 3: *Zelotes acarmanicus* **sp. n.**, male holotype. **a.** left palp in ventral view. **b.** left palp in retrolateral view. **c.** dentation of left chelicera in posterior view, denticle in dashed line present only in female paratypes. a: terminal apophysis; e: embolus; eb: embolar base; m: median apophysis. Scale bar **a-b** 0.5 mm, **c** 0.2 mm

slightly sclerotized laterally and with a central sclerotized protrusion furnished with a cluster of short hairs.

Male palp. Tibial retrolateral apophysis of approximately the same length as tibia (Figs 3, 4). Apex of apophysis with a tiny notch. Median apophysis a projecting ridge. Terminal apophysis transverse, with wavy edges. Embolar base parallel to terminal apophysis with apical crest and tapering retrolateral projection with extra dorsal flip. Embolus long, u-shaped (Fig. 3b), turning dorsally from retrolateral side, gradually ending to a fine curving tip.

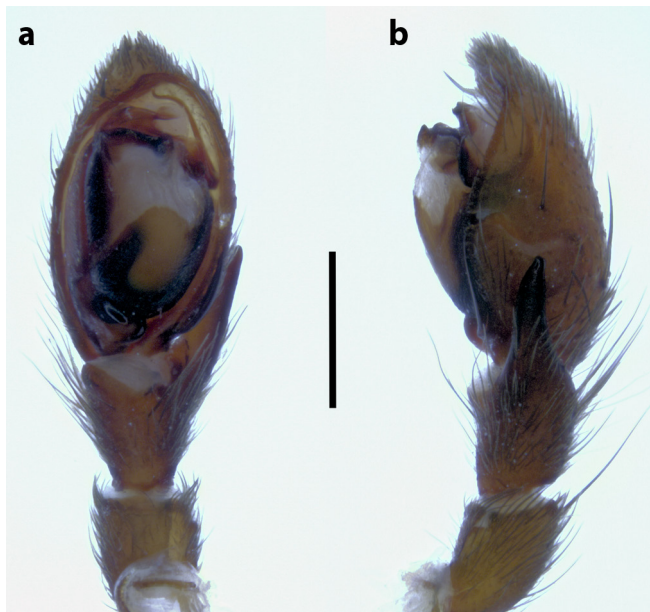


Fig. 4: *Zelotes acarnanicus* sp. n., male, photos. **a.** left palp in ventral view. **b.** left palp in retrolateral view. Scale bar 0.5 mm

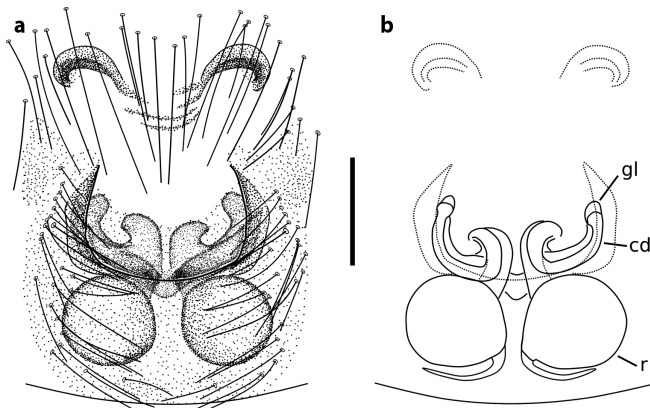


Fig. 5: *Zelotes acarnanicus* sp. n. **a.** epigyne in ventral view. **b.** vulva in dorsal view. cd: copulatory duct; gl: glandular head; r: receptacle. Scale bar 0.2 mm



Fig. 6: *Zelotes acarnanicus* sp. n., photos. **a.** epigyne in ventral view. **b.** vulva in dorsal view. Scale bar 0.2 mm

Female (Paratype)

Measurements. Body length 6.72, prosoma length 3.08, width 2.32, opisthosoma 3.49.

Colour. General appearance very similar to male.

Legs. Leg spination pattern (only segments bearing spines listed): femur: I d 1-1-0, p 0-0-1; II d 1-1-0, p 0-0-1; III d 1-1-0, p 0-1-1, r 0-1-1; IV d 1-1-0, p 0-1-1, r 0-1-1; patella: III r 0-1-0; tibia: III p 1-1-1, v 2-2-2, r 1-1-1; IV p 1-1-1, v 2-2-2, r 1-1-1; metatarsus: II v 2-0-0; III p 1-2-2, v 2-2-1, r 1-1-2; IV p 1-2-2, v 2-2-1, r 1-2-2.

The female shows only some minor differences to the male: 1) Chelicerai dentition as in the male but with left chelicera possessing one additional minute retromarginal tooth situated closer to fang socket (illustrated with a dashed line in Fig. 3c). 2) Leg spination shows a minor deviation from the male with the female possessing one prolateral spine on femur I not seen in the male investigated. 3) Posterior lateral spinnerets with six piriform spigots (one less than in male). Intraspecific variation in these measures is unknown as only one specimen of each sex is available at present.

Epigyne/vulva. Anterior epigynal margins with distinct pockets, medially interrupted (Figs 5a, 6a). Lateral epigynal margins slightly curved. Copulatory ducts with transverse dorsal curves and with lateral glandular heads, then medially looped and continuing as vertical tubes towards the receptacles (Figs 5b, 6b). Receptacles large, circular, and separated by $\frac{1}{4}$ of their diameter.

Distribution. Mainland Greece, known from the type locality only.

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