

## On the identity of the poorly known spider species *Zelotes strandi* (Araneae: Gnaphosidae)

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**Abstract.** The taxonomic status and distribution of the poorly known gnaphosid species *Zelotes strandi* (Nosek, 1905) is clarified, discussed and mapped on the basis of both the holotype (a single female from Turkey) and newly collected material (males and females from Bulgaria). This species was originally described from the island of Prinkipo (= Büyükada, District of Istanbul, Turkey) and the holotype is currently housed in the Naturhistorisches Museum, Vienna. Both sexes are here diagnosed and illustrated, whereby the male is described for the first time.

**Keywords:** Bulgaria, first description of male, new records, taxonomy, Turkey

Nosek (1905) described 23 new spider species from the families Dysderidae, Theridiidae, Lycosidae, Agelenidae, Gnaphosidae and Thomisidae collected by the well-known Austrian naturalist Arnold Penther in different regions of Turkey, including the Island Prinkipo (= Büyükada) in the Marmara Sea, near Istanbul. From the material collected in the territory of this island, Nosek described the species *Zelotes strandi* (Nosek, 1905) (originally in *Prosthesima*) on the basis of a single female specimen. Since its original description, there have been no further records concerning the taxonomy and distribution of the species (Chatzaki 2010, Senglet 2011, 2012, Platnick 2013). Having had the opportunity to examine the collection of A. Nosek kept in the Vienna Museum – and comparing it with material collected from different regions of Bulgaria – it became possible to provide a description of the previously unknown male together with a redescription of the female based on new drawings and photos.

### Material and methods

The type material (a single female) was studied and photographed, without removing the epigyne. The spider material from Bulgaria was collected by hand and by pitfall traps from various localities (Fig. 1). The map of the Balkan Peninsula follows Abadjiev (2001). Measurements of the legs were taken from the dorsal side. Total body length includes chelicerae.

Photographs of the holotype were made using a Nikon camera connected to a Leica MZ 12.5 stereoscope; those of the newly described male with a Lumix camera connected to a Wild MD stereoscope. The drawings were made with a camera lucida mounted on a Leica MZ 12.5 stereoscope.

The following abbreviations are used in the text and figures: AME – anterior median eyes, PLE – posterior lateral eyes, PME – posterior median eyes.



Fig. 1: Localities of *Zelotes strandi*

### Taxonomy

***Zelotes strandi* (Nosek, 1905)** (Figs 2–8, 10, 12, 14)  
*Prosthesima strandi* Nosek, 1905: 126, f. 7

### Material examined

TURKEY, Princess Islands, Prinkipo (Büyükada), Marmara Sea, #249 coll. A. Penther, ♀ holotype, 5.5.1902 (A. Penther leg.). BULGARIA: North Black Sea: Kavarna town, N43.458498°, E28.361197°, alt. 122 m, 1♀, 14.08.1996; Balchik town (dunes), N43.406734°, E28.125257°, alt. 111 m, 1♂ 2♀♀, 17.6.1995; Albena resort, N43.395426°, E28.088753°, alt. 234 m, 1♂, 23.06.1996; 1♂ 1♀, 11.10.1997 (V. Popov leg.). South Black Sea: Arkutino (dunes),

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N42.330895°, E27.734050°, 1 m alt., 1♂, 12.06.1996; Ropotamo river, N42.324380°, E27.730782°. 21 m alt., 1♀, 8.6.1996 (V. Popov leg.). Sushtinska Sredna Gora Mountains: Panagyuriste town, N42.508435°, E24.188566°, 533 m, 2♂♂ 4♀♀, 9.10.1998; Panagyuriste town, Kolonijte, N42.583370°, E24.190925°, alt. 1133 m, 1♂, 8.10.1997; Panagyuriste town, Milej, N42.541801°, E24.196221°, alt. 622 m, 1♀, 5.5.1997; Panagyuriste town, Nikulden, N42.516859°, E24.181875°, alt. 606 m, 1♀, 21.5.1998; 2♀♀, 08.09.1998; 5♂♂, 10.10.1998; 2♂♂ 1♀, 14.5.2000; Panagyuriste town, Sredoryak, N42.551685°, E24.188457°, alt 696 m, 1♀, 6.5.1998; Panagyuriste town, Sveti Ivan, N42.515571°, E24.183635°, alt. 572 m, 3♀♀, 2.6.1998; Strelcha town, Barikadite, N42.574502°, E24.456701°, alt. 1284 m, 2♀♀, 2.6.1996 (S. Lazarov leg.).

### Comparative material

*Zelotes cingarus* (O. P.-Cambridge, 1874). Bulgaria, Slavianka Mt, Kalimantsi vill., N 41.459735°, 23.489964°, alt. 462 m, 1♂ 3♀♀, 09.11.2002 (S. Lazarov leg.).

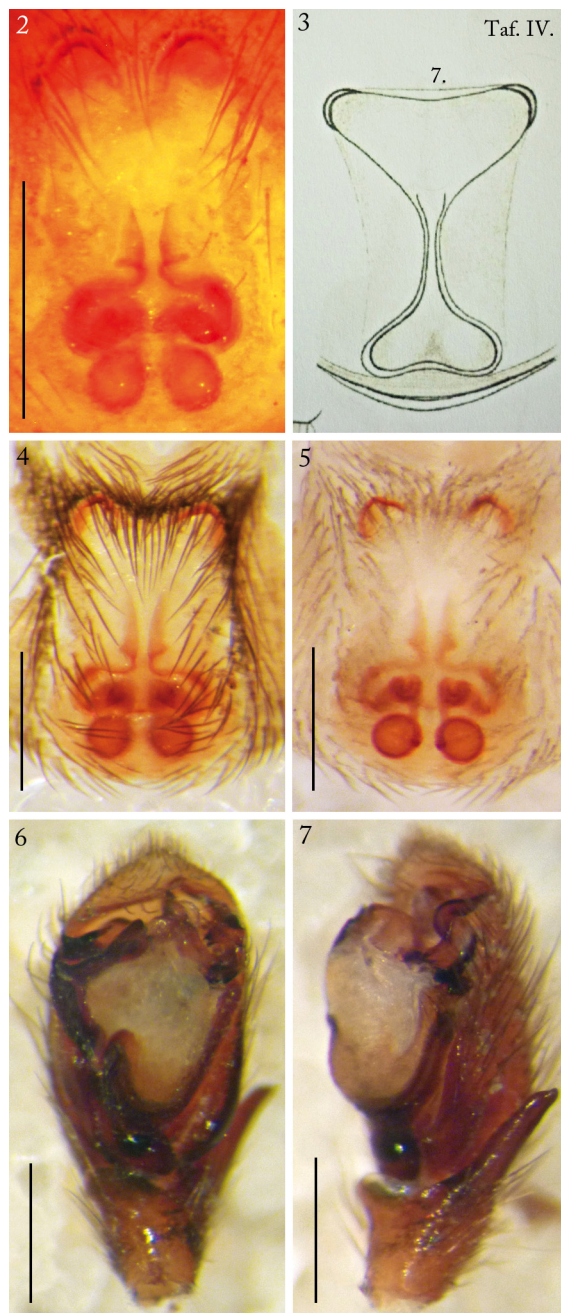
### Depository

The holotype is housed in the Naturhistorisches Museum, Vienna. One pair (male and female) from Bulgaria, Panagyuriste town have been deposited at each of the following museums: Museum für Naturkunde, Humboldt-Universität, Berlin and Senckenberg Museum, Frankfurt am Main. The remaining 12 males and 18 females from Bulgaria are held in the collections of the National Museum of Natural History, Sofia.

### Diagnosis and affinities

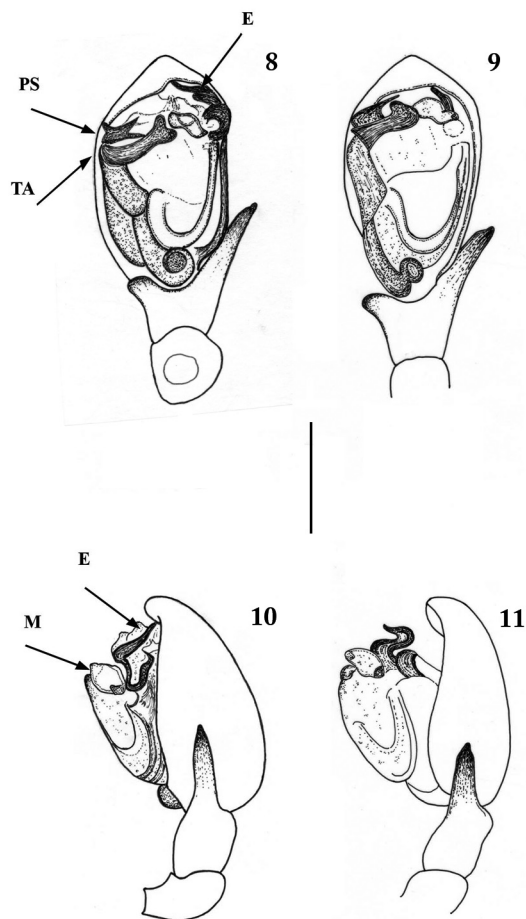
Somatic characters corresponding well to those of the genus. Male palp (Figs 8, 10) distinguished by the long tapering tibial apophysis, coiled embolar base, stout terminal apophysis with a bifid end and posterior sclerite with a characteristic shape; bifid distally. Female epigyne (Figs 12, 14) distinguished by the almost straight and parallel epyginal lateral margins, posteriorly forming U-shaped pockets. Anterior margins much wider than lateral ones. *Z. strandi* resembles *Zelotes cingarus* (O. P.-Cambridge, 1874) (Figs 9, 11, 13, 15), but differs in the following characters. In males of *Z. strandi* (Figs 8, 10) the tibial apophysis is longer; the terminal apophysis is longer and the bifid end is better expressed; the posterior sclerite of the terminal apophysis is bifid distally. In females of *Z. strandi* (Figs 12, 14), the lateral epyginal margins are less spaced, the spermathecae are smaller and the epyginal ducts are less coiled.

The original figure of the epigyne of *Z. strandi* by Nosek (1905) is very schematic and these features



**Figs 2–7:** *Zelotes strandi*: 2 – epigyne (type); 3 – epigyne (type), figure of Nosek (1905); 4 – epigyne (Bulgaria, Panagyuriste); 5 – vulva (Bulgaria, Panagyuriste); 6 – male palp, ventral view; 7 – male palp, retrolateral view

are not represented. The taxonomic value of the picture is thus low. It is effectively impossible to identify the species using the original illustration and this is



**Figs 8–11:** *Zelotes strandi*: 8 – male palp, ventral view; 10 – male palp, retrolateral view. *Zelotes cingarus* (Bulgaria, Slavianka Mt): 9 – male palp, ventral view; 11 – male palp, retrolateral view. E – embolus; M – median apophysis; PS – posterior sclerite; TA – terminal apophysis. Scale bar: 0.3 mm

probably the reason why *Z. strandi* was not recognised again in previous studies.

### Description

Male: Total length 5.3; cephalothorax length 2.52; cephalothorax width 1.94 mm. Leg lengths:

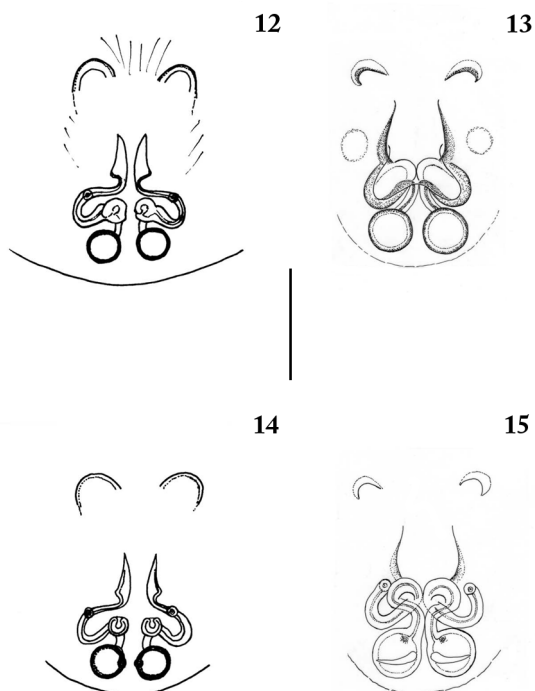
leg	I	II	III	IV
Femur	1.62	1.44	1.26	2.16
Patella	1.01	0.97	0.72	1.10
Tibia	1.26	1.01	0.90	1.44
Metatarsus	0.97	0.90	1.08	1.80
Tarsus	0.83	0.79	0.72	0.90
Total	5.69	5.11	4.68	7.31

Female: Total length 9.0; cephalothorax length 4.68; cephalothorax width 3.06 mm. Leg lengths:

leg	I	II	III	IV
Femur	2.88	2.27	2.16	2,80
Patella	1.62	1.26	1.08	1.62
Tibia	1.98	1.55	1.26	1.98
Metatarsus	1.62	1.40	1.26	2.52
Tarsus	1.26	1.08	1.08	1.26
Total	9.36	7.56	6.84	10.18

Posterior eye row with eyes of equal size and nearly equidistant. Chelicerae red-brown, armed with 3 teeth on outer margin of cheliceral furrow and 2 denticles on inner margin. Carapace, sternum and abdomen brown. Legs, spination: Fe: I–II d 2; II–IV d 6. Ti: I–II spineless; II–IV spinose. Me: I–II v 2; III–IV spinose.

Male palp (Figs 6–8, 10): Tibial apophysis long, slender and tapering. Embolic complex with an S-shaped base and a small, sclerotized embolus. Terminal apophysis stout with a bifid end. Posterior



**Figs 12–15:** *Zelotes strandi*: 12 – epigyne, 14 – vulva. *Zelotes cingarus* (Bulgaria, Slavianka Mt): 13 – epigyne, 15 – vulva. Scale bar: 0.3 mm

sclerite bifid distally. Median apophysis concave in the middle.

Epigyne (Figs 2–4, 12): Long and relatively narrow. Lateral epigynal margins anteriorly almost straight and parallel, posteriorly forming U-shaped pockets, anterior margins much wider than lateral ones.

Vulva (Figs 5, 14): Copulatory ducts long, leading to large, globular, slightly separated spermathecae.

### Ecology

This species reaches altitudes of up to 1,200 m, but prefers lowlands. At higher altitudes it is found under stones, mainly at the edge of beach forests and meadows, in lowlands in dry grasslands, close to oak forests and dunes near the sea shore.

### Phenology

Mature males were captured from April to September, females from May to October.

### Distribution

*Z. strandi* seems to be widespread over the eastern part of the Balkan Peninsula. Until now, it has been captured in Bulgaria in several places, and in Turkey on the Prinkipo (Büyükkada) Island (Fig. 1).

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