

## A new species of *Berinda* (Araneae, Gnaphosidae) from the eastern Aegean Islands, Greece

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**Abstract.** A new ground spider, *Berinda idae* Lissner **spec. nov.** is described from material collected in Kalymnos and Nisyros of the Dodecanese Islands, as well as Santorini and Christiani of the Thira island complex, Cyclades, Greece. The affinity of this species to its congeners is briefly discussed.

**Keywords:** Cyclades, Dodecanese, taxonomy, *Zelotes* group

**Zusammenfassung.** Eine neue Art der Gattung *Berinda* (Araneae, Gnaphosidae) von den östlichen Ägäischen Inseln, Griechenland. Eine neue Plattbauchspinne, *Berinda idae* Lissner **spec. nov.**, wird aus Material, das auf den griechischen Inseln Kalymnos und Nisyros (Dodekanes) sowie auf Santorin und Christiani (Thira-Inseln, Kykladen) gesammelt wurde, beschrieben. Die Beziehungen zu den anderen Arten der Gattung werden kurz diskutiert.

*Berinda* Roewer, 1928 belongs to the *Zelotes* Group within the Gnaphosidae (Panayiotou et al. 2010). Members of this group possess a distal preening comb on metatarsi III and IV and this character is not possessed by any other gnaphosid group (Murphy 2007). Preening combs are specialised brush-like setae emerging from a relatively straight row of bases on metatarsi III and IV that are used for grooming purposes (Platnick & Shadab 1982, FitzPatrick 2007). Within the *Zelotes* Group, *Berinda* males are easily distinguished by the very characteristic conductor guiding the long embolus of the pedipalp, while females stand out by possessing a large hood anterior to the introductory ducts and spermathecae (Kovblyuk et al. 2009). The genus has recently been revised by Panayiotou et al. (2010) adding two new species to the three already described. A sixth species, *Berinda cooki* was later described from Turkey, based on the male only (Logunov 2012). Thus, *Berinda* is a small genus with just six species distributed in the East Mediterranean, Turkey and Uzbekistan (Logunov 2012, Panayiotou et al. 2010).

### Material and methods

The material presented here originates from a systematic survey on some islands belonging to the Dodecanese and Cyclades complexes in the framework of a scientific project undertaken by the Natural History Museum of Crete, or NHMC (see acknowledgements for details) and from other field trips of the first and second author in the same areas. Spiders were collected by pitfall traps in the case of NHMC material and sought by hand, by sifting leaf litter in a tray and by shaking vegetation above a tray in the case of the first author's collection. All NHMC material is deposited at the same museum. Material of the first author's collection will be deposited at the Zoological Museum of Copenhagen. Leg spination data is presented as number of dorsal, ventral, prolateral, and retrolateral spines on all leg segments except the tarsi. Illustrations were created by the first author, from photos of selected features using a Leica Wild M10 stereomicroscope fitted with Leica DFC425 digital camera connected to a computer with

the Leica Application Suite software v. 4.3.0, Zerene Stacker software v. 1.04 and vector graphics editor Inkscape v. 0.48.

**Abbreviations.** NHMC: Natural History Museum of Crete; ZMUC: Zoological Museum of Copenhagen; TL: total length; PL: prosoma length; PW: prosoma width; OL: opisthosoma length; CJL: coll. Jørgen Lissner. Leg spination d: dorsal; v: ventral; p: prolateral; r: retrolateral.

### Results

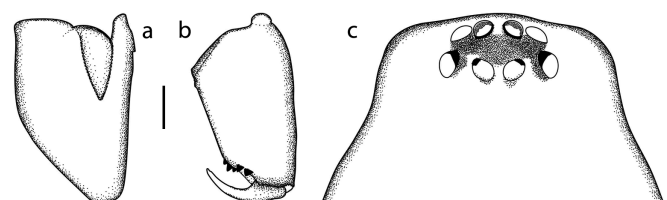
***Berinda idae* Lissner spec. nov.** Figs 1-7

The species here described is assigned to *Berinda*, based on the presence of a combination of characters that is not shared with any other gnaphosid genera (Murphy, 2007): preening combs, epigynal hood, large conductor of the male palp protruding ventrally in the middle of the embolus loop.

**Etymology.** The species is named *idae* to pay tribute to Ida Louise Lissner, daughter of the first author.

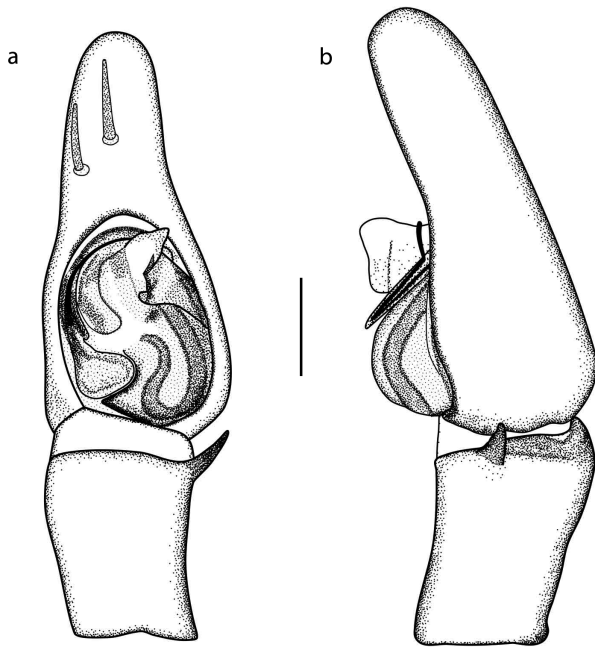
**Type material.** Holotype ♂: GREECE: Cyclades: Thira Islands: Santorini, Profitis Ilias, phrygana (36.3691N 25.4620E), pitfalls 17.V.2003 – 24.VIII.2003, leg. Chatzaki, stored at NHMC [NHMC17283]. Paratypes 1 ♂ 2 ♀♀, same data.

**Other material examined.** GREECE: Cyclades: Thira Islands: Santorini: Vlichada (36.3418N 25.4323E), phrygana 16 ♂♂ 10 ♀♀ [pitfalls 23.IV.2006 – 14.VII.2006, leg. Chatzaki, NHMC8478], 2 ♂♂ 2 ♀♀ same data of which one male was used for the palp illustrations [CJL-10869]; Oia (36.4691N 25.3733E), phrygana 1 ♀ [pitfalls 17.V.2003 – 24.VIII.2003, leg. Chatzaki, NHMC17282]; Christiani Islet (36.2502N 25.2071E), phrygana 1 ♂ 5 ♀♀ [pitfalls 11.IV.2006 – 14.VII.2006, leg. Chatzaki, NHMC8490]; Dodecanese Islands: Nisyros, Avlaki (36.5591N 27.1733E), phrygana 1 ♀ [pitfalls 01.V.2006 – 05.VI.2006, leg. Chatzaki,

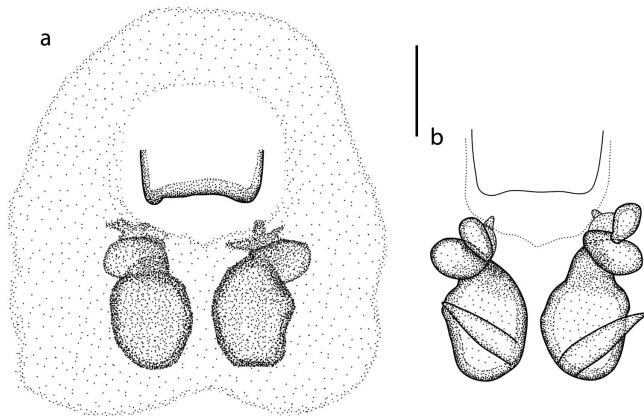


**Fig. 1:** *Berinda idae* Lissner spec. nov. ♀. a) Left chelicera in prolateral view with the outline of the lateral condyle emphasized. b) Right chelicera in posterior view showing positions of teeth on pro- and retromargin. c) Eye region in dorsal view. Scale bar 0.2 mm

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**Fig. 2:** *Berinda idae* Lissner spec. nov. ♂. a) Left male palp in ventral view. b) Same in retrolateral view. Scale bar 0.2 mm



**Fig. 3:** *Berinda idae* Lissner spec. nov. ♀. a) Epigyne in ventral view. b) Vulva in dorsal view. Scale bar 0.1 mm

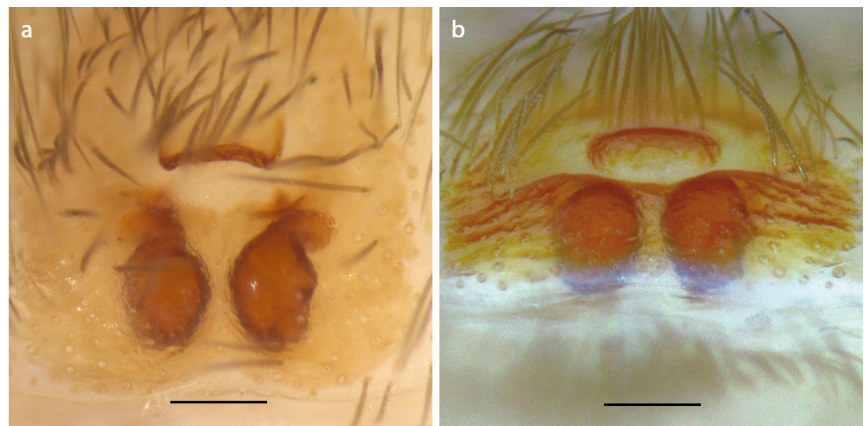
NHMC8406]; Kalymnos, ca. 300 m SE of the monastery of Agios Savvas near Pothia (36.9431N 26.9835E), 1 ♀ (used for illustrations) found among stones in open forest community with pine trees and phryganic species in understory stratum [30.VI.2010, leg. Lissner, CJL-6843].

**Diagnosis.** The male of the species described here differs from those of all other *Berinda* species by possessing a small, triangular tibial retrolateral apophysis, about one fifth the length of palpal tibia. In all other *Berinda* males the tibial apophysis is considerably longer or, in the case of *B. amabilis* Roewer, 1928, short but with an additional finger-like patellar apophysis (Panayiotou et al. 2010). The shape of the membranous part (sac or bladder, sensu Panayiotou et al. 2010) of the conductor is highly distinctive in each species being approximately triangular in retrolateral view in the present species. The female of *B. idae* Lissner spec. nov. possesses a short, rectangular epigynal hood, about twice as wide as long, unlike those of any other known *Berinda* females. The spermathecae are oval in shape and distinctly separated. In the five already described species (female of the sixth *B. cooki* is unknown) the spermathecae are almost touching or overlapping, and all those species, except *B. amabilis*, have kidney-shaped spermathecae.

**Description.** Measurements (mm, n = 3, average value with range in parenthesis): ♂: TL: 6.6 (4.5–8.2), PL: 3.1 (2.2–3.9), PW: 2.2 (1.6–2.6), OL 3.7 (2.5–4.5); ♀: TL: 7.0 (6.8–7.4), PL: 3.0 (2.5–3.7), PW: 2.2 (1.7–2.6), OL 4.2 (3.8–4.6). ♂♀: Carapace yellow-brown with distinct fovea (Fig. 6), very faint radiating striae, abdomen elongated oval, covered with pubescence giving it light greyish brown appearance. Legs coloured as carapace, all segments uniformly plain-coloured. Chelicerae with lateral condyles (Fig. 1a). Cheliceral retromargin with 2 teeth, promargin with 3, relatively smaller teeth, median tooth being largest (Fig. 1b). In some specimens promargin carries 2 additional, minute denticles towards fang. Endites, labium, sternum, coxae (Fig. 7) almost identical in shape to those depicted for *Berinda amabilis* in Murphy (2007). Coxae I longer, thinner than coxae IV as characteristic for members of the *Zelotes* group. Eyes in two rows, anterior row slightly recurved, posterior row procurved with posterior median eyes oblique (Fig. 1c). Area enclosed by eyes darkened. Spinnerets long, cylindrical, anterior pair clearly longer than posterior pair, separated by ca. diameter of spinneret. Each anterior lateral spinneret with pair of small major ampullate gland spigots anterior to 6 piriform gland spigots packed parallel both to each other and to surface of distensible membrane when in resting stage. Presumably, when membrane is fully expanded piriform spigots will attain positions very much like those illustrated for *B. amabilis* in Murphy (2007). All



**Fig. 4:** *Berinda idae* Lissner spec. nov. ♂, photographs; a) Left male palp in ventral view. b) Same in retrolateral view. For scale see fig. 2



**Fig. 5:** *Berinda idae* Lissner spec. nov. ♀. a) Epigyne photographed in ventral view; b) Epigyne photographed in posterior view showing curvature of hood. Scale bar 0.1 mm



**Fig. 6:** *Berinda idae* Lissner spec. nov. ♀. Habitus in dorsal view. Scale bar 2 mm



**Fig. 7:** *Berinda idae* Lissner spec. nov. ♀. Habitus in ventral view. Scale bar 2 mm

leg tarsi with scopulae extending to distal parts of metatarsi. Preening combs present on metatarsi III, IV. Leg spination ♂: Fe: I-II d2 r1; III d3 p2 r2; IV d2 p1-2 r1. Pa: I-II 0; III p1 r1; IV 0. Ti: I 0; II v3; III d1-2 p4 r3 v6; IV: d0 p4 r4 v6. Me: I 0; II v3; III p5 r4 v4; IV p5 r6 v6. Spination of ♀ as in ♂ but Ti: II 0-1; III d1 p4 r3 v6; IV: d1-2 p4 r4 v6. Me: III p5 r3 v4. Ventral spines arranged in two rows on each side of ventral midline. Pro-, retrolateral spines arranged in two rows, if more than one spine. Most conspicuous difference between the sexes appears to be number of ventral spines on tibia II (3 in males, 0-1 in females). Male palp with small triangular tibial apophysis, strongly protruding filiform conductor (Figs 2, 4). Embolus long, filiform. Conductor with large membraneous sac best seen in retrolateral view (Figs 2b, 4b). Epigyne with hood about twice as wide as long, curved in posterior view (Figs 3a, 5a, 5b). Spermathecae (Figs 3a-b) oval, separated by one third their diameter. Genital openings horizontal, situated near anterior part of spermathecae. Introductory ducts short, wide, stout, coiled, not allowing detection of line towards spermathecae.

**Distribution.** GREECE: Dodecanese (Kalymnos, Nisyros), Cyclades (Santorini, Christiani Islet).

### Discussion

The species of *Berinda* are easily separated by their genitalia as both the palpal organs and the epigynes are distinctive in each species. *Berinda idae* Lissner spec. nov. makes no exception and does not seem closely related to its congeners, *B. aegilia* Chatzaki, 2002 being the closest so far, based on most morphological characters.

Until now only *B. ensigera* was known from the Dodecanese Islands (Panayiotou et al. 2010) and it is the first time a member of the genus has been recorded from the Cyclades.

### Acknowledgements

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