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A NEW SPECIES OF *HAHNIA* (ARANEAE, HAHNIIDAE) FROM BULGARIA AND CRIMEAN PENINSULA CLOSE TO *H. NAVA*

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A New Species of *Hahnia* (Araneae, Hahniidae) from Bulgaria and Crimean Peninsula close to *H. nava*. Indzhov, S. — *Hahnia kovblyuki* sp. n. is described from forest habitats in Western Bulgaria and compared to its closest species, *H. nava* (Blackwall, 1841), using morphology and simple morphometry. Previous records of *H. nava* from Crimea are formally re-assigned to *H. kovblyuki* sp. n., and issues in the taxonomy of the *Hahnia nava* complex are briefly discussed.

Key words: Crimea, Balkan Peninsula, species complex, morphometry, forest habitats, spiders, taxonomy.

Introduction

The genus *Hahnia* C. L. Koch, 1841 contains 13 described European species according to the World Spider Catalog (2025). These are small spiders which inhabit the ground layer of various habitats, exhibiting some specialization (species profiles at Harm, 1966, Kovblyuk et al., 2017). The males have relatively similar copulatory organs, unlike the mostly intricate and specific epigynal structures of the females (Figs at Harm, 1966, Kovblyuk et al., 2017). However, species complexes with sibling species are known from Europe, such as *Hahnia ononidum* Simon, 1875 and *Hahnia thymorum* Ledoux, 2014 (Ledoux, 2014). *Hahnia nava* (Blackwall, 1841) is a widespread species with a Transpalaearctic distribution (WSC 2025), reaching eastwards to Japan (Ichikawa, 2024). It is accordingly found in Bulgaria, where it mostly inhabits open, grassland habitats (see material listed below), which coincides well with the

information given by Harm (1966). However, Kovblyuk et al. (2017), in their treatment of Crimean *Hahnia*, reported *H. nava* predominantly from forest habitats, including the leaf litter of *Fagus* forests. In March 2023, a single male *Hahnia* was found in Western Bulgaria, in Lozenska Mts., under a stone in a beech forest. It could not be identified with certainty using the available European literature, but its similarity to *Hahnia nava* did not remain unnoticed. A direct comparison with unambiguous males from the latter species showed a marked difference in the size of the pedipalps. The following two years, more material was collected at the same spot, with two more males being found under stones, while the majority of the individuals were found while sifting and turning older layers of beech litter. The consistent differences in the morphology of both sexes and in habitat preferences showed that this is a separate species, which is described herein.

Material and Methods

Individual spiders were collected while turning stones, searching through vegetation near ground level, or examining leaf litter, and preserved in approximately 75% ethanol. Epigynes and palps were separated using syringe needles, and the epigynes were cleared at room temperature in 80% lactic acid for 2–5 days. The materials were examined under a Bresser Advance ICD stereomicroscope and a Levenhuk 50L Plus monocular microscope. Photos of genitalia were taken using a Samsung Galaxy A54 attached to the monocular microscope's eyepiece and stacked using Picolay (Cypionka, 2025) and subsequently edited using GIMP (2025). Photos of the habitus were taken through the eyepiece of the Bresser stereomicroscope.

Measurements were made using the diameter of the eyefield as reference (2.5 mm at 64 and 1 mm at 160 times magnification) and calculated from the pixels using the program GIMP (2025). All measurements are in mm. Scatter plot was made using R (2022) in R Studio (2026).

The holotype, two male paratypes and four female paratypes are deposited at the deposited at the National Museum of Natural History, Sofia (NMNHS). Additional paratypes will be deposited in the author's collection until they are also transferred to other institution collections in the future; some non-type specimens are in Institute of Biodiversity and Ecosystem Research at the Bulgarian Academy of Sciences (IBER).

Terminology follows Harm (1966) and Zhang et al. (2011).

Abbreviations: CF, cymbial furrow; Em, embolus; MA, median apophysis; Mts., mountain(s).

Results

Family Hahniidae Bertkau, 1878
Genus *Hahnia* C. L. Koch, 1841
Type species: *Hahnia pusilla* C. L. Koch, 1841, by subsequent designation of Thorell (1869).

***Hahnia kovblyuki* sp. n.**
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Hahnia nava (*nec* Blackwall, 1841): Kovblyuk et al., 2017: 313, Figs 4–5 [misidentification].

Material. **Type. Bulgaria:** Holotype ♂: Lozen Mts., above Lozen Monastery [42.584° N, 23.521° E], *Fagus* forest, underneath a log, 07.03.2023 (S. Indzhov) (NMNHS). Paratypes: 1 ♂, same data as holotype, underneath a stone, 04.03.2024; 2 ♂, 3 ♀, same data as holotype, sifting beech leaf litter and under stones, 31.01.2025; 2 ♂, 4 ♀, same data as holotype, sifting beech leaf litter, 28.02.2025 (S. Indzhov) (NMNHS). **Non-type**: West Balkan Mts., Gara Lakatnik [43.085° N, 23.378° E], Carpinus forest, underneath a stone, 17.10.2025, 1 ♀ (S. Indzhov); West Rhodopes Mts., Chokmanovo [41.547° N, 24.735° E], Fagus-Pinus-Picea forest, 15.11.2025, 1 ♂ (V. Vassilev) (IBER).

Diagnosis. The species is morphologically similar to *Hahnia nava* (Blackwall, 1841) but can be separated by the following traits: the male cymbium length is approximately 0.42–0.46 mm (approximately 0.35–0.38 mm in *H. nava*); the cymbium length:width ratio is below 1.47 (above 1.50 in *H. nava*); the cymbial furrow nearly reaches the tip of the cymbium and ends at a right angle (it reaches below the middle of the median apophysis and has a rounded ending in *H. nava*); the embolus originates at 2 o'clock and runs far from the tegulum in its retrobasal quarter (it originates at 3 o'clock and runs closer to the tegulum in *H. nava*); the female copulatory ducts are longer and usually have larger posterior loops than in the closest species (shorter ducts and smaller loops in *H. nava*); the entrance portion of the copulatory ducts is more strongly pigmented ; the primary spermathecae are approximately 0.065–0.070 mm in diameter (approximately 0.045 mm in *H. nava*); the preferred habitat is humid leaf litter in *Fagus* forests (open, often dry grasslands for *H. nava*); the overall colouration is somewhat paler than in *H. nava*, especially the prosoma and legs.

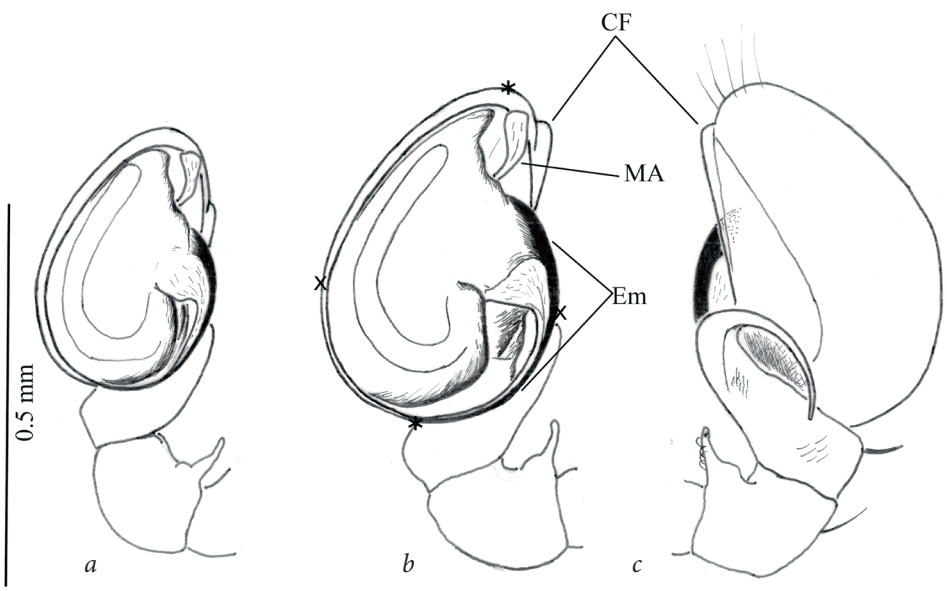

Fig. 1. *Hahnia nava,* male palp, ventral view — *a*; *Hahnia kovblyuki* sp. n., male palp, ventral view — *b*; *Hahnia kovblyuki* sp. n., male palp, retrolateral view — *c*. Scale bar 0.5. Abbreviations: CF, cymbial furrow; Em, embolus; MA, median apophysis. The distance between the asterisks denotes the measured cymbium length and the distance between the x symbols denotes the measured width (measured at the end of the membranous part of Em transversely, see Diagnosis)

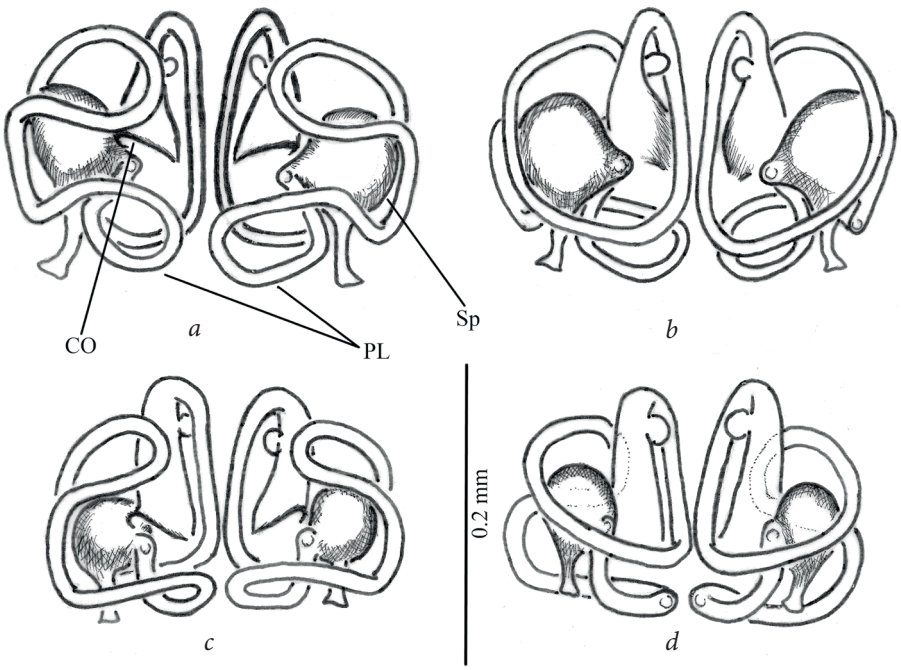

Fig. 2. *Hahnia kovblyuki* sp. n., dissected epigyne, ventral view — *a*; *Hahnia kovblyuki sp. n.*, vulva, dorsal view — *b*; *Hahnia nava,* dissected epigyne, ventral view — *c*; *Hahnia nava,* vulva, dorsal viewb — *d*. Scale bar 0.2. Abbreviations: CO, copulatory opening; PL, posterior loop; Sp, spermathecae

Description

Both sexes, overall appearance, spines

Carapace light brown, with unclear radial striations (Fig. 6). Legs greyish in fresh specimens, with lighter joints, turning light brown in stored specimens. Opisthosoma grey, sometimes with unclear chevrons, ventral side somewhat paler. Sexual dimorphism is minimal; males are slightly darker, with a shorter head region and proportionally somewhat longer front legs (for the latter, see measurements). Leg spines are non-dimorphic, as follows (see Table 1).

Male

Measurements (N=3). Total length 1.51–1.68. Carapace length 0.67–0.72. Leg measurements (male holotype with carapace length 0.71). Femur I 0.52, Patel-

Table 1. **Spinulation of *Hahnia kovblyuki* sp. n.**

Segment\Leg	I	II	III	IV
Femur	1d1p	1d	1d	1d
Patella	1d	1d	1d	1d
Tibia	1d	1d1v	1d1r2v	1d1p1r2v
Metatarsus	none	none	1p1r1v	1p1r1v
Tarsus	none	none	1v	none

Abbreviations: d — dorsal; p — prolateral; r — retrolateral; v — ventral.

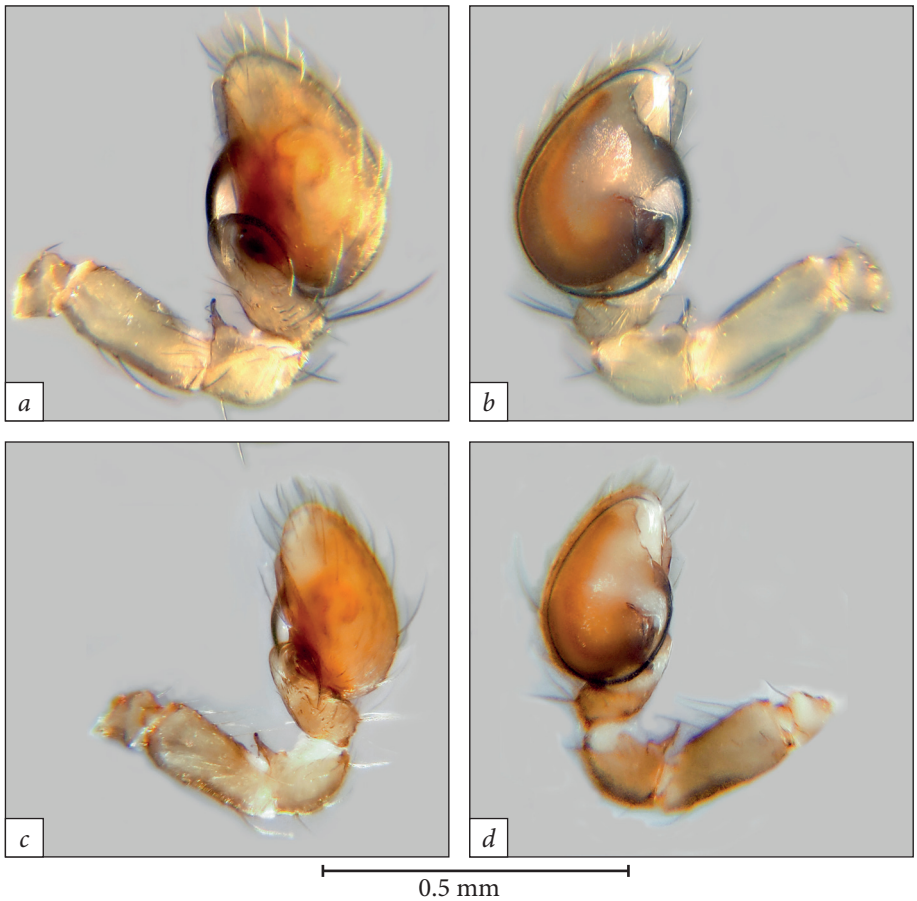

Fig. 3. Top row, *Hahnia kovblyuki* sp. n. male pedipalp. Bottom row, *Hahnia nava*, male pedipalp, retrolateral view — *a*, *c*; ventral view — *b*, *d*. Scale bar 0.5

la I 0.21, Tibia I 0.41, Metatarsus I 0.36, Tarsus I 0.32, Femur II 0.49, Patella II 0.21, Tibia II 0.40, Metatarsus II 0.32, Tarsus II 0.31, Femur III 0.45, Patella III 0.19, Tibia III 0.34, Metatarsus III 0.30, Tarsus III 0.31, Femur IV 0.57, Patella IV 0.21, Tibia IV 0.46, Metatarsus IV 0.47, Tarsus IV 0.35.

Palp. Cymbium ovoid, with a tapering tip, somewhat asymmetrical. Cymbial furrow nearly reaching the tip of the cymbium, ending at a right angle (Figs 1, *b*; 3, *b*). Tegulum flat, lacking setose areas, its retrodistal corner irregularly cut off. Embolus filiform, originating at 2 o'clock, with a membranous velum-like area near the base. Median apophysis originating in the middle of the cut-off section of the tegulum, lamellose, somewhat curved, dilated apically, with a truncated tip. Tibial apophysis is long and thin, curved backwards. Patellar apophysis is thin, nearly straight, but with a hook-shaped tip, and bulged at the base.

Female

Measurements (N=3). Total length 1.92–2.09. Carapace length 0.73–0.80. Leg measurements (female paratype with carapace length 0.71). Femur I 0.53, Patella I 0.26, Tibia I 0.41, Metatarsus I 0.34, Tarsus I 0.29, Femur II 0.47, Patella II 0.23, Tibia II 0.35, Metatarsus II 0.25, Tarsus II 0.25, Femur III 0.55,

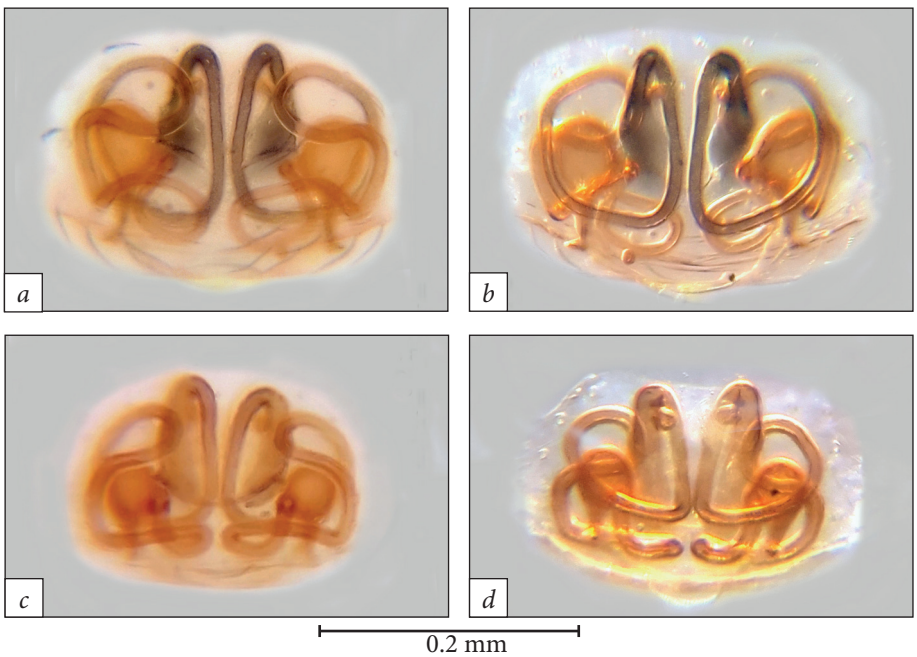

Fig. 4. Top row, *Hahnia kovblyuki* sp., n., vulva. Bottom row, *Hahnia nava*: vulva, ventral view — *a, c*, dorsal view — *b*, *d*. Scale bar 0.2

Patella III 0.24, Tibia III 0.32, Metatarsus III 0.34, Tarsus III 0.29, Femur IV 0.65, Patella IV 0.25, Tibia IV 0.45, Metatarsus IV 0.42, Tarsus IV 0.34.

Epigyne and vulva. Epigyne flat, with no external structures other than two obliquely situated copulatory openings forming a V (Fig. 2, *a*). Copulatory ducts are long, thin, and form several loops (Figs 2, 4, 5), and the entrance portion is more heavily pigmented. Primary spermathecae spherical to slightly ovoid, rather big. Glandular structures are visible anteriorly of the dilated entrance parts of the copulatory ducts.

Phenology. Adult specimens from both sexes were collected on snowless days in autumn and winter, from October until the first half of March. It is possible, however, that their maturity period is even longer, as no targeted searches were conducted in other parts of the year. Kovblyuk et al. (2017) also show activity in summer – June, August and September, which perhaps indicates a nearly year-round adult presence.

General distribution. Bulgaria, Ukraine (Crimean Peninsula).

Etymology. Named after the Ukrainian arachnologist Mykola Kovblyuk (V. I. Vernadsky Taurida National University, Simferopol, Crimea, Ukraine), who first illustrated this species.

Hahnia nava (Blackwall, 1841)

Hahnia nava: Harm, 1966; Almquist, 2006 (see WSC (2025) for a complete list of references).

Material. **Non-type. Bulgaria.** Central Balkan Mts., above Zlatitsa, Govedarnika (42.7470° N, 24.1570° E), dry montane pasture, underneath a stone,13.06.2025, 1 ♀ (S. Indzhov) (Collection S. Indzhov); Chepan Mts., Chepan ecoalley (42.9480° N, 22.9435° E), xerothermic slope, underneath stones, 27.03.2021, 2 ♀ (S. Indzhov) (Collection S. Indzhov); Chepan Mts., road towards Dragoman swamp (42.9373°N, 22.9483° E), roadside, pasture, underneath a stone, 25.04.2021, 1 ♂, 1 ♀ (S. Indzhov) (Collection S. Indzhov); Chepan Mts., Chepan ecoalley (42.9480° N, 22.9435° E), xerothermic slope, underneath stones, 14.03.2023,

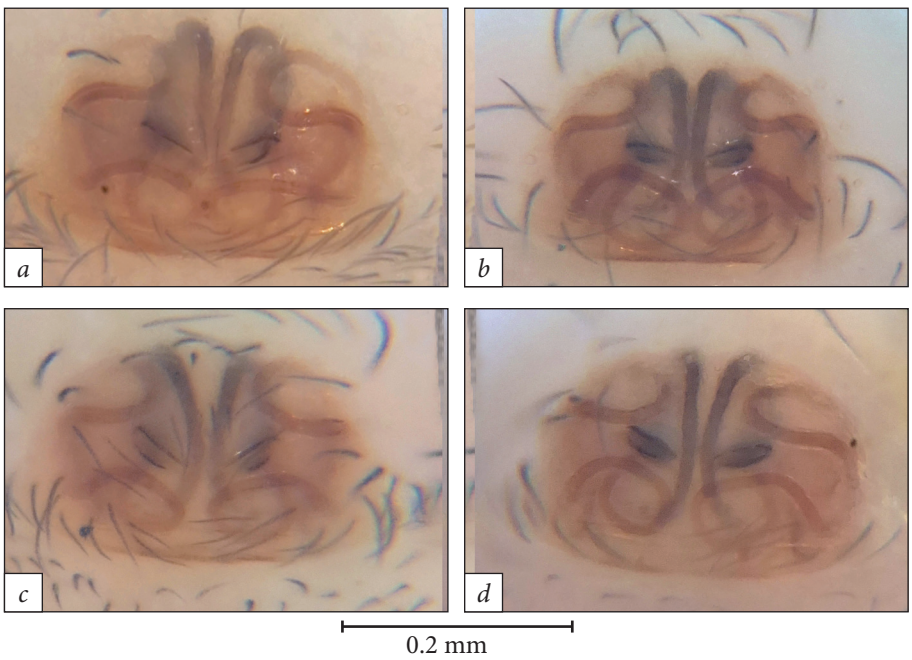

Fig. 5. Four epigynes of *Hahnia kovblyuki* sp. n. *in situ*. Scale bar 0.2

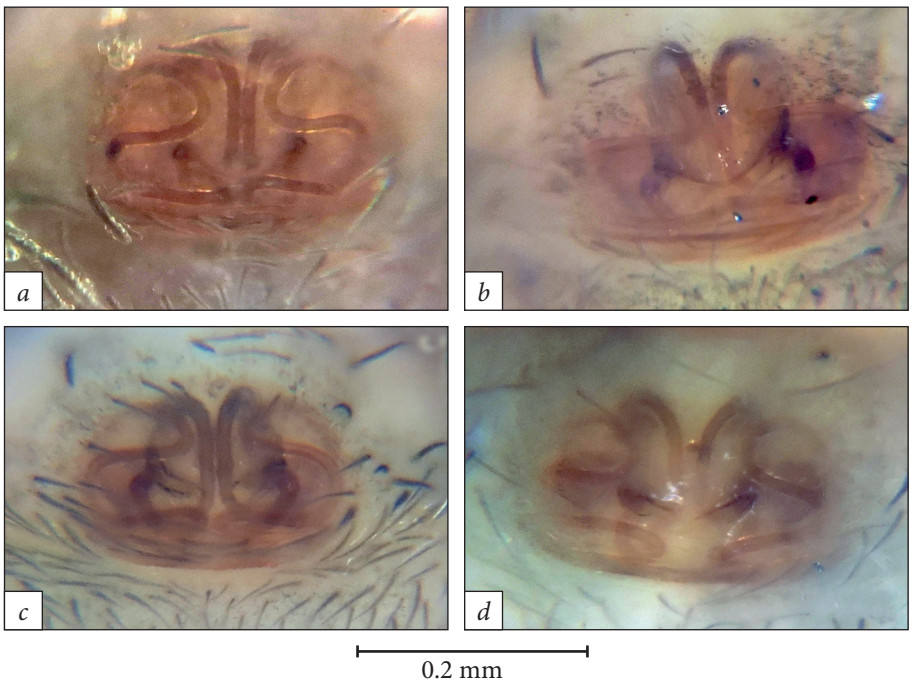

Fig. 6. Four epigynes of *Hahnia nava in situ*: *a* — Zlatitsa; *b*, *d* — Chepan Mts.; c — Dolni Rakovets. Scale bar 0.2

2 ♂, 1 ♀ (S. Indzhov) (Collection S. Indzhov); Chepan Mts., Chepan ecoalley (42.9477° N, 22.9372° E), dry grassland-*Quercus* grove margin, underneath a stone, 09.03.2025, 1 ♂ (S. Indzhov) (Collection S. Indzhov); Radomir Basin, Dolni Rakovets (42.4720° N, 23.0223° E), dry grassland, in grass, 13.05.2025, 1 ♀ (S. Indzhov) (Collection S. Indzhov); Sofia Basin, near Aldomirovtsi swamp (42.8998° N, 23.0041° E), xerothermic grassland, underneath stones and in grass tufts, 19.02.2023, 2 ♂, 1 ♀ (S. Indzhov) (Collection S. Indzhov); Vitosha

Fig. 7. *Hahnia kovblyuki* sp. n., habitus. Left, female, right, male. Scale bar 1 mm

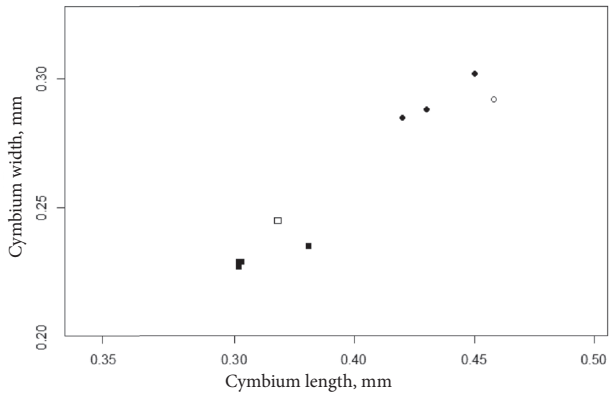

Fig. 8. Scatter plot showing measurements of male cymbium in *Hahnia nava* (N = 5) and *Hahnia kovblyuki* sp. n. (N = 4) Squares — *Hahnia nava*, circles — *Hahnia kovblyuki* sp. n. Filled figures indicate material examined in the current paper, empty square is *Hahnia nava* from Harm (1966) and empty circle is *Hahnia kovblyuki* sp. n. from Kovblyuk et al. (2017)

Mts., Platoto above Kumata Hut (42.5893° N, 23.2527° E), subalpine grassland & *Juniperus*, in grass, 16.10.2024, 1 ♀ (S. Indzhov) (Collection S. Indzhov).

Remarks. As this species has been adequately described in the taxonomic literature (Harm, 1966; Almquist, 2006, etc.), no new description is presented. For comparative remarks, see the diagnosis of *Hahnia kovblyuki* sp. n. as well as the key below.

Key to *Hahnia nava* and *Hahnia kovblyuki* sp. n. (*Hahnia hauseri* Brignoli, 1978 excluded)

1 Males 3
— Females 4
2 Cymbium length > 0.40 (0.42–0.46), male cymbium length : width ratio < 1.47. Legs and carapace light greyish brown. Forest species ..... *H. kovblyuki* sp. n.
— Cymbium length < 0.40 (0.35–0.38), cymbium length : width ratio > 1.50 and above. Legs and carapace usually strongly pigmented, dark brown. Open habitats. ..... *H. nava*
3 Diameter of spermathecae > 0.055 (0.065–0.070), posterior loops often large. Carapace and legs light greyish brown. Forest species. ..... *H. kovblyuki* sp. n.
— Diameter of spermathecae < 0.055 (≈0.045), posterior loops small but variable. Legs and carapace usually strongly pigmented, dark brown. Inhabitant of open habitats. ..... *H. nava*

Discussion

Although frequently cited in taxonomic literature (WSC 2025), *Hahnia nava* appears to belong to a species complex that includes less-known taxa such as *H. kovblyuki* **sp. n.** and *Hahnia hauseri* Brignoli, 1978. The latter species is currently known only from females (Brignoli, 1978); however, it is likely widespread in the Western Mediterranean, as Barrientos (1985) and Lecigne et al. (2025) recorded morphologically similar females with short posterior loops. A definitive interpretation of these populations remains challenging without additional data on males beyond the descriptions provided by Barrientos (1985), which is beyond the scope of the present study.

The identity of the male specimen illustrated by Harm (1966) as *H. pusilla* C. L. Koch, 1841 remains unclear. The curved median apophysis (MA) and the embolus originating at approximately 2 o'clock suggest that it belongs to the *Hahnia nava* complex; in contrast, *H. pusilla* possesses a straight MA and an embolus originating at approximately 5 o'clock (Almquist, 2006). This specimen is unlikely to be *H. kovblyuki* **sp. n.** because its cymbium length is only approximately 0.35 mm (corrected from 3.5 mm) and it lacks the prominent cymbial furrow typical of the new species, appearing more similar to *H. nava* in several aspects. However, its length:width ratio of approximately 1.48 is more consistent with *H. kovblyuki* **sp. n.** Whether this record represents a misidentified *H. nava*, a small specimen of *H. kovblyuki* **sp. n.**, or an undescribed member of this complex from Central European forests remains unknown, as the original illustration does not permit a more definitive assessment.

Variability in pedipalp size is evident in both *H. kovblyuki* **sp. n.** and *H. nava*, with the cymbial length of the latter ranging from 0.35 to 0.38 mm. While literature data (Harm, 1966; Almquist, 2006) report values around 0.37 mm, our measurements of Bulgarian material (N = 4) show that three males possess a cymbium length of approximately 0.35 mm, and only one specimen from Dragoman reaches 0.38 mm. Since this size variation is present in both species and occurs within single localities, it is interpreted as intraspecific variation.

This variability implies that structural characters — specifically the cymbium length:width ratio and the extent of the cymbial furrow — are diagnostically more reliable than absolute measurements alone. Although no overlap in absolute palp size has been observed in the studied material, the ratio remains a stable and robust character for distinguishing these sibling species.

In conclusion, the discovery of *H. kovblyuki* **sp. n.** highlights the taxonomic complexity within the *Hahnia nava* species complex in the Western Palaearctic. Given the subtle morphological differences and potential for overlapping absolute measurements, accurate identification must rely on a combination of genital proportions and habitat data. Further research involving molecular analysis and broader geographical sampling across Central Europe and the Mediterranean will be essential to fully clarify the boundaries of this complex and the status of related populations.

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