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A Newly Recorded Spider of the Family Hahniidae (Arachnida, Araneae) from Taiwan

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Abstract

A spider of the species *Hahnia zhejiangensis* (Song & Zheng 1982) has been recorded in Taiwan for the first time. It differs from all other congeners due to the following combination of characteristics: both genders have anterior median eyes smaller than anterior lateral eyes, chelicerae with 2 - 3 promarginal and 5 - 6 retromarginal teeth, a large spiracular opening located in the middle of the epigastric furrow and at the base of the median spinnerets; females possess a pair of dark brown triangular markings and a large copulatory opening on the epigynum, with two vertical dark brown sclerotized plates behind the epigastric furrow; males display retrolateral tibial apophysis of the palpal organ, which is stout and strongly recurved, while the palpal patellar spur is small, curved and single-pointed. Both genders of this species have been redescribed and illustrated based on specimens obtained from Taiwan.

Keywords: *Hahnia zhejiangensis*, Hahniidae, Araneae, new record, Taiwan.

Introduction

Spiders of the family Hahniidae are usually small (3 - 6 mm) in body size (Song, 1999). They differ from other spiders by the transverse arrangement of three pairs of spinnerets and the relatively large tracheal spiracle located on well beyond the spinnerets (Arita, 1978; Opell & Beatty, 1976; Roth, 1993). The median pair of spinnerets are composed of one-segment, corresponding to the posterior median spinnerets of other spiders. While, both the intermediate and the lateral pairs of spinnerets are composed of two segments, corresponding to the anterior median and the posterior lateral spinnerets of other spiders, respectively (Opell & Beatty, 1976). The lateral spinnerets are the longest ones and the median spinnerets are the shortest ones. There are three serrate claws on each leg without the claw tufts. Most hahniid spiders dwell under stones, in leaf litters, mosses, and soil crevices on the ground, or even under a moss-covered tree bark where they build delicate sheet webs and mainly feed on springtails (Barrion & Litsinger, 1995).

Only one species of hahniid spider, *Hahnia corticicola* Boesenberg & Strand 1906, had been recorded from Taiwan (Chen, 1996; Chu & Okuma, 1975; Hu, 1984; Kayashima, 1943; Lee, 1964) but little is known about the hahniid spiders in Taiwan. During a long-term monitoring on the spiders in Chiuchiufeng areas, Central Taiwan, three unrecorded *Hahnia* specimens were discovered from a valley of areas. They were identified to be the same with *Hahnia zhejiangensis* Song & Zheng 1982 of the Mainland China. In this paper, both sexes of *H. zhejiangensis* were redescribed and illustrated based on specimens obtained from Taiwan.

MATERIALS AND METHODS

Spiders were collected from the leaf litters by using a modified Berlase's Funnel (Chen, 2001). Alcohol-preserved specimens were examined and measured by Leica M3Z stereomicroscope. Female epigynum was dissected and cleaned in hot 10% KOH solution for examining the inner genital structure. Drawings were made by the first author with a drawing tube attached to microscope. Voucher specimens were preserved in 70% ethanol and deposited in the Arachnological collection of the Department of Life Science, National Taiwan Normal University (NTNUB-Ar). Abbreviations used in this paper are: AER, anterior eye row; ALE, anterior lateral eye; AME, anterior median eye; MOA, median ocular area; PER, posterior eye row; PLE, posterior lateral eye; PME, posterior median eye.

RESULTS AND DISCUSSION

Hahnia zhejiangensis Song & Zheng 1982

(Figs. 1A-F, 2A-B)

Hahnia zhejiangensis Song & Zheng 1982: 81, f.1-4; Hu 1984: 210, f. 222; Feng 1990: 144, f. 1-5, pl. 55-119; Song et al. 1999: 362, f. 211D-E, 212G-H.

Specimens examined. **NANTOU:** 1 male and 2 females (NTNUB-Ar 4059-4060, 4066), Shuangtung, Tsaotun, elev. ca. 300m, 28-IX-2002, Shyh-Hwang Chen leg.

Diagnosis. *Hahnia zhejiangensis* differs from all other congeners by the following combination of characters: chelicerae with 2 - 3 promarginal and 5 - 6 retromarginal teeth, a large spiracular opening located in the middle of epigastric furrow and base of the median spinnerets; females having a pair of dark brown triangular markings and a large copulatory opening on the epigynum, and having two vertical dark brown sclerotized plates behind the epigastric furrow; males having retrolateral tibial apophysis of the palpal organ stout and strongly recurved, and having the palpal patellar spur small, curved and single-pointed. Female genitalia distinctively

complicated as shown in Fig. 1F.

Description. Measurements (in mm) for the male are followed by those of two females (in parentheses): Body length 2.96 (2.76 - 2.94). Carapace length 1.26 (1.19 - 1.24), width 0.95 (0.80 - 0.85). Abdomen length 1.70 (1.52 - 1.75), width 1.14 (1.06 - 1.21). Measurements of legs are given in Table 1.

Table 1. Measurements of leg segments of *Hahnia zhejiangensis* found in Taiwan. (in mm)

Legs	Femur	Patella + Tibia	Metatarsus	Tarsus	Total
Male (n = 1)					
I	1.06	1.32	0.83	0.59	3.80
II	1.03	1.14	0.75	0.59	3.51
III	0. 90	1.01	0.75	0.54	3.20
IV	1.08	1.26	0.93	0.62	3.89
Females (n = 2)					
I	*0.90 ± 0.05	1.11 ± 0.05	0.65 ± 0.03	0.49 ± 0.00	3.15 ± 0.13
II	0.84 ± 0.04	0.98 ± 0.00	0.60 ± 0.03	0.46 ± 0.07	2.87 ± 0.13
III	0.76 ± 0.01	0.89 ± 0.01	0.60 ± 0.03	0.43 ± 0.04	2.67 ± 0.08
IV	0.97 ± 0.02	1.19 ± 0.03	0.82 ± 0.02	0.55 ± 0.03	3.51 ± 0.05

*mean± SD.

Female: Carapace longer than width (Fig. 1A). Head region distinctive and narrower than thoracic region. Eyes (Fig. 1B) heterogenous, AMEs black and all the rest eyes silver white, each with a black patch on the base. Both AER and PER procurved, PER longer than AER. PME and PLE equal in diameter and larger than AME. ALE slightly larger than PLE (ALE 1.1 - 1.3 times diameter of PLE). Ratios of MOA, anterior width: posterior width: length = 1: 1.6: 1.3. Height of clypeus 1.5 times diameter of AME. Cervical grooves distinctive. Chelicerae (Fig. 1C) armed with 3 promarginal and 6 retromarginal teeth. Endite slightly longer than width and truncate anteriorly. Labium (Fig. 1D) with a rectangular base and a rounded distal margin, wider than length. Sternum cordate, protrusion between coxae of the fourth legs. Legs formula 4-1-2-3.

Opisthosoma ovoid, longer than width, having two dark brown sclerotized plates (Fig. 1E) located vertically behind the epigastric furrow. A large spiracular opening located in the middle of epigastric furrow and base of median spinnerets. Lateral spinneret composed of 2 segments, distal segment shorter than the proximal one but as long as the median spinneret. Epigynum (Fig. 1E) highly raised, with a pair of dark brown or black triangular markings on the anterior portion and a large copulatory opening. Genitalia (Fig. 1F) much complicated including large spermathecae, bulbs and long coiled copulatory ducts. A pair of dark brown bulbs located anteriorly to spermathecae, with a smaller bulb pairs ventrally but the one on the right side unable to see in NTNUB-Ar 4059 (Fig. 1F).

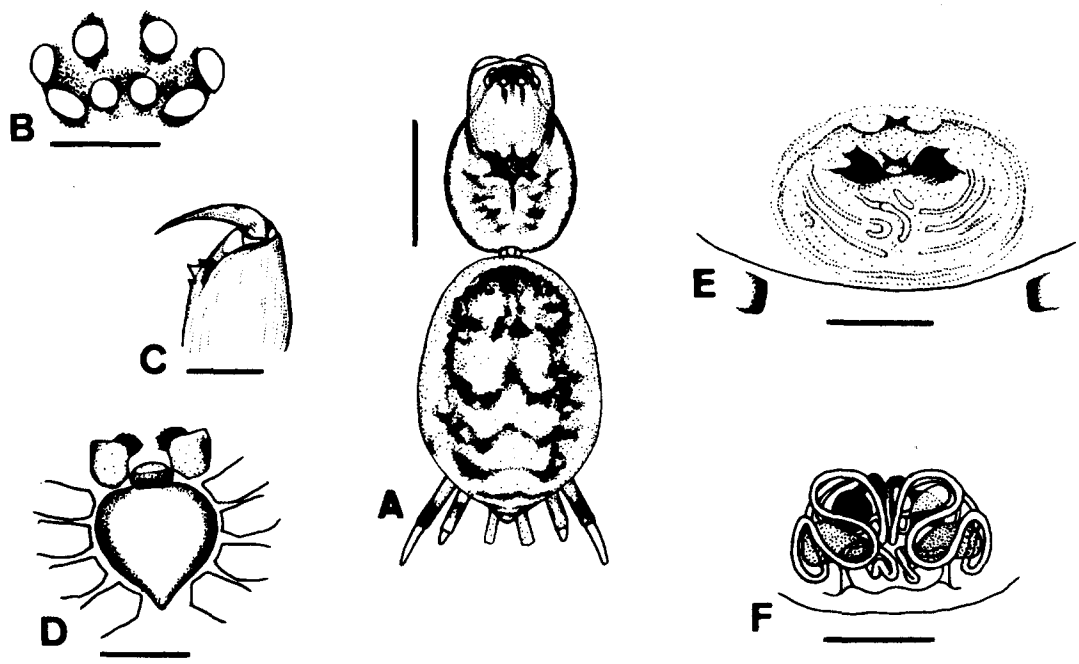

Figure 1. Female *Hahnia zhejiangensis* Song & Zheng. A. Carapace and abdomen, dorsal view. B. Eyes, anterior view. C. Left chelicera, posterior view. D. Sternum and coxae, ventral view. E. Epigynum, ventral view. F. Genitalia, dorsal view. Scales = 0.5 mm (A, D) and 0.2 mm (B-C, E-F).

Colouration of prosoma yellowish brown, with a narrow marginal grayish brown stripe, and having a dark grayish brown eye region, a patch of grayish brown marking behind the cephalic region, and having some distinctive radial markings along cervical grooves. Sternum yellowish brown with a dark brown margin. Dorsum of opisthosoma yellowish brown, with some narrow dark brown stripes forming five to seven chevrons on the median. Each basal segment of lateral and intermediate spinnerets with a dark brown band on the distal end.

Male: Similar to females in general aspects and color pattern. Slightly larger than females with longer legs. Both chelicerae armed with three promarginal and five retromarginal teeth. Height of clypeus 2.5 times diameter of AME. Retrolateral tibial apophysis of male palpal organ (Figs. 2A-B) strongly recurved with a stout base and a fine distal point. Patellar spur small, curved with single point.

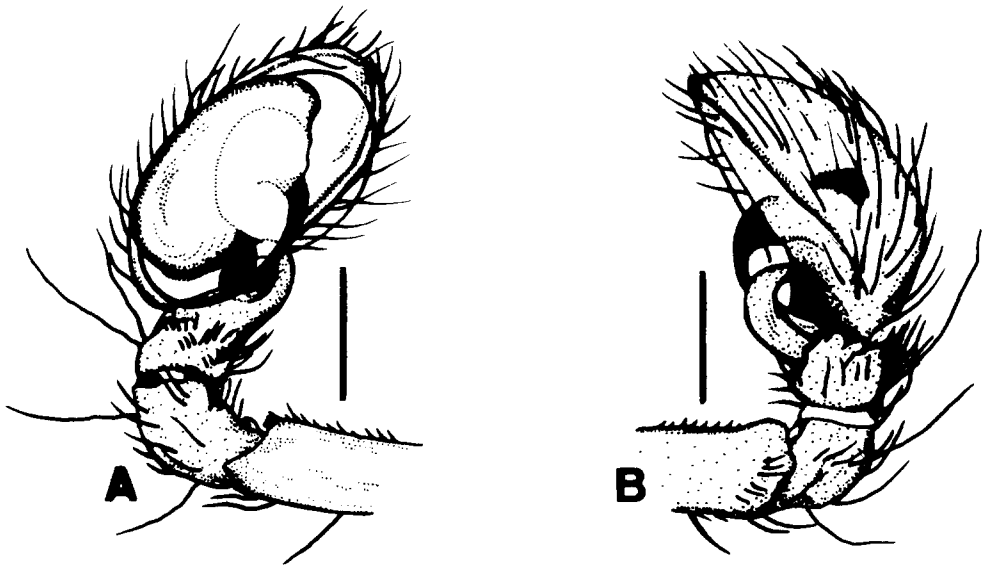

Figure 2. Male *Hahnia zhejiangensis* Song & Zheng. A. Left palp, ventral view. B. same, lateral view. Scales = 0.2 mm.

Distributions. Taiwan (new record), China (Zhejiang).

Remarks. Although *Hahnia zhejiangensis* reported as having three promarginal and six retromarginal teeth on the chelicera (Feng, 1990; Hu, 1984; Song & Zheng, 1982), variations were found in this study. One female (NTNUB-Ar 4059) has three promarginal and six retromarginal teeth on the left chelicera but has two promarginal and five retromarginal teeth on the right chelicera. Another female (NTNUB-Ar 4060) has three promarginal and six retromarginal teeth on both chelicerae. The male (NTNUB-Ar 4066) has five retromarginal teeth on both chelicerae. Judging from the data described previously (Feng, 1990; Hu, 1984; Song & Zheng, 1982), *H. zhejiangensis* typically has three promarginal and six retromarginal teeth on the chelicera but can be varied in having 2-3 promarginal and 5-6 retromarginal teeth. The characters of *H. zhejiangensis* are not always fitted to all diagnostic characters of the genus *Hahnia*. The spiracular opening equidistant from epigastric furrow and base of the spinnerets in *H. zhejiangensis* resembles two North American genera *Antistea* and *Neoantistea* (Hu, 1984; Opell & Beatty, 1976). The equal length of median spinneret to the distal segment of lateral spinneret is a character more close to genus *Neoantistea* than *Hahnia*. However, Song and Zheng (1982) grouped *H. zhejiangensis* basing on those two characters of AMEs distinctively smaller than ALEs and without a stridulatory organ. The status of *H. zhejiangensis* remains in question

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台灣產浙江橫疣蛛之新紀錄（蜘蛛目：橫疣蛛科）

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本文首次紀錄浙江橫疣蛛在台灣之發現。本種與同屬之其他種類區別特徵如下：前牙堤齒 2 - 3 枚，後牙堤齒 5 - 6 枚；前中眼黑色，明顯小於前側眼；氣孔開口於胃外溝和中絲疣連線之中點上；雌蛛之外雌器開口於前方，並有一對黑褐色三角片在其兩側，另有一對黑褐色縱長形幾丁質板在胃外溝後緣；雄蛛觸肢之脛節突起巨大且彎曲，末端尖細，膝節突起小、彎曲且末端不分叉。本文並根據台灣標本重新描述及繪圖。

關鍵詞：浙江橫疣蛛、橫疣蛛科、蜘蛛目、新紀錄、台灣