

A New Species of the Gnaphosid Spider Belonging to the Genus *Aphantaulax* (Araneae: Gnaphosidae) from Taiwan

台灣產鸞蛛科蜘蛛新種台南秘蛛 (*Aphantaulax tainanica* sp. nov.)

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Abstract

This paper describes a new gnaphosid spider *Aphantaulax tainanica* sp. nov. from the Shihchu Wildlife Reserve, Tainan City, Taiwan. It is distinguishable from other congeners by having globular shaped spermathecae in female and a light yellow, awl-shaped tibial apophysis in male.

摘要

本文報導一種台灣產蜘蛛目(Araneae)鸞蛛科(Gnaphosidae)之新種—台南秘蛛(*Aphantaulax tainanica* sp. nov.)。標本採集自台南市四草野生動物保護區的短草區。雌蛛的納精囊呈球形，雄蛛觸肢的脛節突淡黃色且逐漸縮成角錐狀。

Key words: Araneae, Gnaphosidae, *Aphantaulax tainanica*, new species, Taiwan

關鍵詞：蜘蛛目、鸞蛛科、台南秘蛛、新種、台灣

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Introduction

Gnaphosid spiders are free-living, nocturnal animals mainly found on the grounds and some on plants. Most of the ground-dwelling species build a silk retreat under stones or surface debris, in where they shelter themselves during non-active periods (Song *et al.* 1999). They belong to the family Gnaphosidae Pocock, 1898, a large family that comprises 113 genera and 1,955 species in the world (Song *et al.* 2004). In Northeast Asia, about 166 species in 34 genera have been reported from China, 59 species in 19 genera from Japan (Song *et al.* 1999; Kamura 2000, 2002; Tanikawa 2000, 2003; Song *et al.* 2004), but only two species *Zelotes asiaticus* (Bösenberg and Strand, 1906) and *Kishidaia albimaculata* (Saito, 1934) from Taiwan (Chu and Okuma 1975; Chen 1996, 2001; Chen 2002), and a single species *Aphantaulax trifasciata* (Pickard-Cambridge, 1872) from the Kinmen Island (Tso 2004).

This paper describes a new species *Aphantaulax tainanica* sp. nov. from the Shihchu Wildlife Reserve, Tainan City, Taiwan. It is a member of the genus *Aphantaulax* with chelicerae characterized by a denticle on retromargin and a saw-toothed ridge on the promargin of fang groove, rather than separate teeth and the carapace without a thoracic groove. Specimens were preserved in 75% ethanol-water solution and deposited at the National Museum of Natural Science (NMNS), Taichung City, Taiwan. Images of specimens were preformed using a stereo-zoom microscope (SZ-60, OLYMPUS). Abbreviations used in the paper are: ALE, anterior lateral eye; AME, anterior median eye; PLE, posterior lateral eye; PME,

posterior median eye. Eye size was measured as a length of its long axis but for PME it is along a horizontal plane.

Aphantaulax tainanica sp. nov.

(Figs. 1- 4)

Type material

Holotype: A female specimen collected from the Shihchu Wildlife Reserve, Tainan City, 29 July 2003 by Yih-Tsong Ueng (NMNS-4668-003).

Paratypes: A female specimen (NMNS-4185-001) and a male specimen (NMNS-4668-004) collected from the locality same to holotype, respectively, 28 July 2002 and 29 July 2003 by Yih-Tsong Ueng.

Other material

A sub-adult male collected 28 July 2002 (NMNS-4185-002); a sub-adult female and a juvenile 28 June 2003 (NMNS-4668-001, 002); two juveniles 1 April 2004 (NMNS-4668-005); a sub-adult female and three sub-adult males 7 April 2004 (NMNS-4668-006, 007). All of the above specimens were collected from the type locality by Yih-Tsong Ueng.

Characters

Female holotype (Figs. 1, 2): Body 4.6 mm in length. Carapace 2.0 mm in length and 1.2 mm in width. Abdomen 2.4 mm in length and 1.5 mm in width. Eye sizes: AME 0.06 mm, ALE 0.08 mm, PME 0.06 mm, PLE 0.04 mm in length. Distances between eyes: AME-AME 0.08 mm, AME-ALE 0.04 mm, PME-PME 0.16 mm, PME-PLE 0.10 mm, AME-PME 0.16 mm (Fig. 1A). Measurements of legs are listed in

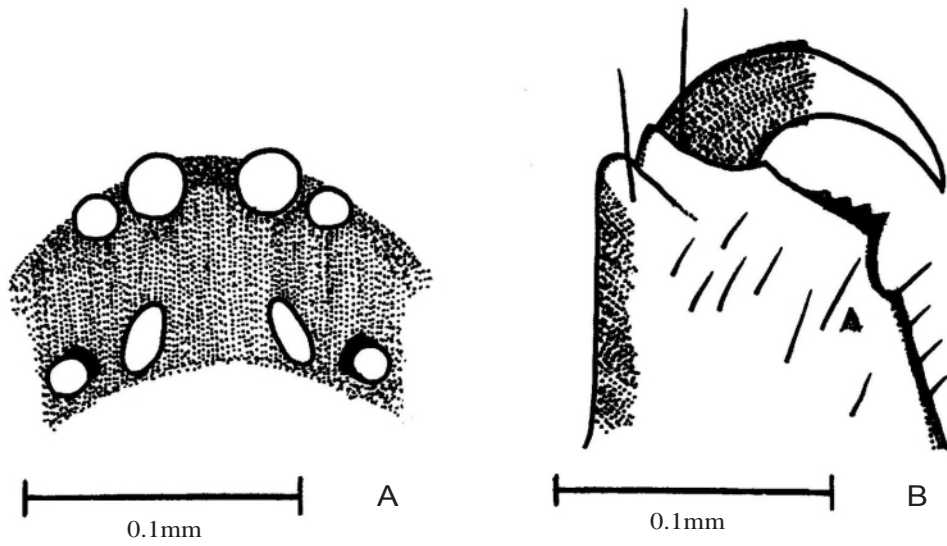


Fig. 1. Dorsal view of eyes (A) and right chelicera (B) of *Aphantaulax tainanica* sp. nov.

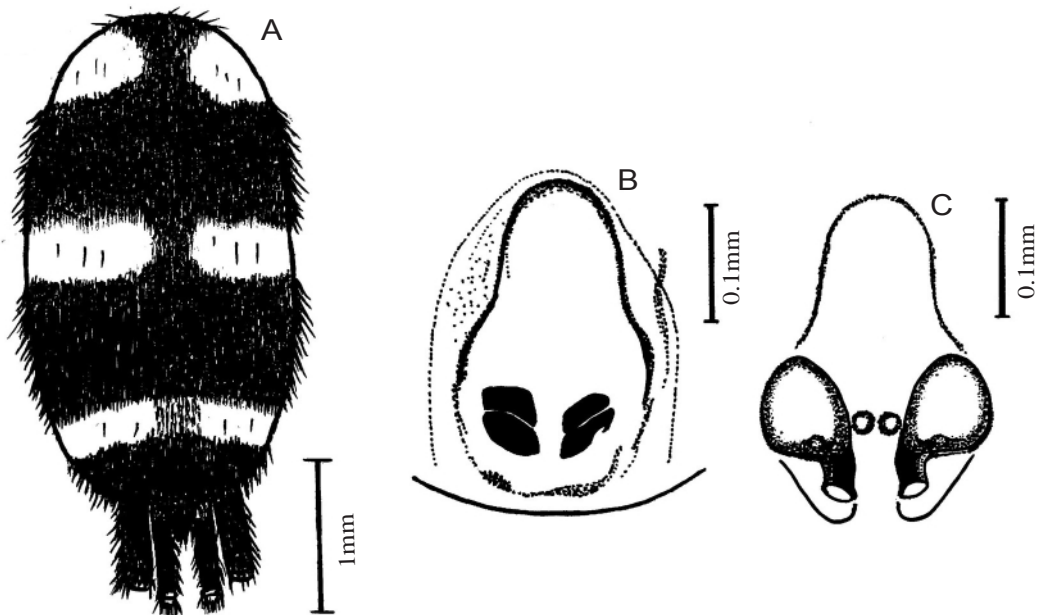


Fig. 2. Female genital organs of *Aphantaulax tainanica* sp. nov. (NMNS-4668-003, holotype): A, dorsal view of opisthosoma; B, ventral view of epigynum; C, dorsal view of vulva.

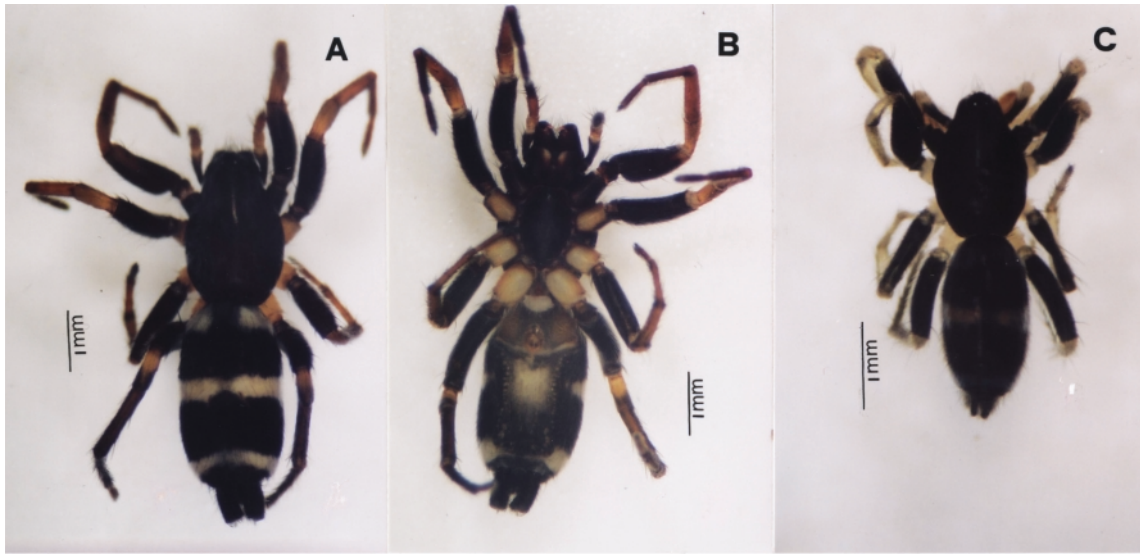


Fig. 3. External features of *Aphantaulax tainanica* sp. nov. A, dorsal view of female (NMNS-4185-001, paratype); B, ventral view of the same female; C, dorsal view of male (NMNS-4185-002, paratype).

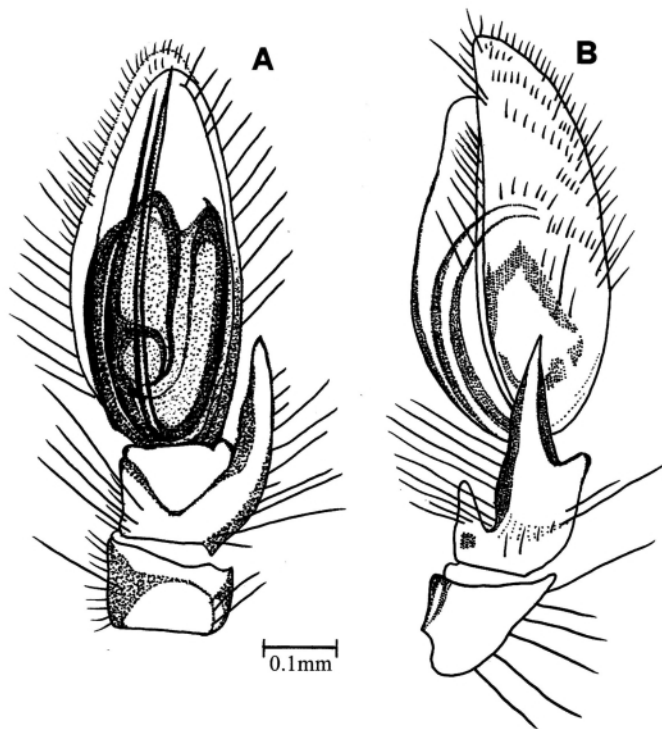


Fig. 4. Ventral view (A) and retrolateral view (B) of male palp of *Aphantaulax tainanica* sp. nov. (NMNS-4185-002, paratype).

Table 1. Chelicera brown in color; a denticle on retromargin; a wide saw-tooth on promargin (Fig. 1B). Carapace, chelicerae and sternum dark chestnut brown in color. Dorsal opisthosomal pattern is shown in Fig. 2A, abdomen black, dorsum with three broad transverse white bands of which anterior one is separated in the middle by a black bar, ventral side of abdomen black with a middle white transverse band, and a white spot on either side of black spinnerets. Color of legs: coxa I dark, coxae II-IV yellowish white, femur dark brown, patella and tibia III-IV dark brown, tarsus and metatarsus IV dark brown, other parts of legs pale brown. Epigynum (Fig. 2B) ovoid in shape, longer than width, with a brown rim anteriorly, and a pair of black spots behind with a cleft in the middle. Vulva with heavily sclerotized copulatory ducts and globular spermathecae (Fig. 2C).

Female paratype (NMNS-4185-001) (Figs. 3A, B) is larger in size than holotype. It has 6.6 mm in body length; carapace 2.6 mm in length and 1.7 mm in width; abdomen 3.2 mm in length and 1.8 mm in width. Ventrum of abdomen with lighter spots arranged in a U-shape over the three-fourths of abdomen length. Measurements of legs are shown in Table 1.

Male paratype (NMNS-4185-002) (Fig. 3C): Body 3.8 mm in length. Carapace 1.5 mm in length and 0.85 mm in width. Abdomen 1.9 mm in length and 1.0 mm in width. Opisthosoma black with three heavily constricted white bands on dorsum, of which the middle band is cleaner than others, as the bands are covered with black skin under white hairs and others stripes running sideward (Fig. 3C). Measurements of legs are shown in Table 1. Color of legs: coxa I dark, femur I-IV dark brown, rest of legs pale

yellowish white. Palpus: distal tip of embous black, reaching to the top of cymbium, tibial apophysis light yellow, awl-shaped and gradually tapering to tip (Figs. 4A, B).

Remarks:

Aphantaulax tainanica has awl-shaped tibial apophysis that differs from that with a small needle-tip or hook-tip of *A. australis*, *A. cincta*, *A. ensifera* and *A. trifasciata* (Simon 1893, 1907; Levy 2002; Song *et al.* 2004). Its light yellow tibial apophysis (retrolateral view) differs from dark tibial apophysis of *A. univittatus*, *A. seminigra*, *A. inornata* and *A. stationis* (Thorell 1897; Tucker 1923; Kamura 2000). *A. tainanica* is easily distinguishable from *A. signicollis*, *A. stationis* and *A. voiensis* by the shape of epigynum (Tucker 1923: figs. 51, 52A; Berland 1920: fig. 124). Although the epigynum of sub-adult *A. tainanica* is similar to that of *A. fasciata* (Deeleman-Reinhold 2001: fig. 877; Kulczyński 1911: fig. 27), globular shaped spermathecae of the former (Fig. 2C) is different from that of the latter. In other words, globular spermathecae in female and awl-shaped tibial apophysis in male are the characters of *A. tainanica* distinguishable from those of the other members of the genus *Aphantaulax*. The specific name is derived from the type locality, Tainan City, Taiwan.

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Table 1. Measurements (mm) of legs of *Aphantaulax tainanica*

	Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Female (holotype) (NMNS-4668-003)	I	1.10	0.65	0.95	0.60	0.50	3.80
	II	1.00	0.55	0.80	0.65	0.65	3.65
	II	1.00	0.50	0.70	0.70	0.55	3.45
	IV	1.40	0.70	0.95	1.10	0.55	4.70
Female (paratype) (NMNS-4185-001)	I	1.20	0.72	1.12	0.80	0.66	4.50
	II	1.20	0.60	1.12	0.88	0.68	4.48
	II	1.24	0.60	1.00	0.94	0.68	4.46
	IV	1.60	0.86	1.00	1.40	0.64	5.50
Male (paratype) (NMNS-4185-002)	I	0.90	0.42	0.60	0.54	0.44	2.90
	II	0.64	0.38	0.60	0.48	0.44	2.54
	III	0.80	0.36	0.50	0.60	0.48	2.74
	IV	1.10	0.32	0.76	0.58	0.36	3.12

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