

## Five New and Four Newly Recorded Species of Jumping Spiders from Taiwan (Araneae: Salticidae)

Xian-Jin Peng<sup>1</sup>, I-Min Tso<sup>2,3</sup> and Shu-Qiang Li<sup>1,\*</sup>

<sup>1</sup>Institute of Zoology, Chinese Academy of Sciences, Beijing 100080

<sup>2</sup>Department of Biology, Tunghai University, Taichung, Taiwan 407

<sup>3</sup>Division of Zoology, National Museum of Natural Science, Taichung 404

(Accepted May 21, 2001)

**Xian-Jin Peng, I-Min Tso and Shu-Qiang Li (2002)** Five new and four newly recorded species of jumping spiders from Taiwan (Araneae: Salticidae). *Zoological Studies* 41(1): 1-12. The present paper deals with 9 species of jumping spiders collected from various areas of Taiwan. Among them, five species are new to science: *Sitticus wuae* sp. nov., *Synagelides palpaloides* sp. nov., *Wanlessia denticulata* sp. nov., *Yaginumaella lobata* sp. nov., and *Zebraplatys bulbus* sp. nov. The other 4 species are new record species to Taiwan: *Siler cupreus* Simon, 1899, *Synagelides palpalis* Zabka, 1985, *Harmochirus branchiatus* Thorell, 1877, and *Ptocasius strupifer* Simon, 1901. Except for *Sitticus*, all genera are reported from Taiwan for the first time. Detailed morphological characteristics are given. The current documented number of Taiwanese salticid diversity is increased to 18 genera and 27 species. <http://www.sinica.edu.tw/zool/zoolstud/41.1/1.pdf>

**Key words:** *Sitticus*, *Synagelides*, *Wanlessia*, *Yaginumaella*, *Zebraplatys*.

Jumping spiders of the family Salticidae are the most diverse taxon in the Araneae. Currently, a total of 510 genera and 4600 species of salticids are documented, which represents about 13% of global Araneae diversity (Platnick 1998). Jumping spiders are small, diurnal predators which catch their prey mainly by stalking (Foelix 1996). The carapace is nearly square, and the legs are stout. One unique feature is their headlight like highly developed anterior median eyes, which enable jumping spiders to form relatively sharp images from arachnid simple eyes. Because of their peculiar eye structure and complex vision-associated behaviors, salticids have received considerable study in fields ranging from visual physiology to behavior (see reviews in Richman and Jackson 1992, Foelix 1996, Jackson and Pollard 1996, Cushing 1997).

Although salticids are the most diverse member of Araneae, in Taiwan only 18 species were reported, and most of these were published in the

19th century (Chen 1996). While weaving spiders such as Araneidae, Tetragnathidae, and Theridiidae were relatively well studied during these decades, the documented salticid diversity has been nearly static since the early 20th century. This situation may have resulted from the fact that (1) compared with weavers, jumping spiders are webless arboreal hunters, and thus are relatively more difficult to find, and (2) while there are many experts on the aforementioned weaver species in East Asia, salticid taxonomists are rare in this region. In fact, these 2 factors are also responsible for the low presentation of specious cursorial spiders such as lycosids, gnaphosids, and heteropodids in the known Taiwanese fauna.

In this paper, we report on partial results of a taxonomic study which attempted to reveal the highly diverse jumping spider fauna of Taiwan and its coastal islands. Based upon specimens collected from western and eastern parts of Taiwan and Orchid Island, a total of 5 new species and 4

\* To whom correspondence and reprint requests should be addressed. Fax: 86-10-62561874. E-mail: Lisq@panda.ioz.ac.cn

new record species were found. All except 1 species belong to genera previously unrecorded in Taiwan. The external morphology and genital structures are described. The supplemented taxa described in the present paper have increased jumping spider diversity in Taiwan from 10 genera and 18 species to 18 genera and 27 species.

In this paper, all measurements are in millimeters. Scale bars equal 1 mm for all figures of body in dorsal view and to 0.1 mm for figures of genital structures. Leg measurements are shown as: total length (length of femur, length of patella and tibia, length of metatarsus, length of tarsus). The type specimens used in this study are deposited at the National Museum of Natural Science, Taichung, Taiwan (NMNS-THU-Ar-). Paratypes of *Yaginumaella lobata* are deposited at the Museum of Comparative Zoology, Harvard Univ., USA. Abbreviations used in this paper are: AER, anterior eye row; ALE, anterior lateral eye; AME, anterior median eye; EFL, length of eye field; PER, posterior eye row; PLE, posterior lateral eye.

### SPECIES ACCOUNT

#### *Siler cupreus* Simon, 1899

(Figs. 1, 2, 3, 4)

*Siler cupreus* Simon, 1899: 250; Proszynski, 1985: 70, figs. 1-11; Peng et al., 1993: 211, figs. 739-744.

*Marpissa vitta* Bosenberg and Strand, 1906: 346.

*Sillerella vitta* Yin and Wang, 1979: 35, fig. 24; Feng, 1990: 215, fig. 190.

**Male:** Total length 3.90-5.50. Carapace dark brown, with bluish-white hairs. Live specimens have metallic luster. Margin of carapace black, covered with light grayish blue hairs. Lateral longitudinal bands dark brown; length of ocular area about 1/2 length of carapace. Chelicera with 2 promarginal teeth, retromarginal fissidendati with 2 cusps. Leg I big and strong, grayish brown, blackish-blue hairs covering dorsal and ventral sides of both patella and tibia. Abdomen with strong metallic luster, two transverse blue bands with metallic luster on median and posterior parts of abdomen (Fig. 1). Palpal organ (Figs. 2-4): embolus short, bulb with a posterior lobe, tibial apophysis stout, long and sinuous.

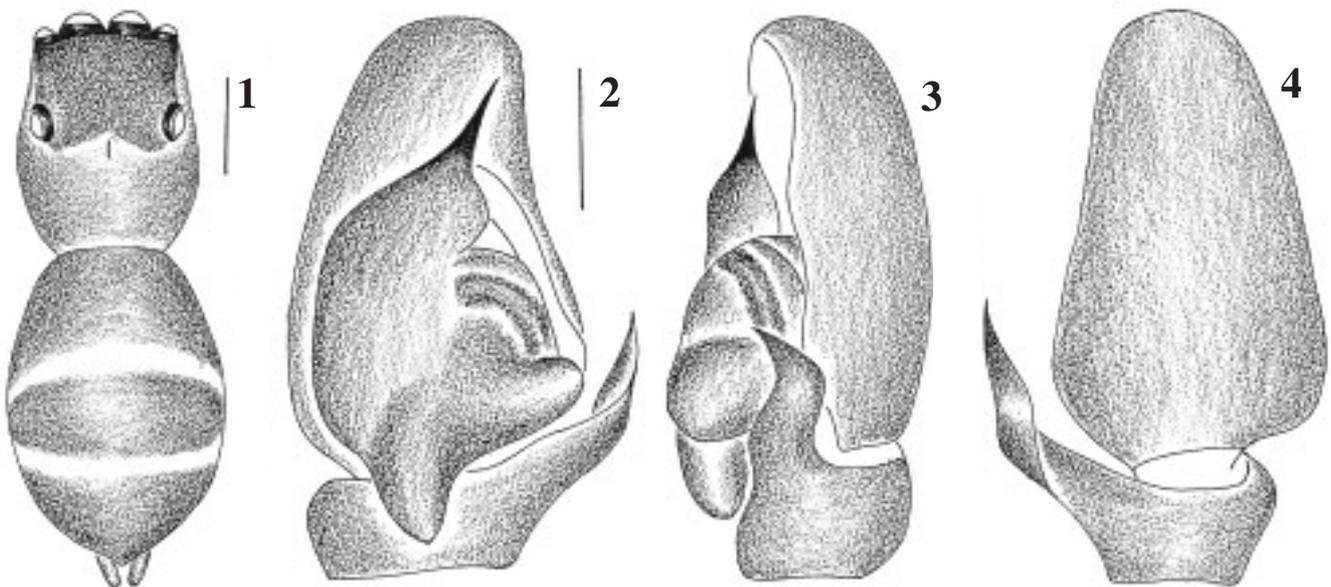
**Specimens examined:** 1 ♂, Tungher, Hualian Co., Taiwan, 14 Feb. 1998, Coll. Yu-Chen Shih (NMNS-THU-Ar-00-0011). 1 ♂, Orchid I., Taitung Co., 15 Feb. 1998, Coll. I-Min Tso (NMNS-THU-Ar-00-0012). 1 ♂, Orchid I., Taitung Co., Taiwan, 15 Feb. 1998, Coll. I-Min Tso (NMNS-THU-Ar-00-0013).

**Distribution:** Japan, China.

#### *Sitticus wuae* sp. nov.

(Figs. 5, 6, 7, 8)

**Male:** Total length 6.50. Carapace length 2.50, width 2.00. Abdomen length 4.00, width



**Figs. 1-4.** *Siler cupreus* Simon, 1899: 1. Body of male. 2. Palpal organ, ventral. 3. Ditto, retrolateral view. 4. Ditto, dorsal view.

3.40. AER 1.90, PER 1.80, AME 0.55, PLE 0.40, ALE 0.40. Height of clypeus 0.10. Legs: I 4.60 (1.50, 1.80, 0.70, 0.60); II 4.40 (1.50, 1.60, 0.80, 0.50); III 5.10 (1.60, 1.80, 1.10, 0.60); IV 5.70 (1.60, 2.00, 1.20, 0.90); formula 4,3,1,2.

Carapace (Fig. 5) black; sides and area behind fovea light colored; densely covered with short, white and long, brown hairs. Fovea longitudinal, black, short-bar-shaped; cervical and radial grooves indistinct. Sternum cordiform, brown with grayish median area; marginal darker; hairs long and sparse. Clypeus dark brown with sparse white or brown hairs, height shorter than 1/2 of radius of AME. Chelicerae dark brown, two pro-marginal teeth, retromarginal fissidendati with 6 cusps (Fig. 8). Legs black brown; coxa, trochanter, and patella light colored; each segment with distal and basal annuli. Spines long and robust, tibiae I and II with 3 pairs of ventral spines, metatarsi I and II with 2 pairs. Abdomen (Fig. 5) widely oval. Dorsum dark gray, with light-colored marks and 3 pairs of muscular depressions. Cardiac pattern spear shaped. A large light-colored mark with scattered dark patches behind 3rd muscular depression and a pair of lightly colored small circles near end. Ventral side of abdomen: median area light yellow, with scattered blackish-gray patches. A large gray mark near end; lateral area blackish gray. Spinnerets blackish brown, posterior spinneret light colored. Epigynum (Fig. 7): atrium large, separated by long, narrow septum; internal structure can be seen through trans-

parent wall. Vulva (Fig. 6): spermathecae long and bending to an arc shape, with a short branch at which fertilization duct is situated; accessory gland on terminal end of spermathecae small.

*Type specimen*: Holotype: ♀, Hui-Sun Experimental Forest Station, Nantou Co., Taiwan, Apr. 1998, Coll. Hai-Yin Wu (NMNS-THU-Ar-00-0037).

*Distribution*: Taiwan.

*Diagnosis*: The new species differs from any other known congeneric species in the structure of the epigynum and vulva. It is similar to *S. penicillatus* (Simon, 1875) (Proszynski, 1973: 78, figs. 14-16), but can be distinguished from the latter by: 1. epigynum weakly sclerotized and transparent; vulva visible through wall in the new species, but invisible or seldom visible in *S. penicillatus*; 2. spermathecae longer and thinner, bent to an arc shape in the new species, but flask shaped in *S. penicillatus*; 3. copulatory canal much shorter than that of *S. penicillatus*; 4. abdominal patterns quite different between the 2 species.

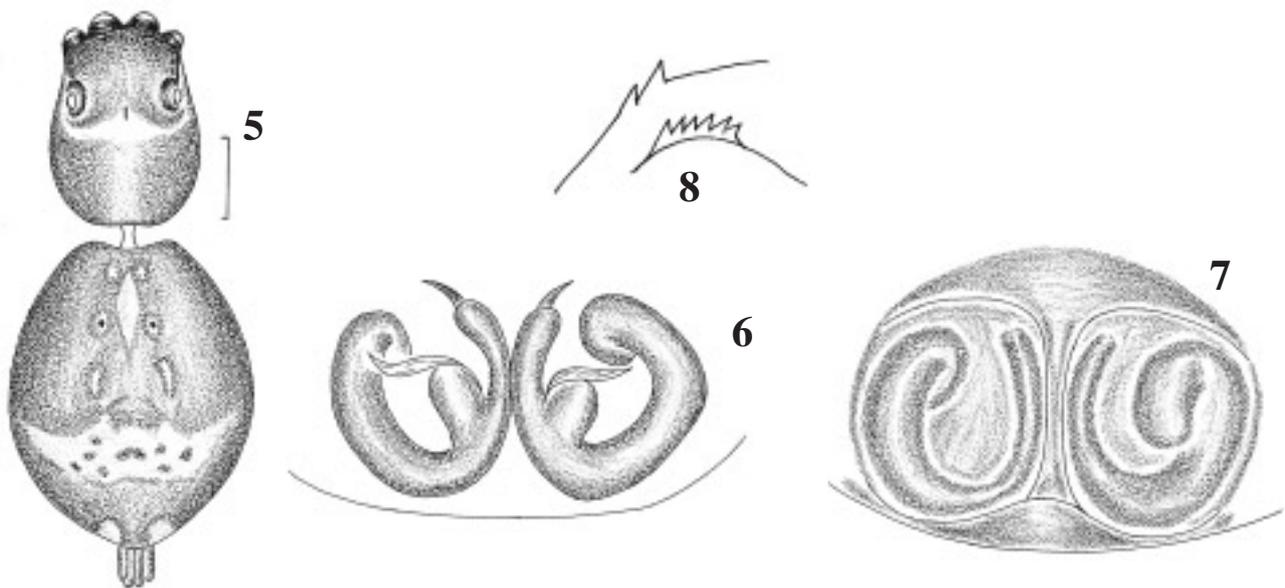
*Etymology*: The specific name is a patronym in honor of the collector Hai-Yin Wu.

#### ***Synagelides palpalis* Zabka, 1985**

(Figs. 9, 10, 11, 12)

*Synagelides palpalis* Zabka, 1985: 398, figs. 573-576.

*Male*: Total length 2.88-3.60. The specimen of 3.60 measured: carapace length 1.80, width 1.40. Abdomen length 1.80, width 1.20. AER



**Figs. 5-8.** *Sitticus wuae* sp. nov.: 5. Body of female. 6. Epigynum. 7. Vulva. 8. Teeth on chelicera.

1.30, PER 1.40, EFL 1.10, AME 0.49, ALE 0.25, PLE 0.25. Clypeus height 0.01. Legs: I 4.00 (1.20, 2.10, 0.30, 0.40); II 2.50 (0.80, 1.00, 0.40, 0.30); III 2.80 (0.90, 1.00, 0.60, 0.30); IV 3.50 (1.00, 1.30, 0.80, 0.40); formula 1,4,3,2.

Carapace (Fig. 9) brown; base of each eye, carapace margin and anterior part of ocular area black; hairs sparse, white or brown; entire carapace covered with numerous small granules. Fovea forward-arc-shaped, dark brown, depression deep; cervical and radial grooves indistinct. Sternum shield shaped, brown with darker margin; hairs sparse and thin. Clypeus dark brown, very narrow, height shorter than 1/2 of radius of AME; hairs sparse and strong. Chelicera (Fig. 12) light brown, one promarginal tooth, two retromarginal teeth merged at base. Legs weak, brown with darker longitudinal bands on sides of each segment. Four pairs of long spines on ventral side of tibia I; metatarsus I with 2 prolateral strong spines longer than length of metatarsus I. The remaining segments of leg I, and legs II, III, and IV without spines. Abdomen cylindrical (Fig. 9). Dorsum: median area with dark brown longitudinal band separated by 2 transverse light-colored bands; posterior portion of band darker; sides with grayish-black bands. Ventral side light brown; a triangular grayish black mark on posterior end; lateral area grayish black. Spinnerets brown. Palpal organ (Figs. 10-11): embolus short and thin; tibial

apophysis long, thin and sinuous; cymbium with a small retrolateral outgrowth.

*Specimens examined*: 1 ♂, Hui-Sun Experimental Forest Station, Nantou Co., Taiwan, Dec. 1997, Coll. Hai-Yin Wu (NMNS-THU-Ar-00-0038); 1 ♂ Hui-Sun Experimental Forest Station, Nantou Co., Taiwan, July 1998, Coll. Sheng-Hai Wu (NMNS-THU-Ar-00-0040).

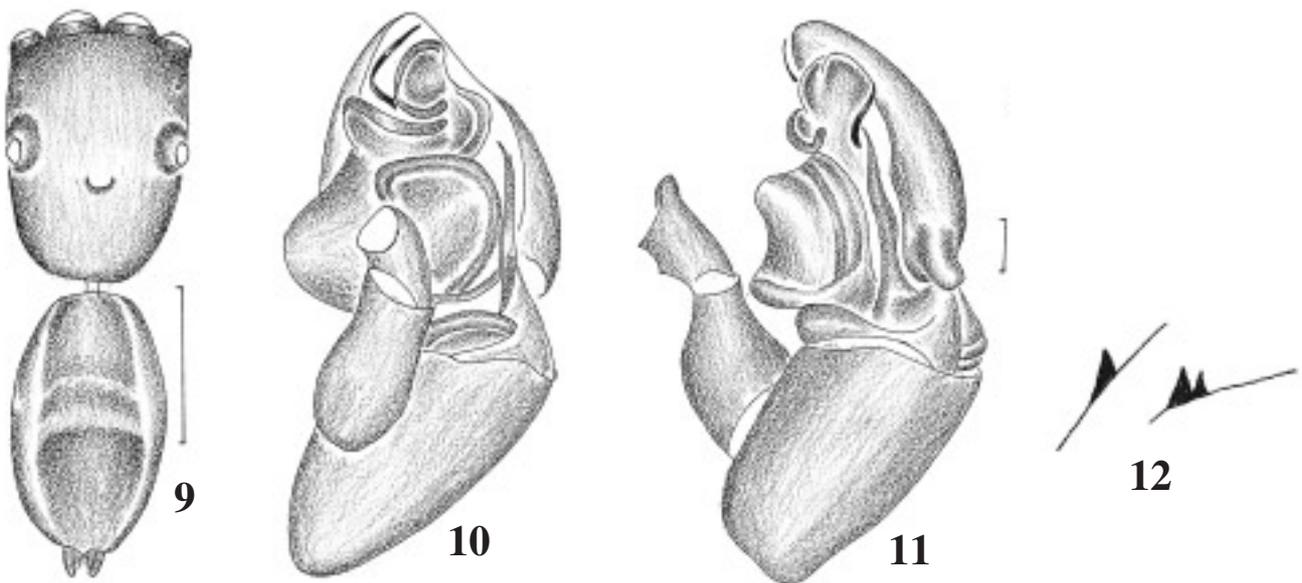
*Distribution*: Vietnam, China.

***Synagelides palpaloides* sp. nov.**

(Figs. 13, 14, 15, 16)

*Female*: Total length 3.90. Carapace length 1.70, width 1.20. Abdomen length 2.20, width 1.25. AER 1.30, PER 1.25, EFL 0.90, AME 0.40, ALE 0.25, PLE 0.25. Legs: I missing; II 2.35 (0.75, 0.80, 0.50, 0.30); III 2.50 (0.70, 0.80, 0.70, 0.30); IV 3.70 (1.00, 1.40, 0.90, 0.40). Clypeus height 0.05.

Carapace (Fig.13) brown; margin, base of each eye and anterior part of ocular area black; hairs sparse, white or brown; carapace densely covered with small granules; fovea dark brown, depression deep. Sternum oval, slightly wider anteriorly; hairs sparse; brown with darker margin. Clypeus black brown with sparse hairs; height of clypeus shorter than 1/2 of radius of AME. Chelicera brown; one promarginal tooth, retromarginal fissentanti with 3 cusps (Fig. 16). Palp and



**Figs. 9-12.** *Synagelides palpalis* Zabka, 1985: 9. Body of male. 10. Palpal organ, ventral. 11. Ditto, retrolateral. 12. Teeth on chelicera.

legs brown, lateral sides with black longitudinal bands; hairs sparse, but tarsus and metatarsus with denser hairs. Legs II, III, and IV without spines. Abdomen cylindrical (Fig. 13). Dorsum grayish black, darker posteriorly; three pairs of muscular depressions grayish white. Ventral side with 3 longitudinal black bands on median area, merging posteriorly; lateral area black. Spinneret brown. Epigynum (Fig. 14) wide and short, with a small hood on the top; atrium large with deep depression; two crescent marks and 2 narrow bands bending into semicircles. Vulva (Fig. 15): spermathecae small and angular; copulatory canal stout; connection between them not very clear.

*Type specimen*: Holotype: ♀, Hui-Sun Experimental Forest Station, Nantou Co., Taiwan, Apr. 1998, Coll. Hai-Yin Wu (NMNS-THU-Ar-00-0037).

*Distribution*: Taiwan.

*Diagnosis*: The new species is similar to *S. palpalis* Zabka, 1985 (Zabka, 1985: 399, figs. 578-580), but differs in: 1. epigynum much wider and shorter; epigynal hood much smaller; 2. vulva much wider; no accessory gland found in that of *S. palpalis*; 3. abdominal pattern quite different.

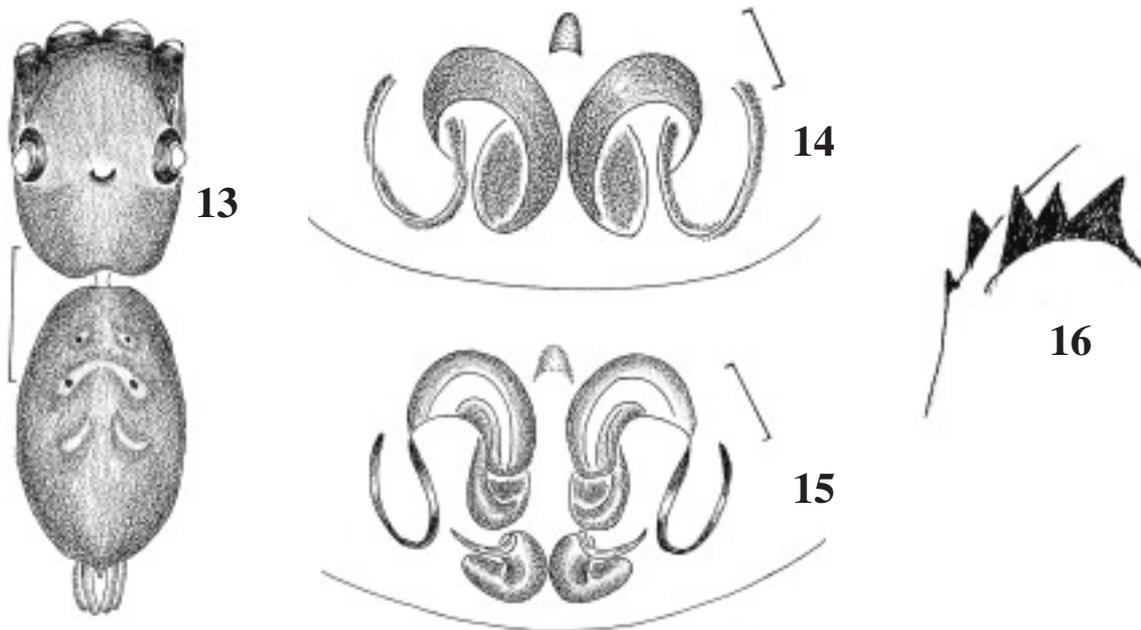
*Etymology*: The specific name refers to the similarity of the new species to *S. palpalis*.

***Wanlessia denticulata* sp. nov.**

(Figs. 17, 18, 19, 20)

*Male*: Total length 4.90-5.30. Holotype measurements: Carapace length 2.20, width 1.80. Abdomen length 2.70, width 1.40. AER 1.70, PER 1.60, EFL 1.10, AME 0.50, ALE 0.30, PLE 0.30. Height of clypeus 0.20. Legs: I 5.70 (1.50, 2.00, 1.30, 0.90); II 5.20 (1.50, 1.80, 1.00, 0.90); III 4.90 (1.50, 1.50, 1.00, 0.90), IV 7.10 (2.00, 2.40, 1.70, 1.00).

Carapace (Fig. 17) dark brown; base of each eye, and lateral and anterior sides of ocular area black; portion from median ocular area to posterior end of carapace colored light brown; lateral and anterior sides of ocular area covered with sparse white or brown long hairs; fovea longitudinal, dark brown, short; anterior end connecting with a transverse light-colored line; behind it with 2 dark brown longitudinal bands; cervical groove not visible; radial grooves not very clear but visible. Sternum oval, bulged medially; yellowish brown with darker margin; hairs brown and dense. Clypeus blackish brown, its height longer than 1/2 of radius of AME; anterior margin with a row of long brown hairs. Chelicera brown, with grayish black longitudinal bands; four larger promarginal teeth, ten smaller retromarginal ones (Fig. 20). Legs brown, no distinct annulus, spines strong; spination of leg I: femur d1-1-4, p0-0-0, r0-0-0; patella p0-1-0, r0-1-0; tibia d1-1-0, r1-1-0, p0-1-1, v2-2-2; metatarsus p0-1-1, r0-0-1, v2-2-2. Abdomen cylindrical. Dorsum (Fig. 17) grayish black with 2 pairs of



**Figs. 13-16.** *Synagelides palpaloides* sp. nov.: 13. Body of female. 14. Epigynum. 15. Vulva. 16. Teeth on chelicera.

muscular depressions; a large light-colored mark with 3 dark gray patches on posterior 1/3 of abdomen. Ventral side light yellow on median area, without distinct mark; lateral sides grayish black. Spinnerets grayish black. Palpal organ (Figs. 18-19): 3 tibial apophyses, ventral one (Fig. 19) smallest; median-retrolateral one (Figs. 18-19) biggest and twisted; distal-retrolateral one conic with pointed end (Fig. 18).

*Type specimens:* Holotype: ♂, Hui-Sun Experimental Forest Station, Nantou Co., Taiwan, June 1998, Coll. Hai-Yin Wu (NMNS-THU-Ar-00-0046); 1 ♂, Hui-Sun Experimental Forest Station, Nantou Co., Taiwan, Apr. 1998, Coll. Hai-Yin Wu (NMNS-THU-Ar-00-0036). Paratype: 1 ♂, Hui-Sun Experimental Forest Station, Nantou Co., Taiwan, Apr. 1998, Coll. Sheng-Hai Wu (NMNS-THU-Ar-00-0035).

*Distribution:* Taiwan.

*Diagnosis:* The new species resembles *W. sedgwicki* Wijesinghe, 1992 (Wijesinghe 1992: 14, figs. 5-7), but differs in: 1. the form of tibial apophyses, especially the median retrolateral apophysis; 2. conductor much more developed; 3. embolus much less developed, its origin not very clear; embolus of *W. sedgwicki* very long and originating at the position of 7 o'clock; 4. cheliceral teeth quite different: 4 promarginal and 10 retromarginal teeth in the new species, but only 3 pro-

marginal and 6 retromarginal in *W. sedgwicki*; 5. abdominal pattern also quite different.

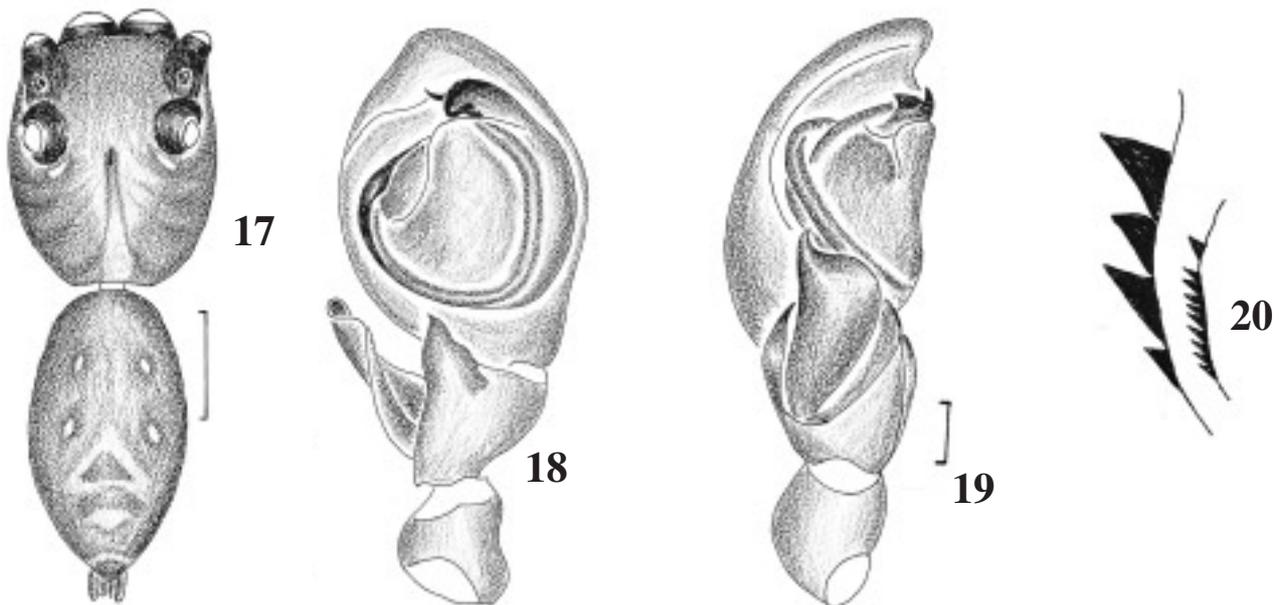
*Etymology:* The specific name is derived from status of the teeth on the chelicera.

***Yaginumaella lobata* sp. nov.**

(Figs. 21, 22, 23, 24, 25)

*Male:* Total length 6.50-8.00. Holotype measurements: Carapace length 3.00, width 2.50. Abdomen length 3.50, width 2.20. AER 2.40, PER 2.20, EFL 1.50. Legs: I 9.10 (3.10, 3.40, 1.60, 1.00); II 6.80 (2.10, 2.50, 1.20, 1.00); III 7.40 (2.40, 2.50, 1.50, 1.00); IV 7.80 (2.40, 2.50, 1.80, 1.10); formula 1,4,3,2.

Carapace (Fig. 21) light brown with black margin; cephalic region bulged, thoracic region sloping abruptly; lateral and anterior sides of ocular area black with long white hairs; fovea longitudinal; four pairs of radial grooves dark brown; lateral areas of carapace with longitudinal bands formed by white hairs. Sternum oval with sparse brown hairs, brown with light-colored median area. Clypeus brown, height about 1/2 of the radius of AME. Area between 2 AMEs densely covered with long white hairs. Chelicera reddish brown, two promarginal teeth, one retromarginal one (Fig. 25). Endites and labium reddish brown, distal areas light-colored with dense white hairs. Palp



**Figs. 17-20.** *Wanlessia denticulata* sp. nov.: 17. Body of male. 18. Palpal organ, ventral. 19. Ditto, retrolateral. 20. Teeth on chelicera.

and legs light brown with darker brown annuli or longitudinal lines. Leg I longest, each segment covered with brush like hairs on ventral side except tarsus. Tibia I with 3 pairs of long spines on ventral side, metatarsus I with 2 pairs. Legs II, III, and IV also covered with long spines and hairs, but hairs not brush like. Abdomen (Fig. 21) elongated oval. Dorsum: grayish black with 2 pairs of reddish-brown muscular depressions; cardiac pattern bar shaped; behind it are 5 to 6 light-colored arc-shaped lines; each lateral side with a light-colored longitudinal band. Ventral side dark gray, lateral area with many inclined lines formed by small dots. Spinnerets grayish brown. Palpal organ (Figs. 22-24): Embolus stout, originating at a position of 11 o'clock (Fig. 22), with a light incision on dorsal (Figs. 22-23); bulb with a distinct posterior lobe (Fig. 22); tibial apophysis sinus with tipped end.

*Type specimens*: Holotype: ♂, Hui-Sun Experimental Forest Station, Nantou Co., Taiwan, Dec. 1997, Coll. Hai-Yin Wu (NMNS-THU-Ar-00-0019). Paratype: 1 ♂, Hong San, Jiangxi, 27 June 1963, Coll. L Gresset, MCZ-Peng-1.

*Diagnosis*: The new species resembles *Y. urbanii* Zabka, 1981 (Zabka, 1981: 21, figs. 31-34), but can be distinguished by: 1. embolus shorter with a distinct incision, which is absent from that of *Y. urbanii*, on anterior 1/3; 2. embolus originat-

ing at a position of 11 o'clock in the new species but at 9 o'clock in *Y. urbanii*; 3. bulb with a long distinct lobe but absent from *Y. urbanii*; 4. tibial apophysis distinctly sinuous in the new species, but not sinuous in *Y. urbanii*; 5. new species much bigger than *Y. urbanii*, with total lengths of 8.00 and 5.00 mm, respectively.

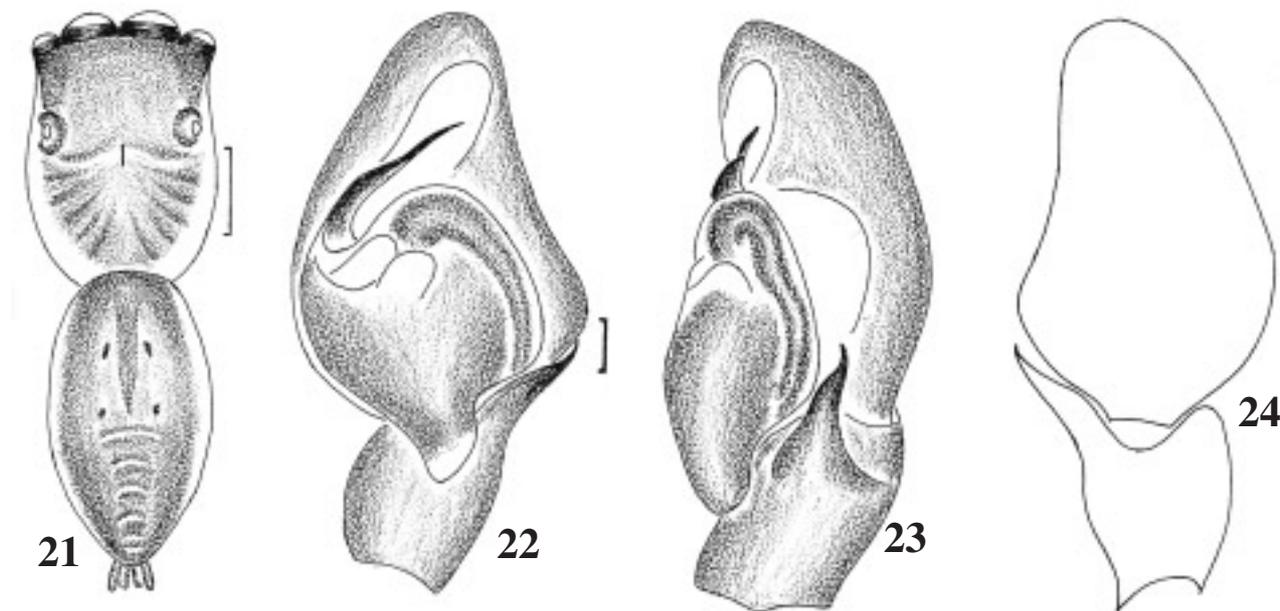
*Etymology*: The specific name is derived from the bulbous lobe of the palpal organ.

***Zebraplatys bulbus* sp. nov.**

(Figs. 26, 27, 28, 29)

*Female*: Total length 12.10. Carapace length 5.30, width 2.00. Abdomen length 6.80, width 1.70. AER 1.90, PER 2.10, EFL 1.30. Legs: I 5.85 (1.85, 2.40, 0.90, 0.70); II 4.40 (1.50, 1.60, 0.90, 0.40); III 4.80 (1.50, 1.60, 1.10, 0.60); IV 6.20 (1.60, 2.40, 1.60, 0.60); formula 4,1,3,2.

Body very flat. Carapace (Fig. 26) dark to blackish brown; margin of carapace and base of each eye black; covered with white or black hairs; fovea short; radial grooves visible but not very



**Figs. 21-25.** *Yaginumaella lobata* sp. nov.: 21. Body of male. 22. Palpal organ, ventral. 23. Ditto, retrolateral. 24. Ditto, dorsal. 25. Teeth on chelicera.

clear. Sternum oval with thin white hairs; grayish black with light brown margin. Clypeus very narrow, light brown, with long white hairs; two long brown setae on area in front of 2 AMEs. Chelicera brown, two promarginal teeth, the basal one bigger; one large retromarginal (Fig. 29). Endites and labium much longer than wide, grayish brown, distal area light-colored with dense hairs. Legs light brown, with gray annuli or longitudinal bands. Tibiae I and II with 7 pairs of long ventral spines, metatarsi I and II with 4 pairs; legs III and IV with sparse and weak spines. Abdomen (Fig. 26) cylindrical. Dorsum densely covered with black hairs; anterior and lateral margins light yellowish brown; median area with large shiny marks: the anterior 2 marks smaller and white; the 3rd and 4th ones yellowish brown; the 5th and 6th ones white; end of abdomen light gray. Ventral side light yellow, each side with a longitudinal band covered with black hairs. Spinnerets grayish black, encircled by grayish black mark. Epigynum (Fig. 27) with large atrium. Vulva (Fig. 28) with spherical spermathecae, copulatory canal short.

*Type specimen:* Holotype: ♀, Nankang, Taipei City, Taiwan, 25 July 1997 (NMNS-THU-Ar-000017), Coll. I. M. Tso.

*Distribution:* Taiwan.

*Diagnosis:* The new species differs from any

other known congeneric species by the large atrium, spherical spermathecae, and short copulatory canals. The genus *Zebraplatys* was established by Zabka in 1992 based on materials from Australia. Only 4 species were described in his paper. The new species described here is the 5th member of the genus.

*Etymology:* The specific name is derived from the spherical spermatheca of the vulva.

***Harmochirus brachiatus* (Thorell, 1877)**

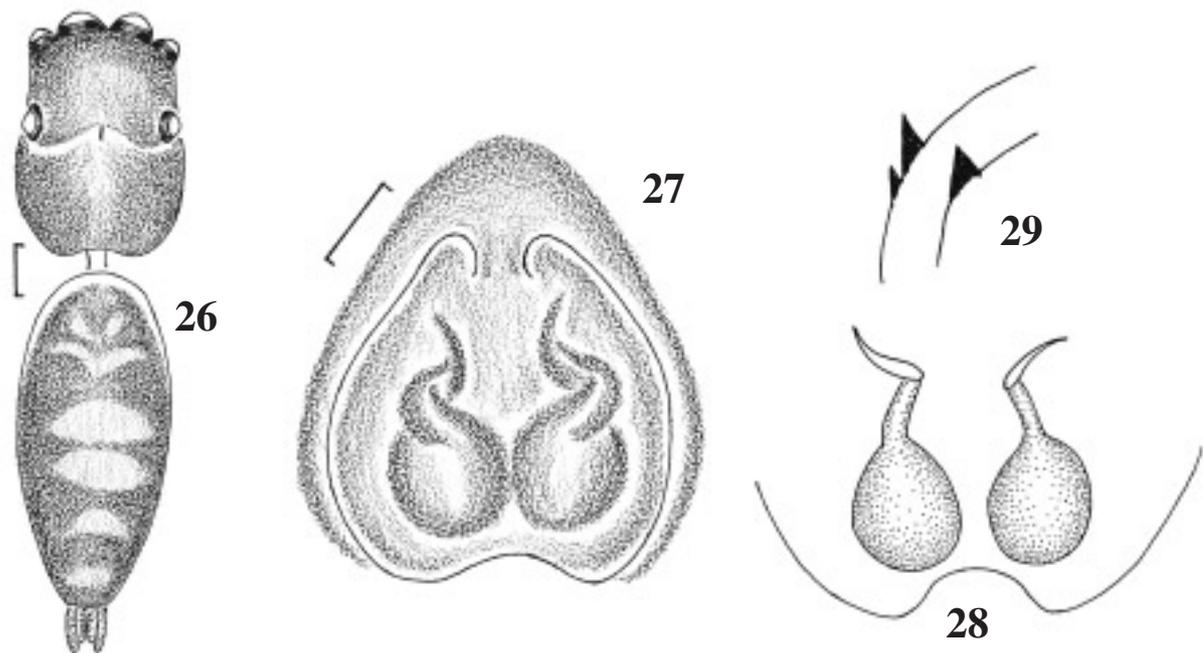
(Figs. 30, 31, 32, 33, 34, 35)

*Ballus brachiatus* Thorell, 1877 Ann. Mus. Star. Nat. Genova 10: 626.

*Harmochirus brachiatus:* Yin and Wang, 1979: 30, fig. 7; Zabka, 1985: 205-206, figs. 35-38; Feng 1990: 205, fig. 180; Peng et al., 1993: 79, figs. 229-241.

*Male:* Total length 2.30-2.70. The specimen of 3.50 measured: Carapace length 1.80, width 1.71. Abdomen length 1.70, width 1.72. AER 1.30, PER 1.51, EFL 1.30.

Carapace (Fig. 30) reddish to blackish brown; base of each eye black; lateral margins of thoracic region covered with dense white hairs. Sternum blackish brown. Chelicera reddish brown; two promarginal teeth; retromarginal fissentati with 2 cusps (Fig. 34). Endites yellowish brown with par-



**Figs. 26-29.** *Zebraplatys bulbus* sp. nov.: 26. Body of female. 27. Epigynum. 28. Vulva. 29. Teeth on chelicera.

allel sides. Labium blackish brown. Leg I biggest, with big flat feather-shaped hairs arranged regularly on ventral sides of femur, patella, and both ventral and dorsal sides of tibia (Fig. 35). Tibia I with 3 pairs of ventral spines, metatarsus with 2 pairs. Legs II-IV yellow with black annuli. Palp yellow. Abdomen (Fig. 30) widely oval. Dorsum dark brown with sparse shiny hairs on anterior portion; each anterior lateral side with a longitudinal crescentic white line usually not visible in dorsal view; median lateral area also with 2 semicircular white marks connected with anterior lateral side one;

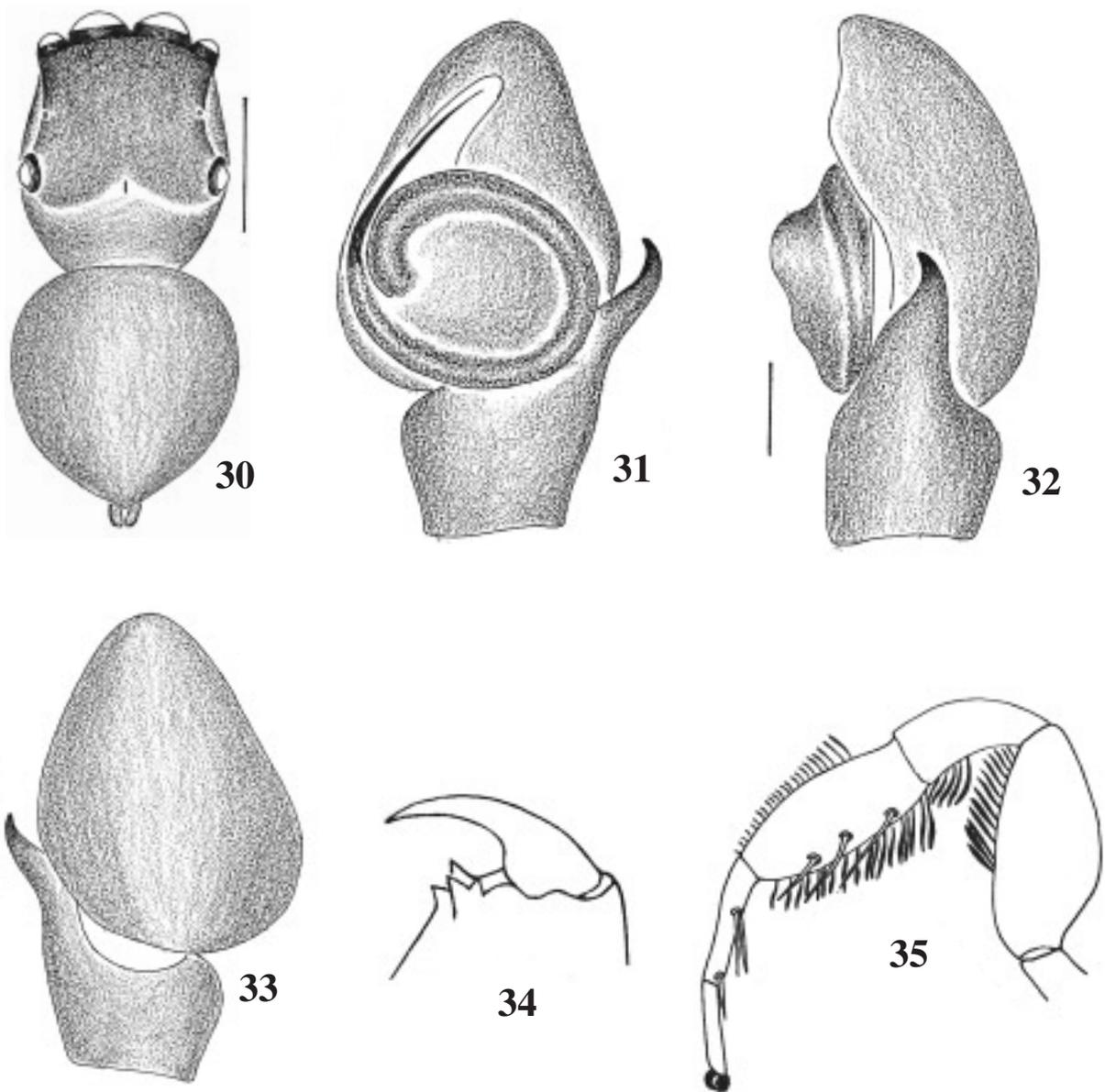
posterior portion with a transverse white band. Palpal organ very simple, embolus long and encircling bulb; tibial apophysis stout, long and slightly bent.

*Specimen examined:* 1 ♂, Taipei City, Taiwan, 31 Mar. 1998, Coll. Shu-Jun Chen (NMNS-THU-Ar-00-0018).

*Distribution:* Japan, India, Vietnam, Australia, China.

***Ptocasius strupifer* Simon, 1901**

(Figs. 36, 37, 38, 39, 40, 41, 42)



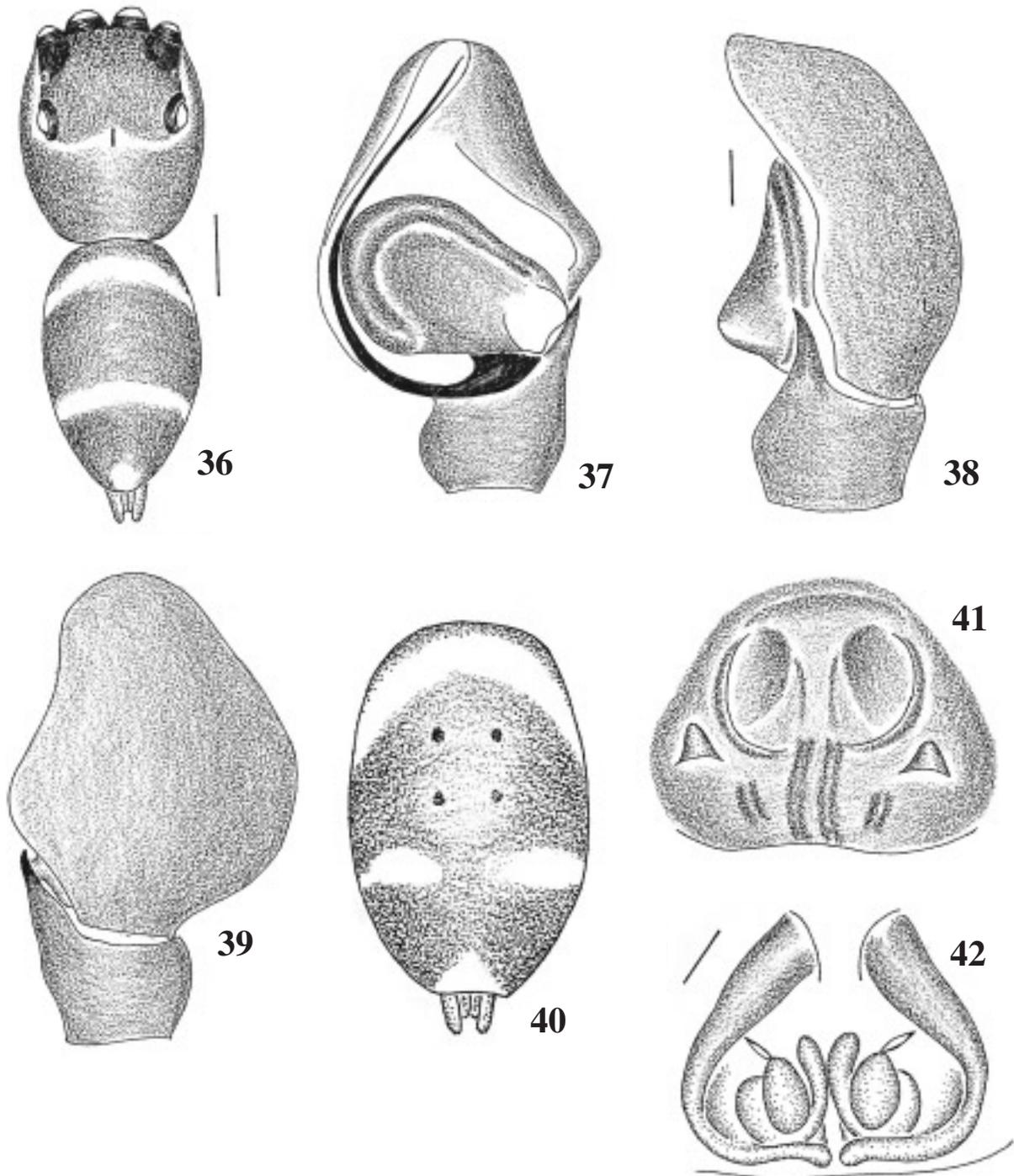
**Figs. 30-35.** *Harmochirus brachiatus* (Thorell, 1877): 30. Body of male. 31. Male palpal organ, ventral. 32. Ditto, retrolateral. 33. Ditto, dorsal. 34. Teeth of chelicera. 35. Leg I.

*Ptocasius strupifer*. Simon, 1901 Ann. Soc. Entomol. Fr. 70: 65; Zabka, 1985: 441, figs. 517-529; Peng et al., 1993: 196, figs. 688-694.

*Male*: Total length 6.10. Carapace length

2.90, width 2.50. Abdomen length 3.20, width 2.01. AER 1.90, PER 1.95, EFL 1.30.

Carapace (Fig. 36) greatly bulged; dark brown; base of each eye except AME black; lateral



**Figs. 36-42.** *Ptocasius strupifer* Simon, 1901: 36. Body of male. 37. Palpal organ, ventral. 38. Ditto, retrolateral. 39. Ditto, dorsal. 40. Female abdomen. 41. Epigynum. 42. Vulva (after Peng et al. 1993).

area and area around fovea covered with white hairs. Sternum brown. Chelicera reddish brown, two promarginal and 1 retromarginal teeth. Endites and labium reddish brown. Legs with brown coxae and trochanters. Legs I and II dark brown; legs III and IV with dark brown femora, yellowish brown tibiae and patellae, and orange metatarsi and tarsi. Abdominal dorsum (Fig. 36) grayish brown with 2 yellowish brown transverse bands and a white circular mark covered with white hairs near end. Entire body covered with dense white or light brown hairs. Ventral side brown; lateral with many lines of light-colored dots. Spinnerets brown. Embolus of palpal organ long and originating at base of bulb (Fig. 37).

*Female*: Total length 5.45. Carapace length 2.65, width 2.20. Abdomen length 2.90, width 1.89. AER 1.75, PER 1.80, EFL 1.23.

Female resembles male in body form and patterns. Coxae and trochanters brown; femora dark brown; remaining segments of legs yellowish brown. Legs with dense grayish-brown hairs and spines. Abdomen elongated oval (Fig. 40). Dorsum grayish brown with 2 white transverse bands and a white circular mark. Ventral side grayish yellow, median area with 3 brown longitudinal bands; lateral areas with dark brown lines. Spinnerets yellowish brown. Epigynum (Fig. 41) with 2 bell-shaped hoods. Copulatory opening large with large depressions. Vulva (Fig. 42) with long copulatory canals twisted and looped.

*Specimens examined*: 1 ♂, Nankang, Taipei City, Taiwan, 25 July 1997, Coll. I-Min Tso (NMNS-THU-Ar-00-0016); 1 ♀, Jiaoshi, Ilan Co., Taiwan, 4 Apr. 1998, Coll. Shuan-Chen Wu (NMNS-THU-Ar-00-0020).

*Distribution*: Vietnam, China.

**Acknowledgments**: We would like to express our sincere appreciation to Dr. Hai-Yin Wu of the Dept. of Natural Resource Management, Tung-Hua Univ. and Dr. Sheng-Hai Wu of Dept. of Zoology, National Chung-Hsing Univ. for providing pitfall

specimens. We are also indebted to Mr. Yu-Chen Shih, Sheng-Chen Wu, and Ms. Shu-Jun Chen for collecting salticid specimens. This study was supported by a National Science Council, Taiwan grant (NSC-89-2621-Z-029-006) to IMT and the President Foundation and Grant for Systematic and Evolutionary Biology (STZ-00-19), Chinese Academy of Science to SQL.

## REFERENCES

- Chen SH. 1996. A checklist of spiders in Taiwan. *Ann. Taiwan. Mus.* **39**: 123-156.
- Cushing PE. 1997. Myrmecomorphy and myrmecophily in spiders: a review. *Fla. Entomol.* **80**: 165-193.
- Feng ZQ. 1990. Spiders of China in color. Changsha, Hunan: Hunan Technological and Scientific Press. 215 pp.
- Foelix RF. 1996. *Biology of spiders*, 2nd ed. New York: Oxford Thieme. 330 pp.
- Jackson RR, SD Pollard. 1996. Predatory behavior of jumping spiders. *Ann. Rev. Entomol.* **41**: 287-308.
- Peng XJ, LP Xie, XQ Xiao. 1993. Salticids in China. Changsha, Hunan: Hunan Normal Univ. Press. 270 pp.
- Platnick NI. 1998. *Advances in spider taxonomy 1992-1995, with redescrptions 1940-1980*. New York: Entomol. Soc. Am. Mus. Nat. Hist. 976 pp.
- Proszynski J. 1973. Revision of the spider genus *Sitticus* Simon, 1901 (Aranei, Salticidae) III. *Sitticus penicillatus* (Simon, 1875) and related forms. *Ann. Zool.* **30**: 71-95.
- Proszynski J. 1985. On *Siler*, *Silerella*, *Cyllobelus* and *Natta* (Araneae, Salticidae). *Ann. Zool.* **25**: 213-223.
- Richman DB, RR Jackson. 1992. A review of ethology of jumping spiders. *Bull. Br. Arachnol. Soc.* **9**: 33-37.
- Wijesinghe DP. 1992. A new genus of jumping spider from Borneo with notes on the Spartaeine palp (Araneae: Salticidae). *Raffles B. Zool.* **40**: 9-19.
- Yin CM, JF Wang. 1979. A classification of jumping spiders collected from the agricultural field and other habitats. *J. Hunan Teacher's Coll. (Nat. Sci. Ed.)* **1**: 1-37.
- Zabka M. 1981. New species of *Yaginumaella* Proszynski, 1976 and *Helicius* Proszynski, 1976 (Araneae: Salticidae) from Bhutan and Burma. *Entomol. Basil.* **6**: 5-41.
- Zabka M. 1985. Systematic and zoogeographic study on the family Salticidae (Araneae) from Vietnam. *Ann. Zool.* **39**: 197-485.
- Zabka M. 1992. Salticidae (Arachnida: Araneae) of Oriental, Australian and Pacific Regions, VIII. A new genus from Australia. *Rec. West. Aust. Mus.* **15**: 673-684.

## 臺灣蠅虎五新種及四新記錄種之描述（蜘蛛目：蠅虎科）

彭賢錦<sup>1</sup> 卓逸民<sup>2,3</sup> 李樞強<sup>1</sup>

本文記述了九種臺灣蠅虎。其中有五個新種，即：吳氏褐蠅虎 (*Sitticus wuae* sp. nov.)，類觸合蠅虎 (*Synagelides palpaloides* sp. nov.)，齒沃蛛 (*Wanlessia denticulata* sp. nov.)；垂雅蛛 (*Yaginumaella lobata* sp. nov.) 和球斑馬蛛 (*Zebraplatys bulbus* sp. nov.)。四個新記錄種，為：藍翠蛛 *Siler cupreus* Simon, 1899；觸合蠅虎 *Synagelides palpalis* Zabka, 1985；鰓蛤蟆蛛 *Harmochirus branchiatus* Thorell, 1877 及毛塚兜蠅虎 *Ptocasius strupifer* Simon, 1901。除 *Sitticus* 外，其餘各屬皆為首次於臺灣發現。本文描述上述各種蠅虎之外形及生殖器結構特徵。這些新種及新記錄種之發現使臺灣蠅虎之種數增加為 18 屬 27 種。

**關鍵詞：**褐蠅虎，合蠅虎，沃蛛，斑馬蛛，雅蛛。

<sup>1</sup>中國科學院動物研究所

<sup>2</sup>東海大學生物系

<sup>3</sup>國立自然科學博物館