

## Two Newly Recorded Spiders of the Genera *Tetragnatha* and *Leucauge* (Araneae: Tetragnathidae) in Taiwan

Shyh-Hwang Chen

Department of Biology, National Taiwan Normal University  
Taipei, Taiwan 117, Republic of China

### ABSTRACT

Both sexes of *Leucauge termisticta* Song and Zhu, 1992 and females of *Tetragnatha caudicula* (Karsch, 1879) are recorded from Taiwan for the first time. *Leucauge termisticta* is commonly distributed in the southern part of Taiwan, and *Tetragnatha caudicula* is only distributed in northern Taiwan. Both species are redescribed in the present paper.

**Key Words:** *Tetragnatha*, *Leucauge*, Araneae, new record, Taiwan

### Introduction

Spiders of the genera *Tetragnatha* and *Leucauge* are very common in Taiwan which frequently appeared in the paddy fields considered to be a useful tool in pest control (Chu and Okuma, 1970). Up to the present, 269 species of spiders were recorded in Taiwan including 4 species of *Leucauge* and 13 species of *Tetragnatha* (Chen, 1996). The preliminary studies on *Leucauge* and *Tetragnatha* were listed in Chu and Okuma (1975) and Chen (1996). However, *Leucauge termisticta* Song and Zhu, 1992, a common spider widely distributed in the southern part of Taiwan, and *Tetragnatha caudicula* (Karsch, 1879), a rare spider found in Tanshui, Taipei Hsien, were recently identified (Fig. 1). Both species are new records to the spider fauna of Taiwan which will be described in this paper.

### Materials and Methods

Specimens were examined and measured under a Leica Wild M3Z stereomicroscope. Measurements were made to the nearest 0.01 mm. Female epigynum was removed and pre-cleaned with 10% KOH to examine the inner structures. All figures were drawn by using a drawing tube. Specimens examined in the present paper are preserved in 70% ethanol and deposited in the Arachnological collection of the Department of Biology,

National Taiwan Normal University (NTNUB-Ar). The terminology for the teeth on the cheliceral margins of female *Tetragnatha* follows Okuma (1988: figures 3G,H). Abbreviations used in the present paper are defined as: 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

#### Systematic account

##### *Leucauge termisticta* Song and Zhu, 1992 (Figs. 1, 2A - E)

*Leucauge termisticta* Song and Zhu, 1992, Sinozoologia: 113.

**Specimens examined: KAOHSIUNG:** 3 females & 4 males (NTNUB-Ar 1594 - 1600), Shanping, Maolin, 7-9-VII-1986; 1 female (NTNUB-Ar 1601), Shanping, Maolin, 28-I-1989; 1 female (NTNUB-Ar 1602), Shanping, Maolin, 17-IV-1983; 1 subadult female (NTNUB-Ar 1593), Liukuci, 6-VII-1986. **PINGTUNG:** 4 female (NTNUB-Ar 1570 - 1573), Chichiatsun, Chunjih, 9-X-1993; 1 female & 1 male (NTNUB-Ar 1604 - 1605), Laiyi, 2-II-1994; 1 male (NTNUB-Ar 1606), 6 Km E Kulou, Laiyi, 12-III-1993; 1 female

\* Corresponding author: Shyh-Hwang Chen, FAX: 886-2-9312904; E-mail: biofv023@sc.ntnu.edu.tw

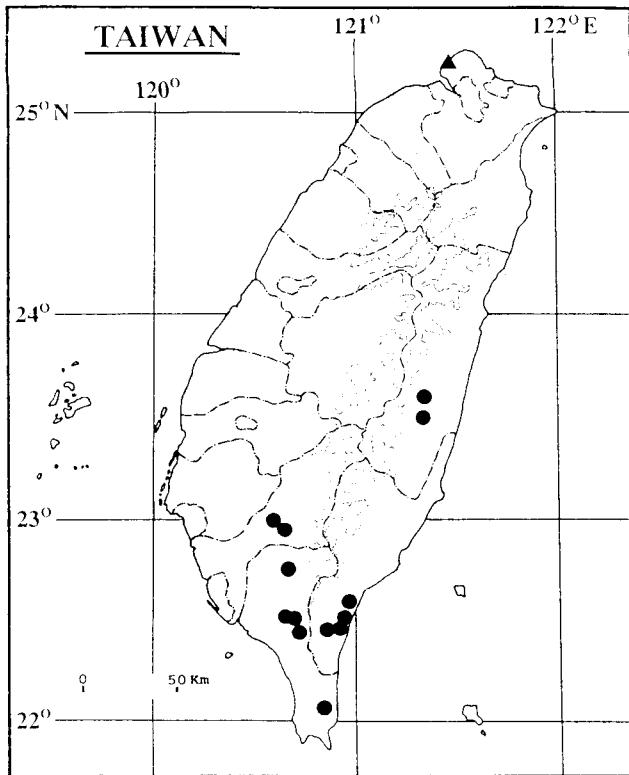


Figure 1. Distribution of *Leucauge termisticta* (circles) and *Tetragnatha caudicula* (triangle) in Taiwan.

(NTNUB-Ar 1607), Nanjenshan, Manchou, 14-IX-1984; 1 female (NTNUB-Ar 1608), Liangshan, Santi, 1-XI-1993. **TAITUNG:** 7 females & 3 males (NTNUB-Ar 1574 - 1583), Lichiu, Chinfeng, 31-X-1993; 3 subadult females (NTNUB-Ar 1609 - 1611), Chialan, Chinfeng, 3-I-1994; 3 females & 1 male (NTNUB-Ar 1584 - 1587), 2 Km W Tachu, Tawu, 4-II-1994; 1 female (NTNUB-Ar 1588), Nankeng, Taimali, 30-X-1993; 2 females & 1 male (NTNUB-Ar 1589 - 1590, 1631), Mt. Chinlun, Taimali, 31-X-1993. **HUALIEN:** 2 females (NTNUB-Ar 1591 - 1592), Hungyeh-Wenchuan, Wanjung, 3-VII-1988; 1 female (NTNUB-Ar 1603), Fuyuan, Juisui, 4-VII-1988. All specimens were collected by the author.

**Description:** Measurements. Five females and four males from Lichiu, Chinlun and Taimali, Taitung Hsien were measured. Measurements (in mm) given for females are followed by those of males (mean  $\pm$  SD in parentheses): Body length 8.58 - 9.71 (9.15  $\pm$  0.45), 5.19 - 6.91 (6.02  $\pm$  0.68); carapace length 3.08 - 3.53 (3.32  $\pm$  0.15), 2.04 - 3.03 (2.50  $\pm$  0.44); carapace width 2.48 - 2.77 (2.67  $\pm$  0.10), 1.72 - 2.25 (2.01  $\pm$  0.21); abdomen length 5.74 - 6.68 (6.28  $\pm$  0.36), 3.22 -

4.14 (3.73  $\pm$  0.34); abdomen width 2.74 - 3.45 (3.21  $\pm$  0.26), 1.61 - 2.08 (1.81  $\pm$  0.17). Measurement of legs as shown in Table 1.

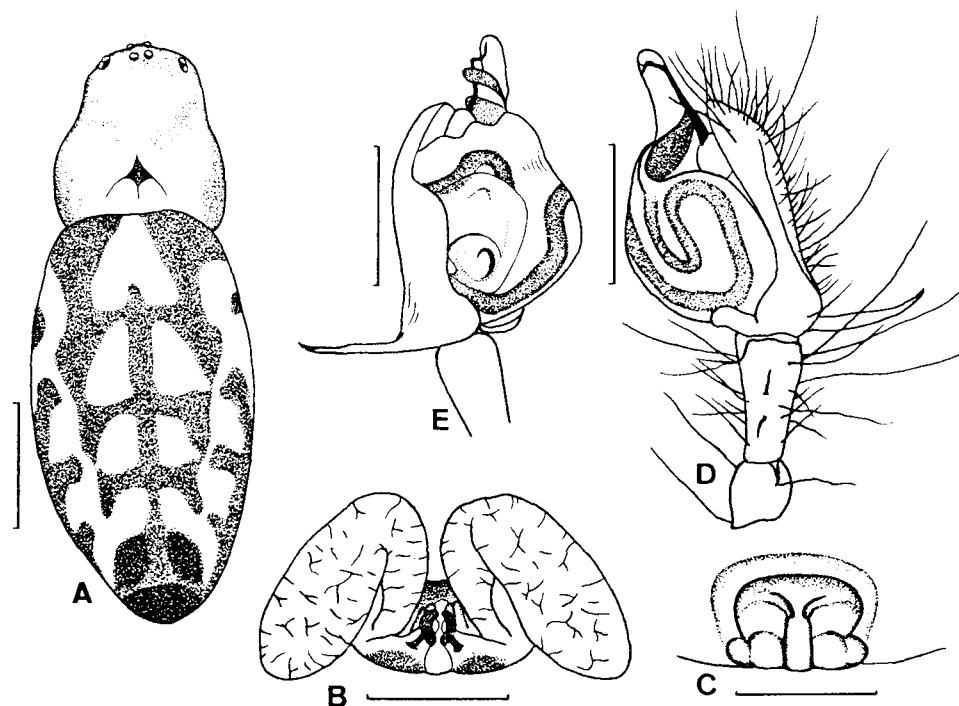
Female (Fig. 2A). Carapace orange brown, with dark brown margin and ocular area, longer than broad; fovea triangular in shape; cervical groove distinct. AER strongly recurved (viewed from above), PER slightly recurved. ALE in contact with PLE. Diameters of eyes in ratio, AME : ALE : PME : PLE = 1 : 1.2 : 1.2 : 1. MOA slightly longer than broad (1.07 : 1), posterior margin slightly longer than posterior (1.05 : 1). Clypeus as long as the diameter of AME. Chelicerae brown, robust; fang dark brown, tip reddish brown, inner margins serrated; promargin of the fang groove armed with 3 teeth and retromargin with 4 teeth. Endites brown, divergent, longer than broad, widened at distal end. Labrium brown, broader than long; anterior margin convex, with 4 black bristles. Sternum orange brown, heart-shaped, with a narrow dark brown border. A black claw at the tip of palpus. Legs orange brown, with black bends on whole segment of patella and on the distal ends of the rest segments; order of leg length 1 > 2 > 4 > 3. Except for the proximal end, the whole segment of tibia densely covered with black long bristles like a test tube brush.

Abdomen (Fig. 2A) longer than broad and widest in the middle. Dorsum silver in color, with 3 longitudinal and 3 - 4 transverse black stripes, sometimes covering yellow pigments on the dorsolateral areas; on the end of abdomen having three remarkable black spots, but these spots usually enlarged and united each other to form a large speck. Flanks silver, with 4 - 5 oblique black stripes. Venter brown, with a pair of silver or greenish silver stripes between epigastric furrow and spinnerets. Epigynum as shown in Figs. 2B-C.

Male. Smaller than female in body size. Eye arrangement similar to female. Legs proportionally longer than those of females; tube brush-like bristles on Tibia IV weak; order of length, 1 > 2 > 4 > 3. Palpus longer than carapace; palpal tarsus (Figs. 2D-E) strongly enlarged, oval in shape, 1.42 times as long as palpal patella and tibia together; cymbium bearing a long spine. Coloration of male yellowish brown to orange; dorsum of abdomen without any longitudinal or transverse black stripes, but having a pair of silver stripes on both sides instead. Three remarkable black spots on the posterior end of dorsum usually separated. The venter of abdomen having a pair of silver stripes as does in female.

**Distribution:** Taiwan and China (Hainan).

**Remarks:** *Leucauge termisticta* is very common in the



**Figure 2.** *Leucauge termisticta* Song and Zhu, 1992. A. Female, dorsal view; B. Female genitalia, dorsal view; C. Epigynum, ventral view; D. Left male palp, ventrolateral view; E. Same, dorsal view. (A, scale = 2 mm; B-E, scale = 0.5 mm.)

**Table 1.** Measurement of leg segments of *Leucauge termisticta* Song and Zhu, 1992. (in mm: mean  $\pm$  SD.)

Leg	Femur	Patella+ Tibia	Metatarsus	Tarsus	Total
Female (n = 5)					
I	6.39 $\pm$ 0.42	7.25 $\pm$ 0.40	6.85 $\pm$ 0.49	1.67 $\pm$ 0.12	22.16 $\pm$ 1.40
II	5.21 $\pm$ 0.42	5.68 $\pm$ 0.36	5.36 $\pm$ 0.42	1.37 $\pm$ 0.09	17.62 $\pm$ 1.25
III	2.93 $\pm$ 0.31	2.62 $\pm$ 0.20	2.51 $\pm$ 0.24	0.99 $\pm$ 0.09	9.05 $\pm$ 0.75
IV	5.28 $\pm$ 0.32	5.04 $\pm$ 0.34	4.69 $\pm$ 0.35	1.15 $\pm$ 0.09	16.16 $\pm$ 1.07
Males (n = 4)					
I	7.32 $\pm$ 0.74	8.83 $\pm$ 0.83	9.23 $\pm$ 1.14	1.88 $\pm$ 0.17	27.26 $\pm$ 2.85
II	5.92 $\pm$ 0.65	6.67 $\pm$ 0.78	6.65 $\pm$ 0.89	1.52 $\pm$ 0.14	20.76 $\pm$ 2.44
III	2.96 $\pm$ 0.34	2.49 $\pm$ 0.35	2.49 $\pm$ 0.39	0.94 $\pm$ 0.06	8.88 $\pm$ 1.13
IV	4.89 $\pm$ 0.55	4.30 $\pm$ 0.50	4.69 $\pm$ 0.70	1.12 $\pm$ 0.10	15.00 $\pm$ 1.84

southern part of Taiwan which distributed sympatrically with *L. magnifica*, *L. decorata*, and *L. blanda*. Although the author unable to examine the type specimen, the structures of female epigynum and male palpal organ, the tube brush-like Tibia IV, and three remarkable black spots on the abdomen of Taiwanese materials are so unique which well matched the original description of *Leucauge termisticta* Song and Zhu, 1992 in Hainan, China that can not be confused with any other congeners in Taiwan.

***Tetragnatha caudicula* (Karsch, 1879)**  
(Figs. 1, 3A-F)

*Eugnatha caudicula* Karsch, 1879, Verh. Nat. Ver. Rheinl. Westf., 36: 66; Simon, 1881, Arachn. de France, 5(1): 7.

*Tetragnatha caudicula*: Boesenberg und Strand, 1906, Abh. Senckenbg. Ges., 30(1-2): 179; Paik, 1957, Korean J. Biol., 2: 43; Yaginuma, 1960, Spiders of Japan in Colour: 74; Hu, 1984, The Chinese Spiders Collected from the Fields and the Forests: 140; Yaginuma, 1986, Spiders of Japan in Color: 131; Okuma, 1988, J. Fac. Agr., Kyushu Univ., 32 (3.4): 167.

**Specimens examined: TAIPEI:** 3 females (NTNUB-Ar 1566 - 1568), paddy fields, Kungputze, 7 Km N Tanshui, 18-VIII-1988, S.-H. CHEN leg.

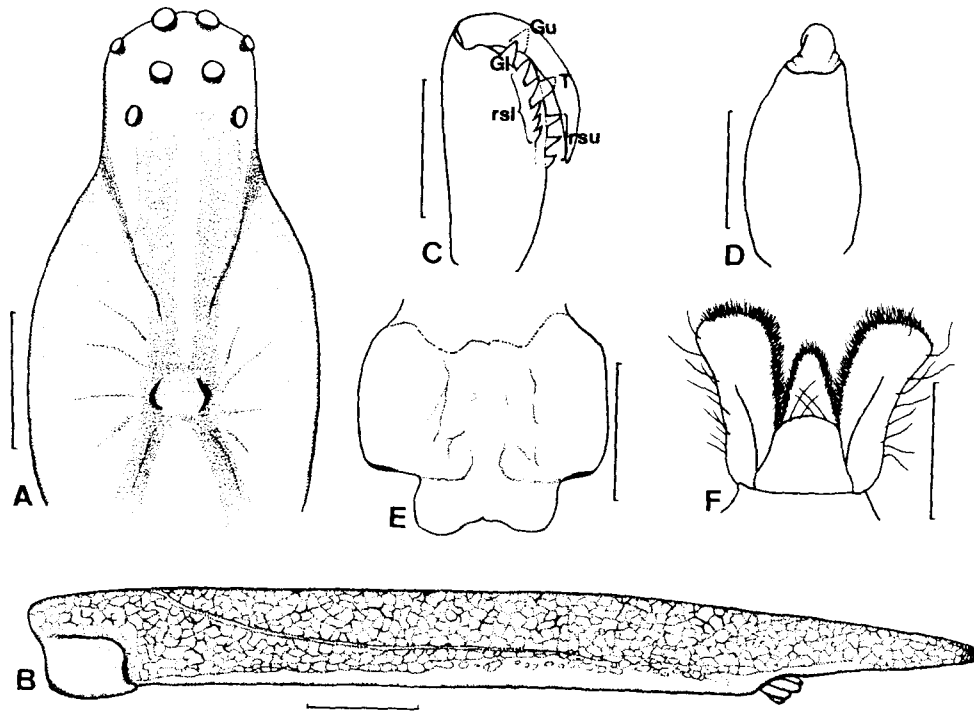


Figure 3. *Tetragnatha caudicula* (Karsch, 1879). A. Carapace of female, dorsal view; B. Abdomen of female, lateral view; C. Right chelicera of female, ventral view; D. Same, lateral view; E. Epigynum, ventral view; F. Endites and labrium, ventral view. (B. scale = 2 mm; A, C-F, scale = 0.5 mm.)

Table 2. Measurement of leg segments of *Tetragnatha caudicula* (Karsch, 1879). (in mm; mean  $\pm$  SD.)

Leg	Femur	Patella+ Tibia	Metatarsus	Tarsus	Total
Females (n = 3)					
I	5.45 $\pm$ 0.43	6.37 $\pm$ 0.46	5.70 $\pm$ 0.34	1.18 $\pm$ 0.09	18.70 $\pm$ 1.30
II	3.40 $\pm$ 0.27	3.37 $\pm$ 0.19	2.92 $\pm$ 0.12	0.75 $\pm$ 0.07	10.44 $\pm$ 0.64
III	1.72 $\pm$ 0.09	1.30 $\pm$ 0.05	1.21 $\pm$ 0.08	0.49 $\pm$ 0.04	4.72 $\pm$ 0.20
IV	4.24 $\pm$ 0.34	3.93 $\pm$ 0.25	3.08 $\pm$ 0.06	0.70 $\pm$ 0.03	11.95 $\pm$ 0.68

**Description:** Measurements. Three females from Kungputze, Taipei were measured (in mm; mean  $\pm$  SD in parentheses): Body length 9.32 - 11.25 (10.19  $\pm$  0.80); carapace length 1.89 - 2.36 (2.09  $\pm$  0.20); carapace width 0.98 - 1.12 (1.05  $\pm$  0.06); abdomen length 7.43 - 8.89 (8.10  $\pm$  0.60); abdomen width 0.85 - 1.08 (0.97  $\pm$  0.09); tail length (length between base of posterior spinnerets and tip of abdomen) 1.29 - 1.64 (1.43  $\pm$  0.15). Measurement of legs as shown in Table 2.

Female. Carapace (Fig. 3A) yellowish brown with two longitudinal brown stripes in the center, rectangular in shape but much compressed in head region, longer than broad; foryca two semicircular depressions; cervical grooves distinct. AER procurved (viewed from anterior) or slightly recurved (viewed from above); PER

strongly recurved (viewed from above); AER slightly longer than PER. Diameters of eyes in ratio, AME : ALE : PME : PLE = 1.4 : 1 : 1.3 : 1. MOA as long as broad, posterior margin slightly longer than the anterior (1.05 : 1). Chelicerae (Figs. 3C-D) yellowish brown, basal segment 0.4 times as long as carapace; fang dark brown, base without EX; promargin of the chelicerae armed with 5 teeth: Gu and T present, rsu 3 in number, AXu and c absent; retromargin armed with 5 - 6 teeth: GI present, rsl 4 - 5 in number, AXI absent. Endites yellowish brown, oblong in shape. Labrium brown, broader than long, with 4 bristles on the anterior margin (Fig. 3F). Sternum brown, longer than broad, palpus yellow, with a black claw distally. Legs yellow, scattered with few greyish brown spots on femurs of Legs I and II; order of length I > 4 > 2 > 3.

Abdomen (Fig. 3B) silver or yellowish brown

silver, slender, incisive of the tail about 6.6 times as long as broad. Tail 0.18 times as long as abdomen. Epigynum as shown in Fig. 3E.

Male Unknown.

**Distribution:** Japan, Korea, Taiwan and China.

**Remarks:** *Tetragnatha caudicula* occurs in the paddy fields of northern Taiwan. It seems not very common in Taiwan because only three individuals had been found since 1988. The Taiwanese materials having a tail overhanging spinnerets, AER longer than PER, and lateral eyes more separated than median eyes are obviously belonging to the *caudicula* group. In this group, only *Tetragnatha caudicula* and *T. javana* had been recorded in Asia (Okuma, 1988). The spinnerets situated far beyond the middle of abdomen in Taiwanese materials is the same as in *Tetragnatha caudicula* which is obviously different from that of *T. javana*. Although the cheliceral teeth of female Taiwanese materials do not match completely with the descriptions of *Tetragnatha caudicula* from Japan and Korea, i.e. without AXu, AXl, e, and EX teeth in Taiwanese materials, no males and only few females allow me to compare that I would tentatively design Taiwanese materials as *T. caudicula* in the present paper. According to the distribution, *Tetragnatha caudicula* is restricted in the palaearctic region of the northeastern Asia. Taiwan is on the south bound of its distribution. In contrary, *Tetragnatha javana* is widely distributed in the tropical regions of Africa and Asia

including most provinces of mainland China, Japan (the Ryukyus) and Taiwan (Hu, 1984; Okuma, 1988; Chen, personal record).

## References

- Chen, S.-H. 1996. A checklist of spiders in Taiwan. *Ann. J. Taiwan Mus.* 39: (in press).
- Chu, Y.-I. and C. Okuma. 1970. Preliminary survey on the spider-fauna of the paddy fields in Taiwan. *Mushi* 44:29-49. (In Chinese.)
- Chu, Y.-I. and C. Okuma. 1975. A check list of spiders in Taiwan(II). *Ann. J. Taiwan Mus.* 18:101-119. (In Chinese.)
- Hu, J.-L. 1984. The Chinese Spiders Collected from the Fields and the Forests. Tianjin Press of Science and Techniques, Tianjin. (In Chinese.)
- Okuma, C. 1988. A revision of the genus *Tetragnatha* Latreille (Araneae, Tetragnathidae) of Asia. Part I. *J. Fac. Arg., Kyushu Univ.* 32: 165-181.
- Song, D. and M. Zhu. 1992. Notes on six species of the genus *Leucauge* (Araneae: Tetragnathidae) of China. *Sinozoologia* 9:111-117. (In Chinese.)
- Yaginuma, T. 1960. Spiders of Japan in Color. Hoikusha, Japan.
- Yaginuma, T. 1986. Spiders of Japan in Color, New Edition. Hoikusha, Japan.

(Accepted: 1996. 12. 27)

# 兩種臺灣產長腳蜘蛛屬和銀腹蜘蛛屬之新記錄 (蜘蛛目：長腳蜘蛛科)

陳世煌

國立臺灣師範大學生物學系

## 摘 要

本文首次記載臺灣產長腳蜘蛛科之兩種新記錄蜘蛛，分別為端斑銀腹蜘蛛 (*Leucauge termisticta* Song and Zhu, 1992) 和尖尾長腳蜘蛛 (*Tetragnatha caudicula*)(Karsch, 1879)。端斑銀腹蜘蛛廣泛分布於臺灣南部，為東洋區系的種類；而尖尾長腳蜘蛛僅出現在臺北淡水一帶，為古北區系的種類。二者均分別繪圖，並重新描述。

**關鍵詞：**新記錄、端斑銀腹蜘蛛、尖尾長腳蜘蛛、長腳蜘蛛科、蜘蛛目、臺灣