

Six newly recorded spiders of the genera *Araneus*, *Larinia*, *Eriophora*, *Thanatus*, *Portia* and *Dolichognatha* (Araneae: Araneidae, Philodromidae, Salticidae and Tetragnathidae) from Taiwan

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Abstract — Six new records of the spiders from Taiwan are reported, which are, *Araneus viridiventr* Yaginuma 1969, *Larinia fusiformis* (Thorell 1877), *Eriophora plumiopedella* (Yin, Wang & Zhang 1987) comb. nov. (Araneidae); *Thanatus miniaceus* Simon 1880 (Philodromidae); *Portia fimbriata* (Doleschall 1859) (Salticidae) and *Dolichognatha umbrophila* Tanikawa 1991 (Tetragnathidae). The genera *Portia*, *Thanatus* and *Dolichognatha* are reported from Taiwan for the first time.

Key words — *Araneae viridiventr*, *Larinia fusiformis*, *Eriophora plumiopedella*, *Thanatus miniaceus*, *Portia fimbriata*, *Dolichognatha umbrophila*.

Introduction

In this paper we describe and illustrate six newly recorded spiders collected from Yangmingshan National Park and various areas in Taiwan. Three species are members of the family Araneidae, which include, *Araneus viridiventr* Yaginuma 1969, *Larinia fusiformis* (Thorell 1877) and *Eriophora plumiopedella* (Yin, Wang & Zhang 1987) comb. nov. The other species are *Thanatus miniaceus* Simon 1880 (Philodromidae); *Portia fimbriata* (Doleschall 1859) (Salticidae) and *Dolichognatha umbrophila* Tanikawa 1991 (Tetragnathidae). Tanikawa (2000) transferred some Japanese *Zilla* species to *Eriophora* by the following characters: 1) male palp of *Eriophora* with a paramedian apophysis, but absent in *Zilla*, 2) male palp of *Zilla* with a subterminal apophysis, but absent in *Eriophora*. Judging from the figures of male palp made by Song et al. (1999), *Zilla plumipedella* have the same features with *Eriophora*, so we transfer the *Z. plumipedella* to the genus *Eriophora* in the present paper. The genera *Portia*, *Thanatus* and *Dolichognatha* are reported from Taiwan for the first time.

All the specimens used in this study are preserved in 75% ethanol and deposited in the National Museum of Natural Science, Taichung, Taiwan (NMNS). The abbreviations used in this paper are as follows: AME—anterior median eye; ALE—anterior lateral eye; PME—posterior median eye; PLE—posterior lateral eye; AME-AME—distance between AMEs; AME-ALE—distance between AME and

ALE; PME-PME—distance between PMEs; PME-PLE—distance between PME and PLE; ALE-ALE—distance between ALEs; PLE-PLE—distance between PLEs; MOA—median ocular area. Leg measurements are shown as total length (femur + patella + tibia + metatarsus + tarsus). All measurements are given in millimeters (mm).

Taxonomic accounts

Family Araneidae

Araneus viridiventr Yaginuma 1969
(Figs. 1–4)

Araneus viridiventr Yaginuma, in Ohno & Yaginuma 1969, p. 21, figs. 3 a–f; Yaginuma 1986, p. 101, pl. 24.4, fig. 54.1; Chikuni 1989, p. 69, fig. 24; Yin et al. 1990, p. 22, figs. 51–57; Kim, et al. 1995, p. 88, figs. 1–2; Yin et al. 1997, p. 142, figs. 57 a–h; Song, Zhu & Chen 1999, p. 242, figs. 141 J–K, N, 145 D, 149 M.

Specimens examined. 1♂ and 2♀, Shuanglienpi, Ilan County, Taiwan, 27-III-2002, Y.-H. Chang (NMNS-4211-001—NMNS-4211-003); 2♀, Fuyuan Forest Recreation Area, Hualien County, Taiwan, 28-III-2002, Y.-H. Chang (NMNS-4211-004—NMNS-4211-005).

Description [based on ♂ (NMNS-4211-001) / ♀ (NMNS-4211-003) from Ilan County]. Total length 3.60/5.80. Prosoma length 1.80/2.30, width 1.60/1.85. Chelicerae with 2/3 promarginal and 2/3 retromarginal teeth. Clypeus height 0.12/0.14. Eye diameters and interdistances: AME 0.12/0.14, ALE 0.09/0.10, PME 0.11/0.13, PLE 0.09/0.10; AME-AME 0.16/0.16, AME-ALE 0.16/0.22, PME-PME

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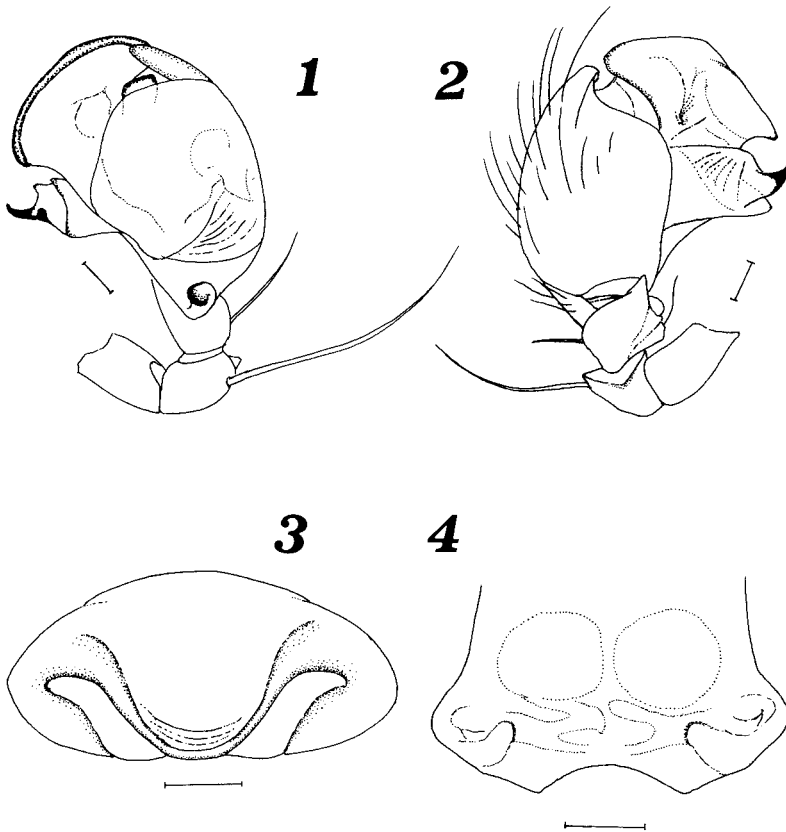


Fig. 1-4. *Araneus viridiventris* Yaginuma 1969: 1-2, ♂ from Shuangliempi, Ilan County (NMNS-4211-001); ♀ from same locality (NMNS-4211-003) — 1, left male palp, retrolateral view; 2, same, prolateral view; 3, epigynum, ventral view; 4, female internal genitalia, dorsal view. Scales: 0.1 mm.

0.14/0.14, PME-PLE 0.24/0.30; MOA length 0.34/0.39, anterior width 0.36/0.40, posterior width 0.34/0.40. Labium length 0.24/0.30, width 0.34/0.45. Sternum length 0.70/1.00, width 0.66/0.85. Leg measurements: I 7.10/9.10 (2.30/2.90 + 0.85/1.10 + 1.80/2.30 + 1.60/2.10 + 0.55/0.70); II 6.45/8.05 (2.05/2.50 + 0.75/1.10 + 1.60/2.05 + 1.50/2.00 + 0.55/0.40); III 3.44/4.30 (1.25/1.50 + 0.50/0.70 + 0.62/0.80 + 0.65/0.80 + 0.42/0.50); IV 4.93/6.30 (1.65/2.20 + 0.60/0.80 + 1.00/1.25 + 1.23/1.55 + 0.45/0.50). Opisthosoma length 2.10/3.65, width 1.60/4.10. The median apophysis of male palp forked at the apex; palpal patella with a long thick bristle; embolus large (Figs. 1-2). Epigynum sclerotized with a U-shaped hood; intromittent orifices situated at both sides of hood; spermatheca globular (Figs. 3-4).

Coloration and markings. Male and female: Carapace, chelicerae, sternum, palps and legs reddish brown; maxillae and labium reddish brown with whitish anterior margins. Dorsum of opisthosoma green, anterior margin dark brown; venter grayish brown.

Distribution. Taiwan (new record), China, Japan (Song, Zhu & Chen 1999).

Larinia fusiformis (Thorell 1877)
(Figs. 5-8)

Meta fusiformis Thorell 1877, p. 431.

Larinia fusiformis: Roewer 1942, p. 770; Bonnet 1957, p. 2349;

Tanikawa 1989, p. 35, figs. 8-14; Okuma et al. 1993, p. 23, figs. 20 C-D; Barrion & Litsinger 1995, p. 612, figs. 384 a-e, 385 a-b.

Larinopa fusiformis: Grasshoff 1970, p. 231, figs. 15 a-b, 16 a-e.

Specimens examined. 1♀, Tunghai University, Taichung City, Taiwan, 30-IV-2002, Y.-H. Chang (NMNS-4211-006); 1♂ and 1♀, Hsinpi Junior High School, Chienkung-tsun, Hsinpi-hsiang, Pingtung County, Taiwan, 29-IV-2003, Y.-H. Chang (NMNS-4211-007—NMNS-4211-008).

Description [based on the ♂ (NMNS-4211-007) / ♀ (NMNS-4211-008) from Pingtung County]. Total length 6.30/10.22. Prosoma length 2.70/3.27, width 1.80/1.98. Chelicerae with 4/4 promarginal and 3/3 retromarginal teeth. Clypeus height 0.06/0.12. Eye diameters and interdistances: AME 0.16/0.14, ALE 0.12/0.11, PME 0.12/0.11, PLE 0.12/0.11; AME-AME 0.18/0.22, AME-ALE 0.16/0.22, PME-PME 0.02/0.03, PME-PLE 0.26/0.38; MOA length 0.40/0.42, anterior width 0.42/0.48, posterior width 0.24/0.28. Labium length 0.20/0.40, width 0.34/0.45. Sternum length 1.28/1.40, width 0.76/0.87. Leg measurements: I 13.85/15.45 (3.25/3.40 + 1.55/1.90 + 3.45/3.80 + 4.35/5.05 + 1.25/1.30); II 12.05/13.80 (3.10/3.35 + 1.30/1.65 + 3.00/3.45 + 3.60/4.20 + 1.05/1.15); III 6.55/7.75 (2.15/2.45 + 0.75/0.95 + 1.45/1.60 + 1.50/1.80 + 0.70/0.95); IV 10.85/13.20 (3.25/3.80 + 1.00/1.35 + 2.65/3.25 + 3.15/3.80 + 0.80/1.00). Opisthosoma length 3.60/6.96,

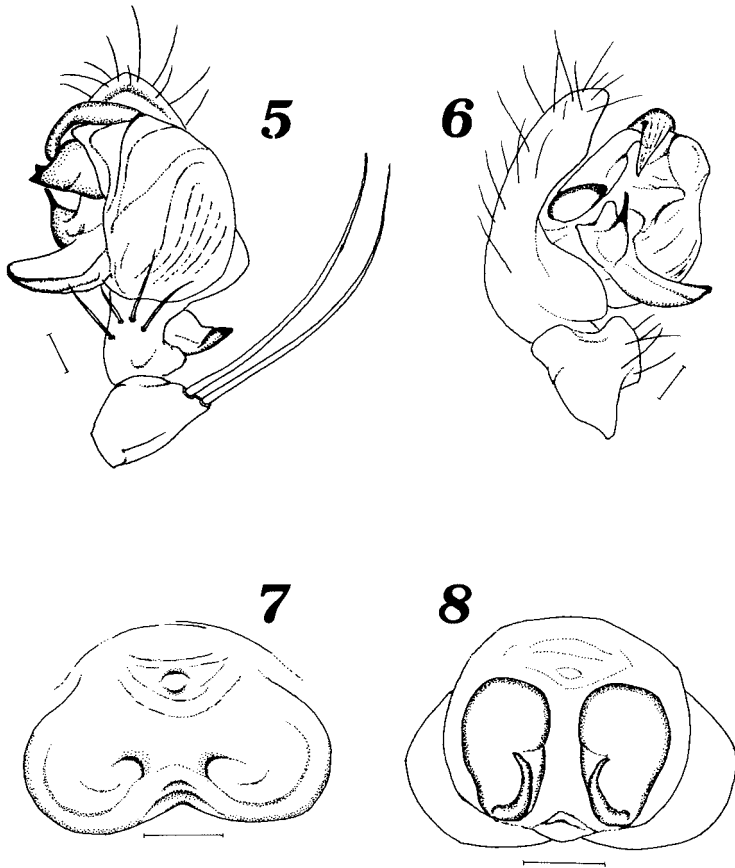


Fig. 5–8. *Larinia fusiformis* (Thorell 1877): ♂ from Hsinpi Junior High School, Pingtung County (NMNS-4211-007); ♀ from same locality (NMNS-4211-008) — 5, left male palp, ventral view; 6, same, prolateral view; 7, epigynum without scape, ventral view; 8, female internal genitalia, dorsal view. Scales: 0.1 mm.

width 1.40/2.56. The median apophysis of male palp scoop-like and projected prolaterally; terminal apophysis beak-like; palpal patella with two long thick bristle (Figs. 5–6). Epigynum lobe-like; intromittent canal short; spermatheca reniform in dorsal view (Figs. 7–8).

Coloration and markings. Male: Carapace yellowish white, with a dark brown patch at the posterior part of cephalic region, thoracic groove dark brown. Chelicerae and maxillae yellowish white; labium pale brown with pale distal margin; sternum yellowish white; palps and legs yellowish white. Dorsum of opisthosoma yellowish white, with six pairs of black spots; venter yellowish white, with a white median band bordered by a V-shaped dark brown marking.

Female: Same as in male, except that dorsum of opisthosoma yellowish white, with a black discontinuous median band bordered by six pairs of black spots.

Distribution. Taiwan (new record), India, Burma, Vietnam, Thailand, Japan, Philippines, Sulawesi, New Guinea, Australia (Tanikawa 1989; Barrion & Litsinger 1995; Platnick 2004).

Eriophora plumiopedella (Yin, Wang & Zhang 1987)

comb. nov.
(Figs. 9–10)

Zilla plumiopedella Yin, Wang & Zhang 1987, p. 65, figs. 15–

23; Yin et al. 1997, p. 400, figs. 290 a–i; Song, Zhu & Chen 1999, p. 310, figs. 184 N, S, 185 C–D, O.

Specimens examined. 1♀, Shuanglienpi, Ilan County, Taiwan, 14-V-1997, Y.-H. Chang (NMNS-4211-009); 1♀, Yangmingshuwu, Yangmingshan National Park, Taipei City, Taiwan, 17-V-2003, Y.-H. Chang (NMNS-4211-010); 1♀, same locality and collector, 25-V-2003 (NMNS-4211-011).

Description [based on the ♀ (NMNS-4211-011) from Taipei City]. Total length 14.34. Prosoma length 5.68, width 4.62. Chelicerae with 3 promarginal and 3 retromarginal teeth. Clypeus height 0.20. Eye diameters and interdistances: AME 0.21, ALE 0.18, PME 0.21, PLE 0.18; AME-AME 0.60, AME-ALE 1.10, PME-PME 0.60, PME-PLE 1.30; MOA length 0.65, anterior width 0.65, posterior width 0.70. Labium length 0.70, width 1.00. Sternum length 2.30, width 2.00. Leg measurements: I 21.90 (6.50 + 2.60 + 5.30 + 5.50 + 2.00); II 19.90 (6.00 + 2.40 + 4.80 + 4.80 + 1.90); III 11.15 (3.45 + 1.50 + 2.40 + 2.40 + 1.40); IV 20.00 (6.10 + 2.20 + 4.80 + 5.30 + 1.60). Opisthosoma length 8.95, width 5.54. Epigynum well sclerotized; median septum short; spermatheca oval (Figs. 9–10).

Coloration and markings. Female: Carapace pale brown, cephalic region with a dark brown V-shaped patch, thoracic region with a dark brown median band and dark brown lateral margin. Chelicerae pale brown, distal part reddish brown; maxillae and labium dark brown with pale brown

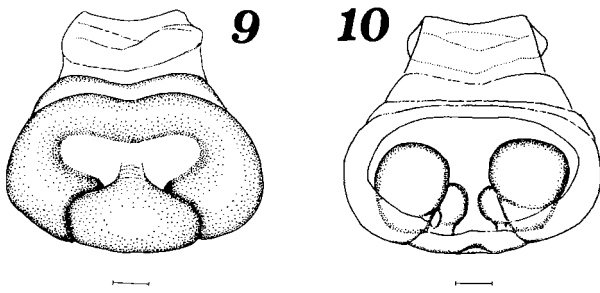


Fig. 9–10. *Eriophora plumiopedella* (Yin, Wang & Zhang 1987) comb. nov.: ♀ from Yangmingshuwu, Yangmingshan National Park, Taipei City (NMNS-4211-011) — 9, epigynum without scape, ventral view; 10, female internal genitalia, dorsal view. Scales: 0.1 mm.

anterior margin; sternum dark brown; palps pale brown; legs pale brown with reddish brown bands, tibia and metatarsus of leg IV bear numerous hairs. Dorsum of opisthosoma greenish brown, dorsum with a yellowish white patch, lateral margin mottled with yellowish white spots; venter dark brown, bordered by yellowish white band, with a pair of yellowish white spots in front of spinnerets.

Distribution. Taiwan (new record), China (Yin, Wang & Zhang 1987).

Family Philodromidae

Thanatus miniaceus Simon 1880 (Figs. 11–14)

Thanatus miniaceus Simon 1880, p. 110; Yaginuma 1986, p. 215, fig. 120. 1; Song 1987, p. 269, figs. 225 A-D; Wu & Song 1987, p. 34, figs. 16 A-B; Chikuni 1989, p. 133, fig. 1; Feng 1990, p. 194, pl. 78.169, figs. 169. 1-2; Chen & Zhang 1991, p. 284, figs. 295. 1-3; Song & Zhu 1997, p. 204, figs. 146 A-D; Song, Zhu & Chen 1999, p. 478, figs. 271 S, 273 I; Kim & Jung 2001, p. 205, figs. 69-72.

Specimens examined. 1♂, Chingtienkang, Yangmingshan National Park, Taipei City, Taiwan, 19-IV-2003, Y.-H. Chang (NMNS-4211-012); 1♂, same locality and collector, 23-V-2003 (NMNS-4211-013); 1♀, same locality and collector, 30-VII-2003 (NMNS-4211-014).

Description [based on the ♂ (NMNS-4211-012) / ♀ (NMNS-4211-014) from Taipei City]. Total length 4.40/4.80. Prosoma length 2.20/2.30, width 2.10/2.10. Chelicerae with 2/2 promarginal. Clypeus height 0.30/0.30. Eye diameters and interdistances: AME 0.08/0.08, ALE 0.10/0.10, PME 0.08/0.08, PLE 0.10/0.10, AME-AME 0.14/0.16, AME-ALE 0.04/0.06, PME-PME 0.26/0.28, PME-PLE 0.24/0.26, MOA length 0.38/0.42, anterior width 0.30/0.34, posterior width 0.40/0.46. Labium length 0.30/0.30, width 0.35/0.35. Sternum length 1.18/1.25, width 1.08/1.10. Leg measurements: I 6.50/5.80 (1.90/2.00 + 0.90/0.50 + 1.50/1.55 + 1.25/0.75 + 0.95/1.00); II 7.50/7.50 (2.15/2.25 + 1.00/1.05 + 1.70/1.75 + 1.55/1.40 + 1.10/1.05);

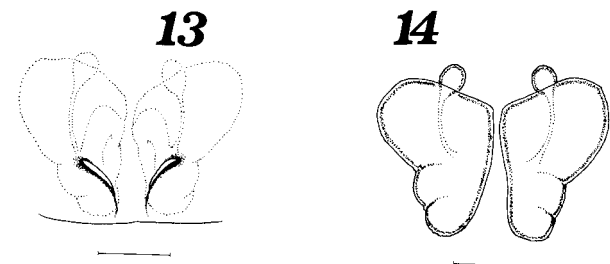
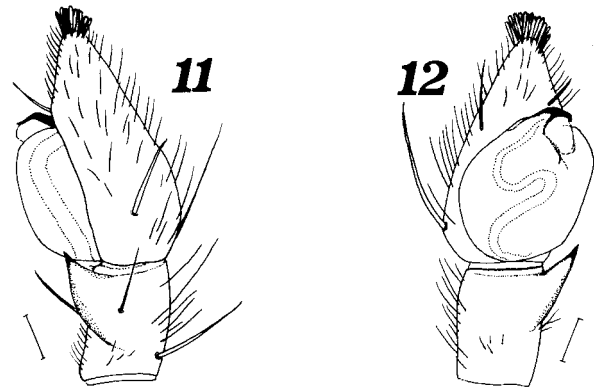


Fig. 11–14. *Thanatus miniaceus* Simon 1880: ♂ from Chingtienkang, Yangmingshan National Park, Taipei City (NMNS-4211-012); ♀ from same locality (NMNS-4211-014) — 11, left male palp, retrolateral view; 12, same, ventral view; 13, epigynum, ventral view; 14, female internal genitalia, dorsal view. Scales: 0.1 mm.

III 6.65/6.50 (2.00/2.00 + 0.85/0.90 + 1.50/1.45 + 1.40/1.25 + 0.90/0.90); IV 7.70/7.45 (2.15/2.25 + 0.80/0.95 + 1.85/1.75 + 1.80/1.50 + 1.10/1.00). Opisthosoma length 2.30/2.70, width 11.40/1.70. Male palp with a retrolateral tibial apophysis; bulb simple, without tegular apophysis; embolus short, spiniform and curved (Figs. 11–12). Epigynum with a wide median septum, intromittent orifices situated at both sides of the septum; spermatheca reniform; gland of spermatheca globular (Figs. 13–14).

Coloration and markings. Male and female: Carapace dark brown, with a pale brown median band. Chelicerae brown; maxillae and labium brown with pale brown anterior margin; sternum reddish brown; palps and legs dark brown. Dorsum of opisthosoma pale brown with a diamond-like patch; venter dark brown.

Distribution. Taiwan (new record), China, Korea, Japan (Yaginuma 1986; Song 1987; Kim & Jung 2001).

Family Salticidae

Portia fimbriata (Doleschall 1859) (Figs. 15–18)

Salticus fimbriatus Doleschall 1859, p. 22, pl. 5, fig. 8.

Sinis fimbriatus: Thorell 1878, p. 269.

Linus fimbriatus: Peckham & Peckham 1886, p. 289; Peckham

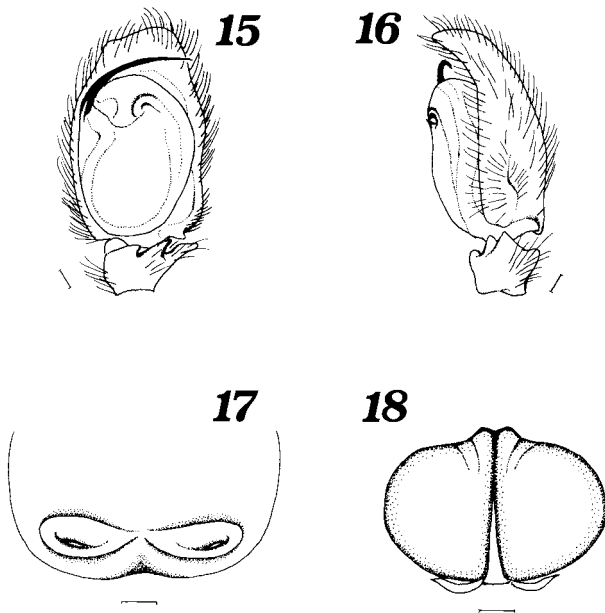


Fig. 15-18. *Portia fimbriata* (Doleschall 1859): ♂ from Yangmingshuwu, Yangmingshan National Park, Taipei City (NMNS-4211-016); ♀ from Luchiaokeng Reserve Area, Yangmingshan National Park, Taipei City (NMNS-4211-015) – 15, left male palp, ventral view; 16, same, retrolateral view; 17, epigynum, ventral view; 18, female internal genitalia, dorsal view. Scales: 0.1 mm.

& Peckham 1901, p. 342, pl. 25, fig. 5; Simon 1901, p. 411, figs. 435-443; Sherriffs 1939, p. 196, pl. 24, fig. 2; Chrysanthus 1968, p. 49, figs. 1-6; Prószyński 1971, p. 385.

Portia fimbriata: Wanless 1978, p. 99, figs. 7 A-G, 8 A-F, pl. 3 a-f, 4 c-f, 5 c-d, f; Davies & Zabka 1989, p. 194, pl. 3; Chikuni 1989, p. 157, fig. 50; Jastrzebski 1997, p. 711, figs. 26-30.

Specimens examined. 1♂, Yangmingshuwu, Yangmingshan National Park, Taipei City, Taiwan, 19-IV-2003, Y.-H. Chang (NMNS-4211-016); 1♀, Luchiaokeng Reserve Area, Yangmingshan National Park, Taipei City, Taiwan, 17-V-2003, Y.-H. Chang (NMNS-4211-015).

Description [based on the ♂ (NMNS-4211-016) / ♀ (NMNS-4211-015) from Taipei City]. Total length 7.90/8.00. Prosoma length 3.90/4.00, width 2.95/3.10. Chelicerae with 3/3 promarginal and 4/4 retromarginal teeth. Clypeus height 0.55/0.62. Eye diameters and interdistances: AME 0.75/0.75, ALE 0.38/0.35, PME 0.25/0.27, PLE 0.35/0.37; eyes arranged in four rows, AME-AME 0.08/0.10, ALE-ALE 1.62/1.65, PME-PME 1.67/1.63, PLE-PLE 1.70/1.65; eye area length 2.02/2.05, width 2.30/2.30, widest on second row. Labium length 0.40/0.55, width 0.55/0.65. Sternum length 1.50/1.65, width 1.22/1.30. Leg measurements: I 14.10/10.60 (3.50/3.00 + 1.60/1.40 + 3.50/2.40 + 3.90/2.50 + 1.60/1.30); II 10.55/8.80 (2.95/2.50 + 1.40/1.40 + 2.30/1.90 + 2.70/1.90 + 1.20/1.10); III 8.80/8.10 (2.60/2.30 + 1.00/1.20 + 1.80/1.55

+ 2.40/1.95 + 1.00/1.10); IV 14.10/12.50 (3.80/3.40 + 1.40/1.30 + 3.10/2.80 + 4.50/3.80 + 1.30/1.20). Opisthosoma length 4.30/4.00, width 2.00/2.40. Male palp with ventral tibial apophysis, intermediate tibial apophysis and retrolateral tibial apophysis; embolus long, spiniform, projected retrolaterally (Figs. 15-16). Epigynum well sclerotized with a short and narrow median septum, intromittent orifice situated at the both sides of the septum; spermatheca oval, intromittent canal short and soft (Figs. 17-18).

Coloration and markings. Male: Carapace dark brown with white bands on thoracic groove and lateral margin. Chelicerae reddish brown; maxillae and labium reddish brown with white anterior margin; sternum dark brown; palps dark brown bear white hairs; legs dark brown. Dorsum of opisthosoma dark brown mottled with white spots; venter dark brown. Female: Carapace dark brown. Chelicerae reddish brown; maxillae and labium reddish brown with white anterior margin; sternum dark brown; palps dark brown, bearing white hairs; legs dark brown. Dorsum of opisthosoma dark brown, mottled with white spots; venter dark brown.

Distribution. Taiwan (new record), Nepal, Sri Lanka to Australia (Platnick 2004).

Family Tetragnathidae

Dolichognatha umbrophila Tanikawa 1991

(Figs. 19-22)

Dolichognatha umbrophila Tanikawa 1991, p. 38, figs. 1-10.

Specimens examined. 1♂, Luchiaokeng Reserve Area, Yangmingshan National Park, Taipei City, Taiwan, 19-IV-2003, Y.-H. Chang (NMNS-4211-017); 1♀, same locality and collector, 12-IV-2003 (NMNS-4211-018).

Description [based on the ♂ (NMNS-4211-017) / ♀ (NMNS-4211-018) from Taipei City]. Total length 3.60/3.35. Prosoma length 1.95/1.75, width 1.30/1.25. Chelicerae with 2/3 promarginal and 4/4 retromarginal teeth. Clypeus height 0.08/0.06. Eye diameters and interdistances: AME 0.14/0.14, ALE 0.10/0.09, PME 0.10/0.09, PLE 0.10/0.09; AME-AME 0.12/0.08, AME-ALE 0.11/0.08, PME-PME 0.01/0, PME-PLE 0.21/0.21; MOA length 0.46/0.40, anterior width 0.36/0.36, posterior width 0.20/0.18. Labium length 0.23/0.22, width 0.34/0.30. Sternum length 0.80/0.74, width 0.74/0.70. Leg measurements: I 10.30/7.40 (3.25/2.30 + 0.95/0.75 + 2.80/1.95 + 2.45/1.65 + 0.85/0.75); II 7.75/5.75 (2.50/1.85 + 0.85/0.70 + 1.90/1.35 + 1.80/1.25 + 0.70/0.60); III 3.65/3.20 (1.20/1.00 + 0.55/0.50 + 0.65/0.60 + 0.80/0.70 + 0.45/0.40); IV 4.18/3.85 (1.50/1.40 + 0.50/0.45 + 0.75/0.70 + 1.00/0.85 + 0.43/0.45). Opisthosoma length 1.90/1.70, width 1.45/1.70. Embolus distally spiniform (Figs. 19-20). Epigynum poorly sclerotized; spermatheca tubular (Figs. 21-22).

Coloration and markings. Male and female: Carapace

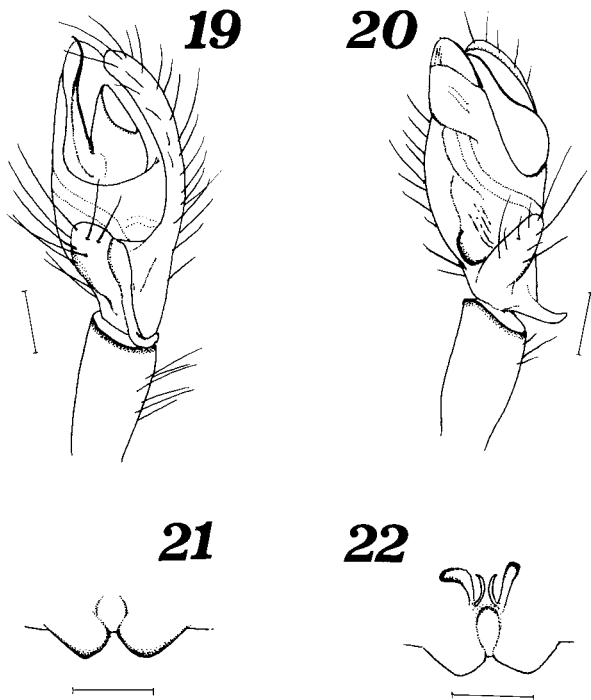


Fig. 19–22. *Dolichognatha umbrophila* Tanikawa 1991: ♂ from Luchiaokeng Reserve Area, Yangmingshan National Park, Taipei City (NMNS-4211-017); ♀ from same locality (NMNS-4211-018) – 19, left male palp, retrolateral view; 20, same, ventral view; 21, epigynum, ventral view; 22, female internal genitalia, dorsal. Scales: 0.1 mm.

pale brown, cephalic region dark brown, lateral margins of thoracic region and thoracic groove dark brown. Chelicerae reddish brown; maxillae and labium reddish brown with yellowish white anterior margins; sternum pale brown, with several dark brown patches; palps and legs reddish brown with dark brown band. Opisthosoma dark brown, mottled with yellowish white spots.

Distribution. Taiwan (new record), Japan (Tanikawa 1991).

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References

- Barrion, A. T. & Litsinger, J. A. 1995. *Riceland Spiders of South and Southeast Asia*. CAB International, Wallingford, UK. xix + 700 pp., 16 pls.
- Bonnet, P. 1957. *Bibliographia Araneorum*, Vol. 2. Toulouse. 1927–3026 pp.
- Chen, Z. F. & Zhang, Z. H. 1991. *Fauna of Zhejiang: Araneida*. Zhejiang Science and Technology Publishing House, Hangzhou. 356 pp., 8 pls. (In Chinese with English summary)
- Chikuni, Y. 1989. *Pictorial Encyclopedia of Spiders in Japan*. Kaiseisha, Tokyo. 310 pp. (In Japanese)
- Chrysanthus, P. 1968. Spiders from south New Guinea X. *Tijdschr. Ent.*, 111: 49–74.
- Davies, V. T. & Zabka, M. 1989. Illustrated keys to the genera of jumping spiders (Araneae: Salticidae) in Australia. *Mem. Qd Mus.*, 27: 189–266.
- Doleschall, L. 1859. Tweede Bijdrage tot de Kennis der Arachniden van den Indischen Archipel. *Acta Soc. Sci. Ind.-Neerl.*, 5: 1–60.
- Feng, Z. Q. 1990. *Spiders of China in Colour*. Hunan Science and Technology Publishing House, Changsha. 256 pp. (In Chinese)
- Grasshoff, M. 1970. Die Tribus Mangorini. I. Die Gattungen *Eustala*, *Larinia* s. str., *Larinopa* n. gen. (Arachnida: Araneae: Araneidae-Araneinae). *Senckenberg. Biol.*, 51: 209–234.
- Jastrzebski, P. 1997. Salticidae from the Himalayas. Subfamily Spartaeinae Wanless, 1984 (Araneae: Salticidae). *Genus*, 8: 701–713.
- Kim, J. P. & Jung, J. Y. 2001. A revisional study of the spider family Prodidomidae O.P.-Cambridge, 1871 (Arachnida: Araneae) from Korea. *Korean Arachnol.*, 17: 185–222. (In Korean with English abstract)
- Kim, J. P., Namkung, J., Lee, M. C. & Yoo, J. S. 1995. The spider fauna of Kanazawa and Itsukaichi, Japan. *Korean Arachnol.*, 11: 83–91. (In Korean with English abstract)
- Ohno, M. & Yaginuma, T. 1969. The spider fauna of the Goto islands belonging to Kyushu, Japan. *J. Tokyo Univ. Gen. Educ. (Nat. Sci.)*, 12: 7–24. (In Japanese)
- Okuma, C., Kamal, N. Q., Hirashima, Y., Alam, M. Z. & Ogata, K. 1993. *Illustrated Monograph of the Rice Field Spiders of Bangladesh*. Institute of Postgraduate Studies in Agriculture (Salna, Gazipur, Bangladesh)-Japan International Cooperation Agency Project Publication 1. 93 pp.
- Peckham, G. W. & Peckham, E. G. 1886. Genera of the family Attidae: with a partial synonymy. *Trans. Wiscons. Acad. Sci. Arts Let.*, 6: 255–342.
- Peckham, G. W. & Peckham, E. G. 1901. Spiders of the *Phidippus* group of the family Attidae. *Trans. Wiscons. Acad. Sci. Arts Let.*, 13: 282–358.
- Platnick, N. I. 2004. *The World Spider Catalog, Version 4.5*. The American Museum of Natural History, New York, online at <http://research.amnh.org/entomology/spiders/catalog/>.
- Prószyński, J. 1971. Catalogue of Salticidae (Aranei) specimens kept in major collections of the world. *Annls Zool. Warsz.*, 28: 367–519.
- Roewer, C. F. 1942. *Katalog der Araneae von 1758 bis 1940*. Bremen, 1: 1–1040.
- Sherriffs, W. R. 1939. Hong-Kong spiders. Part VI. *Hong-Kong Naturalist*, 9: 193–198.
- Simon, E. 1880. *Etudes arachnologiques*. 11 e Mémoire. XVII. Arachnides recueillies aux environs de Pékin par M. V. Collin de Plancy. *Ann. Soc. Ent. Fr.*, 10: 97–128.
- Simon, E. 1901. *Histoire naturelle des araignées*. Paris, 2: 381–668.
- Song, D. X. 1987. *Spiders from Agricultural Regions of China* (Arachnida: Araneae). Agriculture Publishing House, Beijing. 376 pp. (In Chinese)
- Song, D. X. & Zhu, M. S. 1997. *Fauna Sinica: Arachnida: Araneae: Thomisidae, Philodromidae*. Science Press, Beijing. viii + 259 pp. (In Chinese)
- Song, D. X., Zhu, M. S. & Chen, J. 1999. *The Spiders of China*. Hebei Science and Technology Publishing House, Shijiazhuang. 640 pp., 8 pl.
- Tanikawa, A. 1989. Japanese spiders of the genus *Larinia* Simon (Araneae: Araneidae). *Acta Arachnol.*, 38: 31–47.
- Tanikawa, A. 1991. A new species of the genus *Dolichognatha* (Araneae: Tetragnathidae) from Iriomotejima Island, southwest Japan. *Acta Arachnol.*, 40: 37–41.
- Tanikawa, A. 2000. Japanese spiders of the genus *Eriophora* (Araneae: Araneidae). *Acta Arachnol.*, 49: 17–28.

- Thorell, T. 1877. Studi sui Ragni Malesi e Papuani. I. Ragni di Selebes raccolti nel 1874 dal Dott. O. Beccari. Ann. Mus. Civ. Stor. Nat. Genova, 10: 341-637.
- Thorell, T. 1878. Studi sui ragni Malesi e Papuani. II. Ragni di Amboina raccolti Prof. O. Beccari. Ann. Mus. Civ. Stor. Nat. Genova, 13: 1-317.
- Wanless, F. R. 1978. A revision of the spider genus *Portia* (Araneae: Salticidae). Bull. Br. Mus. Nat. Hist. (Zool.), 34: 83-124.
- Wu, L. T. & Song, D. X. 1987. Notes on Inner Mongolian spiders of the family Philodromidae. J. Inner Mongolia Teacher's Univ., 1987: 28-37.
- Yaginuma, T. 1986. Spiders of Japan in Color (new ed.). Hoikusha, Osaka. xxiv + 305 pp., 64 pls. (In Japanese)
- Yin, C. M., Wang, J. F. & Zhang, Y. J. 1987. On the Chinese spiders of genus *Zilla* (Araneae, Araneidae). Nat. Sci. J. Hunan Normal Univ., 10: 62-68. (In Chinese)
- Yin, C. M., Wang, J. F., Xie, L. P. & Peng, X. J. 1990. New and newly recorded species of the spiders of family Araneidae from China (Arachnida, Araneae). In Spiders in China: One Hundred New and Newly Recorded Species of the Families Araneidae and Agelenidae. Hunan Normal Univ. Press, Changsha. pp. 1-171. (In Chinese)
- Yin, C. M., Wang, J. F., Zhu, M. S., Xie, L. P., Peng, X. J. & Bao, Y. H. 1997. Fauna Sinica: Arachnida: Araneae: Araneidae. Science Press, Beijing. xiii + 460 pp. (In Chinese)

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