

New and Remarkable Spiders of the Families Liphistiidae, Argyronetidae, Pisauridae, Theridiidae and Araneidae (Arachnida) from Japan

Hirotsugu Ono

Department of Zoology, National Science Museum, 3–23–1 Hyakunin-chô,
Shinjuku-ku, Tokyo, 169–0073 Japan

Abstract Two new species and a new subspecies of spiders (Araneae) are described from Japan under the names, *Ryuthela iheyana* sp. nov. (Liphistiidae), *Argyroneta aquatica japonica* subsp. nov. (Argyronetidae) and *Dolomedes yawatai* sp. nov. (Pisauridae). *Ero foliata* L. Koch, 1878, described as a mimetiid is transferred from the original genus to *Chryssio* O. Pickard-Cambridge, 1882, belonging to the family Theridiidae and regarded as same species as *Argyroaster punctifera* Yaginuma, 1960, syn. nov. On the basis of examination of type specimens preserved in the old European collections, synonymies of two araneid species are reported, that is, *Araneus seminiger* (L. Koch, 1878) [= *Araneus miyashitai* Tanikawa, 2001, syn. nov.] and *Araneus stella* (Karsch, 1879) [= *Araneus tsuno* Yaginuma, 1972, syn. nov.].

Key words: Liphistiidae, Argyronetidae, Pisauridae, Theridiidae, Araneidae, taxonomy, new species, new subspecies, new synonymies, Japan.

Introduction

Type specimens of Japanese spiders, *Ero foliata* L. Koch, 1878, *Epeira semi-nigra* L. Koch, 1878, and *Epeira stella* Karsch, 1879, kept in the old collections of the Natural History Museum in Wien, Austria, and the Zoological Museum in Berlin, Germany, were examined. These species mentioned above with their original names were never recognized for a long time, because no illustration was attached to the descriptions.

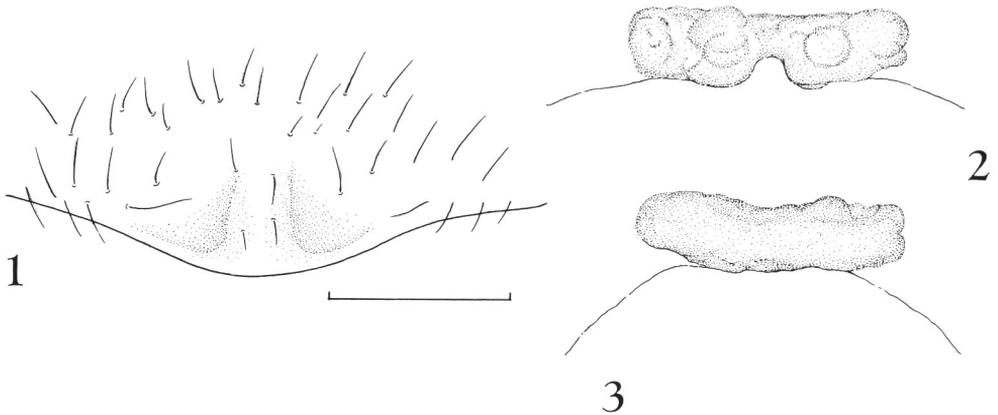
A careful examination of the type specimens shows that these spiders are at present known to have another names regarded synonymous with those old ones. The type specimens of the three species in question will be redescribed and illustrated in the present paper.

Other than these, two new species of Liphistiidae and Pisauridae and a new subspecies of *Argyroneta aquatica* (Clerck, 1758) (Argyronetidae) will be herein described. The new liphistiid is a member of the genus *Ryuthela* Haupt, 1983, collected from Iheyajima Island, a small island about 30 km northwest of Okinawajima Island.

However, the species systematically stands nearer to *Ryuthela sasakii* Ono, 1997 known from Kumejima Island than to *R. nishihirai* (Haupt, 1979) from Okinawajima Island, although Iheyajima is geographically much nearer to Okinawajima than to Kumejima. The second new species belonging to the genus *Dolomedes* Latreille, 1804, was obtained from Ishigakijima Island of Ryukyu Islands. With this report the author starts a taxonomical study of the family Pisauridae. *Argyroneta aquatica* is a well known, water spider, widely distributed from Europe to Japan. Based on some differences in the genital organs between specimens from the Netherlands, Russia and Japan, the author will propose to divide the species into two subspecies.

Type specimens of the new species and new subspecies to be described in this paper are deposited in the collection of the Department of Zoology, National Science Museum, Tokyo (NSMT).

Before going further, the author wishes to express his cordial thanks to Dr. Jürgen Gruber, Wien, and Dr. Jason Dunlop, Berlin, for advices



Figs. 1–3. *Ryuthela iheyana* sp. nov., female holotype (NSMT-Ar 5185) from Iheyajima Island, Japan. — 1, Genital area of female, ventral view; 2, spermathecae, dorsal view; 3, spermathecae, ventral view. [Scale: 0.5 mm.]

and loan of type specimens, and to Mr. Eiichi Shinkai, Mr. Kiyoto Ogata, Mr. Ken-ichi Kumada, the late Dr. Tadashige Habe, Dr. Mamoru Owada, and Mr. Akihiko Yawata for offering invaluable specimens used in the present paper. This study was partly supported by the Grant-in-aid No. 10640688 for Scientific Research, from the Ministry of Education, Science, Sports and Culture, Japan.

Family Liphistiidae

Ryuthela iheyana sp. nov.

[Japanese name: Iheya-kimuragumo]

(Figs. 1–3)

Diagnosis. This new species seems to be related to *Ryuthela sasakii* Ono, 1997, described from Kumejima Island in having spermathecae basally fused. However, the spermathecae of this new species are much shorter and bar-shaped, while those of the latter species are triangle (cf. Figs. 2–3 and Ono, 1997, figs. 5–6). The new spider stands closer to the species from Kumejima Island than to *Ryuthela nishihirai* (Haupt, 1979) known from Okinawajima Island geographically much nearer to Iheyajima.

Type series. Holotype: ♀, Mt. Gayōzan, NE slope, 50 m alt., Iheyajima Island, Ryukyu Islands, Okinawa Pref., southwestern Japan, 20–I–

1998, H. Ono leg. (NSMT-Ar 5185); paratypes: 3 ♀, same data as for the holotype (NSMT-Ar 5186–5188).

Description of females (male unknown). Measurements based on the holotype. Body length 11.9 mm; prosoma length 5.2 mm, width 4.2 mm; opisthosoma length 6.0 mm, width 4.9 mm; lengths of palp and legs [total length (femur+patella+tibia+metatarsus+tarsus)]: palp 9.8 mm (3.6+1.8+2.0+–+2.4), leg I 11.1 mm (3.6+1.8+2.1+2.3+1.3), II 10.8 mm (3.6+1.7+2.0+2.3+1.2), III 11.1 mm (3.4+1.7+1.9+2.6+1.5), IV 16.0 mm (4.6+2.3+2.8+4.3+2.0). Variation: body length, 9.9–12.0 mm, prosoma length 4.5–5.6, width 4.0–4.6, opisthosoma length 4.7–6.8, width 3.6–5.8.

Prosoma longer than wide, head high; ocular tubercle wider than long, ALE>PLE>PME>AME (nearly 19:14:9:2), AME very small, clypeus wider than ALE-ALE, median ocular area trapezoidal, wider than long. Chelicera with 12 teeth on promargin of fang furrow. Leg formula IV–I=III–II; superior claws of tarsi each with 2 teeth; claw of palp with two teeth.

Opisthosoma ovate, longer than wide; posterior median spinnerets reduced, completely fused and with two pair of weak setae.

Female genitalia (Figs. 1–3). Spermathecae short, basally fused and forming a bar, opening

part not visible.

Coloration and markings. Prosoma light yellowish brown, marginated with beige, ocular tubercle black; chelicera proximally light yellowish brown, distally dark brown, fang reddish brown, sternum, legs and palps light yellowish brown. Opisthosoma yellowish brown, dorsal sclerites beige at the sides, ventral sclerites and spinnerets light yellowish brown.

Distribution. Japan (known only from Iheyajima Island). This preforms the northernmost locality in the distributional range of the genus *Ryuthela* Haupt, 1983 (cf. Ono, 2000).

Remarks. The trapdoor of the holotype female was 1.4 cm wide and 1.1 cm long; those of paratypes: 1.6×1.4, 1.4×1.2 and 1.3×1.1 cm. The specific epithet is derived from the type area.

Family Argyronetidae

Argyroneta aquatica japonica subsp. nov.

[Japanese name: Mizugumo]

(Figs. 4–7)

Type specimens. Holotype: ♂, Kushiro-shitsugen Wetlands, north of Kushiro-shi, eastern Hokkaido, Japan, VIII–1988, E. Shinkai leg. (NSMT-Ar 5198), paratype: 1 ♀ same data as for the holotype (NSMT-Ar 5199).

Specimens used for comparison. *Argyroneta aquatica aquatica* (Clerck, 1758) (Figs. 8–11): 2 ♀ 1 ♂, Kortenhoef-Pools, near Hilversum, the Netherlands, 29–VI–1959, Coll. O. Kraus (SMF 11215); 1 ♀, Lake of Mozhaisk, south of St. Petersburg, Russia, 23–IX–1988, T. Habe leg. (NSMT-Ar 5200).

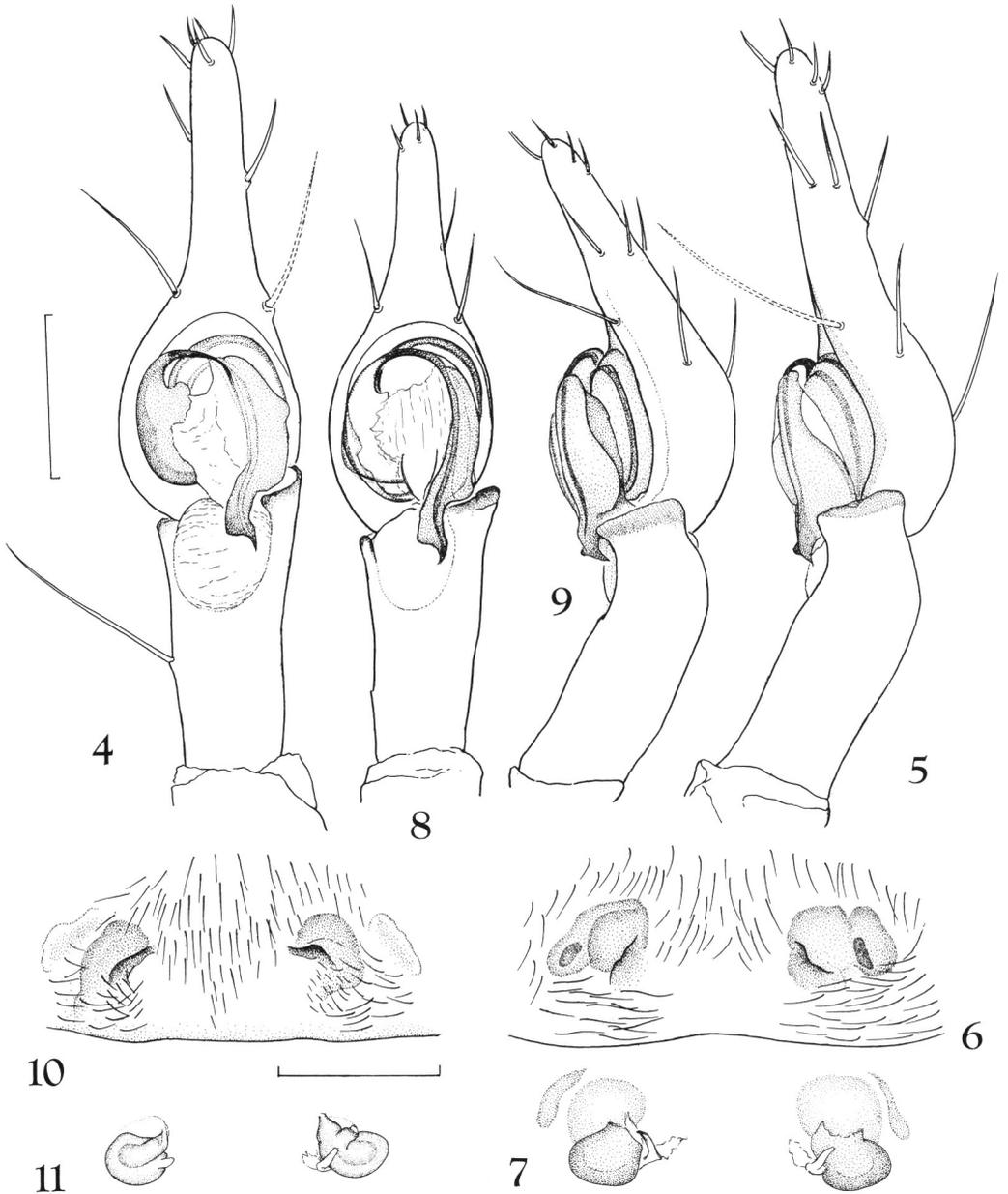
Notes. *Argyroneta aquatica* is the only spider species known to live in fresh waters. She constructs a retreat among submerged vegetation with air bubbles carried on the body. Although spiders of this species were hardly found, its distributional range was very wide in northern Eurasia from Europe to Japan (Yaginuma, 1986, p. 155). An infraspecific classification is herewith proposed mainly on the basis of a slight difference in the shape of male palp recognized between specimens from Europe and Japan.

Grothendieck & Kraus (1994) discussed relationships between *Argyroneta aquatica* and some agelenid groups and regarded this species a member of a subtaxon Cybaeninae of Agelenidae in their sense. After this, the water spider was occasionally put in the family Cybaenidae. However, Argyronetidae Thorell, 1870, seems prior to Cybaenidae Banks, 1892, when these are really included in a same family, as was treated by Yaginuma (1960, 1986).

Diagnosis. The cymbium of male palp of this new subspecies is very long and more than three times longer than the width of tegulum, while that of the nominotypical subspecies is shorter than three times the width (cf. Figs. 4–5 and 8–9). Intromittent canals of female genitalia is distinct in *Argyroneta aquatica aquatica*, but not visible in *A. a. japonica* (cf. Figs. 6–7 and 10–11).

Description. Measurements: Male (holotype): Body length 10.60 mm, prosoma length 4.96 mm, width 3.56 mm, opisthosoma length 5.63 mm, width 3.56 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: I 15.48 mm (4.37+1.70+4.00+4.15+1.26), II 11.62 mm (3.33+1.63+2.59+2.96+1.11), III 10.29 mm (2.81+1.41+2.07+2.74+1.26), IV 13.41 mm (3.48+1.63+2.89+3.93+1.48); female (paratype): body length 8.15 mm, prosoma length 3.70 mm, width 3.11 mm, opisthosoma length 4.44 mm, width 3.56 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: I 10.48 mm (3.07+1.41+2.52+2.52+0.96), II 9.15 mm (2.67+1.37+2.00+2.22+0.89), III 8.79 mm (2.30+1.30+1.93+2.22+1.04), IV 11.44 mm (3.11+1.48+2.33+3.33+1.19).

Prosoma: Eyes compactly set, both the eye rows procurved, ♀ ♂ ALE=PLE>PME>AME (7:7:6:5), AME-AME/AME-ALE ♀ 1.00, ♂ 0.71, PME-PME/PME-PLE ♀ 0.89, ♂ 0.77, median ocular area as long as wide, wider behind than in front (anterior width/posterior width ♀ ♂ 0.72), clypeus wide, clypeus/AME-AME ♀ 1.60, ♂ 2.40. Chelicera with three teeth on promargin of fang furrow and two teeth on retromargin,



Figs. 4–11. 4–7, *Argyroneta aquatica japonica* subsp. nov., male holotype and a female paratype (NSMT-Ar 5198–5199) from Hokkaido, Japan; 8–11, *Argyroneta aquatica aquatica* (Clerck, 1758), 1 ♀ 1 ♂ (SMF 11215) from the Netherlands. — 4, 8, male palp, ventral view; 5, 9, male palp, retrolateral view; 6, 10, epigynum, ventral view; 7, 11, female genitalia, dorsal view. [Scales: 0.5 mm.]

labium slightly longer than wide (length/width ♀ 1.11, ♂ 1.33), sternum almost as long as wide (length / width ♀ 1.00, ♂ 0.94). Leg formula ♀ IV–I–II–III, ♂ I–IV–II–III; tibiae and metatarsi of legs III and IV furnished with many spines;

tarsal claws with 6–8 teeth.

Male palp (Figs. 4–5). Tibia long, retrolaterally with a wide, sclerotized apophysis. Cymbium very long, three times longer than the width of tegulum.

Female genitalia (Figs. 6–7). Epigynum wider than long, with a pair of simple openings. Spermathecae small and globular, intromittent canals not visible in dorsal view.

Coloration and markings (in alcohol). ♀♂ Prosoma yellowish brown, darker marginated, chelicerae reddish brown, maxillae, labium, sternum and legs yellowish brown; opisthosoma beige without markings.

Remark. Water spiders are known also from Honshu and Kyushu in Japan, but the author could not see any specimens from these islands. The subspecific name is derived from the name of country.

Family Pisauridae

Dolomedes yawatai sp. nov.

[Japanese name: Ishigaki-aoguro-hashirigumo]

(Figs. 12–17)

Diagnosis. This new species resembles *Dolomedes raptor* Bösenberg et Strand, 1906, widely known from Honshu, Shikoku and Kyushu, Japan, not only in general appearance but also in the structure of male palp and female genitalia, but is distinguished from the latter by the shape of retrolateral tibial apophysis of male palp and the shape of winding spermathecae in female genitalia.

Type specimens. Holotype: ♀, Mt. Omotodake, Ishigakijima Island, Ryukyu Islands, Okinawa Pref., Southwest Japan, 25–X–2000 (died on 28–XI–2000), A. Yawata leg. (NSMT-Ar 5196); paratype: 1♂, emerged from egg-sac of holotype female on 25–XI–2000, matured in VI–2001 (NSMT-Ar 5197).

Description. Measurements: Female (holotype): Body length 28.3 mm, prosoma length 14.2 mm, width 13.4 mm, opisthosoma length 15.0 mm, width 8.4 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: I 49.8 mm (13.3+6.9+12.5+10.1+7.0), II 52.3 mm (14.7+7.4+13.0+10.5+6.7), III 49.4 mm (14.1+7.1+11.5+11.0+5.7), IV 57.4 mm (15.5+6.8+14.1+14.3+6.7); male (paratype): body length 11.1 mm, prosoma length 5.9 mm,

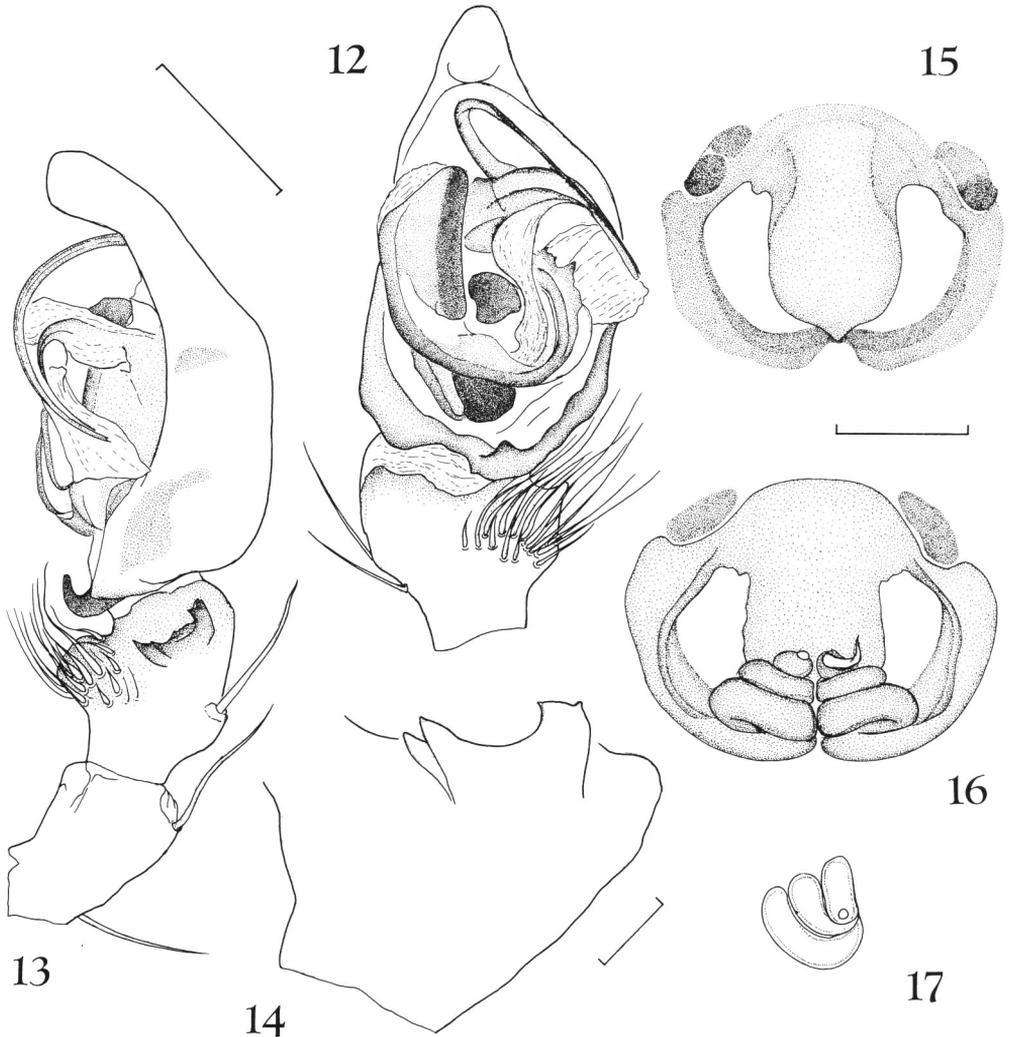
width 5.4 mm, opisthosoma length 5.3 mm, width 3.5 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: I 28.6 mm (7.2+2.9+7.0+7.0+4.5), II 28.7 mm (7.3+3.1+6.9+6.9+4.5), III 25.6 mm (7.3+2.7+5.9+5.8+3.9), IV 30.6 mm (8.2+3.0+7.0+7.7+4.7).

Prosoma longer than wide (length/width ♀ 1.06, ♂ 1.09), covered with short hairs. Eyes large and compactly set, PME>PLE>AME>ALE, ALE/AME ♀♂ 0.80, PLE/PME ♀♂ 0.93, AME-AME/AME-ALE ♀♂ 0.80, PME-PME/PME-PLE ♀ 0.35, ♂ 0.17, median ocular area almost as long as wide (length/width ♀ 1.03, ♂ 1.00), wider behind than in front (anterior width/posterior width ♀ 0.73, ♂ 0.72), clypeus wide, clypeus/anterior width of median ocular area ♀ 1.29, ♂ 0.85. Labium slightly longer than wide (length/width ♀ 1.09, ♂ 1.05), sternum longer than wide (length/width ♀ 1.15, ♂ 1.02). Leg formula IV–II–I–III; tarsal claws with 6–8 teeth, female palp with a claw with 4 teeth. Femora of legs with many dorsal spines; patellae with dorsal and lateral spines; tibiae with dorsal, lateral and ventral spines; metatarsi with lateral and ventral spines.

Male palp (Figs. 12–14). Tibia with a bundle of setae on ventral surface and with a retrolateral apophyses strongly sclerotized and furnished with two teeth in its ventral side (Fig. 14). Basal part of tarsus strongly sclerotized, with a rostrated apophysis.

Female genitalia (Figs. 15–17). Epigynum wider than long, strongly sclerotized, with a median septum short and wide. Spermathecae tubular and winding.

Coloration and markings. ♀ Prosoma polished blackish brown, with yellowish brown short hairs at the sides; chelicerae black, maxillae, labium and sternum brown, legs blackish brown, femora and tibiae with yellowish brown markings, metatarsi of legs I and II densely covered with short white hairs. Opisthosoma black, distinct markings not recognizable. ♂ Prosoma light yellowish brown, darker at the middle, laterally covered with short white hairs; chelicerae yellowish brown, maxillae, labium and sternum light yellowish brown.



Figs. 12–17. *Dolomedes yawatai* sp. nov., female holotype and a male paratype (NSMT-Ar 5196–5197) from Ishigakijima Island, Japan. — 12, male palp, ventral view; 13, male palp, retrolateral view; 14, male palpal tibia, dorsal view; 15, epigynum, ventral view; 16, female genitalia, dorsal view; 17, left spermatheca, frontal view. [Scales: 12–13, 15–17, 0.5 mm, 14, 0.25 mm.]

lowish white, legs yellowish brown. Opisthosoma beige with sparse white and brown hairs, ventrally lighter.

Remark. This species is dedicated to Mr. Akihiko Yawata, Tokyo, who collected the female and reared her spiderlings to adult in order to get a male used for this description.

Family Theridiidae

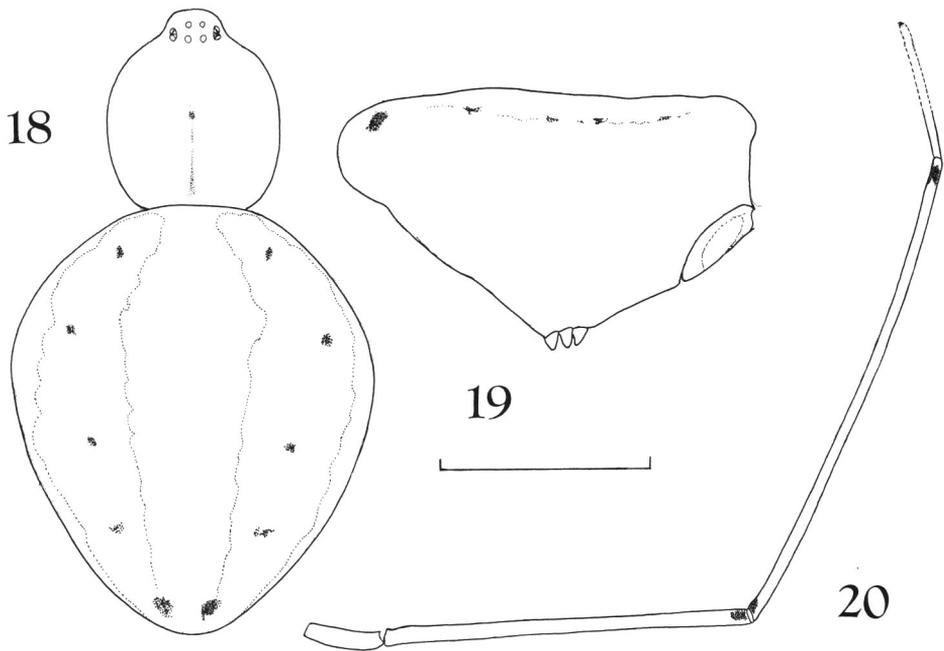
Chrysofoliata (L. Koch, 1878), comb. nov.

[Japanese name: Hoshimidori-himegumo]

(Figs. 18–20)

Erofoliata L. Koch, 1878, p. 748 (immature female holotype from Japan, collected between 1874 and 1876, A. Roretz leg., in the Natural History Museum, Wien, NHMW 20025, examined).

Argyroaster punctifera Yaginuma, 1960 (a), p. 38, pl. 11, fig. 63 (type specimen not designated; type area: Honshu, Japan). [Syn. nov.]



Figs. 18–20. *Chrysso foliata* (L. Koch, 1878), immature female holotype (NHMW 20025) from Japan. — 18, Body, dorsal view; 19, opisthosoma, lateral view; 20, leg I, prolateral view. [Scale: 1 mm.]

Argyroaster punctifera Yaginuma, 1960 (b), on the second page of additional pages (without page numbering) between pp. 174 and 175 (female holotype from Mt. Hieizan-type locality!-between Kyoto and Shiga Prefs., Honshu, Japan, VII–1953, T. Yaginuma leg., and male allotype from Osaka Pref., Japan, 3–V–1958, T. Yaginuma leg., probably deposited in Osaka Museum of Natural History, not examined), regarded as a synonym and homonym of *Argyroaster punctifera* Yaginuma, 1960 (a), p. 38. [Syn. nov.]

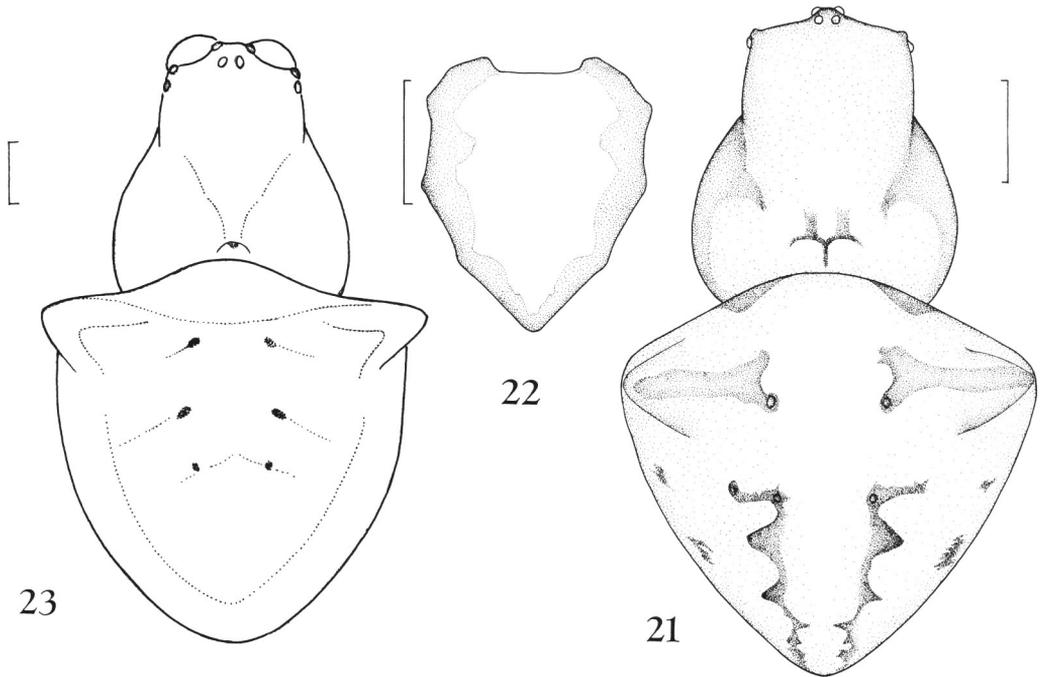
Type specimen. Holotype: immature ♀, Japan, collected between 1874 and 1876, A. Roretz leg., “Tausch, Erber (A. N. 1879. II–8)” (NHMW 20025).

Other specimens examined. 1 ♀, Mt. Hieizan between Kyoto and Shiga Prefs., Honshu, Japan, 3–VI–1957, T. Yaginuma leg. (NSMT-Ar 140); 2 ♂, Mt. Jinbasan, Tokyo, 22–V–1984, H. Ono leg. (NSMT-Ar 471); 3 ♀, Hanayama-mura, Kuriharagun, Miyagi Pref., 24–VI–1973, K. Kumada leg. (NSMT-Ar 3758)

Notes. The present author discovered the holotype of *Ero foliata* L. Koch, 1878 at the Natural History Museum of Wien, which had been

used for the exhibition in the museum. After a careful examination of the specimen, he came to the conclusion that the spider did not belong to the genus *Ero* (Mimetidae), but was in fact a theridiid and should be the same species as *Argyroaster punctifera* described twice in the same book by Yaginuma (1960). *Ero foliata* is regarded as a senior synonym of the latter and is transferred from the original genus to *Chrysso* O. Pickard-Cambridge, 1882.

Description of the holotype (Figs. 18–20). Body length 3.0 mm. Prosoma yellowish white, longer than wide, eyes compactly set, clypeus long and extending forwards, legs not measured but very long and slender, tibia and metatarsus of leg I apically with black marking (Fig. 20). Opisthosoma large and pyriform, its dorsum flat, with a pair of light beige bands and five pairs of black spots (Fig. 18), caudally extending beyond spinnerets (Fig. 19).



Figs. 21–23. 21–22, *Araneus seminiger* (L. Koch, 1878), immature female holotype (NHMW 20182) from Japan; 23, *Araneus stella* (Karsch, 1879), immature male holotype (ZMB 2715) from Japan. — 21, 23, body, dorsal view; 22, sternum, ventral view. [Scales: 1 mm.]

***Araneus seminiger* (L. Koch, 1878)**

[Japanese name: Koke-onigumo]

(Figs. 21–22)

Epeira semi-nigra L. Koch, 1878, p. 737 (immature female holotype from Japan, A. Roretz leg., deposited in the Natural History Museum Wien, NHMW 20182, examined).

Aranea semi-nigra: Bösenberg & Strand, 1906, p. 235.

Aranea mongolica: Bösenberg & Strand, 1906, p. 236 [nec *Araneus mongolicus* Simon, 1895, synonymized with *Araneus tartaricus* (Kroneberg, 1875) by Schenkel (1936, p. 269)].

Araneus seminiger: Bonnet, 1955, p. 593.

Araneus mongolicus: Saito, 1959, p. 10, fig. 6, p. 87, pl. 11, fig. 95, pl. 13, fig. 95. — Yaginuma, 1960, p. 58, pl. 18, fig. 108; 1968, p. 58, pl. 18, fig. 108.

Araneus tartaricus?: Yaginuma, 1986, p. 94, pl. 21, fig. 1 [nec *Araneus tartaricus* (Kroneberg, 1875)].

Araneus miyashitai Tanikawa, 2001, p. 77 (female holotype from Susado, Horigane-mura, Minamiazumi-gun, Nagano Pref., Honshu, Japan, 8–VIII–1990, A. Tanikawa leg., 3 ♀ 1 ♂ paratypes from Hokkaido, Chiba, Aichi and Nara Pref., Japan, deposition appointed to National Science Museum, Tokyo, not examined). [Syn. nov.]

Type specimen. Holotype: immature ♀, Japan, collected between 1874 and 1876, A. Roretz leg., “Tausch, Erber (A. N. 1879. II–2) “ (NHMW 20182).

Other specimens examined. 1 ♀, Tamine, Shitara-chô, Kitashitara-gun, Aichi Pref., Honshu, Japan, 16–VIII–2000, K. Ogata leg. (NSMT-Ar 5189); 1 ♀, Niimi-shi, Okayama Pref., Honshu, VII–1984, M. Owada leg. (NSMT-Ar 2911).

Notes. The holotype of *Araneus seminiger* was examined and illustrated for the first time. This specimen was regarded as same species as the spider wrongly identified with *Araneus tartaricus* (Kroneberg, 1875) in Japan. The latter species is distributed in Caucasus, Turkestan, Tibet and China, but probably not in Japan (Yaginuma, 1986). *Araneus miyashitai* recently described from Japan by Tanikawa (2001) may be the same species as *A. seminiger*. It stands to reason that he should describe it as a new species, because the existence of the type specimen of *Araneus seminiger* has not been known for a long

time. Tanikawa (2001) explained that specimens identified with real *Araneus tartaricus* from Afghanistan were different from the Japanese spider.

Description of the holotype (Figs. 21–22). Body length 6.5 mm. Prosoma longer than wide, light yellowish brown and darker marginated, cervical groove distinct and dark brown (Fig. 21), head very wide, median ocular area almost as long as wide, slightly wider in front than behind, sternum longer than wide, median field white, marginated with brown (Fig. 22), legs (not measured) robust, tibiae and metatarsi of legs I and II with many strong spines. Opisthosoma almost triangle, as long as wide, with a pair of hump on anterior margin, dorsum light yellow with a pair of black bars between humps and unique markings (Fig. 21), venter with three pairs of white spots.

Araneus stella (Karsch, 1879)

[Japanese name: Tsuno-onigumo]

(Fig. 23)

Epeira stella Karsch, 1879, p. 69 (immature male holotype from Japan, F. Hilgendorf leg., deposited in Zoological Museum Berlin, ZMB 2715, examined).

Araneus tsuno Yaginuma, 1972, p. 53, p. 57, figs. 1–8 (female holotype from Susado, Minamiazumi-gun, Nagano Pref., Honshu, Japan, 3–X–1969, Y. Chikuni leg., probably deposited in Osaka Museum of Natural History, not examined); 1986, p. 97, fig. 51, pl. 22, fig. 2. — Chikuni, 1989, p. 64, fig. 6, p. 204. [Syn. nov.]

Type specimen. Holotype: immature ♂, Japan, collected between 1873 and 1876, presumably at Hakodate, Hokkaido, in 1874, F. Hilgendorf leg. (ZMB 2715).

Other specimen examined. 1♂, Itsukaichichō, Nishitama-gun, Tokyo, Honshu, Japan, 28-IX-1987, K. Kumada leg. (NSMT-Ar 1266).

Notes. The holotype of this species shows that the subadult male spider is without doubt the same species as *Araneus tsuno* described by Yaginuma in 1972. Because Karsch gave no illustration of this species at the original description, it has never been recognized by Japanese arachnologists since that time.

Description of the holotype (Fig. 23). Body length 9.4 mm. Prosoma longer than wide, light yellowish brown without marking, cervical groove distinct (Fig. 23), head wide, median ocular area as long as wide, wider in front than behind, chelicera with three teeth on both the margins of fang furrow, respectively, sternum longer than wide, lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: leg I 14.6 mm, tarsus absent (4.5+2.1+3.9+4.1+–), leg II 13.8 mm (4.1+2.1+3.2+3.1+1.3), leg III 9.1 mm (3.0+1.4+1.9+1.8+1.0), leg IV 13.1 mm (4.2+1.7+3.1+3.0+1.1), tibia I with 7 pairs, tibia II with 6 pairs, metatarsus I with 5 pairs, metatarsus II with 4 pairs of ventral spines, respectively. Opisthosoma longer than wide, with a pair of large hump on anterior margin, dorsum light yellowish brown without distinct marking.

References

- Bösenberg, W., & E. Strand 1906. Japanische Spinnen. *Abh. senckenb. naturf. Ges.*, **30**: 93–373, 400–422, pls. 3–16.
- Bonnet, P., 1955. *Araneus* Clerck, 1758. *Bibliographia Araneorum*, **2**: 408–633.
- Chikuni, Y., 1989. Pictorial Encyclopedia of Spiders in Japan. 309 pp. Kaiseisha, Tokyo. (In Japanese.)
- Clerck, C., 1757 [1 January 1758 for the date of publication of scientific names]. *Aranei Suecici, descriptionibus et figuris oeneis illustrati, ad genera subalterna redacti speciebus ultra LX determinati.* 154 pp., 6 pls. Stockholm.
- Grothendieck, K., & O. Kraus, 1994. Die Wasserspinne *Argyroneta aquatica*: Verwandtschaft und Spezialisierung (Arachnida, Araneae, Agelenidae). *Verh. naturwiss. Ver. Hamburg*, (NF), **34**: 259–273.
- Karsch, F., 1879. Baustoffe zu einer Spinnenfauna von Japan. *Verh. naturf. Ver. preuss. Rheil. Westfalens*, **36**: 57–105.
- Koch, L., 1878. Japanesische Arachniden und Myriapoden. *Verh. zool.-bot. Ges. Wien*, **27**: 735–798, pls. XV–XVI.
- Kroneberg, A. I., 1875. Araneae. In: Fedtschenko, A. P., Reise in Turkestan, Zoologischer Theil, 2, pp. 1–58, pls. I–V. Moscow.
- Ono, H., 1997. New species of the genera *Ryuthela* and *Tmarus* (Araneae, Liphistiidae and Thomisidae) from the Ryukyu Islands, Southwest Japan. *Bull. natn. Sci. Mus., Tokyo*, (A), **23**: 149–163.

- Ono, H. 2000. Zoogeographic and taxonomic notes on spiders of the subfamily Heptathelinae (Araneae, Mesothelae, Liphistiidae). *Mem. natn. Sci. Mus., Tokyo*, (33): 145–151.
- Saito, S., 1959. The Spider Book Illustrated in Colours. 194 pp., 28 pls. Hokuryukan, Tokyo. (In Japanese.)
- Schenkel, E., 1936. Schwedisch-chinesische wissenschaftliche Expedition nach den nordwestlichen Provinzen Chinas, unter Leitung von Dr. Sven Hedin und Prof. Sü Ping-chang. Araneae gesammelt vom schwedischen Arzt der Expedition Dr. David Hummel 1927–1930. *Ark. Zool.*, **29A**(1): 1–314.
- Simon, E., 1895. Arachnides recueillis par Mr G. Potanine en Chine et en Mongolie (1876–1879). *Bull. Acad. imp. sci. St.-Petersb.*, (5)**2**: 331–345.
- Tanikawa, A., 2001. Twelve new species and one newly recorded species of the spider genus *Araneus* (Araneae: Araneidae) from Japan. *Acta arachnol.*, **50**: 63–86.
- Yaginuma, T., 1960. Spiders of Japan in Colour. 186 pp., 56 pls., +8 pp. descriptions of a new genus and 17 new species. Hoikusha, Osaka. (In Japanese.)
- Yaginuma, T., 1972. Revision of some Japanese araneid spiders. *Acta arachnol.*, **24**: 51–59. (In Japanese, with english descriptions of new species.)
- Yaginuma, T., 1986. Spiders of Japan in Color, New Edition. 305 pp., 64 pls. Hoikusha, Osaka. (In Japanese.)