

Notes on Three Species of Trapdoor Spiders (Araneae, Liphistiidae and Ctenizidae) from Japan

Hirotsugu Ono

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

Abstract Three trapdoor spiders of the families Liphistiidae and Ctenizidae are reported from Japan. Females of *Ryuthela owadai* Ono, 1997 (Liphistiidae), are newly described based on fresh specimens collected from Tokashikijima Island, Southwest Japan. *Latouchia japonica* Strand, 1910 (Ctenizidae), is redescribed based on the syntypes found in the old collection of the Muséum National d'Histoire Naturelle, Paris. The type locality of *Latouchia typica* (Kishida, 1913) is determined and the neotype is designated.

Key words: Taxonomy, Araneae, Liphistiidae, Ctenizidae, Japan.

Results of a taxonomic study of three Japanese species of trapdoor spiders of the families Liphistiidae and Ctenizidae are reported in the present paper. The female of *Ryuthela owadai* Ono, 1997, hitherto unknown, is newly described with specimens obtained from Tokashikijima Island, Southwest Japan. *Latouchia japonica* Strand, 1910, is redescribed based on the syntypes found in the old collection of the Muséum National d'Histoire Naturelle, Paris. The description of *Kishinouyeus typicus* (*Latouchia typica* at present) made by Kishida (1913) is regarded as the original. The type locality of the species is determined on the basis of designation of neotype.

The abbreviations used in this paper are as follows: ALE, anterior lateral eye; AME, anterior median eye; PLE, posterior lateral eye; PME, posterior median eye.

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Family Liphistiidae

Ryuthela owadai Ono, 1997

[Japanese name: Tokashiki-kimuragumo]

(Figs. 1–3)

Ryuthela owadai Ono, 1997, p. 155 (♂ holotype and 1 ♂, 1 juv. ♀ paratypes from Aharen, Tokashikijima

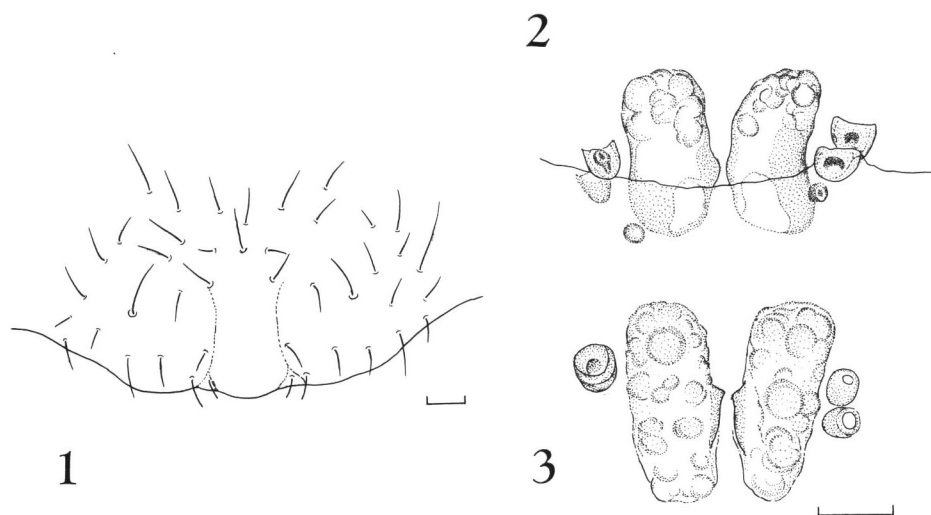
Island, Ryukyu Islands, SW Japan, 11-X-1990, M. Owada leg., NSMT-Ar 3459–3461, examined); 1999, p. 41; 2000, p. 149.

Notes. Females of this species newly obtained are described in following lines. Although the female genital organ of this species is peculiar in having cupulate glands attached to spermathecae, its general structure resembles that of *Ryuthela nishihirai* (Haupt, 1979) distributed in the southern part of Okinawajima Island. The relationship between both the species performed in males (Ono, 1997) is confirmed with females too.

Specimens examined. 3 ♀, Tokashiku, 30 m alt., Tokashiki-son, Tokashiki-jima Island, the Ryukyu Islands, Okinawa Pref., Southwest Japan, 17-I-2001, H. Ono leg. (NSMT-Ar 4857–4859); 1 ♀, Tokashiki, 40 m alt., Tokashiki-son, Tokashikijima Island, the Ryukyu Islands, Okinawa Pref., Southwest Japan, 18-I-2001, H. Ono leg. (NSMT-Ar 4860).

Description of females. Measurement based on 4 ♀. Body length 9.6–14.1 mm; prosoma length 5.1–5.8 mm, width 4.0–4.8 mm; opisthosoma length 5.1–7.1 mm, width 3.9–5.6 mm; lengths of palp and legs of 1 ♀ from Tokashiku (NSMT-Ar 4857) [total length (femur+patella+tibia+metatarsus+tarsus)]: palp 9.3 mm (3.5+1.8+1.9+—+2.2), leg I 10.7 mm (3.5+2.0+2.0+2.1+1.1), II 10.5 mm (3.3+2.0+1.9+2.1+1.2), III 10.9 mm (3.1+1.9+1.9+2.5+1.5), IV 15.4 mm (4.2+2.4+2.9+3.8+2.1).

Prosoma longer than wide, head high; ocular tubercle wider than long, ALE>PLE>PME>AME (nearly 18:15:10:2), AME very small, clypeus wider than



Figs. 1–3. *Ryuthela owadai* Ono, 1997, ♀, NSMT-Ar 4857. — 1, Genital area of female, ventral view; 2, spermathecae, dorsal view; 3, spermathecae, ventral view. [Scales: 0.1 mm.]

ALE-ALE, median ocular area trapezoidal, wider than long. Chelicera with 12 teeth on promargin of fang furrow. Leg formula IV, III, I, II; superior claws of tarsi each with 2–3 teeth, claw of palp with 2 teeth.

Opisthosoma ovate, longer than wide; posterior median spinnerets reduced and totally fused.

Female genitalia (Figs. 1–3). A pair of spermathecae present; spermathecae thick, basally close to each other; the distal part rounded and granulate; two cupulate processes present at the side of each spermatheca.

Coloration and markings. Prosoma beige, head darker, ocular tubercle black; chelicerae dorsally yellowish brown, ventrally reddish brown, sternum, legs and palps light yellowish brown. Opisthosoma beige, dorsal sclerites beige mottled with greyish brown; ventral sclerites light yellowish brown, genital part darker, spinnerets yellow.

Family Ctenizidae

Latouchia japonica Strand, 1910

[Japanese name: Miyakojima-totategumo]

(Figs. 4–6)

Latouchia japonica Strand, 1910, p. 441 (2♀ 1 juv. syntypes, “Miyako, Süd-Japan, Dr. Andreae leg., Friese mihi ded.,” in the Muséum National d’ Histoire Naturelle, Paris, examined). — Saito, 1938, p. 35 (Japanese translation of a part of Strand’s German description).

Notes. This species was never recognized since its original description, because no illustration was given and the depository of type specimens was hitherto unknown. However, I fortunately found its syntypes at the Natural History Museum in Paris. A redescription based on a female syntype is given as follows. Miyakojima Island is at present occupied by sugar cane fields and the trapdoor spiders are hardly found.

Specimens examined. 2♀ 1 juv. syntypes, “Miyako, Süd-Japan, Dr. Andreae leg., Friese mihi ded.” (MNHN 27–3812).

Redescription based on an adult female syntype. Measurement. Body length 11.4 mm; prosoma length 6.0 mm, width 5.2 mm; opisthosoma length 7.0 mm, width 5.5 mm; lengths of palp and legs [total length (femur+patella+tibia+metatarsus+tarsus)]: palp 11.2 mm (4.1+2.2+2.3+—+2.6), leg I 12.3 mm (4.0+2.7+2.4+2.1+1.1), II 10.6 mm (3.6+2.1+2.0+1.9+1.0), III 10.8 mm (3.3+2.2+1.4+2.4+1.5), IV 15.9 mm (4.9+3.0+3.0+3.2+1.8).

Prosoma longer than wide, fovea distinct; ocular tubercle (Fig. 4) wider than long, ALE>PLE>PME=AME (nearly 15:14:8:8), median ocular area trapezoidal, wider than long, AME-AME narrower than diameter of AME (5:7). Chelicera with 7 teeth on each margin of fang furrow (Fig. 5). Leg formula IV, I, III, II; superior claws of tarsi each with 2–3 teeth, claw of palp with a tooth.

Opisthosoma ovate, longer than wide; female genitalia with a pair of globular spermathecae (Fig. 6).

Coloration and markings. Prosoma brown, chelicerae reddish brown, maxillae, labium, sternum, palps and legs yellowish brown. Opisthosoma damaged, greyish white.

***Latouchia typica* (Kishida, 1913)**

[Japanese name: Kishinoue-totategumo]

(Figs. 7–9)

Totategumo (no scientific name): Kishinoue, 1889 a, p. 154, pl. 16, figs. 1–8; 1989 b, p. 307.

Kishinouyeus typicus Kishida, 1913, p. 22.; 1927, p. 958, fig. 1848; 1928, p. 386. — Saito, 1938, p. 34, fig. 21. — Yaginuma, 1954, p. 21, pl. 1, 2 figs; 1960, p. 20, pl. 1, 2 figs.

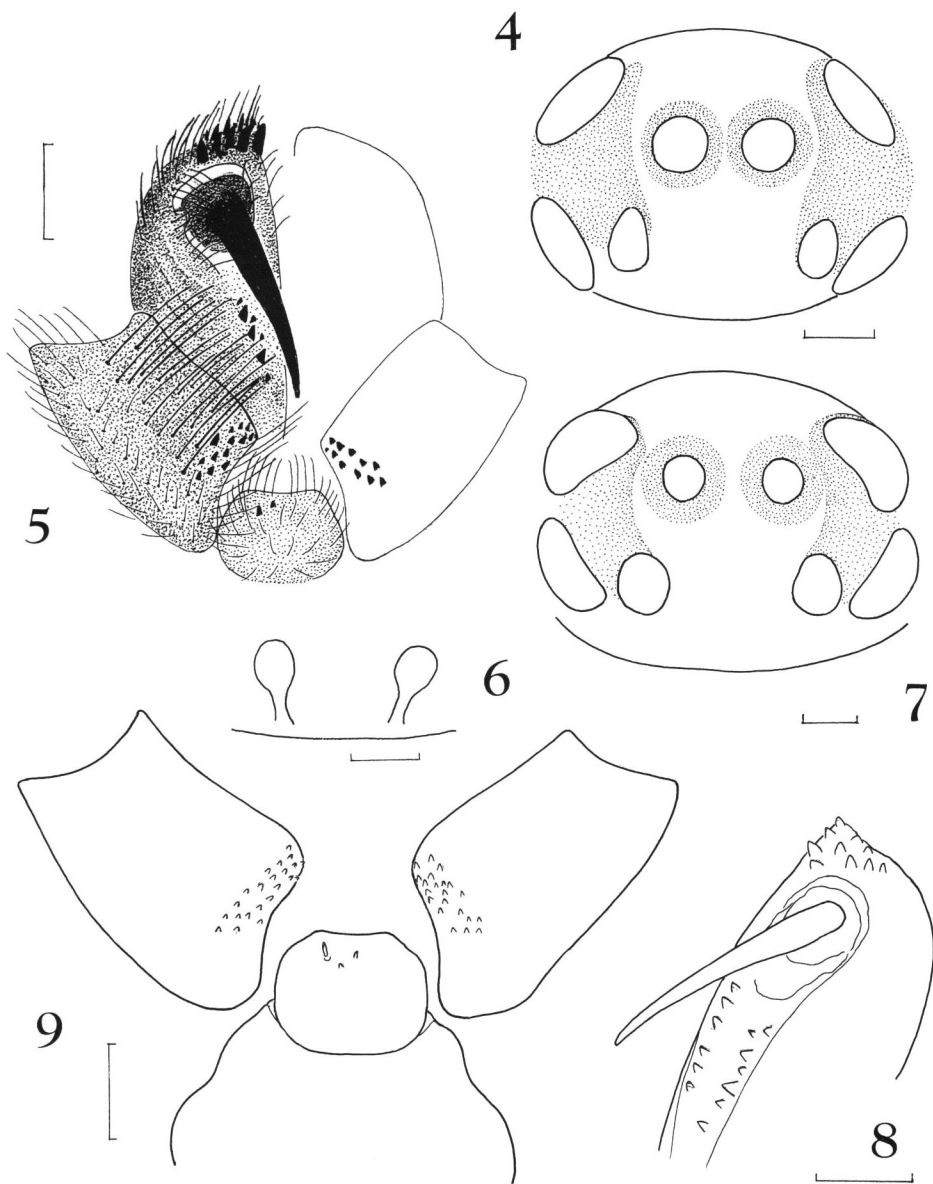
Latouchia typica: Yaginuma, 1961, p. 2; 1965, p. 360, fig.; 1968, p. 20, pl. 1, 2 figs; 1986, p. 3, pl. 1, fig. 4, text-fig. 1. — Chikuni, 1989, p. 19, fig. 1, p. 163.

Notes. Kishinoue (1889 a) described and illustrated a trapdoor spider found in the garden of Tokyo University, Bunkyo-ku, Tokyo, but gave no scientific name. Kishida (1913) described this spider under the name *Kishinouyeus typicus*, having noticed that the new genus and species should be established in another paper of him. However, the paper was not published.

The generic and specific names were regarded as valid, and the only and oldest description of “*Kishinouyeus typicus*” published by Kishida (1913) was elevated to the original one for this trapdoor spider (Yaginuma, 1954, 1960). After not long Yaginuma (1961) revised some trapdoor spiders of Japan and synonymized the genus *Kishinouyeus* Kishida, 1913 with *Latouchia* Pocock, 1901.

Although *Latouchia typica* was commonly used for a Japanese trapdoor spider widely distributed in southern Honshu, Shikoku and Kyushu (Yaginuma, 1968, 1986; Chikuni, 1989), some problems have been left unsolved: 1) Is the Kishida’s paper of 1913 valid as the original description of the species? 2) Does the type specimen exist? 3) Where is the type locality?

The answer for the first question should be yes, because the scientific value of this paper has been repeatedly recognized by many authors. I respect the first revisor (Yaginuma) for his treatment. For the second question the answer is no; the depository of type specimens of arachnids described by Kishida is totally unknown with the exception of that of a tick species, which is preserved at present in the collection of the National Science Museum, Tokyo. Kishida’s collection of various animals was lost at the Experiment Station of Forestry Agency at Meguro, Tokyo, where he was working at last (private communication from Mr. I. Obara, mammalogist, Tokyo). In his private collection (lost after his death in 1968) no arachnid specimen was seen by his family (private communication from Prof. S. Kishida, Tokyo, the youngest son of Dr. K. Kishida).



Figs. 4–9. 4–6, *Latouchia japonica* Strand, 1910, 1 ♀ syntype, MNHN 27–3812; 7–9, *Latouchia typica* (Kishida, 1913), ♀ neotype, NSMT-Ar 4861. — 4, eyes, dorsal view; 5, chelicera, maxillae and labium, ventral view; 6, female genitalia, ventral view; 7, eyes, dorsal view; 8, chelicera, ventral view; 9, maxillae and labium, ventral view. [Scales: 4, 7, 0.2 mm; 5, 8, 9, 1 mm; 6, 0.5 mm.]

My experience shows that Japanese spiders such as *Latouchia* can geographically vary much because their ability in moving is not large. Specimens identified with *Latouchia typica* should be re-examined in future, because we cannot be sure that all the trapdoor spiders from Honshu, Shikoku and Kyushu belong to one species. Therefore, a designation of the neotype of *Kishinouyeus typicus* is indispensable.

Kishida (1913) gave the generic name *Kishinouyeus* in honor of the contribution of Prof. K. Kishinoue (also spelled Kishinouye), Tokyo University, in arachnology, who first described the spider in question, and cited Tokyo for the distribution of the species. This suggested that the campus of Tokyo University, where Kishinoue observed the spider, should be chosen as the type locality of this species.

Thus, the neotype is herewith designated for *Kishinouyeus typicus* Kishida, 1913, and its description is given as follows.

Specimen examined. Neotype: ♀, campus of Tokyo University, Hongô, Bunkyo-ku, Tokyo, Japan, 28–VIII–1995, F. Sasaoka leg. (NSMT-Ar 4861).

Description. Measurement. Body length 16.3 mm; prosoma length 7.5 mm, width 6.9 mm; opisthosoma length 9.0 mm, width 6.1 mm; lengths of palp and legs [total length (femur+patella+tibia+metatarsus+tarsus)]: palp 10.8 mm (4.0+2.1+2.2+—+2.5), leg I 14.9 mm (5.1+3.1+3.0+2.5+1.2), II 13.4 mm (4.4+3.2+2.5+2.1+1.2), III 13.4 mm (4.2+3.1+1.9+2.4+1.7), IV 17.2 mm (5.3+3.3+3.2+3.7+1.7).

Prosoma longer than wide, fovea distinct; ocular tubercle (Fig. 7) wider than long, ALE>PLE>PME>AME (nearly 15:13:9:7), median ocular area trapezoidal, wider than long, AME-AME wider than diameter of AME (8:7). Chelicera with 6 teeth on promargin and 7 teeth on retromargin of fang furrow (Fig. 8), maxillae and labium denticulate, sternum slightly longer than wide (47:44). Leg formula IV, I, II, III; claws of tarsi of palp and legs each with a tooth.

Opisthosoma ovate, longer than wide. Female genitalia will be described after determination of the geographical variation upon individuals from various places.

Coloration and markings. Prosoma greyish brown with a distinct fovea, chelicerae reddish brown, maxillae, labium, sternum, legs and palps yellowish brown. Opisthosoma purplish brown with some pairs of white bars in the posterior half, ventral side lighter.

References

- Chikuni, Y., 1989. Pictorial Encyclopedia of Spiders in Japan. 309 pp. Kaisei-sha, Tokyo. (In Japanese.)
 Kishida, K., 1913. Spiders of Japan (1). *Kagaku Sekai* (World of Science), 7(4): 19–22. (In Japanese.)
 Kishida, K., 1927. Arachnida. In: Uchida, S. et al.: *Figuraro de Japanaj Bestoj*, pp. 952–991. Hokuryû-kan, Tokyo. (In Japanese.)
 Kishida, K., 1928. Trapdoor spiders of Japan and their bearing on Zoögeography. *Annot. zool. japon.*, 11: 385–387.
 Kishinoue, K., 1889 a. Totategumo. [A trapdoor spider.] *Zool. Mag.*, 1: 154–159, pl. 16. (In Japanese.)

- Kishinoue, K., 1889b. Totategumo. [A trapdoor spider, remarks.] *Zool. Mag.*, **1**: 307–308. (In Japanese.)
- 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., 1999. Spiders of the genus *Heptathela* (Araneae, Liphistiidae) from Vietnam, with notes on their natural history. *J. Arachnol.*, **27**: 37–43.
- 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., 1938. Class Arachnoidea, Order Araneina, Part 1. Suborder Liphistiomorphae, Suborder Mygalomorphae, *Fauna Nipponica*, **9** II(1): i–iii, 1–58. (In Japanese.)
- Strand, E., 1910. Eine neue japanische Ctenizine (Araneae). *Deutsch. ent. Zeitschr.*, **1910**: 441–442.
- Yaginuma, T., 1954. Synopsis of Japanese spiders (1). *Atypus*, (5): 13–24, pl 1. (In Japanese.)
- Yaginuma, T., 1960. Spiders of Japan in Colour. vi+186+8 pp., 56 pls. Hoikusha, Osaka. (In Japanese.)
- Yaginuma, T., 1961. Revision of Families, Genera and Species of Japanese Spiders. 45 pp. Arachnological Society of East Asia, Osaka. (In Japanese.)
- Yaginuma, T., 1965. Araneae. In Okada, K., S. Uchida & T. Uchida (eds.): New Illustrated Encyclopedia of the Fauna of Japan, pp. 356–388. Hokuryû-kan, Tokyo. (In Japanese.)
- Yaginuma, T., 1968. Spiders of Japan in Colour, Enlarged and Revised Edition. vi+197 pp., 56 pls. Hoikusha, Osaka. (In Japanese.)
- Yaginuma, T., 1986. Spiders of Japan in Color, New Edition. xxiv+305 pp., 64 pls. Hoikusha, Osaka. (In Japanese.)

