

Three Interesting Spiders of the Families Filistatidae, Clubionidae and Salticidae (Araneae) from Palau

Hirotsugu Ono

Department of Zoology, National Museum of Nature and Science,
4–1–1, Amakubo, Tsukuba-shi, Ibaraki, 305–0005 Japan
E-mail: ono@kahaku.go.jp

(Received 29 August 2011; accepted 28 September 2011)

Abstract Three interesting spiders from the Republic of Palau are reported. *Filistata fuscata* Nakatsudi, 1943 (Filistatidae), is taxonomically revised and redescribed with topotypical specimens newly obtained. Nakatsudi is regarded as the only author of the name, contrary to the hitherto treatments in the catalogues as Kishida, 1943 or Kishida in Nakatsudi, 1943. *Filistata fuscata* Kishida, 1947, validated on the basis of Kishida (1947) as its original description is regarded as a junior homonym and synonym of *Filistata fuscata* Nakatsudi, 1943. After a careful assessment of characteristics, the species is transferred from the original genus into *Tricalamus* Wang, 1987, and a new combination *Tricalamus fuscatus* is proposed. Two new species of the genera *Clubiona* Latreille, 1804 (Clubionidae) and *Athamas* O. Pickard-Cambridge, 1877 (Salticidae), are described from Koror Island of Palau under the names, *Clubiona jaegeri* sp. nov. and *Athamas prozysinskii* sp. nov., respectively.

Key words: Taxonomy, Araneae, Filistatidae, Clubionidae, Salticidae, Palau.

In the course of research project on the biodiversity inventory in western Pacific regions made by the National Museum of Nature and Science, Tokyo, the author visited the Republic of Palau for a short period in January 2011. He aimed to collect data of *Filistata fuscata*, a species of the spider family Filistatidae described by Nakatsudi (1943) with only females from Koror Island, Palau, of the former Japanese Micronesia. It was never recognized since the original description except for an unreliable record from Hahajima Island of the Ogasawara Islands, Japan (Yaginuma 1970, 1979; Ono, 2011b). Besides, there is confusion on the authorship of the name. On the basis of fresh, topotypical specimens including a male discovered, the species is redescribed and taxonomically revised.

Two new species of the sac spider genus *Clubiona* Latreille, 1804 (Clubionidae), and the jumping spider genus *Athamas* O. Pickard-Cambridge, 1877 (Salticidae), both from Koror Island are also described herewith.

The abbreviations used are as follows: ALE, anterior lateral eye; AME, anterior median eye; ap, in the apical part; PLE, posterior lateral eye; PME, posterior median eye.

The specimens used for this study including types of the new species are deposited in the arachnid collection (Tsukuba) of the National Museum of Nature and Science, Tokyo (NSMT-Ar).

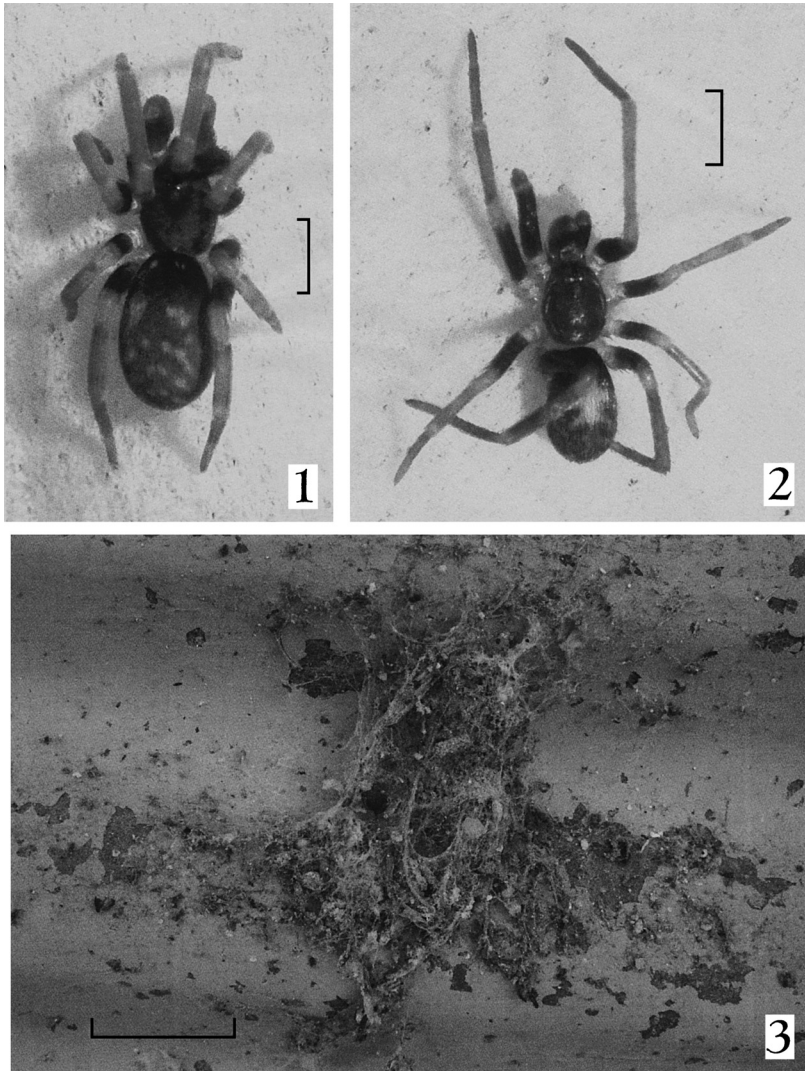
Family Filistatidae

Genus *Tricalamus* Wang, 1987

Tricalamus fuscatus (Nakatsudi, 1943),
comb. nov.
(Figs. 1–11)

“*Filistata fuscata* Kishida, 1919,” in Nakatsudi, 1943, p. 148. [Nomen nudum; “Araneae Pelewensis, 1919, p. 2” as cited by Nakatsudi is regarded as unpublished notes of Kishida.]

Filistata fuscata Nakatsudi, 1943, p. 148, fig. 1 a–c (type material based on a female described and some imma-



Figs. 1–3. *Tricalamus fuscatus* (Nakatsudi, 1943). — 1, Female (NSMT-Ar 9790); 2, male (NSMT-Ar 9791); 3, web of the female. [Scales for Figs. 1–2, 1 mm, for Fig.3, 10 mm.]

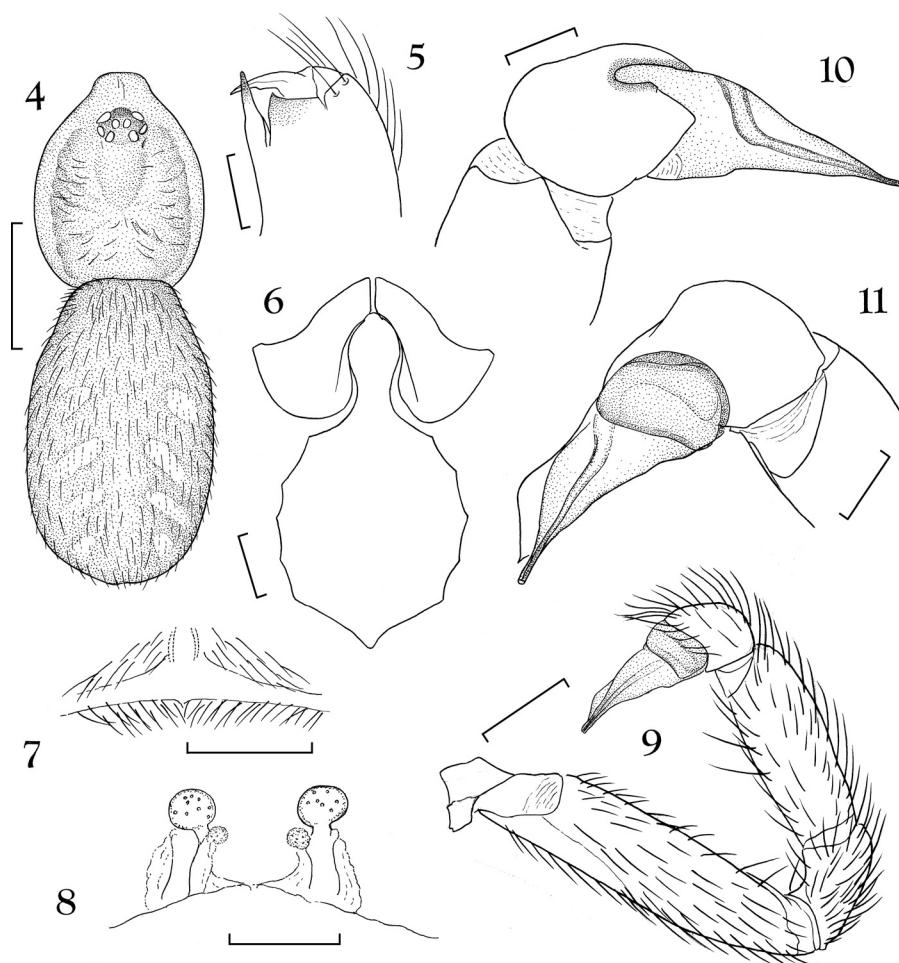
ture females collected by Toji Ogata on Koror Island, Palau Islands, VIII-1941; depository unknown, but presumably in the Tokyo University of Agriculture, referring to the explanation in the introduction of the paper. [Given as “*Filistata fuscata* Kishida,” but the spider was studied and described solely by K. Nakatsudi.] — Ono, 2011b, p. 444.

Filistata fuscata Kishida, 1947, p. 999, fig. 2839 (based on specimens from Japanese Micronesia as the type area; depository of type specimens unknown). [First validated by Ono (2011b) based on the neglected literature of Kishida, and regarded as a junior homonym and synonym of *Filistata fuscata* Nakatsudi, 1943.]

“*Filistata fuscata* Kishida in Nakatsudi, 1943:” Brignoli, 1983, p. 144.

“*Filistata fuscata* Kishida, 1943:” Platnick, 2011, The World Spider Catalogue, Version 12.0, <http://research.amnh.org./iz/spiders/catalog>.

Notes. “*Filistata fuscata*” was published for the first time by Nakatsudi (1943) with females from Koror Island, Palau. The species has been recorded in the catalogues as “*Filistata fuscata* Kishida in Nakatsudi, 1943” (Brignoli, 1983) or “*Filistata fuscata* Kishida, 1943” (Platnick,



Figs. 4–11. *Tricalamus fuscatus* (Nakatsudi, 1943). 4–8, Female (NSMT-Ar 9790), 9–11, male (NSMT-Ar 9791). — 4, Pro- and opisthosomata (appendages omitted), dorsal view; 5, chelicera, ventral view; 6, maxillae, labium and sternum, ventral view; 7, genital field, ventral view; 8, inner organ of female genitalia, dorsal view; 9, male palp, prolateral view; 10, palpal organ, retrolateral view; 11, palpal organ, prolateral view. [Scales for Fig. 4, 0.5 mm, for Figs. 6–9, 0.25 mm, for Figs. 5, 10–11, 0.1 mm.]

2011), because Nakatsudi designated “*Filistata fuscata* Kishida” for the name of spider and cited “Kishida, 1919, *Araneae Pelewensis*, p. 2, as the source.” However, this citation should be made on the basis of Kishida’s suggestion oral or in personal writing, and *Araneae Pelewensis* was de facto one of Kishida’s unpublished notes. Regarding the description and the figures as the original publication of Kodi Nakatsudi, the present author has recognized only Nakatsudi for the author of the name (vide also Ono, 1994, 2005). Personality of Kodi Nakatsudi was explained in

detail in a memorial article published in *Acta Arachnologica*, Vol. 43, 1994, pp. 95–112. Although the true nature of the spider was never ascertained since the original description except for an unreliable record from Hahajima Island of the Ogasawara Islands, Japan (Yaginuma 1970, 1979; Ono, 2011), and the type depository was not known, the author obtained on Koror Island fresh, topotypical specimens including a male. Thus, the interesting species is redescribed in the following lines.

Diagnosis. This species is herewith transfer-

red from the original genus into *Tricalamus* Wang, 1987, after a careful examination of important characters, especially of the condition of calamistrum on the leg IV of female and the structure of male palpal organ. Spiders of *Filistata* Latreille, 1810 are much larger in size, and have male palp with slender segments, long cymbium and a different structure of palpal organ (Lehtinen, 1967). The genus *Tricalamus* was separated from *Pritha* Lehtinen, 1967, by the shape of calamistrum having three rows of hairs, while that of *Pritha* has two rows (Wang, 1987b). However, these two genera have a similar structure of male palp with robust segments and the cymbium with U-shaped notch. The relationship between *Tricalamus* and *Pritha* should be solved from many different angles in future, but the present author follows the treatment of Wang (1987a, b) for the time being. In a dozen known species of *Tricalamus* from China, no close relative with this species could be specified.

Specimens examined. One female and one male used for the following description, from Koror Island (7°20'N/134°30'E), the Republic of Palau, 30-I-2011, H. Ono leg. (NSMT-Ar 9790–9791); seven females with same data (NSMT-Ar 9792–9794).

Description. Measurements: Body length female 3.56 mm, male 2.85 mm; prosoma length female 1.50 mm, male 1.31 mm, width female 1.24 mm, male 1.01 mm; opisthosoma length female 2.25 mm, male 1.69 mm, width female 1.33 mm, male 0.93 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: female I 5.65 mm (1.47+0.53+1.46+1.26+0.93), II 4.18 mm (1.23+0.49+0.90+0.90+0.66), III 3.59 mm (1.02+0.48+0.75+0.80+0.54), IV 4.80 mm (1.35+0.48+1.20+1.11+0.66), male I 6.08 mm (1.56+0.47+1.68+1.44+0.93), II 4.25 mm (1.29+0.38+0.81+1.17+0.60), III 3.93 mm (0.99+0.39+0.99+1.08+0.48), IV 5.24 mm (1.36+0.42+1.44+1.40+0.62).

Prosoma: Carapace longer than wide (length/width female 1.21, male 1.30), covered with hairs, median furrow indistinct (Fig. 4). Eyes compactly set, ALE>PLE>PME>AME (6:5:4:

3 in female, 8:6:4:3 in male), both the eye rows procurved, AME-AME AME-ALE (1:2 in female, 1:1 in male), ALE-ALE>PME-PME (9:7 in female, 8:7 in male), PME and PLE close to each other, median ocular area wider than long (length/width 0.71 in female and male), wider behind than in front (anterior width/posterior width 0.57 in female, 0.64 in male), clypeus wider than the width of ocular area. Chelicera (Fig. 6): Small, with a short fang, fang furrow absent but a large tooth-like process present on the margin, which forms pincers with fang; maxillae convergent and close to each other apically, labium united basally with sternum, longer than wide, sternum longer than wide (length/width around 1.25) (Fig. 5), female palp with claw. Legs, especially those of female robust, densely covered with thick hairs but with a few spines: male tibiae I–II ventrally with two weak, apical spines, metatarsi I–II with one apical spine, leg formula: I-IV-II-III, calamistrum of female situated in the basal part of metatarsi IV with three rows (9/5/10) of hairs.

Male palp (Figs. 9–11): Femur longer than patella+tibia, tibia longer than tarsus, without any apophysis, cymbium short, with U-shaped notch dorso-retrolaterally, palpal organ simple and long with short embolus with a wing-like process.

Opisthosoma: Oval, longer than wide (length/width 1.69 in female, 1.82 in male), densely covered with strong hairs, spinnerets compactly set, anterior spinnerets as same as posterior ones in size, median ones small, cribellum paired, small squares.

Female genitalia (Figs. 7–8): Genital field wider than long, with a bald area long sideways. Inner organ very small, with a pair of globular spermathecae and small glands on short stems.

Coloration and markings (Figs. 1–2, 4): Female and male: carapace brown with indistinct black markings laterally, ocular area black, chelicerae, maxillae and labium yellowish brown, sternum light yellowish brown, palps and legs blackish or dark reddish brown except for coxae and trochanters whitish, color of legs III lighter.

Opisthosoma dorsum blackish brown, with paired light colored patch, black laterally, milk white ventrally.

Variation. Body length of females: 3.56–5.46 mm.

Distribution. Palau (Koror Island). Records from the other part of Micronesia and Japan (Ogasawara Islands) should be checked.

Remark. Spiders of the species make webs with delicate and dusty threads (Fig. 3) on the walls and at the edge of window frame of buildings as well as on the trunk of trees.

Family **Clubionidae**

Genus *Clubiona* Latreille, 1804

Clubiona jaegeri sp. nov.

(Figs. 12–16)

Diagnosis. This new species belongs to the species group of *Clubiona hystrix* Berland, 1938, defined by Deeleman-Reinhold (2001), and seems close to the type species of the group known from New Hebrides, *C. maipai* Jäger et Dankittipakul, 2010, from Thailand, *C. kuu* Jäger et Dankittipakul, 2010, from Laos, and *C. oceanica* Ono, 2011a, from Ogasawara Islands, Japan. However, the embolus of this news species is much longer and the basal part of the retrolateral tibial apophysis is much thicker than those of these related species.

Type specimen. Holotype: male from Koror Island (7°20'N/134°30'E), Palau Islands, found on a leaf of herbaceous liana, 30-I-2011, H. Ono leg. (NSMT-Ar 9797).

Description (holotype). Measurements: Body length 5.29 mm; prosoma length 2.51 mm, width 1.71 mm; opisthosoma length 2.59 mm, width 1.37 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: I 5.93 mm (1.78+0.99+1.54+1.09+0.53), II 6.34 mm (1.88+1.05+1.69+1.16+0.56), III 5.01 mm (1.46+0.75+1.03+1.31+0.46), IV 7.89 mm (2.28+0.90+1.71+2.34+0.66).

Prosoma: Carapace longer than wide (length/width 1.47), with wide head and median furrow.

Eyes almost same in size, the anterior eye row slightly recurved and the posterior row almost straight in dorsal view, AME-AME=AME-ALE, PME-PME>PME-PLE (2:1), median ocular area wider than long (length/width 0.60), wider behind than in front (anterior width/posterior width 0.65), clypeus very narrow. Chelicera (Fig. 13) with serration on the promargin of fang furrow and two small teeth on the retromargin, labium longer than wide (length/width 1.37), sternum longer than wide (length/width 1.80). Legs robust and hairy; leg formula: IV-II-I-III. Spination: Femora: I–IV dorsally 0-1-1-1, I and IV prolaterally 0-0-0-1, II–III prolaterally 0-0-1-1, I–IV retrolaterally 0-0-1-1; patellae: I–IV dorsally 1-0-1 (weak); tibiae: I ventrally 2-2-0, II ventrally 2-2-1, III–IV pro- and retrolaterally 1-1, III ventrally 2-0-2ap, IV ventrally 2-1-1ap; metatarsi: I–IV pro- and retrolaterally 1-1-2ap, II ventrally 1-0, III ventrally 2-0-2ap, IV ventrally 2-1-1ap.

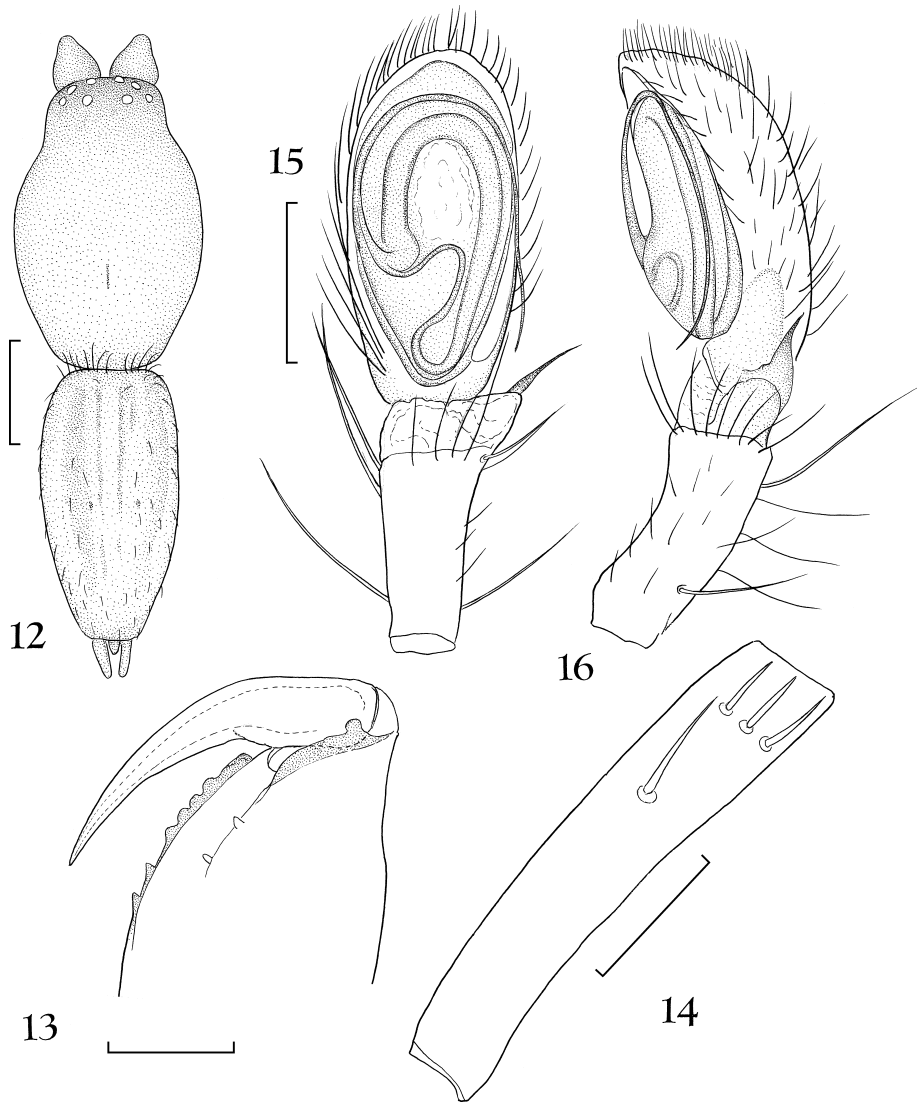
Male palp (Figs. 14–16): Femur distally with strong spines (Fig. 14), tibia shorter than tarsus, furnished with a retrolateral apophysis with spiniform tip. Cymbium an oval cup, palpal organ simple with the middle part of tegulum membranous and not forming apophysis, embolus filiform and long.

Opisthosoma: Much longer than wide (length/width 1.89), narrower posteriorly and furnished with short hairs. Anterior spinnerets cylindrical and thicker than posterior ones.

Coloration and markings (Fig. 12): Carapace light reddish brown anteriorly, yellowish brown posteriorly, chelicerae and maxillae yellowish brown, labium and sternum light yellowish brown, palps and legs yellow, without any markings; opisthosoma light yellowish brown dorsally, light grey laterally and ventrally, without any distinct markings.

Distribution. Palau (Koror Island).

Etymology. The new species is dedicated to Dr. Peter Jäger, Germany, one of the leading arachnologists.



Figs. 12–16. *Clubiona jaegeri* Ono, sp. nov., male holotype, (NSMT-Ar 9797). — 12, Pro- and opisthosomata (appendages omitted), dorsal view; 13, chelicera, ventral view; 14, femur of palp, dorsal view; 15, palpal organ, ventral view; 16, palpal organ, retrolateral view. [Scales for Fig. 12, 1 mm, for Figs. 13–16, 0.25 mm.]

Family Salticidae

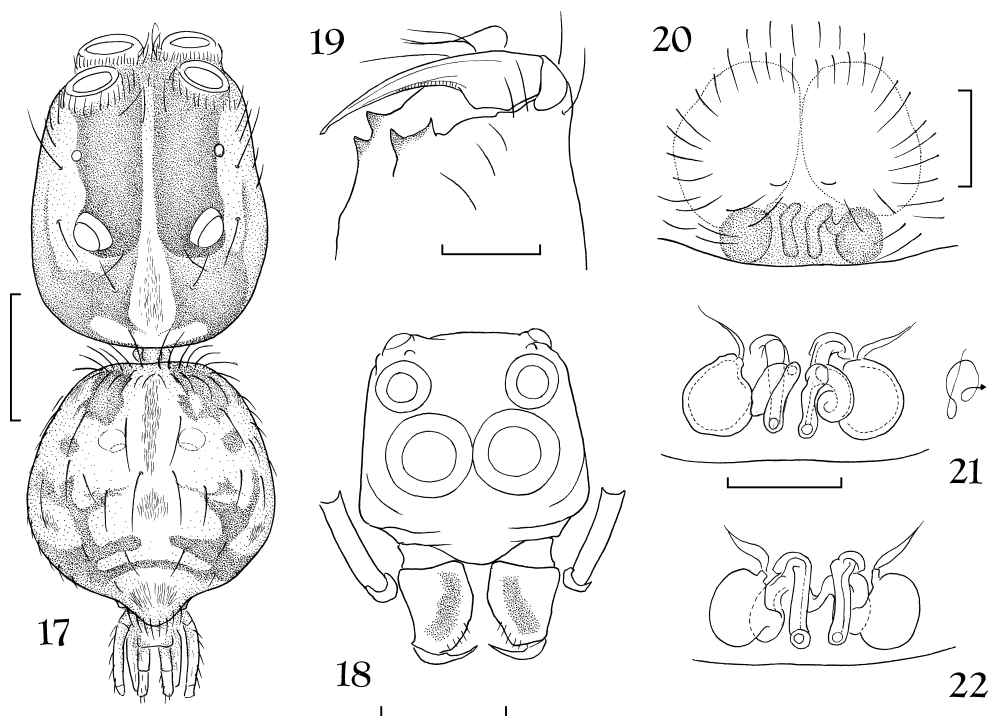
Genus *Athamas* O. Pickard-Cambridge, 1877

Athamas prozysnki sp. nov.

(Figs. 17–28)

Notes. The genus *Athamas* O. Pickard-Cambridge, 1877, has been known from western and southern Pacific Islands, comprising seven species, *A. whitmei* O. Pickard-Cambridge,

1877, the type species described from Samoa, Polynesia, *A. kochi* Jendrzejewska, 1995, and *A. tahitiensis* Jendrzejewska, 1995, from Tahiti, Polynesia, *A. univittatus* Berland, 1938, from New Hebrides (Vanuatu), and *A. guinensis* Jendrzejewska, 1995, *A. nitidus* Jendrzejewska, 1995, and *A. debakkeri* Szűts, 2003, from Papua New Guinea [cf. Prószyński's Monograph of Salticidae (Araneae) of the World, Version 2011, <http://www.miiz.waw.pl/salticid/main.htm>]. Of



Figs. 17–22. *Athamas prozsynskii* Ono, sp. nov., female, allotype (NSMT-Ar 9796). — 17, Pro- and opisthosoma (appendages omitted), dorsal view; 18, prosoma, frontal view; 19, chelicera, ventral view; 20, epigynum, ventral view; 21, inner organ of female genitalia, ventral view, with a schema showing the route and direction of intromittent canal; 22, inner organ, dorsal view. [Scales for Fig. 17, 0.5 mm, for Figs. 18–22, 0.1 mm.]

these species, *Athamas whitmeei* is exceptionally estimated to have a wide distributional range from the Society Islands to the Caroline Islands, showing a remarkable variation in male palpal organ and female genitalia (Berry, Beatty and Prószyński, 1996). The present material is not enough to solve this problem, but the author takes a skeptical view on such conspicuous, interspecific divergence in salticids. Other than details of the sexual organs, structural coloration caused by specialized hairs may deserve more appreciation for spiders living by sight. Further species may be cryptic on other small and larger islands scattered in the Pacific Ocean, because a bare possibility of geographic variation occurs in the case of artificial spreading as observed occasionally on oceanic islands (Ono, 2011 b).

Diagnosis. The new species is separated from *Athamas whitmeei*, sensu stricto, from

Samoa, by the details of sexual organs, especially of the shape of tegular ridge and embolus (cf. Figs. 25 and 27 and Prószyński, 1984, p. 4, upper right fig.), and of size of anterior membranous windows of epigynum and female genitalia (cf. Fig. 20 and Berry, Beatty and Prószyński, 1996, p. 218, figs. 10–12), as well as the male coloration and markings (cf. Fig. 23 and the description by O. Pickard-Cambridge, 1877, pl. LVI, fig. 11 and Prószyński, 1984, p. 4, middle right fig.).

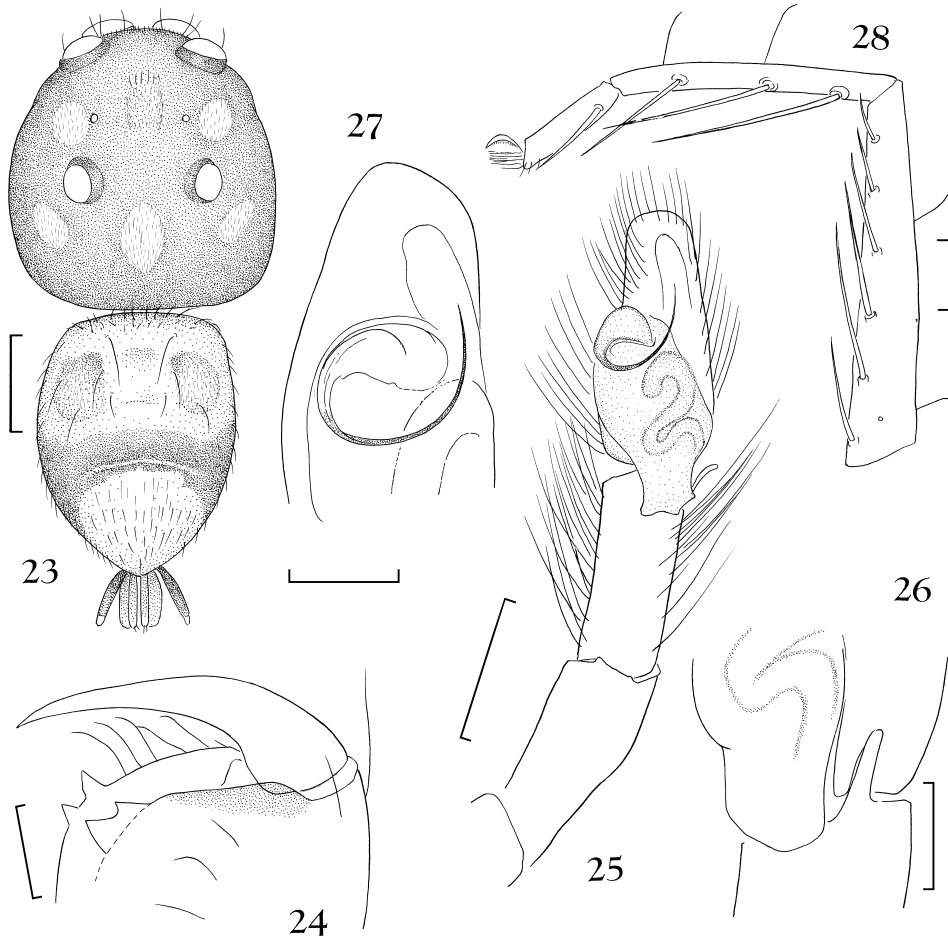
Type series. Holotype: male and a female paratype, from Koror Island (7°20'N/134°30'E), Republic of Palau, 27-I-2011, H. Ono leg. (NSMT-Ar 9795–9796).

Description (female and male). Measurements: Body length female 2.16 mm, male 2.98 mm; prosoma length female 1.20 mm, male 1.38 mm, width female 0.94 mm, male 1.35 mm, height female 0.75, male 1.12; opisthosoma

length female 0.98 mm, male 1.35 mm, width female 0.90 mm, male 0.98 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: female I 2.63 mm (0.89+0.40+0.64+0.44+0.26), II 2.03 mm (0.69+0.23+0.52+0.38+0.21), III 2.49 mm (0.86+0.31+0.53+0.49+0.30), IV 2.53 mm (0.81+0.30+0.52+0.62+0.28), male I 4.81 mm (1.55+0.72+1.22+0.94+0.38), II 2.91 mm (0.94+0.47+0.60+0.64+0.26), III 3.13 mm (0.92+0.47+0.69+0.77+0.28), IV 3.67 mm (1.20+0.51+0.69+0.91+0.36).

Prosoma (Figs. 17–18, 23): Carapace high, longer than wide (length/width female 1.28, male

1.15), partly covered with squamose hairs and long setae, fovea indistinct. Eyes in four rows, ocular area two thirds of carapace, longer than wide, widest at the second row (ALE-ALE), AME>ALE>PME in size (6:4:3 in female and male), PLE very small, AME close to each other, ALE-PLE>PLE-PME (3:2 in female and male), PLE-PLE>PME-PME>ALE-ALE (7:6:4 in female, 7:6:5 in male), clypeus narrower than the diameter of AME (1:2) in female, as same as AME in male. Chelicerae with two teeth on the promargin of fang furrow, the retromargin fissidantate (Figs. 19 and 24), labium slightly longer than wide (length/width 1.44 in female, 1.07 in



Figs. 23–28. *Athamas prozysniskii* Ono, sp. nov., male, holotype, (NSMT-Ar 9795). — 23, Pro- and opisthosomata (appendages omitted), dorsal view; 24, chelicera, ventral view; 25, palp, ventral view; 26, tibial apophysis, retrolateral view; 27, embolus, prolateral view; 28, tibia, metatarsus and tarsus of leg. I, retrolateral view. [Scales for Fig. 23, 0.5 mm, for Figs. 25 and 28, 0.25 mm, for Figs. 24, 26–27, 0.1 mm.]

male), maxillae twice as long as labium, parallel, with sharp edge, sternum longer than wide (length/width 1.25 in female, 1.03 in male). Legs relatively robust, with slender claws with many small teeth, leg formula: I-IV-III-II, male leg I much longer than that of female. Spination: Female: femora I-IV 0-1-1-1 dorsally except for III 0-0-1-1, III-IV prolaterally 0-0-0-1, tibiae III-IV 1-1 prolaterally, 1 retrolaterally, I ventrally 2-2-2-2, II ventrally 2-2-2, III ventrally 0-1, metatarasi I-II 2-2-2 ventrally, III 0-0-1ap prolaterally, 0-0-2 ap retrolaterally, 2-0-2ap ventrally, IV 0-0-1ap pro- and retrolaterally, 2-0-2ap ventrally, tarsi I 1-0 pro- and retrolaterally, II 1-0 retrolaterally; male: femora I-IV 1-0-1-1 dorsally except for III 0-0-1-1, I-III 0-0-0-1 prolaterally, IV 0-0-0-1 retrolaterally, tibiae III-IV 0-1-1 prolaterally, 1-1 retrolaterally, I ventrally 2-2-2-2-2, II ventrally 2-2-2-2, III-IV ventrally 1-0-2ap, metatarasi I-II 2-2-2 ventrally, III-IV 0-1-1ap retrolaterally, 2ap ventrally, tarsi I 1-0 prolaterally. Three distal segments of male leg I illustrated as Fig. 28.

Male palp (Figs. 25-27): Patella as long as tibia, tibia with a retrolateral apophysis digitiform and curved. Palpal organ long and simple, with curved, spiniform embolus and tegular edge wide, undulate and overlapping tibia.

Opisthosoma: Longer than wide (length/width 1.09 in female, 1.38 in male), its dorsum with squamose hairs, spinnerets developed and cylindrical, median spinnerets larger than relatively slender posterior ones.

Female genitalia (Figs. 20-22): Epigynum wider than long, with a pair of large, ovate membranous windows anteriorly, and inner organs visible near epigastric furrow, copulatory openings situated at the posterior part of the windows. Spermathecae globular, intromittent canals (copulatory ducts) tubular and winding.

Coloration and markings (Figs. 17 and 23): Dimorphic. Female: Carapace yellowish brown, with a pair of black bands between ALE and PME, a narrow white stripe with white hairs at the middle, and blackish brown posterior declivity. Chelicerae yellowish brown with black mark-

ing prolaterally, maxillae, labium and sternum yellow, palps and legs yellow, with black patches on femora, tibia, metatarsi and tarsi. Opisthosoma yellow, with black markings and several patches with white hairs, posterior spinnerets black. Male: Carapace wholly shiny black, with six round patches of dark orange hairs. Chelicerae blackish brown, lighter distally, maxillae and labium yellowish brown, sternum yellow, palps and legs yellow, retrolateral sides of coxae, trochanters, tibiae and metatarsi of leg I black. Opisthosoma dorsum mostly covered with orange hairs, a wide blackish band and a thin, white line present at the middle, venter and spinnerets blackish brown. Coloration of living male spider is gemlike and pretty with greenish black body and red patches.

Distribution. Palau (Koror Island).

Etymology. Dedicated to Dr. Jerzy Prószyński, Poland, the world authority on jumping spiders.

Acknowledgements

The present author wishes to express his sincere thanks to Dr. Peter Jäger, Senckenberg Museum, Frankfurt am Main, Germany, for his invaluable advice. The Belau National Museum kindly permitted the author to observe spiders in the gardens. This study was partly supported by the Japan Society of Promotion of Science (JSPS No. 21540487).

References

- Berland, L. 1938. Araignées des Nouvelles-Hébrides. *Annales de la Société Entomologique de France*, 107: 121-190.
- Berry J. W., J. A. Beatty and J. Prószyński 1996. Salticidae of the Pacific Islands. I. Distribution of twelve genera, with description of eighteen new species. *Journal of Arachnology*, 24: 214-253.
- Brignoli, P. M. 1983. *A Catalogue of the Araneae Described between 1940 and 1981*. xi+755 pp. Manchester University Press.
- Deeleman-Reinhold, C. L. 2001. *Forest Spiders of South East Asia, with a Revision of the Sac and Ground Spiders (Araneae: Clubionidae, Corinnidae, Liocranidae, Gnaphosidae, Prodidomidae and Trochanterriidae)*. 591 pp., 8 pls. Brill, Leiden, Boston, Köln.

- Jäger, P. and P. Dankittipakul, 2010. Clubionidae from Laos and Thailand (Arachnida: Araneae). *Zootaxa*, 2730: 23–43.
- Kishida, K. 1947. *Filistata fuscata*. In Uchida, S. et al.: Illustrated Encyclopedia of the Fauna of Japan (Exclusive of Insects), Revised Edition, p. 999, fig. 2839. Hokuryukan, Tokyo.
- Jendrzejewska, B. 1995. Genus *Athamas* Pickard-Cambridge, 1877, an unusual salticid from the Pacific area (Araneae: Salticidae). *Genus, International Journal of Invertebrate Taxonomy*, Wrocław, 6: 181–194.
- Lehtinen, P. 1967. Classification of the cribellate spiders and some allied families, with notes on the evolution of the suborder Araneomorpha. *Annales Zoologici Fennici*, 4: 199–468.
- Nakatsudi, K. 1943. Some Arachnida from Micronesia. Tokyo Nogyo Daigaku Nogaku Shuho, *Journal of Agricultural Science, Tokyo Agricultural University (=Tokyo University of Agriculture)*, 2: 147–180, pls. XXII–XXIV.
- Ono, H. 1994. Spiders described by Mr. Kodi Nakatsudi. In *Memoir of Kodi Nakatsudi (1911–1945) in the fiftieth anniversary of his pass away*. *Acta Arachnologica*, 43: 108–111.
- Ono, H. 2005. Revision of spider taxa described by Kyukichi Kishida: Part 1. Personal history and a list of his works on spiders. *The Journal of Arachnology*, 33: 501–508.
- Ono, H. 2009. Filistatidae. In Ono, H. (ed.): *The Spiders of Japan, with Keys to the Families and Genera and Illustration of the Species*, pp. 125–126. Tokai University Press, Kanagawa.
- Ono, H. 2011 a. New spiders of the families Tetragnathidae, Nephilidae and Clubionidae (Arachnida, Araneae) from Izu and Ogasawara Islands, Tokyo. *Bulletin of the National Museum of Nature and Science, Tokyo, Series A*, 37: 15–26.
- Ono, H. 2011 b. Spiders (Arachnida, Araneae) of the Ogasawara Islands. *Memoirs of the National Museum of Nature and Science, Tokyo*, 47: 435–470.
- Pickard-Cambridge, O. 1877. On some new species of Araneidea, with characters of two new genera, and some remarks on the families Podophthalmides (sic!) and Dinopides. *Proceedings of the Zoological Society of London, 1877: 557–578*, pls. LVI–LVII.
- Prószyński, J. 1984. Diagnostic Drawings of Less Known Salticidae (Araneae), an Atlas. IX+177 pp. Siedlce.
- Szűts T. 2003. On remarkable jumping spiders (Araneae: Salticidae) from Papua New Guinea. *Folia Entomologica Hungarica, Budapest*, 64: 41–58.
- Wang, J.-F. 1987 a. Study on the spiders of Filistatidae in South China I. *Tricalamus* gen. nov. *Acta Zootaxonomica Sinica*, 12: 142–159.
- Wang, J.-F. 1987 b. Study on the spiders of Filistatidae in South China II. Gen. *Pritha*. *Acta Zootaxonomica Sinica*, 12: 251–255.
- Yaginuma, T. 1970. Spiders of the Ogasawara Islands. *Atypus*, 54: 13–15.
- Yaginuma, T. 1979. Spiders of the Ogasawara Islands. *The Nature and Animals, Tokyo*, 9 (8): 33–36.