

New Spiders of the Families Tetragnathidae, Nephilidae and Clubionidae (Arachnida, Araneae) from Izu and Ogasawara Islands, Tokyo

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Abstract Three new spiders of the families Tetragnathidae, Nephilidae and Clubionidae (Arachnida, Araneae) from Hachijojima and Mikurajima Islands of the Izu Islands, and Chichijima Island of the Ogasawara Islands are described under the names, *Leucauge nagashimai* sp. nov. (Tetragnathidae), *Nephila clavata caerulescens* subsp. nov. (Nephilidae) and *Clubiona oceanica* sp. nov. (Clubionidae). *Leucauge nagashimai* resembles Chinese *Leucauge bimaculata* and *liui*, both described by Zhu, Song et Zhang (2003), but differs from the two species by the details of female genitalia, especially in the shape of spermathecae. *Clubiona oceanica* belongs to the species group of *Clubiona hystrix* defined by Deeleman-Reinhold (2001) and stands close to *Clubiona maipai* Jäger et Dankittipakul, 2010 from Thailand, *Clubiona kuu* Jäger et Dankittipakul, 2010 from Laos, *Clubiona damirkovaci* Deeleman-Reinhold, 2001 from Peninsular Malaysia and *Clubiona hitchinsi* Saaristo, 2002 from Seychelles Islands, but is distinguishable from these known species by the structure of female genitalia, especially the position of intromittent orifices and the condition of intromittent canals and in details of tibial apophysis and embolus of male palpal organ. *Nephila clavata caerulescens* is described for the populations of *Nephila clavata* on Hachijojima and Mikurajima Islands, which show a remarkable variation on the coloration of the body not mimic to the color pattern of vespid wasps.

Key words: Taxonomy, Araneae, Nephilidae, Tetragnathidae, Clubionidae, Izu Islands, Ogasawara Islands.

Introduction

Under a long-term project of the “Studies on the Origin of Biodiversity of the Sagami Sea, the Fossa Magna Element and the Izu-Ogasawara Island Arc” organized by the National Museum of Nature and Science, Tokyo, the present author continued inventory studies of spiders of these areas in the period from 2006 through 2010. At the same time, he was appointed a committee member of an assessment of threatened species (Red Data) of spiders of the Izu and Ogasawara Islands, Tokyo, which was provided by the Japan Wildlife Research Center, Tokyo, under commission of the Environment Bureau of the Tokyo Metropolitan Government in the years 2009 and 2010.

In the course of these projects the present author concentrated his efforts on field researches on Mikurajima and Hachijojima Islands of the Izu Islands, and Chichijima and Hahajima Islands of the Ogasawara Islands. Although some papers were published on the basis of results of the study during these projects (Ono, 2008, 2009, 2010, 2011), several spider specimens have been left undetermined. On the basis of a part of this unstudied material, three new and interesting spiders are described in the present paper.

The Izu Islands are composed of seven main islands and some smaller islands stretching to the south from the Bay of Tokyo and occupy a wide range between 32 and 35 degrees north latitude. Of these, Mikurajima Island (20.55 km² in size) and Hachijojima Island (62.52 km²) are situated

in the southern part. All the islands of Izu are volcanic formed by Pleistocene activity, and their spider fauna seems to be poor in the total number of species (Ono, 2001). However, Mikurajima and Hachijojima have developed evergreen broad-leaved forests well preserved and various aspects of arachnology are expected, for instance a phase of isolation.

From Mikurajima Island, 86 species were recorded (Ono, 2010), while 91 species were known from Hachijojima Island (Sasaoka, 2010). A new subspecies of well-known *Nephila clavata* L. Koch, 1878, is reported, which shows a geographic variation presumably caused by the isolation in these islands.

On the other hand, the Ogasawara Islands (= the Bonin and Volcano Islands) are situated in a much southern area surrounded by the latitude between 23° and 28° N and the longitude between 141° and 143° E in the northwestern Pacific (see Ono, 2011, figs. 1–4). The islands have volcanic origin came into existence forty-eight million years ago and were uninhabited up to the 19th Century. Being more than 1,000 km apart from a land, such islands should perform a typical oceanic fauna composed of many endemics explosively evolved from small number of ancestral species. However, human activities after first immigration in 1830 influenced actually the nature of Ogasawara, and gave a serious damage on the spider fauna. Of 81 species known from the Ogasawara Islands, two thirds are regarded as artificial immigrants (Ono, 2011). Chichijima Island (24 km²) is the largest and administratively main island in Ogasawara, having a population of about 2,000. Two new species of the families Tetragnathidae and Clubionidae are herein described from this island, both of which seem to be endemic to the islands.

Material and Methods

The specimens used for this study were collected during research trips on Hachijojima between 23rd and 26th November 2007 and between 6th and 8th March and between 7th and 11th No-

vember 2010 and on Chichijima Island between 18th and 30th May and between 19th and 24th October 2010 by the present author using sweeping and beating methods in the forest as well as collecting by hand, that is, two females of *Nephila clavata*, seven females, four males and four juveniles of a leucaugine species, and six females, four males and two juveniles of a clubionid species. Other than the above material, some specimens (17 immature females and 7 adult males) of *Nephila clavata* collected by Mr. M. Tanaka on Mikurajima Island on 3rd October 2009 were provided for this study. Comparative material was also used, which were selected from the specimens preserved in the Arachnid Collection of the National Museum of Nature and Science, Tokyo.

All the specimens were preserved in 76% or absolute ethanol on location, examined under Leica MZ16 stereomicroscope, and taxonomically studied at the Department of Zoology of the above museum. Some individuals were photographed while alive at the field to record natural coloration (Figs. 32–38). Body, legs and eyes were measured, and pro- and opisthosomata, chelicerae and details of female genitalia and male palpal organ of the specified specimens were illustrated. Thus, a new subspecies of *Nephila clavata* L. Koch, 1878 (Nephilidae), and two new species of the genera *Leucauge* White, 1841 (Tetragnathidae) and *Clubiona* Latreille, 1804 (Clubionidae) are recognized and described as follows.

The type specimens of the new species and subspecies are deposited in the Department of Zoology, National Museum of Nature and Science, Tokyo (NSMT).

Following abbreviations are used for the descriptions: AME, anterior median eye, ALE, anterior lateral eye, PME, posterior median eye and PLE, posterior lateral eye.

Descriptions of New Taxa

Family Tetragnathidae

Leucauge nagashimai sp. nov.

[Japanese name: Hime-shirokanegumo]

(Figs. 1–16, 36–38)

Diagnosis. This new species resembles some Chinese species as *Leucauge bimaculata* Zhu, Song et Zhang, 2003 from Yunnan and *Leucauge liui* Zhu, Song et Zhang, 2003 from Hainan Island in the structure of female genitalia, but is distinguishable from these species by the details of female genitalia, especially the shape of spermathecae (Figs. 10–11). The structure of male palpal organ of this new species is also peculiar (Figs. 3–6) and the horn-like dorsal apophysis on cymbium is absent. The opisthosoma of this new species is cylindrical and without posterior projection, while that of the other species is fusiform and the posterior end is more or less narrowed and expanded over the spinnerets.

Type specimens. Holotype: male and allotype: female from Mt. Yoakeyama, Chichijima Island, Ogasawara Islands, Tokyo, Japan, 28-V-2010, H. Ono leg. (NSMT-Ar 9451-9452); paratypes: one female from the same locality as for the holotype, 22-X-2010, one female from Omura, 1-IV-1974, Mt. Asahiya, one female from Mt. Asahiya, 26-V-2010, two males from Mt. Asahiya, 20-21-X-2010, one female and one male, from Komagari, 22-X-2010, two females from forest near Maruyama Tunnel, 23-X-2010; all specimens from Chichijima Island and H. Ono leg. (NSMT-Ar 9453-9459).

Description (holotype and allotype). Measurements: Body length female 5.85 mm, male 3.15 mm; prosoma length female 2.15 mm, male 1.31 mm, width female 1.75 mm, male 1.05 mm; opisthosoma length female 3.55 mm, male 1.88 mm, width female 1.75 mm, male 0.98 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: female, I 13.50 mm (3.79+0.88+3.60+3.99+1.24), II 10.07 mm (2.87+0.83+2.51+2.85+1.01), III 5.26 mm (1.69+0.53+0.98+1.50+0.56),

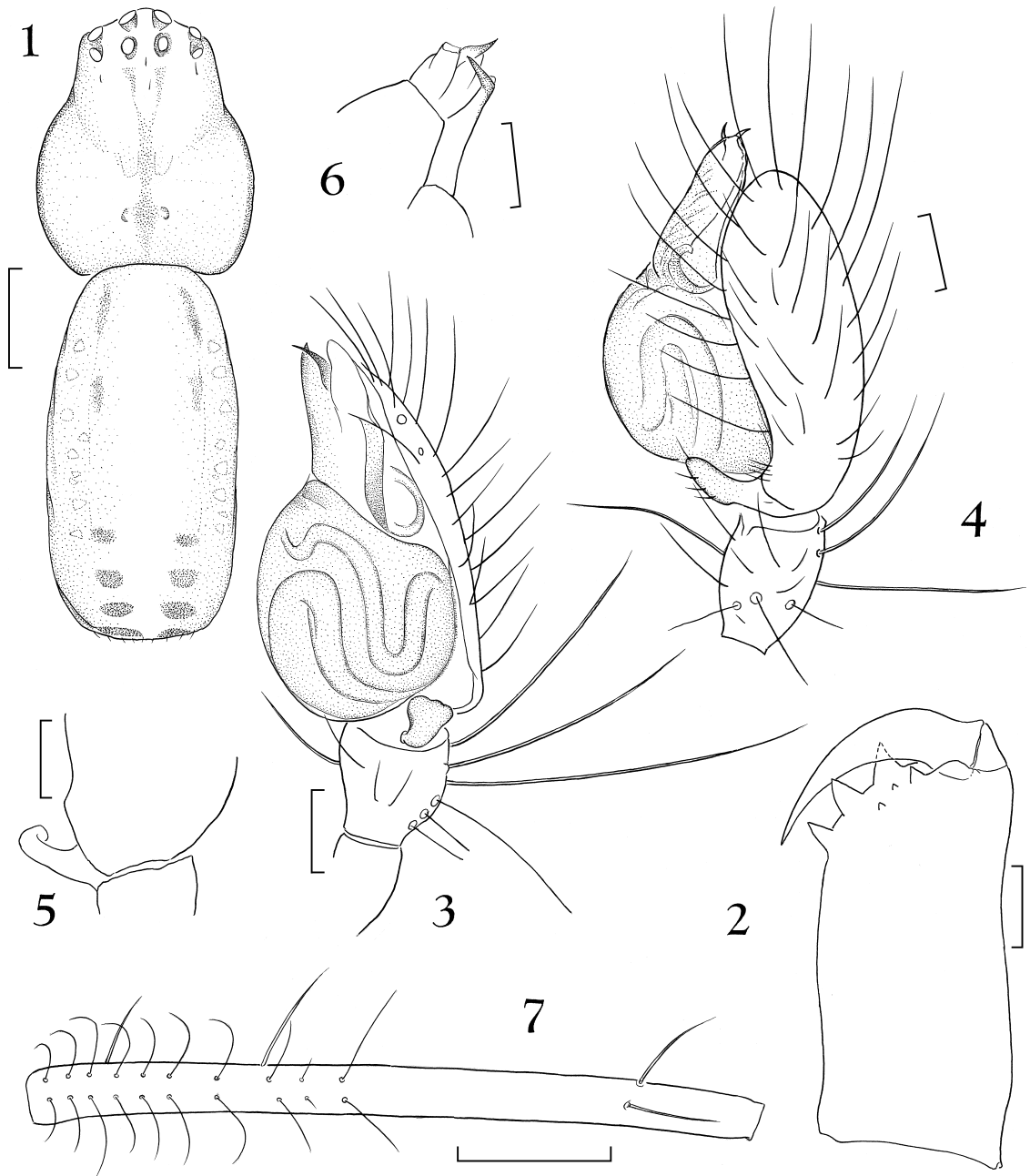
IV 8.69 mm (2.94+0.53+1.91+2.48+0.83), male, I 13.10 mm (3.39+0.64+3.56+4.31+1.20), II 9.01 mm (2.63+0.56+2.36+2.63+0.83), III 4.13 mm (1.35+0.36+0.83+1.06+0.53), IV 7.24 mm (2.40+0.47+1.58+2.06+0.73).

Prosoma: Carapace flat, longer than wide (length/width female 1.23, male 1.25), median furrow distinct. Eyes almost same in size, ALE and PME of female slightly larger, the anterior eye row slightly recurved and the posterior row straight in both the sexes, AME-AME \leq AME-ALE (5:6 in female, 1:1 in male), PME-PME $<$ ME-PLA (1:2 in female, 2:3 in male), median ocular area almost square (length/width 0.94 in female, 1.08 in male; anterior width/posterior width 0.88 in female, 1.00 in male), clypeus narrow. Chelicera of female with three strong teeth on the promargin of fang furrow and one large and four small teeth on retromargin (Fig. 8), that of the male with retromarginal teeth reduced (Fig. 2). Labium wider than long (length/width 0.60 in female, 0.66 in male), sternum longer than wide (length/width 1.11 in female, 1.09 in male), female palp without a long claw. Legs long and slender, with long spines on femora dorsally and laterally, patellae dorsally, tibia laterally and metatarsi dorsally; femora with a low of trichobothria [twelve pairs in female, ten pairs in male (Fig. 7)]; leg formula: I-II-IV-III.

Male palp (Figs. 3–6): Tibia short with long spines and trichobothria. Cymbium short and without dorsal apophysis, paracymbium simple digitiform with curved tip. Tegulum large and expanded, embolic division compactly set, with spiniform embolus.

Opisthosoma: Longer than wide (length/width 2.23 in female, 1.92 in male), cylindrical with the posterior end wide and not extending backwards over spinnerets as normal shape of *Leucauge*, which is narrowed and projecting.

Female genitalia (Figs. 9–11): Epigynum simple, having typical shape of the genus. Intromittent orifices situated in the anterior part, intromittent canals relatively short and not distinct, spermathecae glandularis and winding, separated in two parts and connected by a short canal, soft

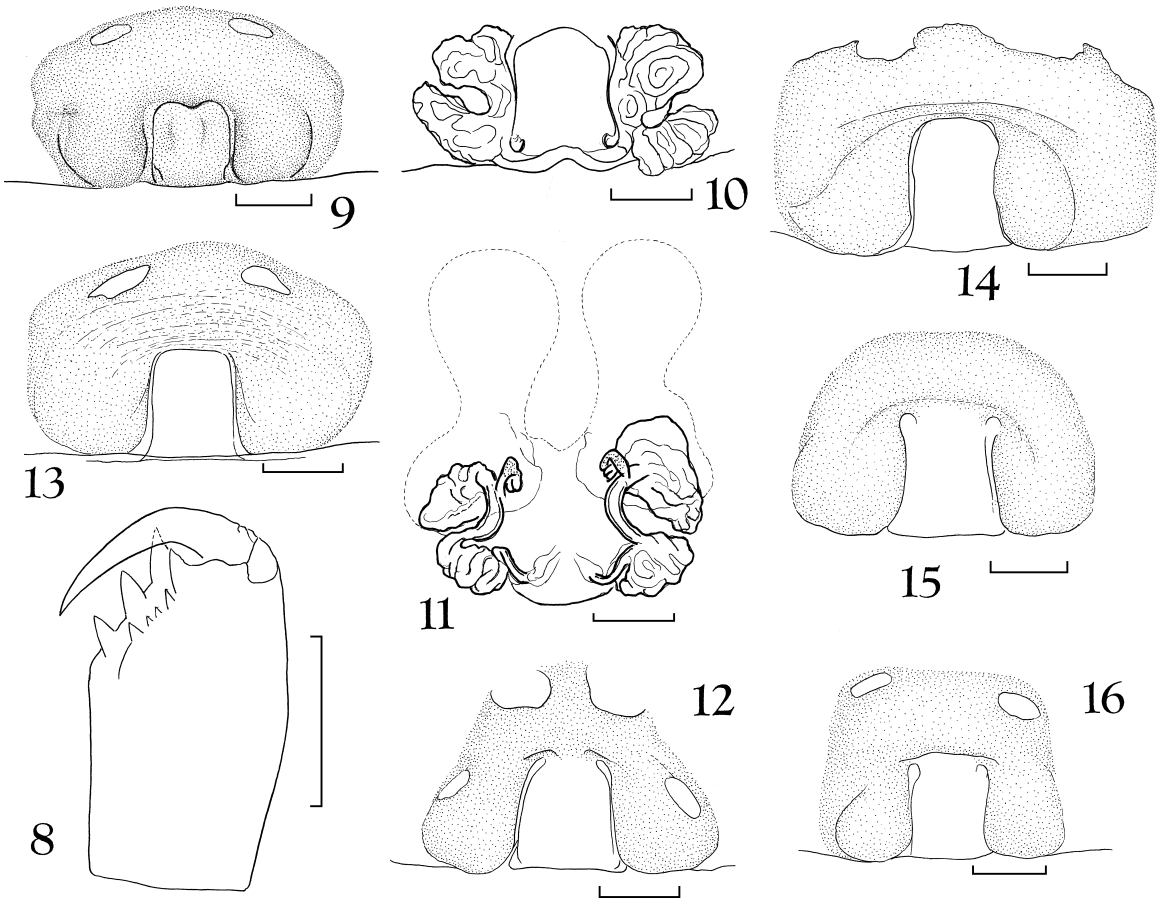


Figs. 1–7. *Leucauge nagashimai* Ono, sp. nov., male, holotype (NSMT-Ar 9451). — 1, Pro- and opisthosomata (appendages omitted), dorsal view; 2, chelicera, retrolateral view; 3, male palp, ventral view; 4, male palp, retrolateral view; 5, basal part of cymbium, dorsal view; 6, tip of male palpal organ, prolateral view; 7, femur of leg IV, prolateral view. [Scales for Fig. 1, 1 mm; for Figs. 2–6, 0.1 mm; for Fig. 7, 0.5 mm.]

bladder organ present.

Coloration and markings: Female (Fig. 36): carapace dull yellow margined with black and a

longitudinal black stripe; chelicerae yellowish brown, maxillae brown, outer margin darker, labium brown and sternum blackish brown; palps



Figs. 8–16. *Leucauge nagashimai* Ono, sp. nov., females: 8–11, allotype from Mt. Yoakeyama (NSMT-Ar 9452), 12, a paratype from Omura (NSMT-Ar 9453), 13, a paratype from Mt. Yoakeyama (NSMT-Ar 9454), 14–15, paratypes from near Maruyama Tunnel (NSMT-Ar 9456), 16, a paratype from Komagari (NSMT-Ar 9455). — 8, chelicera, retrolateral view; 9, 12–16, epigyna, ventral view; 10, female genitalia, ventral view; 11, female genitalia, dorsal view. [Scales: for Fig. 8, 0.2 mm; for Figs. 9–16, 0.1 mm.]

yellowish brown, femora and patellae of legs dlight greenish brown, other segments of legs reddish brown. Opisthosoma whitish gray dorsally, with a pair of black lines and white, black and silver spots, laterally and ventrally black, with a pair of silver-gray longitudinal bands from epigastric furrow to the spinnerets. Male (Fig. 1): carapace yellow margined with black; chelicerae, maxillae, labium and sternum light yellowish brown, palps and legs yellow, tibiae, metatarsi and tarsi darker. Opisthosoma light pinkish yellow, with a some pair of black spots, ventrally light grayish brown without light colored band.

Variation. Body length of paratypes: Females

3.57–7.14 mm, males 2.73–3.36 mm. Markings on opisthosoma are variable (Figs. 1, 36–38), some individuals lack black lines and have only two or three pairs of black spots in the posterior part like in males (Fig. 1 and 38). One female from Komagari has gold spots on the opisthosoma, while most of females have silver ones. The shape of epigynum is variable (Figs. 9, 12–16).

Distribution. Japan (at present known only from Chichijima Island).

Etymology. This new species is dedicated to Mr. Tadayoshi Nagashima, Chichijima Island, Ogasawara.

Remarks. Spiders of this species were found in

dark places of forests and along a rivulet and at the entrance of artificial caves like bomb shelters in wartime. The webs of spiders are small with a diameter of 15–30 cm and nearly vertical or slightly leaning.

Family Nephilidae

Nephila clavata caerulescens subsp. nov.

[Japanese name: Aoi-jorougumo]

(Figs. 17–23, 32–35)

Diagnosis. *Nephila clavata* L. Koch, 1878, is a species distributed widely in East Asia from India to Japan. Its phylogenetic position was studied recently by Su *et al.* (2011) on the molecular basis. In Japan, the species is widely distributed from Aomori Prefecture, Honshu, to the Ryukyu Islands. In Izu Islands, the spider has been recorded from Oshima, Shikinejima, Kozushima, Miyakejima, Mikurajima, Hachijojima and Aogashima Islands (Ono, 2001, 2010). However, spiders observed on Hachijojima and Mikurajima Islands show a remarkable variation of the coloration and markings of the opisthosomal dorsum (Figs. 32 and 34). The back of female is wholly blue with a distinct yellow bar at the anterior part, while the individuals of the nominal subspecies herewith designated, *Nephila clavata clavata*, in the main islands of Japan have a striped pattern in yellow and blue (Yaginuma, 1986, plate 35; Chikuni, 1989 and 2008, p.80; Shinkai, 2006, p. 183). Resembling the warning pattern of some vespid wasps, the coloration and markings on the opisthosoma of the spider has an important meaning in mimicry. Therefore, the present author regarded the characteristics remarkable.

Type specimens. Holotype: female, and allotype: male from Noboryou-touge, Hachijojima Island, Izu Islands, Tokyo, Japan, H. Ono leg. (NSMT-Ar 9481-9482); paratypes: one female and one male, same data as for the holotype (NSMT-Ar 9483-9484).

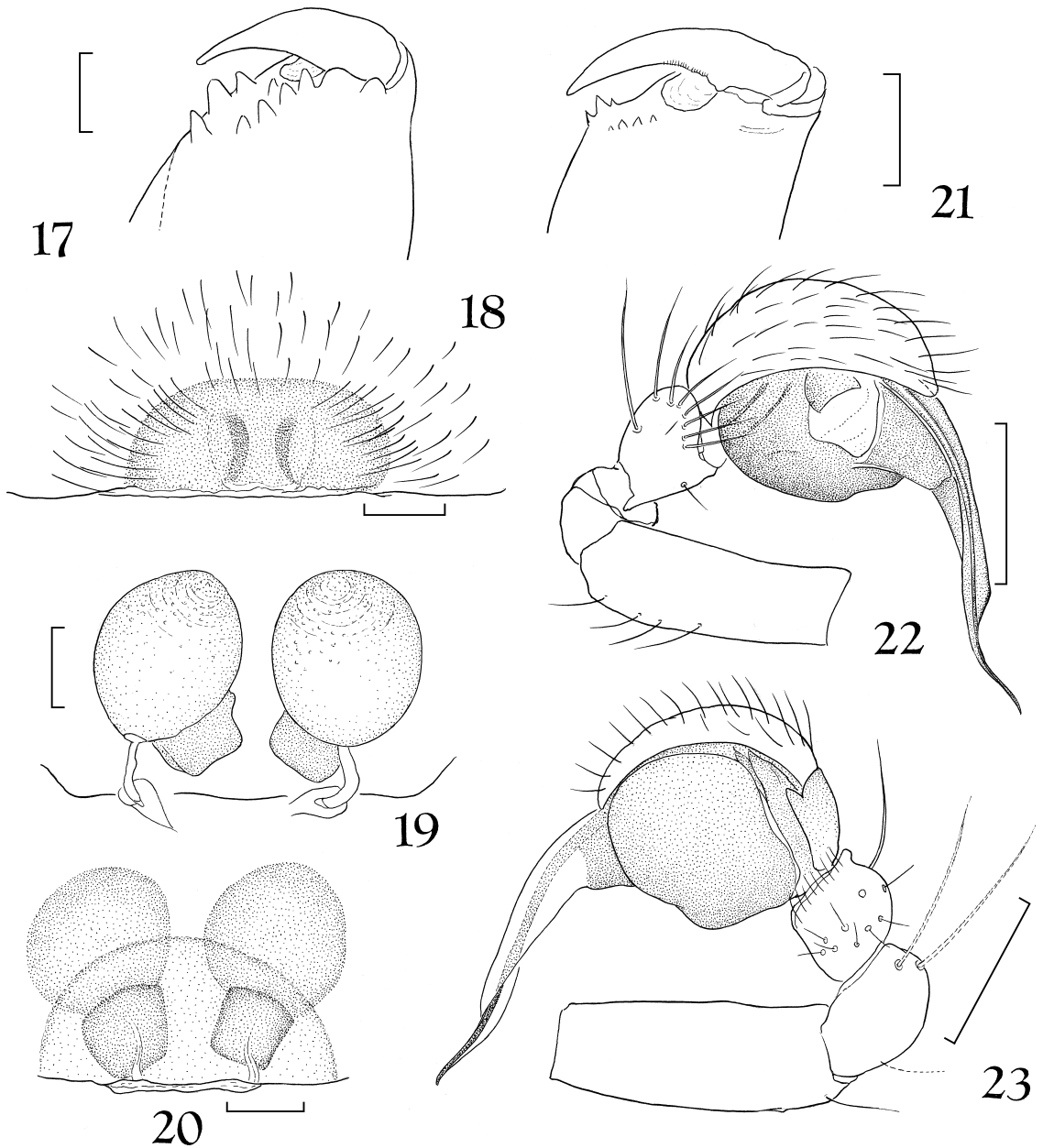
Other specimens examined. Seven males and 17 immature females from Sato Village, Mikura-

jima Island, Izu Islands, Tokyo, Japan, 3-X-2009, M. Tanaka leg.; two females and one egg sac, near Sato, 50–100 m in elevation, Mikurajima Island, 5-III-2010, H. Ono leg. (NSMT-Ar 9516-9517).

Comparative material. Many females and males of *Nephila clavata clavata* from Japan, in the Arachnid Collection of NSMT, data omitted.

Description (holotype and allotype). Measurements: Body length female 20.05 mm, male 7.00 mm; prosoma length female 6.82 mm, male 3.38 mm, width female 4.02 mm, male 2.06 mm; opisthosoma length female 14.70 mm, male 4.35 mm, width female 7.23 mm, male 1.54 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: female, I 42.52 mm (12.39+2.41+10.19+14.38+3.15), II 33.55 mm (9.66+2.10+7.56+11.66+2.57), III 18.02 mm (5.46+1.58+3.15+5.88+1.95), IV 31.25 mm (10.71+1.58+6.30+10.24+2.42), male, I absent, II 21.09 mm (6.08+1.28+4.28+7.20+2.25), III 9.71 mm (3.11+0.75+1.65+2.85+1.35), IV 16.91 mm (5.48+1.01+3.22+5.55+1.65).

Prosoma: Carapace flat, much longer than wide (length/width female 1.70, male 1.64), median furrow present. Eyes almost same in size, AME slightly larger than the others, both the eye rows slightly recurved in both the sexes, AME-AME wider than AME-ALE in female (1:2), narrower in male (5:4), PME-PME < PME-PLE (1:2 in female, 4:6 in male), median ocular area almost square (length/width 1.00 in female, 1.11 in male; anterior width/posterior width 1.00 in female, 1.11 in male), clypeus > AME-AME. Chelicera of female with three strong teeth on the promargin of fang furrow and five teeth on retromargin (Fig. 17), that of male with three promarginal and four small retromarginal teeth (Fig. 21), fang very short. Labium triangular, longer than wide (length/width 1.07 in female, 1.19 in male), maxillae closer apically, sternum longer than wide (length/width 1.20 in female, 1.25 in male). Female palp without a small claw. Legs long and slender, with spines on femora, patellae, tibia and metatarsi, and each tibia with scopula; leg formula: I-II-IV-III.



Figs. 17–23. *Nephila clavata caerulescens* Ono, subsp. nov.: 17–20, female holotype (NSMT-Ar 9481), 21–23, male allotype (NSMT-Ar 9482). — 17, 21, chelicerae, retrolateral view; 18, epigynum, ventral view; 19, female genitalia, dorsal view; female genitalia, ventral view; 22, male palp, prolateral view; 23, male palp, retrolateral view. [Scales: for Figs. 17, 21, 0.25 mm; for Figs. 18–20, 22–23, 0.5 mm.]

Male palp (Figs. 22–23): Tibia short with long spines and trichobothria. Cymbium small cup, paracymbium with a dorsal tooth. Tegulum large and expanded, embolic division long without

apophysis, embolus tubular, curved apically.

Opisthosoma: Longer than wide (length/idth 2.03 in female, 1.82 in male), oval with the posterior end wide and slightly extending backwards

over spinnerets.

Female genitalia (Figs. 18–20): Epigynum small and strongly sclerotized, wider than long, without scape. Intromittent orifices situated along the posterior edge, intromittent canals thick tube and very short, spermathecae globular and hard, with long fertilization tubes.

Coloration and markings: Female (Fig. 32–34): carapace dull yellow marginated with black and a longitudinal black stripe; chelicerae yellowish brown, maxillae brown, outer margin darker, labium brown and sternum blackish brown; palps yellowish brown, femora and patellae of legs light greenish brown, other segments of legs reddish brown. Opisthosoma whitish gray dorsally, with a pair of black lines and white, black and silver spots, laterally and ventrally black, with a pair of silver-gray longitudinal bands from epigastric furrow to the spinnerets. Male: carapace yellow marginated with black; chelicerae, maxillae, labium and sternum light yellowish brown, palps and legs yellow, tibiae, metatarsi and tarsi darker. Opisthosoma light pinkish yellow, with some pair of black spots, ventrally light grayish brown without light colored band.

Variation. Body length of paratypes: Female 17.32 mm, male 6.62 mm..

Distribution. Japan (at present known only from Hachijojima and Mikurajima Islands).

Etymology. The subspecific epithet is Latin meaning bluish, derived from the coloration of abdominal dorsum of female.

Remarks. Although the population of Mikurajima Island shows a same pattern of abdomen as that of the Hachijojima Island, the present author used specimens from Hachijojima only as type material. This new subspecies has many characteristics common with the nominal subspecies, including female and male genital organs. However, because the female genitalia and the details of male palp of *Nephila clavata* were never examined and illustrated properly, the present author described those of this new subspecies fully as above.

Family Clubionidae

Clubiona oceanica sp. nov.

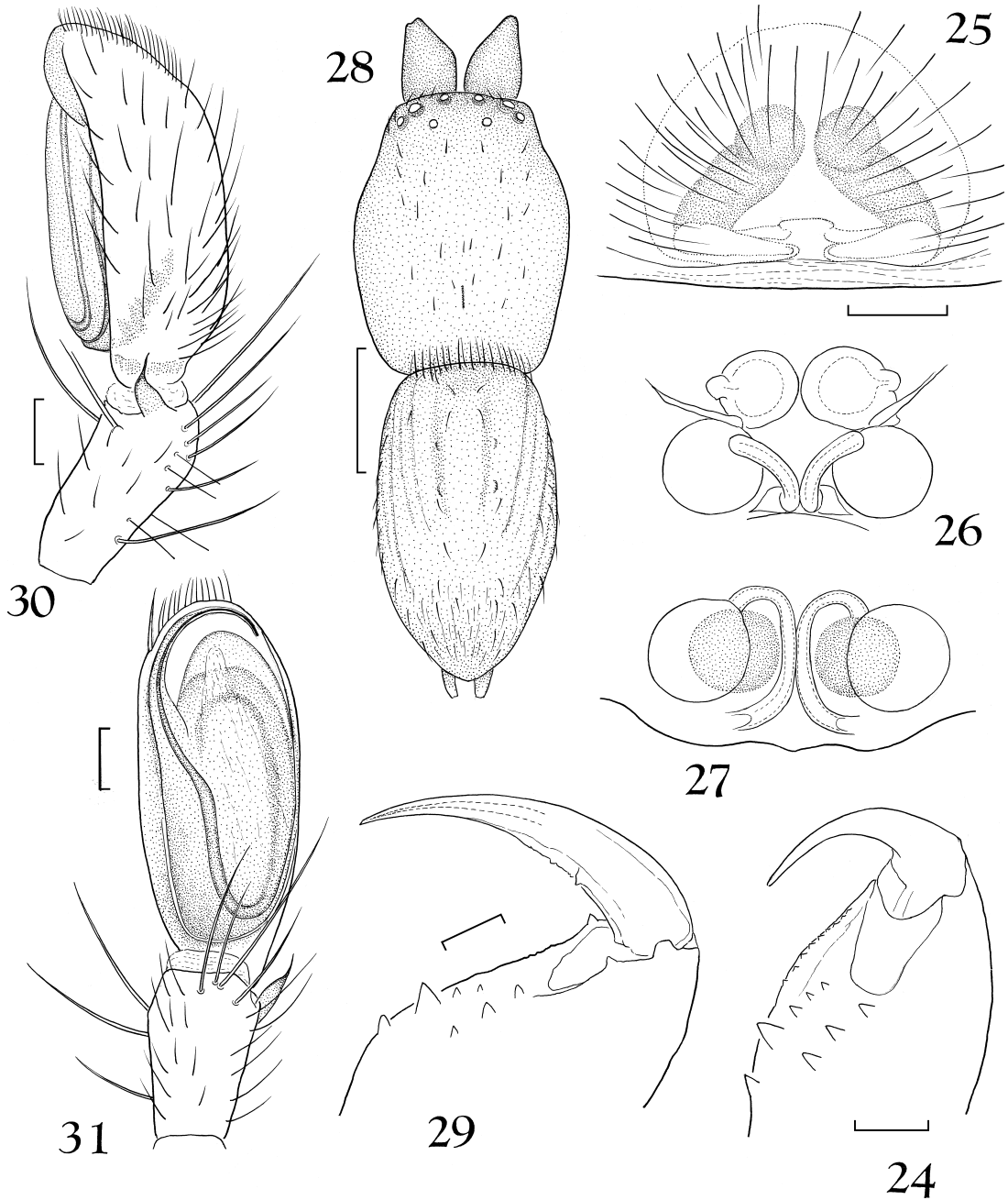
[Japanese name: Nanyou-fukurogumo]

(Figs. 24–31)

Diagnosis. This new species belongs to the species group of *Clubiona hystrix* defined by Deeleman-Reinhold (2001), which is the closest group within *Clubiona sensu lato* to the genus *Pteroneta* Deeleman-Reinhold, 2001, in genital morphology. Although this group is very diverse in Southeast Asia, only a few species were described. Of these, *Clubiona maipai* Jäger et Dankittipakul, 2010 from Mae Hon Son, North Thailand, *Clubiona kuu* Jäger et Dankittipakul, 2010 from Luang Prabang, Laos, and *Clubiona damirkovaci* Deeleman-Reinhold, 2001 from near Kuala Lumpur, Malaysia are closely similar to this new species in the shape of male palp, but the new species can be distinguished from these known species by the delicate details of tibial apophysis and embolus as well as by the structure of female genitalia, especially the position of intromittent orifices and the condition of intromittent canals. *Clubiona hitchinsi* Saaristo, 2002, from Seychelles Islands also resembles the species mentioned above, including this new species (Saaristo, 2010).

Type specimens. Holotype: female and allotype: male from Miyanojima, Chichijima Island, Ogasawara Islands, Tokyo, Japan, 25-V-2010, H. Ono leg. (NSMT-Ar 9427-9428); paratypes: one female, same data as for the holotype, one female from Ougiura, 26-V-2010, T. Nagashima and H. Ono leg., two females, two males and two juveniles from Komagari, 27-V-2010, H. Ono leg., one female and one male from Kominato, 20-V-2010 and 21-X-2010, respectively, H. Ono leg., all from Chichijima Island (NSMT-Ar 9429-9435).

Description (holotype and allotype). Measurements: Body length female 4.98 mm, male 4.80 mm; prosoma length female 2.22 mm, male 2.37 mm, width female 1.62 mm, male 1.71 mm; opisthosoma length female 2.70 mm, male 2.46



Figs. 24–31. *Clubiona oceanica* Ono, sp. nov.: 24–27, female, holotype (NSMT-Ar 9427), 28–31, male, allotype (NSMT-Ar 9428). — 24, 29, chelicerae, retrolateral view; 25, epigynum, ventral view; 26, female genitalia, dorsal view; 27, female genitalia, posterior view; 28, pro- and opisthosomata (appendages omitted), dorsal view; 30, male palp, retrolateral view; 31, male palp, ventral view. [Scales: for Figs. 24–27, 29–31, 0.1 mm; for Fig. 28, 1 mm.]



Figs. 32–38. Coloration and markings of body of new spiders. — 32 (Upper, left), *Nephila clavata caeruleascens* Ono, subsp. nov., female, holotype from Hachijojima Island (NSMT-Ar 9481), dorsal view; 33 (upper, right), same specimen, ventral view; 34 (middle, left), same specimen, lateral view; 35 (middle, right), same species, a female from Mikurajima Island (NSMT-Ar 9516), dorsal view; 36 (bottom, left), *Leucauge nashimai* Ono, sp. nov., female, allotype from Mt. Yoakeyama, Chichijima Island (NSMT-Ar 9452), dorsal view; 37 (bottom, center), a female paratype from Mt. Yoakeyama (NSMT-Ar 9454), dorsal view; 38 (bottom, right), a female paratype from near Maruyama Tunnel (NSMT-Ar 9456), dorsal view. [Body lengths of spiders: 32–34, 20.05 mm; 35, 22.31 mm; 36, 5.85 mm; 37, 7.14 mm; 38, 4.67 mm.]

mm, width female 1.80 mm, male 1.32 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: female,

I 3.86 mm (1.18+0.63+0.90+0.70+0.45),

II 4.06 mm (1.29+0.64+0.90+0.75+0.48),

III 3.76 mm (1.17+0.60+0.68+0.90+0.41),

IV 5.58 mm (1.71+0.60+1.20+1.51+0.56), male,

I 4.40 mm (1.35+0.68+1.08+0.82+0.47),

II 5.10 mm (1.50+0.87+1.26+0.96+0.51),

III 4.27 mm (1.25+0.62+0.87+1.08+0.45),

IV 6.43 mm (1.82+0.84+1.37+1.81+0.59).

Prosoma: Carapace longer than wide (length/width 1.37 in female, 1.39 in male), with wide head and median furrow. Eyes almost same in size except for ALE larger than the others, ALE > AME = PLE = PME (10:9:9:9 in female and male), the anterior eye row slightly recurved and the posterior row procurved in dorsal view, AME-AME > AME-ALE (2:1 in female and male), PME-PME > PME-PL (8:5 in female, 5:3 in male), median ocular area wider than long (length/width 0.71 in female, 0.68 in male), wider behind than in front (anterior width/posterior width 0.71 in female, 0.68 in male), clypeus very narrow. Chelicera (Figs. 24 and 29) with four or five teeth on the promargin of fang furrow, two of which are larger, and three teeth on the retromargin, labium longer than wide (length/width 1.58 in female, 1.54 in male), sternum longer than wide (length/width 1.52 in female, 1.42 in male). Female palp furnished with a very small claw. Legs robust and hairy; leg formula: IV-II-I-III. Spination: Femora: I-IV dorsally 1-0-1-1, I-II prolaterally 0-0-0-1 (female) of 0-0-1-1 (male), III-IV pro- and retrolaterally each 0-0-0-1; patellae: I-IV dorsally 1-0-1 (weak); tibiae: I-IV dorsally 1-0-1 (weak), I-II ventrally 2-2, III-IV pro- and retrolaterally 1-1, III ventrally 1-1, IV ventrally 1-1-1ap; metatarsi: I-IV pro- and retrolaterally 1-1-2ap except for IV of male prolaterally 1-2-2ap, II ventrally 1-0, III ventrally 2-0-2ap, IV ventrally 2-1-2ap. A long, ventral spine on the basal part of metatarsus II is characteristic.

Male palp (Figs. 30–31): Tibia shorter than tarsus, furnished with a retrolateral apophysis

with spiniform tip. Cymbium a long, oval cup, palpal organ simple with small digitiform, membranous tegular apophysis and short and curved embolus.

Opisthosoma: Oval, longer than wide (length/width 1.50 in female, 1.86 in male), narrower posteriorly furnished with short hairs. Spinnerets formed typically for the genus.

Female genitalia (Figs. 25–27): Epigynum wider than long, its posterior ledge sclerotized and forming a pair of guide pockets, inner organ visible through integument. Genital openings situated at the middle of epigynum near epigastric furrow, intromittent canal tubular and curved. Spermathecae globular and in two parts, the main globe situated in the anterior part, smaller than the attached globes, with small glands laterally and fertilization tubes between both globes.

Coloration and markings: Female and male (Fig. 28): carapace light yellowish brown, head darker, chelicerae light reddish brown, maxillae, labium and sternum light yellowish brown, palps and legs dark yellow, without any markings; opisthosoma light yellowish brown dorsally and ventrally, without any markings.

Variation. Body length of the paratypes: females 4.62–5.09 mm, males 4.62–4.80 mm. Color of the opisthosoma is variable in white and gray.

Distribution. Japan (at the present known only from Chichijima Island).

Etymology. The species epithet is Latin *Oceanicus*.

Remarks. Spiders of this new species were found under the bark of trees. One female collected in May had an egg sac in her retreat.

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References

- Chikuni, Y., 1989. Pictorial Encyclopedia of Spiders of Japan. 308 pp. Kaisei-sha, Tokyo.
- Chikuni, Y., 2008. Pictorial Encyclopedia of Spiders of Japan (revised edition). 308 pp. Kaisei-sha, Tokyo.
- 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 Trochanteriidae. 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.
- Ono, H. 2001. Spiders (Arachnida, Araneae) from Izu Islands, Tokyo, Japan. *Memoirs of the National Science Museum, Tokyo*, 37: 261–277.
- Ono, H. 2008. Five new spiders of the families Dictynidae, Cybaeidae, Coelotidae and Ctenidae (Arachnida, Araneae) from Japan. *Bulletin of the National Museum of Nature and Science, Tokyo, Series A*, 34: 157–171.
- Ono, H. (ed.), 2009. The Spiders of Japan, with Keys to the Families and Genera and Illustration of the Species, xvi+738 pp. Tokai University Press, Kanagawa.
- Ono, H. 2010. Spiders from Mikurajima Island, Tokyo, with descriptions of new genera and species of the families Linyphiidae and Theridiidae (Arachnida, Araneae). *Bulletin of the National Museum of Nature and Science, Tokyo, Series A*, 36: 51–63.
- Ono, H. 2011. Spiders (Arachnida, Araneae) of the Ogasawara Islands. *Memoirs of the National Museum of Nature and Science, Tokyo*, 47, in press.
- Saaristo, M. I. 2010. Order Araneae Clerck, 1757, spiders. In: Gerlach J. and Y. Marusik (eds.), *Arachnida and Myriapoda of the Seychelles Islands*, pp. 8–306. Siri Scientific Press, Manchester.
- Sasaoka, F. 2010. Mygalomorph and other spiders of Hachijojima Island, the Izu Islands. *Kishidaia*, (97): 55–58.
- Shinkai, E., 2006. Spiders of Japan. 335 pp. Bun-ichi Sogo Shuppan, Tokyo.
- Su, Y.-C., Y.-H. Chang, D. Smith, M.-S. Zhu, M. Kuntner and I.-M. Tso, 2011. Biogeography and Speciation Patterns of the Golden Orb Spider Genus *Nephila* (Araneae: Nephilidae) in Asia. *Zoological Science*, 28: 47–55.
- Yaginuma, T., 1986. Spiders of Japan in Color, New Edition. xxiv+305 pp., pls. 1–64. Hoikusha, Osaka.