

Spiders (Arachnida, Araneae) of the Ogasawara Islands, Japan

Hirotsugu Ono

Department of Zoology, National Museum of Nature and Science,
3–23–1 Hyakunin-cho, Shinjuku-ku, Tokyo 169–0073, Japan
E-mail: ono @ kahaku. go. jp

Abstract. Spider specimens collected from Ogasawara Islands (= Bonin Islands), Japan, and preserved in the arachnid collection of Department of Zoology, National Museum of Nature and Science, Tokyo, were taxonomically studied. A list of 81 species belonging to 25 families, including eleven species without fixed species name, was made on the basis of those fresh specimens and records from preceding literatures. Twenty-six species of spiders are newly recorded from Ogasawara Islands. Of these following four species are new to the Japanese fauna: *Epectris apicalis* Simon, 1893 and *Opopaea deserticola* Simon, 1891 [Oonopidae], *Oecobius concinnus* Simon, 1893 [Oecobiidae] and *Opadometa grata* (Guérin, 1838) [Tetragnathidae], and a new species of the family Theridiidae is described under the name of *Euryopsis perpusilla* sp. nov. The spider fauna of the Ogasawara Islands is analyzed on the basis of zoogeographical and ecological conditions, especially of spider's ability in dispersing by ballooning and of artificial effects. The fact of shortage of total species number on Ogasawara Islands, which reaches only 5 % of the total number of known species of Japan, reveals that the spiders seem to have no great abilities in floating in the air and in drifting with winds as insects and snails. The spiders of the islands are composed of only 24 (30 %) species of natural inhabitants and 57 (70 %) artificially imported ones. Of these eleven species appear to be endemic to Ogasawara for the time being: *Walckenaeria* sp., *Nippononeta masatakana*, *Meioneta boninensis*, *Meioneta ignorata*, *Euryopsis perpusilla*, *Leucauge* sp., *Tetragnatha boninensis*, *Tetragnatha* sp., *Acantheis nipponicus*, *Cladothele boninensis* and *Clubiona* sp. Most of artificially introduced species are soil dwellers and spiders living around buildings. Reptiles of *Anolis carolinensis* (Iguanidae), toads of *Bufo marinus* (Bufonidae) and birds of mixed breed population of *Zosterops japonicus* subspecies are recognized to be danger enemies which may threaten spiders. Following species were observed as dominant in estimated population size: *Ischnothyreus peltifer*, *Erigone edentata*, *Nesticella mogera*, *Coscinida japonica*, *Theridion melanostictum*, *Coleosoma floridanum*, *Mysmenella* sp., *Pseudanapis aloha*, *Tetragnatha maxillosa*, *Cyclosa norihisai*, *Cyclosa maritima* and *Neoscona theisi*.

Key word: Arachnida, Araneae, Ogasawara Islands, taxonomy, zoogeography, inventory, new species.

Introduction

The present paper reports results of the inventory study on spiders of the Ogasawara Islands in the northwestern Pacific Ocean. The study was mainly supported by the budget of a long-term project “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 in the period between 2006 and 2010. Further op-

portunity for an assessment of threatened species (Red Data) of spiders of Tokyo 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 made field researches on Chichijima and Hahajima Islands of Ogasawara in May and October 2010 and collected about 1,100 individuals of spiders from various places of the islands. Some

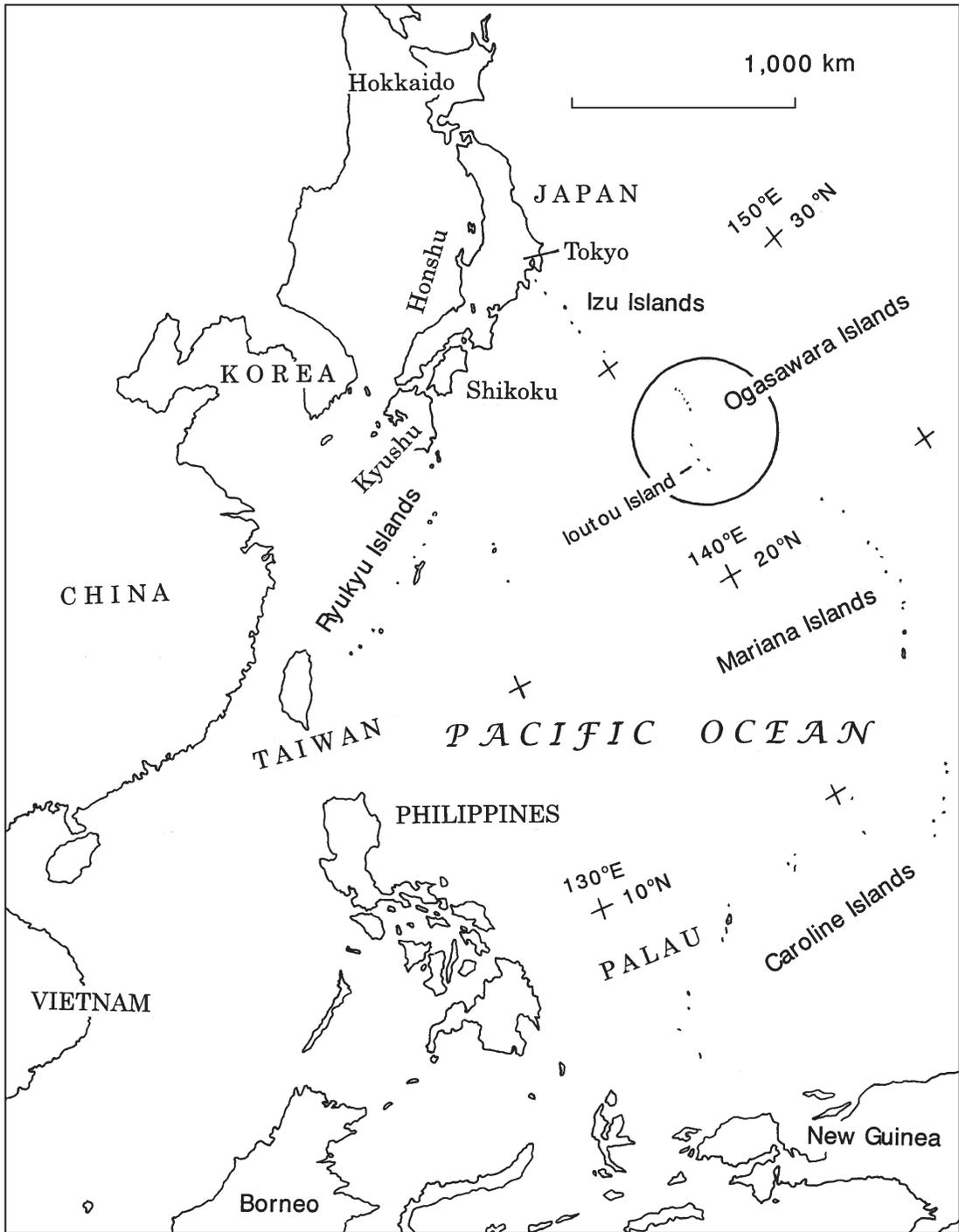


Fig. 1. Map showing the northwestern part of the Pacific Ocean. The section within a circle is the area of the Ogasawara Islands.

specimens hitherto preserved in the arachnid collection of the Department of Zoology, National Museum of Nature and Science, Tokyo, are also used for this study. These specimens were taxonomically studied and determined.

The Ogasawara Islands (= the Bonin and Volcano Islands) are situated in the northwestern Pacific in the area surrounded by the latitude between 23° and 28° N and the longitude between 141° and 143° E (Fig. 1). The nearest land is the middle of Honshū, which is about 1,000 km apart from largest Chichijima Island. Including Ioutou Island (= Iwo Jima), it was a hard-fought area between Japan and United States of America in the Second World War. About 18,000 Japanese and 7,000 American soldiers died in the battle during February and March 1945 on a small island of 23 square kilometers.

Although their origin came into existence forty-eight million years ago, these volcanic islands were uninhabited up to the 19th Century. First in 1830 immigration began with Western and Polynesian people, then the islands were in Japanese possession since 1876. After the World War United States occupied the area for a period between 1945 and 1968 until the Tokyo Metropolitan administration has restarted after returning of the islands to Japan. These human activities influenced actually the spider fauna.

The islands perform a typical oceanic fauna composed of a small number of species including some endemics. For instance, about 250 species (31 %) of a total number (800 species) of insects hitherto known from Ogasawara are endemic, while the rate of the species introduced by human activity is also around 30 % (Takakuwa, 2004; Karube, 2004). Being worse than the insect fauna, the spider fauna of Ogasawara shows a poor construction of species because either well ballooning spiders, which are tough against dried and cold environments, or spiders clinging on driftwoods may only reach such oceanic islands. That indicates artificial introduction could have a great influence and give a serious damage on natural construction of the spider fauna.

On the basis of published records (Kishida,

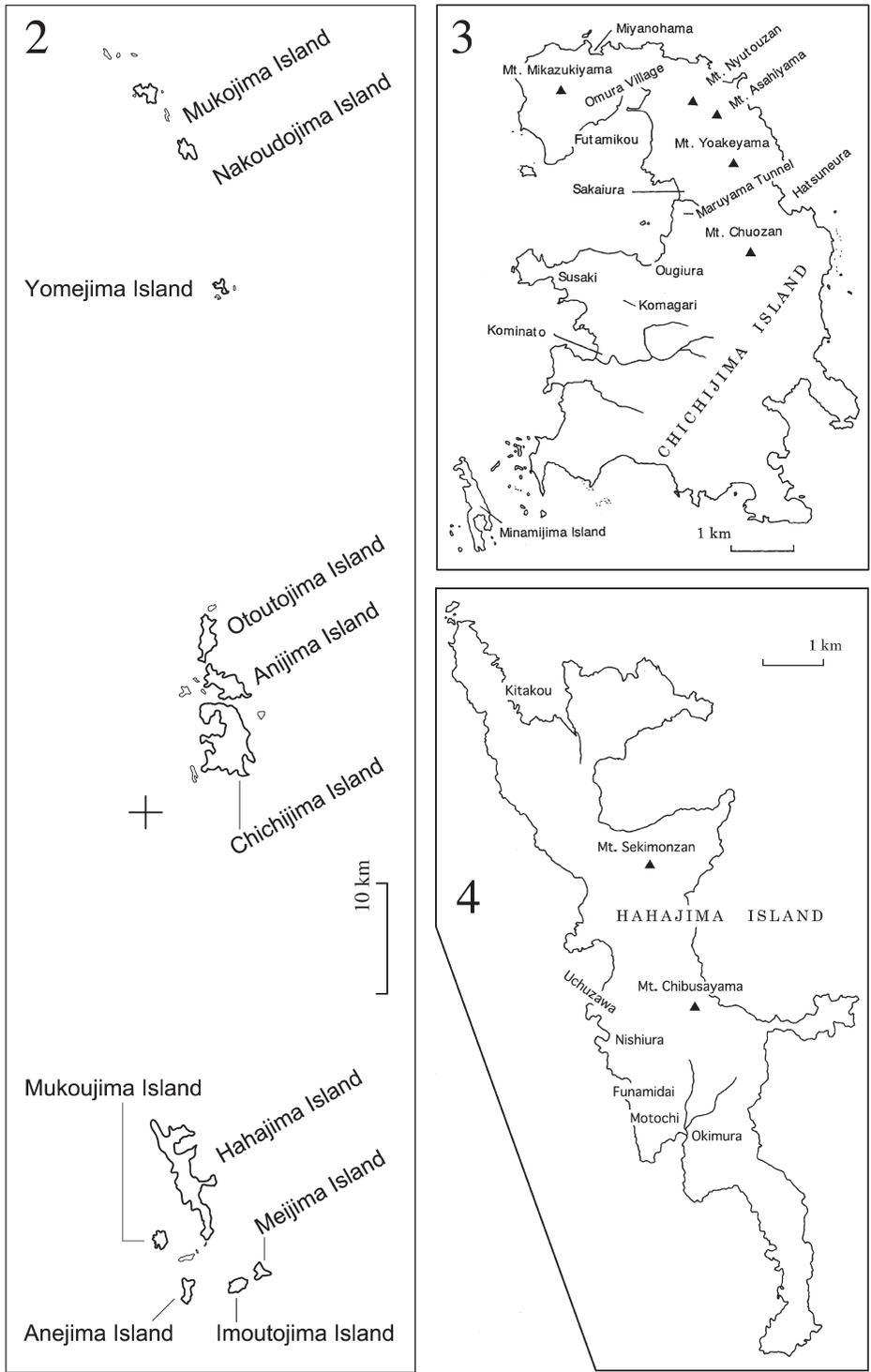
1921, 1928a, b, 1969; Shimomura, 1933; S. Saito, 1938; Yaginuma, 1960, 1968, 1970,a,b,c, 1977, 1979, 1986; M. Yoshida, 1969, Shinkai, 1969, 1977; Nakamura and Kojima, 1971; Nagashima, 1975; Yaginuma and Shinkai, 1975; Ohno, 1977; Ohno *et al.*, 1977; Okuma, 1979, H. Saito, 1982; Nishikawa, 1982; Tanaka, 1989; Tanikawa, 1989, 1992, 2007, 2009; Kamura, 1991, 2009; H. Yoshida, 1993, 1999, 2003, 2009a, b; Ono and Saito, 2001; Yawata, 2001; Ono, 2006, 2009; Ono *et al.*, 2009) about 60 to 70 species have been known from this area. However, there is no clear overall picture of spider fauna, because these records were occasionally fragmentary with unreliable identifications. These records were revised in comparison with the materials newly obtained and some questionable identification is pointed out.

Thus a list of spiders of the Ogasawara Islands known up to present is completed with some notes on interesting records and description of a new species. A zoogeographical aspect of the spider fauna of the Ogasawara Islands is given on the basis of results of this inventory study.

Materials and Methods

Most specimens used in this study were collected during research trips made by the present author on Chichijima and Hahajima Islands in the period between 18 and 30 May and between 19 and 24 October 2010. Other than these some specimens preserved in the arachnid collection of the Department of Zoology, National Museum of Nature and Science, Tokyo (NSMT) were provided for this study, including a material from Chichijima Island collected by the present author in 1974.

Collecting sites on Chichijima and Hahajima Islands are explained on maps (Figs. 2–4) and some of their views were shown (Figs. 5–10). For preservation of the vegetation especially for protection of indigenous plants to Ogasawara Islands from trampling damage, collecting fields were limited to the places along the roads and trails and on vegetations without such regulations, al-



Figs. 2–4. The Ogasawara Islands. 2, map showing northern part of the Ogasawara Islands, excluding Kazan Islands, + mark indicates a point of 27° N / 142° E; 3, collecting sites on Chichijima Island; 4, collecting sites on Hahajima Island.



Figs. 5–10. Views of collecting sites in Chichijima Island (5–8) and in Hahajima Island (9–10). 5, Miyanohama; 6, entrance of the nature trail to Mt. Asahi-yama; 7, Sakaiura; 8, Kominato; 9, Okimura; 10, a forest near Uchuzawa.

though the researches were fully permitted by relevant organizations.

Specimens collected were preserved in 76 % ethanol on location except for some spiders necessary to rear into adults, and examined under Leica MZ16 stereomicroscope at the zoological department of the museum.

A total of 1,200 individuals of spiders of the Ogasawara Islands were examined and identified (see the following list). Of these, some interesting

spiders were studied in detail and their body and important parts as male palpal organ and female genitalia were illustrated (Figs. 11–94). Four species are recorded to the Japanese spider fauna for the first time. A new species of the genus *Euryopsis* Menge, 1868 (Theridiidae) is described.

All the records of spiders from Ogasawara Islands in literatures hitherto published were taxonomically revised and some misidentifications were pointed out. The documentary information

is taken into account and a dependable list of the spiders of the Ogasawara Islands is prepared.

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

Other than specially indicated all the specimens used for this study including type specimens of new species were preserved in the collection of the National Museum of Nature and Science, Tokyo (NSMT).

Results

A list of spiders from Ogasawara Islands

Family Ctenizidae

[Japanese name: Totategumo-ka]

1. *Conothele* sp. [Jn.: Chichishima-totategumo]
Pachyomerus (sic) *mirandus* Kishida, 1921a, p. 32 (a record based on a female from Mt. Asahi-yama, Chichijima Island, 20-II-1894, Sadamori Hirota and Ryutaro Sekiguchi leg., depository of the specimen unknown). [Nomen nudum.]
Pachylomerus mirandus: Kishida, 1921b, p. 110; Saito, 1938, p. 33; Yaginuma, 1970a, p. 13; Ono, 2009, p. 91.
Pachylomerus mirundus (sic): Kishida, 1969, p. 3.
Ummidia fragaria: Yaginuma, 1979, p. 34 [Presumably not based on specimen of *Conothele fragaria* (Dönitz, 1887).]
 Notes. Kishida (1969) suggested 1919 for the year of naming of *Pachylomerus mirandus*, but there was no publication by him in this year (Ono, 2005). In the first report on this spider (Kishida, 1921a), species characteristics were not clearly given and no further record of this spider has been known up to the present. Although Yaginuma (1979) regarded this spider as *Ummidia fragaria*, the present author has no material to confirm the identity.

Record. Chichijima Island (Kishida, 1921a, b).

Family Segestriidae [Jn.: Enmagumo-ka]

2. *Ariadna insulicola* Yaginuma, 1967
 [Jn.: Shima-miyagumo]
 Record. Minamishima Island (Yaginuma, 1979).

Family Oonopidae [Jn.: Tamagogumo-ka]

3. *Heteroonops spinimanus* (Simon, 1891)
 [Jn.: Nanyou-tamagogumo]
Oonopinus hunus: Ono, 2009, p. 101.
 Notes. *Oonopinus hunus* Suman, 1965 originally described from Hawaiian Islands was recorded by Ono (2009) from Japan on the basis of females collected on Chichijima Island in 1974. However, Platnick and Dupérré (2009b) recently synonymized it with a pantropical species *Heteroonops spinimanus* (Simon, 1891). Consequently, the genus *Heteroonops* Dalmas, 1916 was recorded from Japan for the first time, while *Oonopinus* Simon, 1893 was for the moment deleted from the Japanese fauna.
 Records. Chichijima Island (Ono, 2009 and the present report).
 Specimens examined. Chichijima Island: Omura, two females and one juvenile, 2-IV-1974; Mt. Chuoizan to Hatsuneura, two juveniles, 26-V-2010; Kominato, one female and three juveniles, 20-V-2010, one juvenile, 21-X-2010; all specimens H. Ono leg.

4. *Orchestina* sp. indet. (Figs. 11–12)

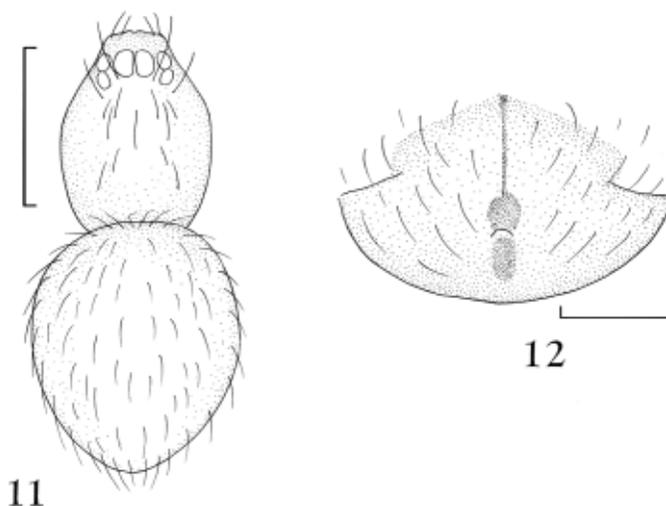
Notes. A female specimen obtained from Chichijima Island was illustrated (Figs. 11–12). Under this genus three species have been known from Japan. Although the present spider differs from all of these species, it is left undetermined due to the shortage of male specimen.

Specimen examined. Chichijima Island: Mt. Asahi-yama, one female, 20–21-X-2010, H. Ono leg.

5. *Ischnothyreus peltifer* (Simon, 1891)

[Jn.: Hawaii-yoroi-danigumo]

Ischnothyreus narutomii: Yaginuma, 1970a, p. 14



Figs. 11–12. *Orchestina* sp., female (Mt. Asahi-yama). 11, Pro- and opisthosomata, dorsal view; 12, genital field, ventral view. Scales: 0.5 mm for 11; 0.1 mm for 12.

(misidentification; nec *Ischnothyreus narutomii* Nakatsudi, 1942).

Ischnothyreus omus: Ono, 2009, p. 103 (a junior synonym of *Ischnaspis peltifer* Simon, 1891).

Notes. Ono (2009) recorded this species for the first time from Japan as *Ischnothyreus omus* Suman, 1965, which was originally described from the Hawaiian Islands. However, Saaristo (2001) synonymized it with *Ischnothyreus peltifer* (Simon, 1891) described from St. Vincent Island, West Indies. Referring to the synonymy and diagnosis reported by Saaristo this spider is widespread in sub-tropic regions in North America, East Asia, the Middle East and Hawaii. Although many authors since Yaginuma (1970a) identified this spider with *Ischnothyreus narutomii* Nakatsudi, 1943, described from Miyakejima Island of the Izu Islands, these records are herewith regarded as those of the present species.

Records. Chichijima (Nakamura and Kojima, 1971; Yaginuma, 1979; Ono, 2009 and the present report), Hahajima (Yaginuma, 1970a, 1979; Nakamura and Kojima, 1971; Ono, present report) and Mukoujima (Nakamura and Kojima, 1971; Yaginuma, 1979) Islands.

Specimens examined. Chichijima Island: Mt. Yoakeyama, two females, 22-X-2010; Kominato, one female, 20-V-2010; all specimens H. Ono leg.

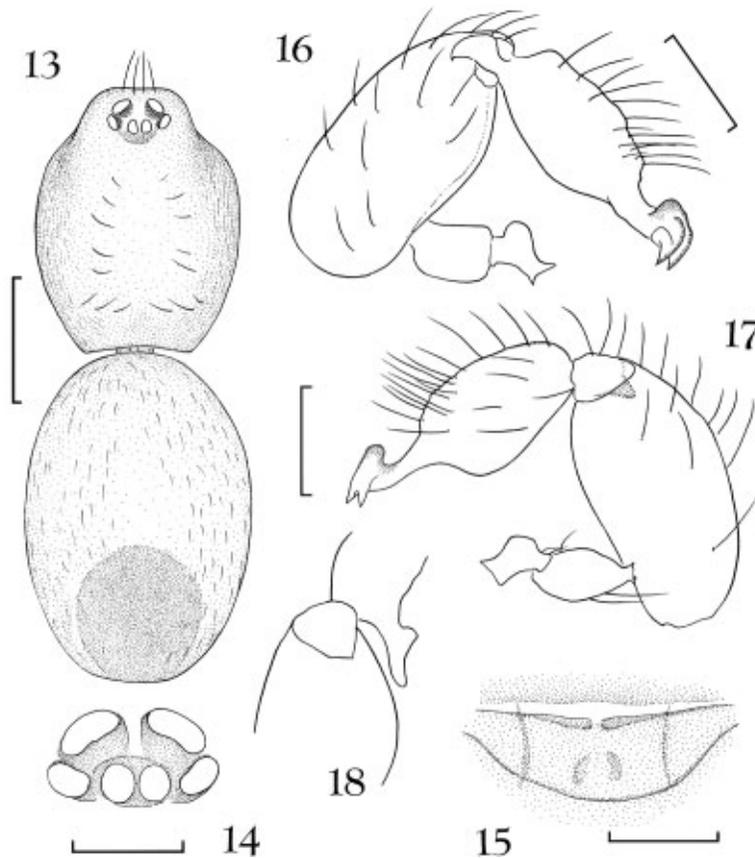
Hahajima Island: Nishiura, one female and one male, 23-V-2010; Motochi, one female and one male, 23-V-2010; all specimens H. Ono leg.

6. *Epectris apicalis* Simon, 1893 [Jn.: Hinomaru-danigumo] (Figs. 13–18)

Notes. This spider was herewith newly registered in the Japanese fauna. Platnick and Dupérré (2009a) reported well on the species. It was originally described from Luzon, the Philippines, but has been found in many places in the world, not only in Asia and Pacific Islands (the Philippines, Thailand, Singapore, Borneo, Hawaii, Micronesia, New Caledonia etc.) but also in the Seychelle Islands and Central and South America, even on Galapagos Islands. Although the spider is found in Asia, it may be attributed to the New World. Platnick and Dupérré (2009) suggested that the genus *Epectris* Simon, 1893 (type species: *Epectris apicalis*) could be a junior synonym of *Opopaea* Simon, 1891 (type species: *Opopaea deserticola*).

Specimens examined. Chichijima Island: Miyano-hama, one male, 25-V-2010; Kominato, one female, 20-V-2010; both H. Ono leg.

Description. Based on the Japanese material. Body length: female 1.65 mm, male 1.25 mm. Prosoma: Carapace longer than wide, finely ru-



Figs. 13–18. *Epectris apicalis* Simon, 1893, female (Kominato) (15) and male (Miyano-hama) (13–14 and 16–18). 13, Pro- and opisthosomata, dorsal view; 14, eyes, dorsal view; 15, genital field, ventral view; 16, male palp, prolateral view; 17, male palp, retrolateral view; 18, joint between tibia and tarsus of male palp, dorsal view. Scales: 0.25 mm for 13; 0.1 mm for 14–18.

gated laterally (Fig. 13); AMEs separated from each other and much larger than other eyes (Fig. 14); male palp with large and expanded patella and simple palpal organ (Figs. 16–18). Opisthosoma: oval and longer than wide, with a large dorsal scutum and ventral scuta, both of which cover almost all the soft part. Female genital field is illustrated in Fig. 15. Coloration and markings: almost all parts light yellowish brown except for the soft part of opisthosoma white and a large black round marking on the posterior part of dorsal scutum (Fig. 13).

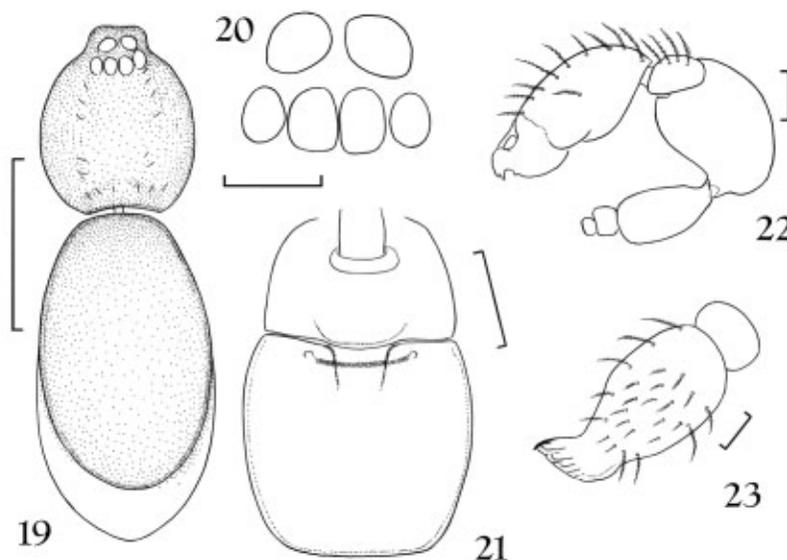
7. *Opopaea deserticola* Simon, 1891 [Jn.: Minami-sharakudaingumo] (Figs. 19–23)

Notes. This species is newly recorded from

Japan and is definitely regarded as an artificial immigrant from America. It is actually the type species of the genus and has been known from very wide range in the New World (Platnick and Dupérré, 2009a).

Specimens examined. Chichijima Island: Miyano-hama, two females, 25-V-2010, H. Ono leg. Hahajima Island: Okimura, one male, 23-V-2010, H. Ono leg.

Description. Based on the Japanese material. Body length: female 1.48 / 1.70 mm, male 1.34 mm. Prosoma: Carapace longer than wide, finely rugated laterally; AMEs separated from each other and much larger than other eyes (Fig. 20); male palp with large and expanded patella and simple palpal organ (Figs. 22–23). Opisthosoma: oval



Figs. 19–23. *Opopaea deserticola* Simon, 1891, female (Miyanoama) (19–21) and male (Okimura) (22–23). 19, Pro- and opisthosoma, dorsal view; 20, eyes, dorsal view; 21, ventral plates of opisthosoma, ventral view; 22, male palp, retrolateral view; 23, same, dorsal view. Scales: 0.5 mm for 19; 0.1 mm for 20, 22–23; 0.25 mm for 21.

and longer than wide, with a large dorsal scutum and ventral scuta (Figs. 19 and 21). Female genital field is illustrated in Fig. 21. Coloration and markings: almost all parts light yellowish brown except for the soft part of opisthosoma white (Fig. 19). This species resembles *Epectris apicalis* but is easily distinguished from the latter by the eye arrangement, marking on the abdominal scutum and the shape of genital organs.

8. *Gamasomorpha lalana* Suman, 1965
[Jn.: Minami-danigumo]

Records. Chichijima Island (Ono, 2009 and the present report).

Specimens examined. Chichijima Island: Miyanoama, two females, 25-V-2010; Ougiura, one male, 28-V-2010; Kominato, one female, 20-V-2010; all specimens H. Ono leg.

Family **Tetrablemmidae** [Jn.: Jabaragumo-ka]

9. *Ablemma shimojanai* (Komatsu, 1968)
[Jn.: Shimojanagumo]

Notes. This species was known in Ryukyu Islands. Although more than twenty species have

been described under the genus *Ablemma* Roewer, 1963, from Southeast Asia and New Guinea, no difference was found between this material and the original description.

Specimens examined. Mt. Asahiyama, one female and one male, 20–21-V-2010, one male, 21-X-2010, H. Ono leg.

Family **Pholcidae** [Jn.: Yureigumo-ka]

10. *Physocylus globosus* (Taczanowski, 1873)
[Jn.: Nettai-yuureigumo]

Records. Chichijima (Yaginuma, 1979; Ono, present paper).

Specimens examined. Chichijima Island: Okumura, 13 females, five males and three juveniles, V-2010; contributed by the Japan Wildlife Research Center.

11. *Smeringopus pallidus* (Blackwall, 1858)
[Jn.: Yuureigumo-modoki]

Note. Although this species is adapted to the urban environment, it was found in Chichijima Island not only in and around buildings but also in the caves at the seaside and in the forests.

Records. Chichijima (Yaginuma, 1979; Yawata, 2001; Ono, present report) and Hahajima (Yaginuma, 1970a, 1979; Nakamura and Kojima, 1971; Nagashima, 1975; Shinkai, 1977; Yawata, 2001) Islands.

Specimens examined. Chichijima Island: Miyano-hama, two females and one juvenile, 25-V-2010; Omura, one female and two juveniles, 31-III-1974; Mt. Asahiyama, one female and one juvenile, 26-V-2010; Mt. Yoakeyama, one male and one juvenile, 28-V-2010; Ougiura, two females and five juveniles, 28-V-2010; Kominato, six females, four males and three juveniles, 20 and 27-V-2010, one female and 10 juveniles, 21-X-2010; all specimens H. Ono leg. Hahajima Island: Okimura, one male, 23-V-2010, H. Ono leg.

12. *Spermophora senoculata* (Dugés, 1836)

[Jn.: Shimongumo]

Note. This cosmopolitan, house spider is herewith recorded from Ogasawara for the first time.

Specimens examined. Chichijima Island: Ougiura, one female and five juveniles, 28-V-2010, H. Ono leg.

Family **Telemidae** [Jn.: Yaginomagumo-ka]

13. *Telema* sp. indet.

Notes. This genus is very diverse in East Asia, as more than thirty species were described only from China. Because males lack in the material, the present author could not identify the present females with *Telema nipponica* (Yaginuma, 1972), the only known species from Japan.

Specimens examined. Chichijima Island: Mt. Asahiyama, one female, 20–21-V-2010, H. Ono leg.; Maruyama Tunnel, one female, 23-X-2010, H. Ono leg. Hahajima Island: Okimura, one female, 24-V-2010, H. Ono leg.

Family **Scytodidae** [Jn.: Yamashirogumo-ka]

14. *Scytodes thoracica* (Latreille, 1802)

[Jn.: Yukata-yamashirogumo]

Records. Hahajima Island (Yaginuma, 1979).

15. *Scytodes fusca* Walekenaer, 1837 [Jn.: Kuroyamashirogumo] (Figs. 24–30, 95)

Scytodes nigrolineata: Yoshida, 1969, p. 19; Shinkai, 1969, p. 11; Nagashima, 1975, p. 1; Yaginuma, 1979, p. 34 (probably not *Dictis nigrolineata* Simon, 1880, a junior synonym of *Dictis striatipes* L. Koch, 1872)

Scytodes sp. (?): Yawata, 2001, p. 90.

Notes. The present author regarded *Scytodes* spiders commonly found in Ogasawara as *Scytodes fusca* contra *Scytodes nigrolineata* as given in Yaginuma (1979). The coloration and markings of carapace and abdomen are variable in individuals collected in the same place (Figs. 24–26, 95). The shape of male palpal organ led identification to the above species (Figs. 27–30).

Records. Chichijima (Yaginuma, 1979; Yawata, 2001), Nishijima (Yaginuma, 1979), Hahajima (Nagashima, 1975; Yaginuma, 1979) Islands. Locality not specified (Yoshida, 1969; Shinkai, 1969).

Specimens examined. Chichijima Island: Miyano-hama, two females, 25-V-2010, one juvenile, 2-IV-1974, H. Ono leg.; Sakaiura, five females, one male and two juveniles, 26-V-2010, T. Nagashima and H. Ono leg.; Ougiura, one juvenile, 28-V-2010, H. Ono leg.

16. *Scytodes longipes* Lucas, 1844 [Jn.: Ashinaga-yamashirogumo]

Scytodes sp. (? *Scytodes longipes*): Yaginuma, 1979, p. 34.

Record. Nishijima Island (Yaginuma, 1979).

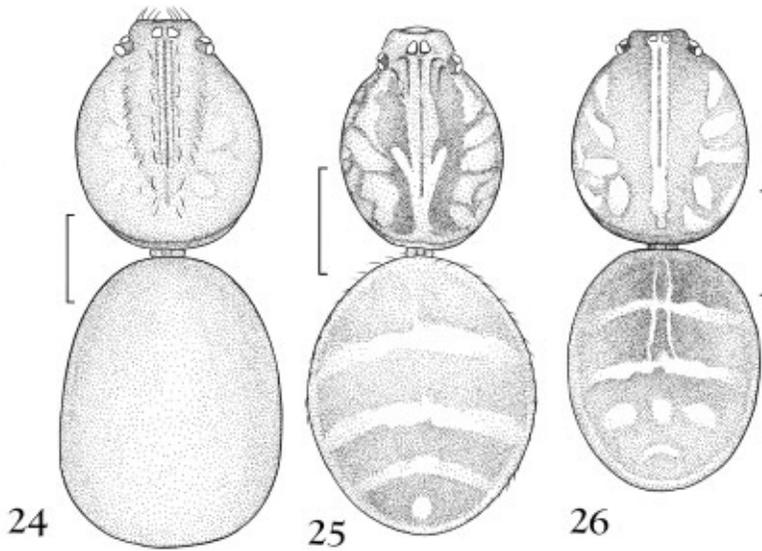
Family **Filistatidae**

17. *Filistata fuscata* Nakatsudi, 1943

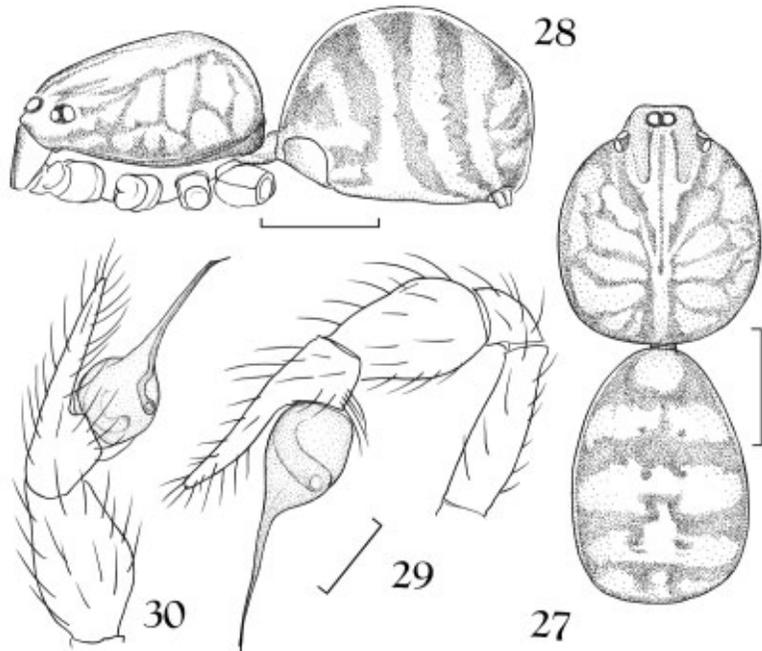
[Jn.: Tobihiro-kayashimagumo]

Filistata fuscata Nakatsudi, 1943, p. 148 (the name was given as *Filistata fuscata* Kishida, 1919, which was not published by Kishida; having made singly the original description and illustrations, Nakatsudi should be designated as the author of the name; type locality is Koror Island, Palau).

Filistata fuscata Kishida, 1947, p. 999 (the type



Figs. 24–26. *Scytodes fusca* Walckenaer, 1837, females (Sakaiura), showing variation of body markings. 24–26, Pro- and opisthosomata, dorsal view. Scales: 1 mm.



Figs. 27–30. *Scytodes fusca* Walckenaer, 1837, male (Sakaiura). 27, Pro- and opisthosomata, dorsal view; 28, same, lateral view; 29, male palp, retrolateral view; 30, same, prolateral view. Scales: 0.25 mm for 27–28; 0.1 mm for 29–30.

area is “Micronesia” including Mariana, Caroline and Marshall Islands). [A junior homonym and probably a junior synonym of *Filistata fuscata* Nakatsudi, 1943.]

Filistata sp. (resembling *Filistata fuscata*): Yaginuma, 1970a, p. 14; 1979, p. 34.

Notes. The record of this species in Ogasawara Islands should be revised, but is presented herewith, following Yaginuma’s presumption. In the catalogues of spiders the author of the name was given as “Kishida in Nakatsudi, 1943” but it was described singly by Nakatsudi. Not included in the present material.

Records. Hahajima Island (Yaginuma, 1970a, 1979). Locality not specified (Yaginuma, 1970c).

Family **Oecobiidae** [Jn.: Chirigumo-ka]

18. ***Oecobius navus*** Blackwall, 1859

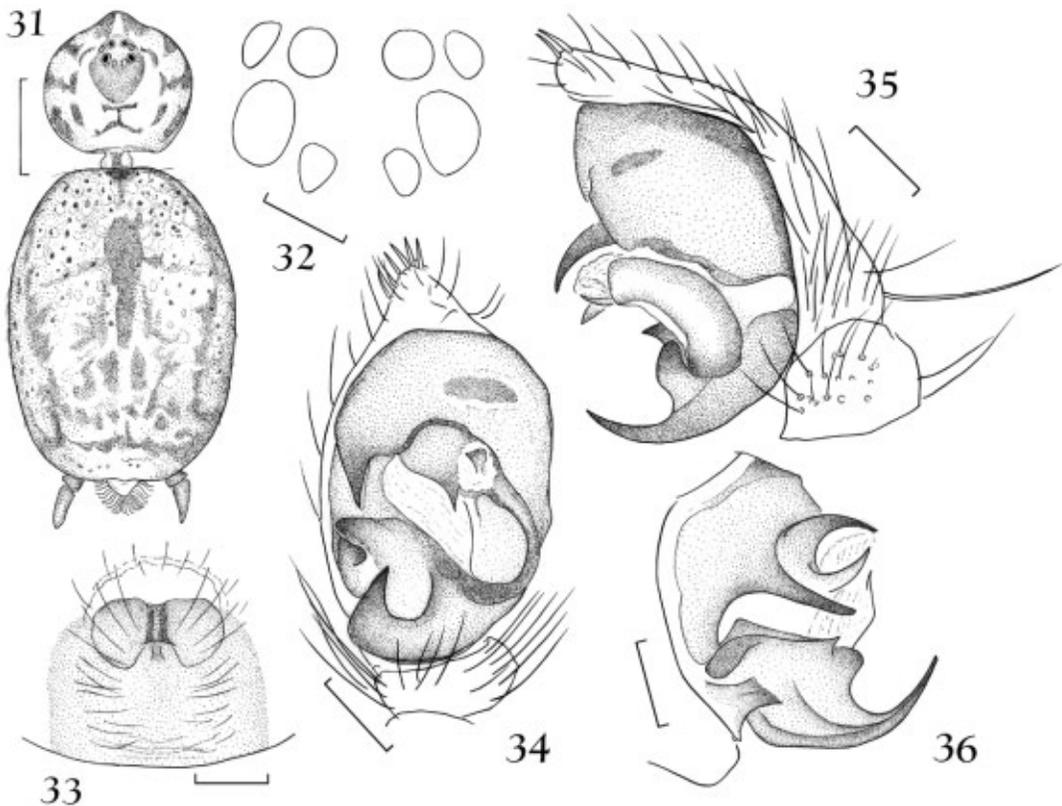
[Jn.: Chirigumo]

Oecobius annulipes: Yoshida, 1969, p. 19; Shinkai, 1969, p. 9; Yaginuma, 1979, p. 34 (nec *Oecobius annulipes* Lucas, 1846)

Records. Chichijima Island (Yaginuma, 1979). Locality not specified (Yoshida, 1969; Shinkai, 1969).

19. ***Oecobius concinnus*** Simon, 1893 [Jn.: Madara-chirigumo] (Figs. 31–36, 96–97)

Notes. This species is recorded herewith for the first time from Japan. It has been mainly recorded from Central America (Shear 1970; Santos and Gonzaga, 2003). Spiders of the species were collected from walls of buildings, artificial bank



Figs. 31–36. *Oecobius concinnus* Simon, 1893, female (Kominato) (31–33) and male (Kominato) (34–36). 31, Pro- and opisthosomata, dorsal view; 32, eyes, dorsal view; 33, epigynum, ventral view; 34, male palpal organ, ventral view; 35, same, retrolateral view; 36, same, prolateral view. Scales: 0.5 mm for 31; 0.1 mm for 32–26.

along river and rocks at the seaside. The webs are relatively large and formed a group along grooves (Figs. 96–97).

Specimens examined. Chichijima Island: Miyahama, two females and two juveniles, 25-V-2010; Sakaiura, one female, 26-V-2010; Ougiura, two females and one juvenile, 28-V-2010; Kominato, 10 females, one male and one juvenile, 20-V-2010; all specimens H. Ono leg. Hahajima Island: Okimura, one female, 24-V-2010, H. Ono leg.

Description. Based on the Japanese specimens. Body length: females 2.08–2.70 mm, male 1.80 mm. Prosoma: Carapace round, as long as wide, raised at the middle; eyes compactly set, PLE > AME > PME = ALE, AMEs separated from each other (Fig. 32); chelicerae very small, male palp with large palpal organ furnished with developed tegular apophyses, embolic division small, situated between basal and apical apophyses (Figs. 34–36). Opisthosoma: quite large in comparison with prosoma, oval and longer than wide (Fig. 31). Epigynum with genital openings situated in the anterior part (Fig. 33). Coloration and markings (female and male): Carapace light yellow mottled with black, ocular area dark brown, mouth parts light yellow, sternum light yellow marginated with black, palps and legs light yellow with black rings; opisthosoma dull white or gray, spotted in black, sides and cardiac pattern blackish brown, venter white or light gray.

Family Uloboridae [Jn.: Uzugumo-ka]

20. *Zosis geniculatus* (Olivier, 1789) [Jn.: Minami-uzugumo]

Uloborus geniculatus: M. Yoshida, 1969, p. 19; Shinkai, 1969; Yaginuma, 1986, p. 14.

Zosis geniculatus: Shinkai, 2006, p. 48; H. Yoshida, 2009, p. 145.

Records. Chichijima (Yaginuma, 1970a, 1979; Nakamura and Kojima, 1971; Yawata, 2001; Ono, present report) and Hahajima (Yaginuma, 1970a, 1979; Nagashima, 1975; Yawata, 2001) Islands. Locality not specified, but Chichijima or Hahajima (Yoshida, 1969; Shinkai, 1969,

2006; Yaginuma, 1970c, 1977, 1986).

Specimens examined. Chichijima Island: Mt. Mikazukiyama, two juveniles, 2-IV-1974; Ougiura, two females and many juveniles, 28-V-2010; Kominato, three juveniles, 1-IV-1974; all specimens H. Ono leg. Hahajima Island: Motochi, one juvenile, 23-V-2010, H. Ono leg.

Family Agelenidae [Jn.: Tanagumo-ka]

21. *Paratheuma insulana* (Banks, 1902)

[Jn.: Shima-isotanagumo]

Note. Presumably introduced from Caribbean Sea to Japan with the Navy.

Record. Chichijima Island (Ono, 2006).

Family Lycosidae [Jn.: Komorigumo-ka]

22. *Lycosa coelestis* L. Koch, 1878 [Jn.: Harakuro-komorigumo]

Notes. As Yaginuma (1979) listed this species with a question mark, the records of this species in Ogasawara Islands should be re-examined. It could be a misidentification with the next species.

Records. Locality not specified (Shinkai, 1969; Yoshida, 1969).

23. *Lycosa boninensis* Tanaka, 1989 [Jn.: Ogasawara-komorigumo]

Notes. This species seems common on Chichijima Island, because many juveniles were seen in various places. Tso and Chen (2004) reported this species from Taiwan. The Taiwanese record indicates that this spider is not endemic in Ogasawara Islands and could be introduced from Taiwan.

Records. Chichijima (Ono, present report), Hahajima (Tanaka, 1989) and Ioutou (Tanaka, 1989; Tanikawa, 1989).

Specimens examined. Chichijima Island: Ougiura, one immature male, 29-V-2010, H. Ono leg.; Susaki, one immature female, 26-V-2010 (adult in July after breeding), T. Nagashima and H. Ono leg.; Kominato, one male, 20-V-2010, H. Ono leg.

24. *Lycosa matsushitai* Nakatsudi, 1943

[Jn.: Matsushita-komorigumo]

Notes. This species was described from Micronesia by Nakatsudi (1943). In the original description the type locality was not given, although specimens from Tenian and Rota Islands, Northern Mariana Islands, and Babeldaob Island of Palau were used for the study. The distributional range of this spider seems to be wide in Micronesia including Ogasawara Islands (Yaginuma 1970b and others). Tanaka (1990) recorded a female of this spider from Mt. Chibusayama of Hahajima Island and illustrated its epigynum. The shape of epigynum in the figure is not characteristic to separate this species from *Lycosa boninensis*. Therefore he distinguished this species from the latter with only their body size. The female body length of *Lycosa matsushitai* is more than 20 mm, while that of *L. boninensis* is less than 15 mm. Although the male of *L. matsushitai* is unknown, comparison of the male palpal structure between both the species is a matter requiring immediate attention.

Records. Chichijima (Yaginuma, 1970b, 1979; Nakamura and Kojima, 1971; Shinkai, 1977) and Hahajima (Tanaka, 1990) Islands. Locality not specified (Yaginuma, 1970c, 1977, 1986).

25. *Pardosa takahashii* (Saito, 1936)

[Jn.: Sunahara-komorigumo]

Note. This is a common species on sandy beach in the Ryukyus but the present author has not seen it during field researches on Chichijima and Hahajima Islands.

Records. Anijima (Yaginuma, 1979) and Hahajima (Yaginuma, 1979) Islands. Locality not specified (Shinkai, 2006).

26. *Pardosa astrigera* L. Koch, 1878 [Jn.: Uzuki-komorigumo]

Lycosa suzukii: Yoshida, 1969, p. 19 (nec *Lycosa suzukii* Kishida, nom. nud.)

Pardosa T-insignita: Shinkai, 1969, p. 38 (nec *Pardosa T-insignita* Bösenberg et Strand, 1906).

Pardosa astrigera (?): Yaginuma, 1979, p. 35.

Note. Yaginuma (1979) suggested that the identification of this species by Yoshida (1969) and Shinkai (1969) should be doubtful.

Records. Locality not specified, but Chichijima or Hahajima Island (Yoshida, 1969; Shinkai, 1969; Yaginuma, 1979).

Family **Linyphiidae** [Jn.: Saragumo-ka]27. *Ummeliata feminea* (Bösenberg et Strand, 1906) [Jn.: Atoguro-akamunegumo]

Oedothorax tokyoensis: Shinkai, 1969, 22 [synonymized with *Oedothorax femineus* by Saito (1993)].

Records. Locality not specified (Shinkai, 1969; Yaginuma, 1979).

28. *Walckenaeria* sp. indet. (Figs. 37–38)

Note. This spider is unknown from Japan but left undetermined because of lacking male specimen. Female characteristics are shown in Figs. 37–38.

Specimen examined. Chichijima Island: Mt. Yoakeyama, one female, 22-X-2010, H. Ono leg.

29. *Mermessus naniwaensis* (Oi, 1960)

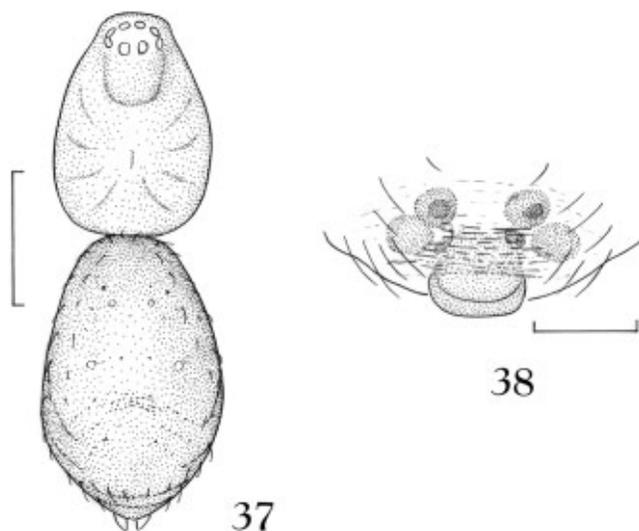
[Jn.: Naniwa-nankingumo]

Notes. This species is distributed in Japan (Honshu, Shikoku and Kyushu) and China. It is recorded herewith from Ogasawara Islands for the first time and is regarded as an immigrant.

Specimens examined. Chichijima Island: Kominato, six females and one immature male, 20- and 27-V-2010, H. Ono leg. Hahajima Island: Nishiura, two females, two males and five juveniles, 23-V-2010, H. Ono leg.

30. *Caviphantes samensis* Oi, 1960 [Jn.: Horanukagumo] (Figs. 39–45)

Notes. The present author was skeptic and illustrated the male specimen collected from Minami-ioutou in details (Figs. 39–45). However, he did not find any remarkable characters to separate it from *Caviphantes samensis*. Although this spider was first described from a cave in Honshu, a



Figs. 37–38. *Walckenaeria* sp. [Linyphiidae], female (Mt. Yoakeyama). 37, Pro- and opisthosomata, dorsal view; 38, epigynum, ventral view. Scales: 0.5 mm for 37; 0.1 mm for 38.

wide distributional range has been known in Japan and China. During recent researches the spider was not found in Chichijima and Hahajima Islands. Thus, the records of this species on Ogasawara are open to doubt whether these are caused by the artificial effect.

Records. Hahajima (Saito, 1882) and Minami-ioutou (Ono, present report) Islands.

Specimens examined. Minami-ioutou Island: 25-VI-2007, H. Karube leg.

31. *Erigone prominens* Bösenberg et Strand, 1906 [Jn.: Nokogiri-hizagumo]

Erigone sp. (?): Nishikawa, 1982, p. 374.

Note. The distributional range of this species is very wide from Asia to Africa and New Zealand. Because spiders of the species balloon well, the distribution in Ogasawara Islands may be natural.

Specimens examined. Minami-ioutou Island: two females, 25-VI-2007, H. Karube leg.

32. *Erigone edentata* Saito et Ono, 2001 [Jn.: Marumune-hizagumo] (Figs. 46–50)

Notes. This species was recently described and recorded from Aichi and Kyoto Prefectures (Saito and Ono, 2001) and from Meguro-ku, To-

kyo (Ono and Shinkai, 2001). It is recorded herewith from Ogasawara Island for the first time. It may be an immigrant from Honshu and the present author could not find anything remarkable in the individuals from Ogasawara (Figs. 46–50).

Specimens examined. Chichijima Island: Miyano-hama, one female and one male, 25-V-2010; Susaki, one male, 26-V-2010; Kominato, 18 females and seven males, 20– and 27-V-2010; all specimens H. Ono leg. Hahajima Island: Uchuzawa, one male, 22-V-2010, H. Ono leg.; Okimura, two females, 23-V-2010, H. Ono leg.

33. *Nippononeta masatakana* Ono et Saito, 2001 [Jn. changed: Minami-ioutou-keshigumo]

Meioneta sp.: Nishikawa, 1982, p. .

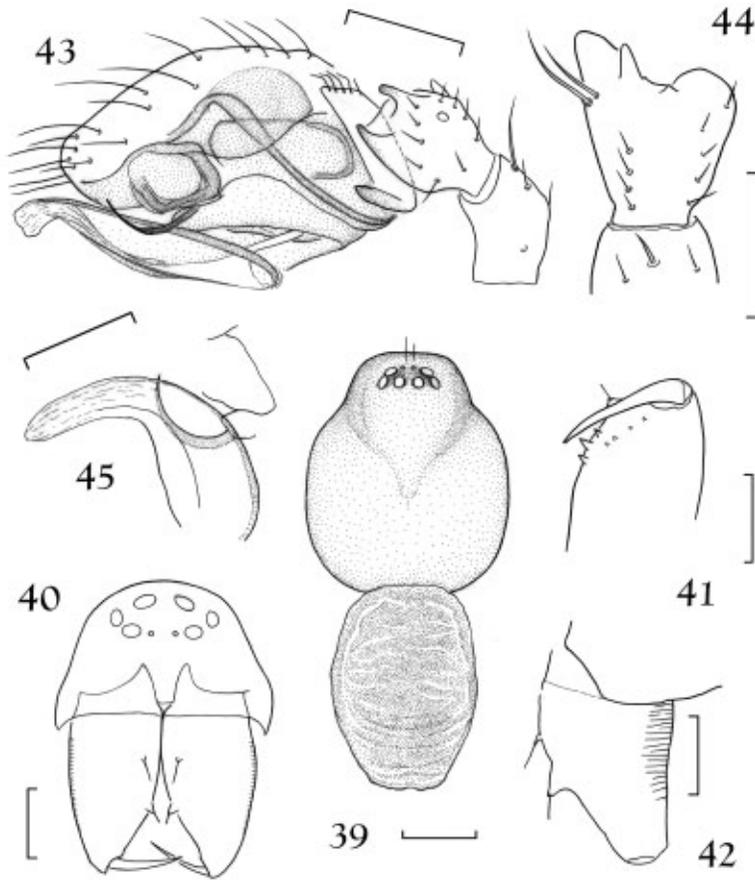
Nippononeta masatakana Ono et Saito, 2001, p. 187.

Records. Hahajima (Ono, present report) and Minami-ioutou (Ono and Saito, 2001; Ono *et al.*, 2009) Islands.

Specimens examined. Hahajima Island: Okimura, two females, 23-V-2010, H. Ono leg.

34. *Meioneta boninensis* Saito, 1982 [Jn.: Ogasawara-keshigumo]

Record. Hahajima Island (Saito, 1982). Type



Figs. 39–45. *Caviphantes samensis* Oi, 1960, male (Minami-ioutou Island). 39, Pro- and opisthosomata, dorsal view; 40, prosoma, frontal view; 41, chelicerae, ventral view; 42, same, lateral view; 43, male palp, retrolateral view; 44, tibia of male palp, dorsal view; 45, embolic division of male palp, ventral view. Scales: 0.1 mm.

locality: Mt. Kuwanokiyama, Hahajima Island.

35. *Meioneta ignorata* Saito, 1982 [Jn.: Sadayorikeshigumo]

Records. Chichijima (Saito, 1982) and Hahajima (Saito, 1982) Islands. Type locality: Mt. Kuwanokiyama, Hahajima Island.

36. *Microbathyphantes aokii* (Saito, 1982)

[Jn.: Ogasawara-tenagagumo]

Bathyphantes aokii H. Saito, 1982, p. 34 (type locality: Mt. Mikazukiyama, Chichijima Island).

Microbathyphantes aokii: Tu and Li, 2006, p. 104.

Note. Although this spider was first thought to be endemic, it has been recorded from China and

Vietnam.

Records. Chichijima (Saito, 1982) and Hahajima (Saito, 1982) Islands. Locality not specified (Yaginuma, 1986).

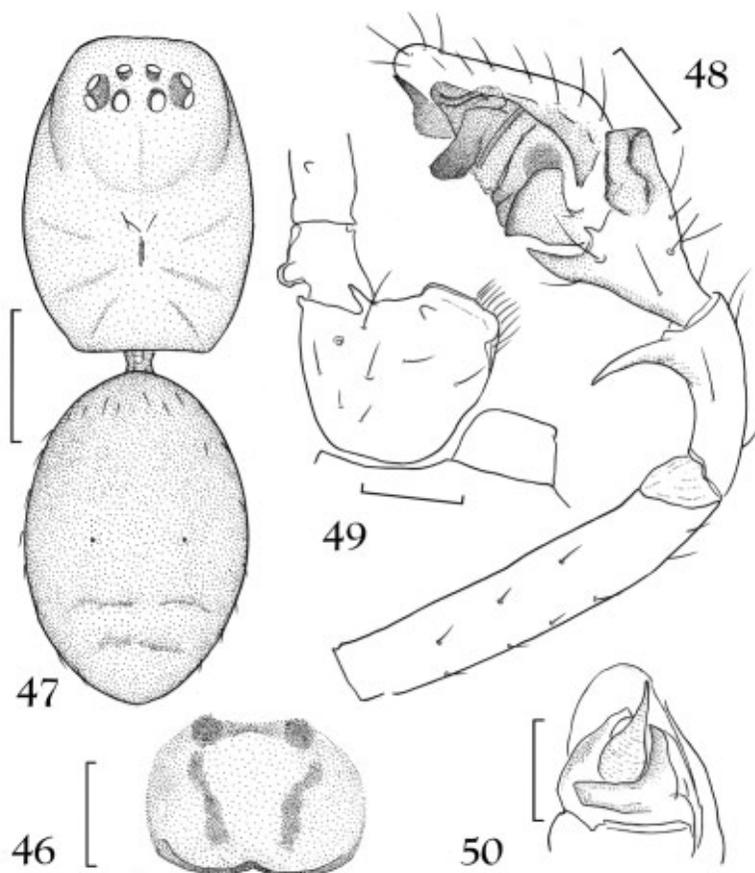
Specimens examined. Hahajima Island: Uchuzawa, seven females and three males, 22-V-2010; Okimura, one female and one male, 23-V-2010; Nishiura, six females, 23-V-2010; all specimens H. Ono leg.

37. *Microbathyphantes tateyamaensis* (Oi, 1960) [Jn.: Tateyama-tenagagumo]

Bathyphantes tateyamaensis: Saito, 1982, p. 34.

Microbathyphantes tateyamaensis: Ono *et al.*, 2009, p. 334.

Records. Chichijima Island (Saito, 1982).



Figs. 46–50. *Erigone edentata* Saito et Ono, 2001, female (Kominato) (46) and male (Uchuzawa) (47–50). 46, Epigynum, ventral view; 47, pro- and opisthosomata, dorsal view; 48, male palp, retrolateral view; 49, maxilla and the basal part of male palp, ventral view; 50, embolic division of male palp, ventral view. Scales: 0.05 mm for 46, 48–50; 0.25 mm for 47.

Locality not specified (Ono *et al.*, 2009).

Specimens examined. Hahajima Island: Mt. Sekimonzan, three females, one male and 24 juveniles, 22-V-2010; Uchuzawa, two juveniles, 22-V-2010; all specimens H. Ono leg.

Family **Nesticidae** [Jn.: Horahimegumo-ka]

38. *Nesticella mogera* (Yaginuma, 1972)

[Jn.: Chibi-horahimegumo]

Records. Chichijima Island (Ono, present report). Yaginuma (1970, 1979) recorded *Nesticus* sp. (presumably juveniles) from Chichijima and Hahajima Islands, which may be the same species as the present one.

Specimens examined. Chichijima Island: Miyanoama, one juvenile, 25-V-2010; Mt. Asahi-yama, two juveniles, 20-V-2010, two males and three juveniles, 21-X-2010; Mt. Yoakeyama, one female, 28-V-2010; Mt. Chuzozan to Hatsuneura, five juveniles, 26-V-2010; Komagari, one female, one male and seven juveniles, 27-V-2010; Sakai-ura, three juveniles, 28-V-2010; Kominato, seven females, three males and 14 juveniles, 20 and 27-V-2010; all specimens H. Ono leg.

39. *Eidmannella pallida* (Emerton, 1875)

[Jn.: Amerika-horahimegumo]

Note. Although this species is regarded as cosmopolitan, it was found only on Minami-iout-

ou Island in Japan.

Records. Minami-ioutou Island (Nishikawa, 1982; Yaginuma, 1986; Kamura and Irie, 2009).

Family **Theridiidae** [Jn.: Himegumo-ka]

40. *Coscinida japonica* Yoshida, 1994 [Jn.: Togatari-kusachi-himegumo]

Notes. This species was hitherto known from the Ryukyu Islands (Yoshida, 2009) and recorded from Ogasawara Islands for the first time. It should be an immigrant from the Ryukyus. Spiders of the species were commonly found on the ground and in the leaf litter almost in every collecting site on Chichijima and Hahajima Islands.

Specimens examined. Chichijima Island: Miyanoama, one juvenile, 25-V-2010; Mt. Asahi-yama, three females, 20-V-2010, four females and 11 juveniles, 20–21-X-2010; Mt. Yoakeyama, one juvenile, 28-V-2010, five females, five males and 12 juveniles, 22-X-2010; Mt. Chuzozan to Hatsu-neura, six females, two males, 15 juveniles, 26-V-2010; Sakaiura, one female, two males 12 juveniles, 28-V-2010; Maruyama Tunnel, one female and one juvenile, 23-X-2010; Ougiura, one female, one male and one juvenile, 28-V-2010; Komagari, 2 females, 2 males and 8 juvenile, 21 and 27-V-2010; Kominato, 25 females, eight males and nine juveniles, 20 and 27-V-2010; all specimens H. Ono leg. Hahajima Island: Mt. Sekimonzan, two females and four juveniles, 22-V-2010; Uchuzawa, one female, one male and five juveniles, 22-V-2010; Okimura, four females and nine juveniles, 23–24-V-2010; Nishiura, six females, four males and 23 juveniles, 23-V-2010; all specimens H. Ono leg.

41. *Theridion melanostictum* O. Pickard-Cambridge, 1876 [Jn.: Ogasawara-himegumo] (Figs. 51–55)

Theridion ogasawarense Yoshida, 1993, p. 111 (type locality: Hahajima Island; a junior synonym of the present species).

Notes. This spider is widely distributed in North America, Middle East and Asia (Japan and China) and is regarded as an immigrant in Oga-

sawara Islands. This is one of the dominant species on Chichijima and Hahajima Islands. Both female and male are illustrated in Figs. 51–55.

Records. Chichijima (Yawata, 2001; Ono, present report) and Hahajima (Yoshida, 1993, 2003, 2009; Yawata, 2001; Ono, present report) Islands.

Specimens examined. Chichijima Island: Mt. Mikazukiyama, three juveniles, 3-IV-1974; Miyanoama, three females, two males and three juveniles, 25-V-2010; Omura (Higashimachi), three females, one male and three juveniles, 31-III-1974; Mt. Asahi-yama, one juvenile, 20-V-2010; Komagari, two females, one male and one juvenile, 21 and 27-V-2010; Sakaiura, one female, 26-V-2010; Ougiura, two females, one male and three juveniles, 29-V-2010; Kominato, six females and three juveniles, 20 and 27-V-2010, one female, 21-X-2010; all specimens H. Ono leg. Hahajima Island: Okimura, three females, two males and four juveniles, 23–24-V-2010, H. Ono leg.

42. *Nesticodes rufipes* (Lucas, 1846)

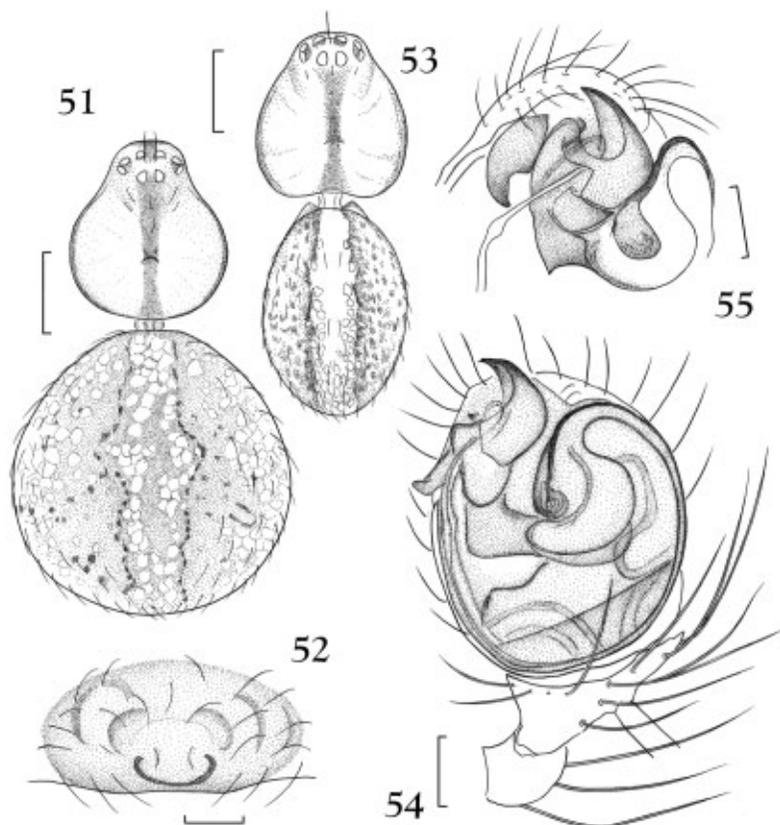
[Jn.: Akaashi-himegumo]

Note. This is a spider widespread in tropical regions of the world due to the artificial dispersal. In Japan it was hitherto recorded from the Ryukyu Islands.

Specimen examined. Chichijima Island: Kominato, one male, 27-V-2010, H. Ono leg.

43. *Platnickina adamsoni* (Berland, 1934), nom. reviv. [Jn.: Sato-himegumo] (Figs. 56–61)

Notes. *Theridion adamsoni* Berland, 1934, described from Tahiti was a well known, pantropical spider, which was also recorded in Japan (Chikuni, 1989). In the catalogues and major books on Japanese spiders (Chikuni, 2008, and others) the species is regarded as a junior synonym of another Japanese, relatively obscure spider, *Theridion mneon* Bösenberg et Strand, 1906, on the basis of the synonymy reported by Yoshida (2001). However, the characteristics of “*adamsoni*” are not suitable to the original description and illustrations of *Theridion mneon* made by Bösen-



Figs. 51–55. *Theridion melanostictum* O. Pickard-Cambridge, 1876, female (51–52) and male (53–55) (both from Komagari). 51, 53, Pro- and opisthosomata, dorsal view; 52, epigynum, ventral view; 54, male palp, ventral view; 55, tip of male palpal organ, prolateral view. Scales: 0.5 mm for 51, 53; 0.1 mm for 52, 54–55.

berg and Strand (1906). Because the reviser did not carefully refer to the original description nor examine type specimen of *Theridion mneon* probably preserved in the Senckenberg Museum Frankfurt, Germany, there could exist an incomplete treatment of the synonymy. Although the present author is studying some specimens of real *mneon* obtained from Japan (Ono and Kumada, MS preparing), *Platnickina adamsoni* is for the time being revived and illustrations (Figs. 56–61) of the species are presented herewith on the basis of the specimens collected on Chichijima Island. This spider is newly recorded to the fauna of Ogasawara Islands.

Specimens examined. Chichijima Island: Miyahohama, one female, one male and two juveniles, 25-V-2010; Ougiura, one male and one ju-

venile, 28-V-2010; Kominato, one female, 27-V-2010; all specimens H. Ono leg.

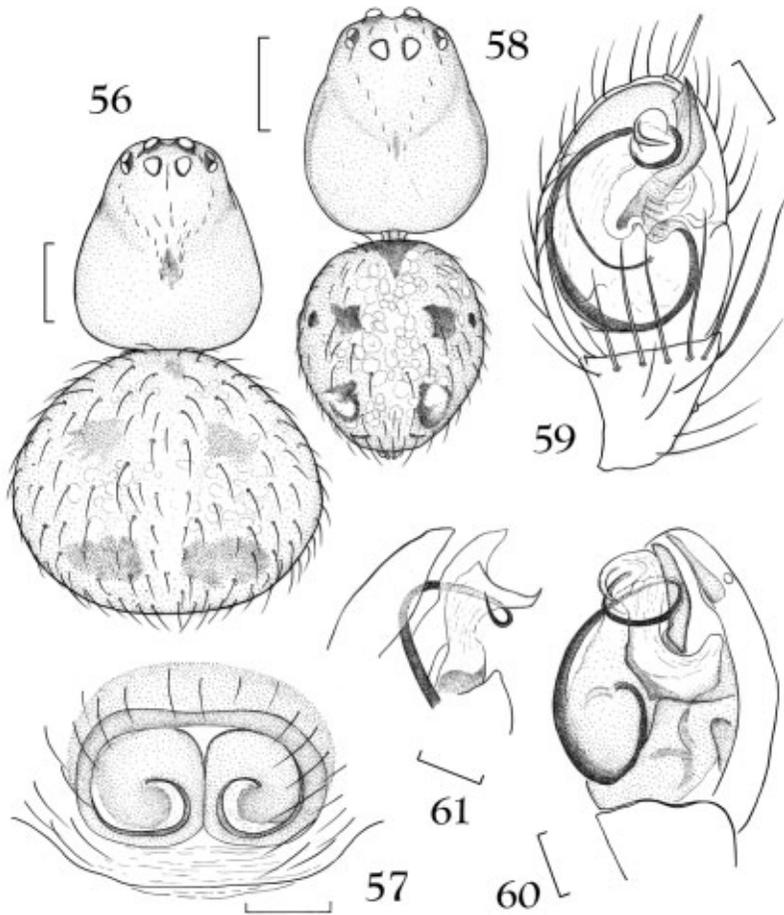
44. *Coleosoma floridanum* Banks, 1900

[Jn.: Yoshida-sayahimegumo]

Notes. Eleven eggs were found in an egg sac of a female collected at Sakaiura on 28 May 2010. The eggs were oval in shape, yellowish brown in color, and very large in size (its major axis 0.45–0.48 mm), comparing with the body length (1.71 mm) of the female.

Records. Chichijima (Ono, present report) and Hahajima (Nakajo, 2008; Ono, present report).

Specimens examined. Chichijima Island: Miyahohama, five females and five juveniles, 25-V-2010; Mt. Asahiya, four females and two juve-



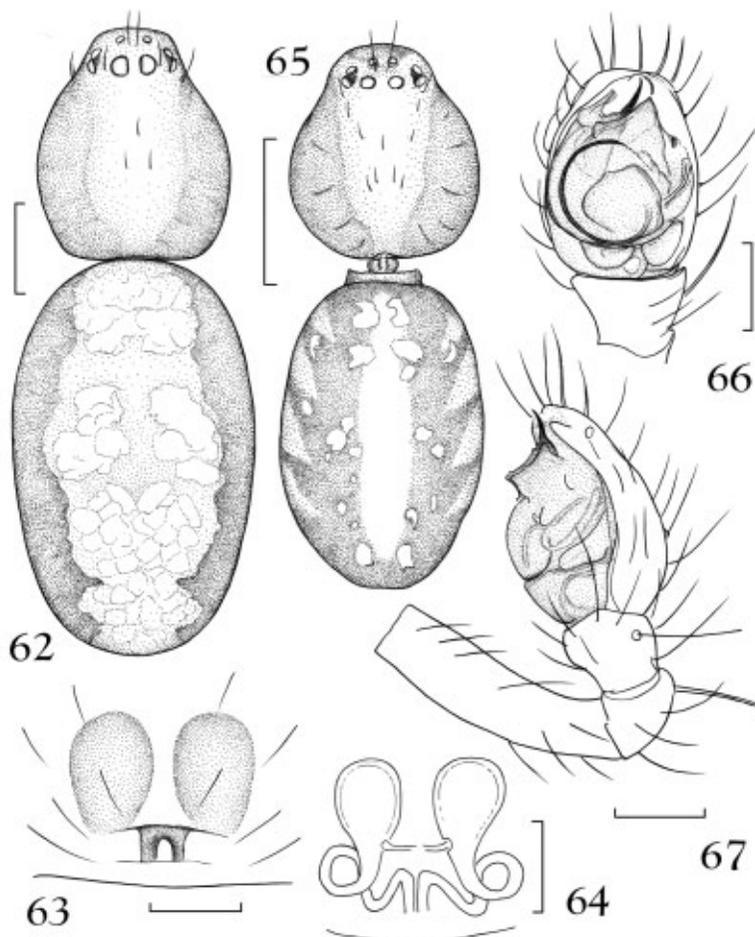
Figs. 56–61. *Platnickina adamsoni* (Berland, 1934), female (56–57) and male (58–61) (both from Miyano-hama). 56, 58, Pro- and opisthosomata, dorsal view; 57, epigynum, ventral view; 59, male palp, ventral view; 60, same, retro-lateral view; 61, tip of embolic division of male palp, prolateral view. Scales: 0.5 mm for 56, 58; 0.1 mm for 57, 59–61.

niles, 20-V-2010, one juvenile, 21-X-2010; Mt. Yoakeyama, two juveniles, 22-X-2010; Mt. Chuzan to Hatsuneura, two females, one male and two juveniles, 26-V-2010; Sakaiura, three females and one male, 28-V-2010; Maruyama Tunnel, one female, 23-X-2010; Ougiura, one female and one juvenile, 28-V-2010; Komagari, one male and two juveniles, 27-V-2010; Kominato, 11 females, two males and six juveniles, 20 and 27-V-2010; all specimens H. Ono leg. Hahajima Island: Mt. Sekimonzan, six females and four juveniles, 22-V-2010; Uchuzawa, one female, 22-V-2010; Uchuzawa, two males, 22-V-2010; Funamidai, one male, 23-V-2010; Okimura, nine females,

five males and six juveniles, 23–24-V-2010; Nishiura, three females, three males and 13 juveniles, 23-V-2010; all specimens H. Ono leg.

45. *Chryso octomaculata* (Bösenberg et Strand, 1906) [Jn.: Yahoshi-himegumo] (Figs. 62–67)

Notes. More than sixty species have been known under the genus *Chryso* O. Pickard-Cambridge, 1882, in the world and most of the species were described from Asia and South America. From six species known from Japan (Yoshida, 2009), only this species is found in Ogasawara. This delicate species with body length around 2 mm is distributed widely in Japan, Korea, China



Figs. 62–67. *Chryso octomaculata* (Bösenberg et Strand, 1906), female (62–64) and male (65–67) (both from Okimura). 62, 65, Pro- and opisthosomata, dorsal view; 63, epigynum, ventral view; 64, female genitalia, dorsal view; 66, male palp, ventral view; 67, same, retrolateral view. Scales: 0.5 mm for 62, 65; 0.05 mm for 63–64; 0.1 mm for 66–67.

and Taiwan. At the first glance the individuals from Ogasawara are very different from those from Honshu in the coloration and markings. The carapace is dull white, light grayish brown at the sides, and the opisthosoma is also dull white dorsally, light grayish brown laterally, with many clear white dots and a black marking above the spinnerets (Figs. 62 and 65). However, in the structure of male palp and female genitalia, no major difference has been recognized among all individuals examined (Figs. 63–64, 66–67).

Specimens examined. Chichijima Island: Maruyama Tunnel, one female, 23-X-2010, H.

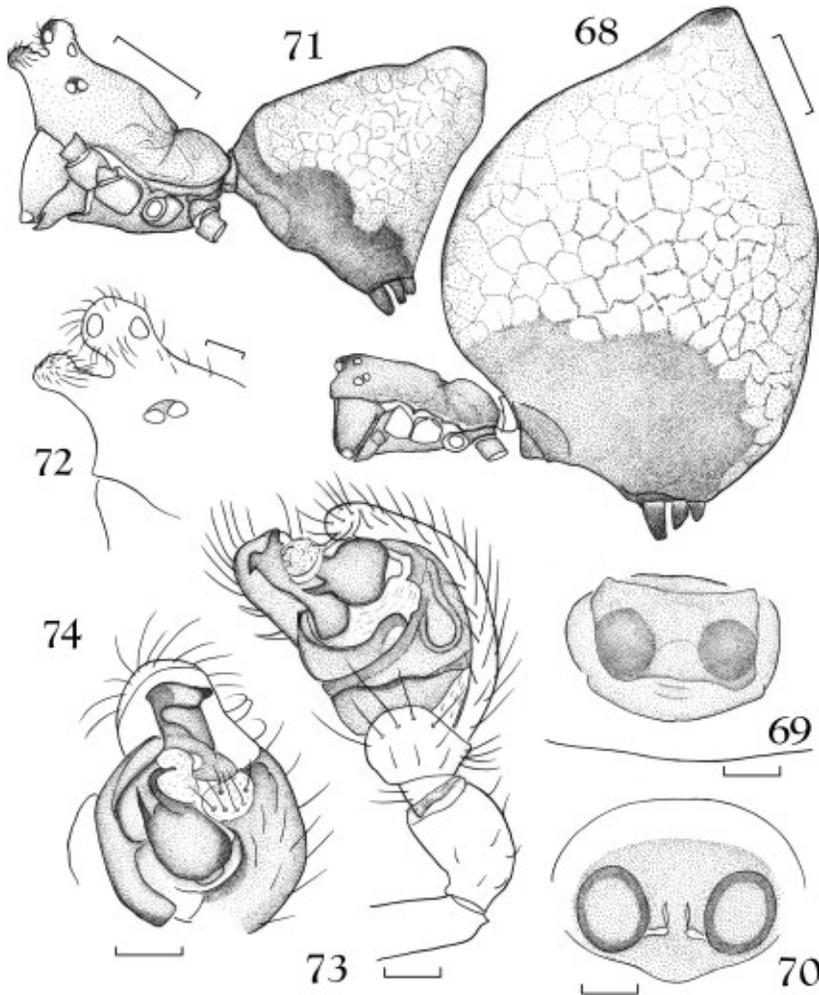
Ono leg. Hahajima Island: Okimura, one female and one male, 23-V-2010, H. Ono leg.

46. *Parasteatoda tepidariorum* (C.L. Koch, 1841) [Jn.: Oo-himegumo]

Records. Chichijima (Yaginuma, 1979) and Hahajima (Nagashima, 1975; Yaginuma, 1979). Locality not specified (Shinkai, 1969).

47. *Argyrodes bonadea* (Karsch, 1881) [Jn.: Shirokane-isourougumo] (Figs. 68–74)

Notes. This species is widely distributed in East Asia, from Japan and Korea through China



Figs. 68–74. *Argyrodes bonadea* (Karsch, 1881), female (68–70) and male (71–74) (both from Sakaiura). 68, 71, Pro- and opisthosomata, lateral view; 69, epigynum, ventral view; 70, female genitalia, dorsal view; 72, head of male, lateral view; 73, male palp, retrolateral view; 74, male palpal organ, ventral view. Scales: 0.5 mm for 68, 71; 0.1 mm for 69–70, 72–74.

and Taiwan to the Philippines, and is presumably an immigrant from these countries. Details of both the external features and genital organs were examined and illustrated (Figs. 68–74), but the present author has not found any morphological difference among individuals from Ogasawara and the main islands of Japan.

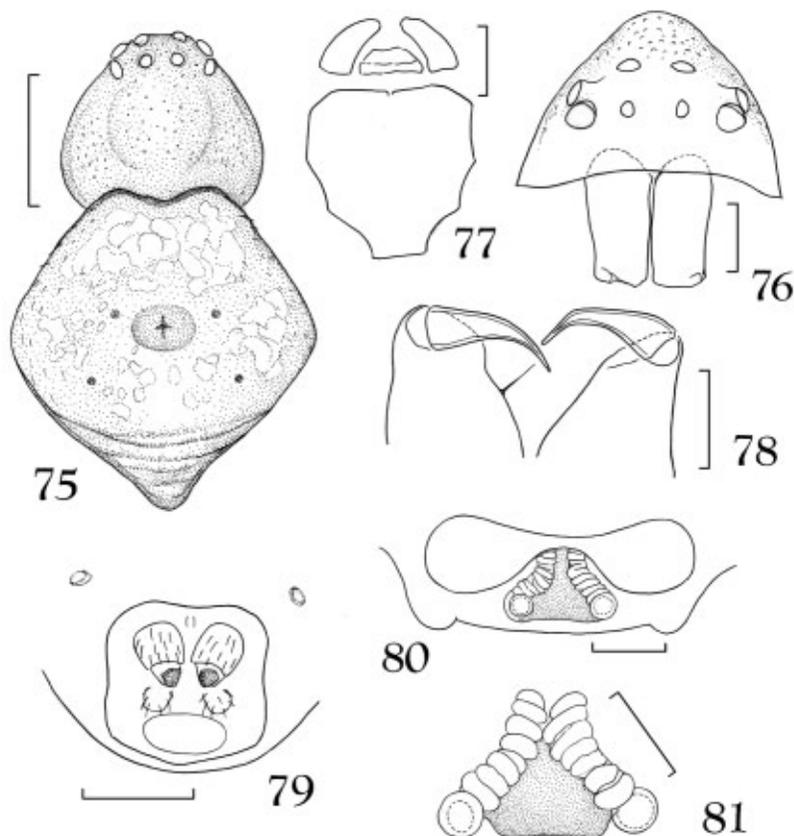
Records. Anijima (Yaginuma, 1979), Chichijima (Yaginuma, 1979; Tanikawa, 1989; Ono, present report), Hahajima (Nagashima, 1975; Yaginuma, 1979; Tanikawa, 1989; Yawata, 2001; Nakajo, 2008) and Ioutou (Tanikawa, 1989) Is-

lands.

Specimens examined. Chichijima Island: Miyanojima, one male, 25-V-2010; Mt. Yoakeyama, one immature female, 22-X-2010; Maruyama Tunnel, one male, 23-X-2010; Ougiura, one female and one male, 29-V-2010; all specimens H. Ono leg.

48. *Euryopsis perpusilla* sp. nov. [Jn.: Asahihimegumo] (Figs. 75–81)

Diagnosis. This peculiar spider is described temporarily under this large genus with more than



Figs. 75–81. *Euryopis perpusilla* Ono, sp. nov., female holotype, NSMT-Ar 9392 (Mt. Asahiyama). 75, Pro- and opisthosomata, dorsal view; 76, prosoma, frontal view; 77, maxillae, labium and sternum, ventral view; 78, chelicerae, ventral view; 79, spinnerets, ventral view; 80, epigynum and surrounding area, ventral view; 81, female genitalia, ventral view. Scales: 0.25 mm for 75; 0.1 mm for 76–77, 79; 0.05 mm for 78, 80–81.

70 known species from the world on the basis of the characteristics of small body size, eye arrangement, condition of chelicerae, maxillae, legs and spinnerets and the shape of the opisthosoma. Three species of *Euryopis* are known from Japan (Yoshida, 2009) but the new species is much different from these and remarkable in the presence of a small sclerotized plate at the middle of opisthosomal dorsum and the shape of female genitalia. Finally, both the cover plates of book lungs are united interiorly and form a large plate connected with the anterior part of epigynum.

Type specimen. Holotype: female from Mt. Asahiyama, Chichijima Island, Ogasawara Islands, Tokyo, Japan, 20-V-2010, H. Ono leg. (NSMT-Ar 9392).

Description. Based on the female holotype; male unknown. Measurements: Body length 0.94 mm; prosoma length 0.47 mm, width 0.45 mm, height 0.23 mm; opisthosoma length 0.75 mm, width 0.66 mm, height 0.58 mm; lengths of legs [total length (femur + patella + tibia + metatarsus + tarsus)]: I 1.49 mm (0.47 + 0.15 + 0.44 + 0.27 + 0.16), II 1.54 mm (0.52 + 0.16 + 0.43 + 0.27 + 0.16), III 1.16 mm (0.37 + 0.14 + 0.27 + 0.22 + 0.16), IV 1.38 mm (0.47 + 0.14 + 0.37 + 0.23 + 0.17).

Prosoma: Carapace slightly longer than wide (length / width 1.04), high and expanded, its surface strongly sclerotized and covered with many tubercles (Figs. 75–76), median furrow absent. Eyes: ALE = PME > PLE > AME (8:8:6:5), both

the eye rows slightly recurved in dorsal view, AME-AME > AME-ALE (2:1), PME-PME > PME-PLE (8:3), median ocular area wider than long (length / width 0.75), slightly wider behind than in front (anterior width / posterior 0.90), clypeus longer than AME-AME (5:3). Chelicera (Figs. 76 and 78) small and without tooth, labium not fused with the anterior margin of sternum, wider than long (length / width 0.33), maxillae convergent and twice as long as labium, sternum cordate and expanded, slightly longer than wide (length / width 1.09), posteriorly truncated (Fig. 77). Palp furnished with a claw. Legs robust and hairy, without spines except for patellae I-IV with 1-0-1 long spines, respectively. Leg formula: II-I-IV-III.

Opisthosoma (Fig. 75) pyriform, longer than wide (length / width 1.14), its dorsum with a small sclerotized plate at the middle, and wholly covered with short hairs. Booklungs presumably present, their cover plates united each other. Anterior spinnerets thick and conical, posterior lateral spinnerets reduced, posterior median spinnerets indistinct; colulus is replaced by a pair of hairs.

Female genitalia (Figs. 80–81): Genital field wider than long, connected with the sclerotized plate originated from booklungs. Genital openings large and round, and separated by a triangle plate situated at the middle of epigynum, intro-mittent canals twisted, spermathecae and fertilization tubes not distinguishable from the canals.

Coloration and markings (Fig. 75): Carapace light yellowish brown, lighter at the middle, and without markings, chelicerae, maxillae, labium and sternum dark yellow, palps and legs light yellowish brown; opisthosoma white dorsally and ventrally, with clear white spots, dorsal plate light yellowish brown.

Distribution. Japan (at the present known only from the type locality).

Etymology. The specific epithet is Latin meaning very small.

Family Anapidae [Jn.: Yorimegumo-ka]

49. *Mysmenella* sp.

Note. Spiders of this species are commonly found on the ground, weaving spherical webs, which are relatively large in comparison with their body size. Two species of this genus are known in Japan, namely *Mysmenella ogatai* Ono, 2007 and *M. pseudojobi* Lin and Li, 2008, which seem different from the present species. However, the species identification is not fixed at present, because comparison with the species of a wide range in East Asia and the Pacific Islands may be necessary.

Specimens examined. Chichijima Island: Mt. Asahiyama, two females, two males and 15 juveniles, 20-V-2010, two females, two males and 10 juveniles, 20–21-X-2010; Mt. Yoakeyama, 19 juveniles, 22-X-2010; Mt. Chuoizan to Hatsuneura, four females and five males and 15 juveniles, 26-V-2010; Maruyama Tunnel, one female and two juveniles, 23-X-2010; Sakaiura, one juvenile, 28-V-2010; Komagari, two males and six juveniles, 27-V-2010; Kominato, three juveniles, 20-V-2010; all specimens H. Ono leg. Hahajima Island: Mt. Sekimonzan, one female, three males and many juveniles, 22-V-2010; Nishiura, four females, one male and 10 juveniles, 23-V-2010; Motochi, six females, four males and many juveniles, 23-V-2010; all specimens H. Ono leg.

50. *Pseudoanapis aloha* Forster, 1959

[Jn.: Taiheiyo-sunatsubugumo]

Notes. This minute species with body length less than 1 mm is hitherto known from Australia, Caroline Islands, Hawaiian Islands (type area), England and Japan. The spider was presumably introduced to the islands by human activity.

Records. Anijima (Ono, 2009), Chichijima (Ono, 2009, present report) and Hahajima (Ono, new record with the present report) Islands.

Specimens examined. Anijima Island: Takinoura, three males, 22-V-2007, S. Hatsushiba leg. Chichijima Island: Mt. Asahiyama, 13 females and eight males, 20–21-V-2010; Mt. Yoakeyama, one female and one male, 28-V-2010, four females and three males, 22-X-2010; Mt. Chozan, one male, 22-V-2007, T. Kishimoto leg; Mt. Chuoizan to Hatsuneura, four females,

26-V-2010; Sakaiura, one female and one male, 28-V-2010; Maruyama Tunnel, two females, 23-X-2010; Kominato, two females and one male, 20-V-2010; specimens without collector's name: H. Ono leg. Hahajima Island: Uchuzawa, one male, 22-V-2010; Motochi, 13 females and four males, 24-V-2010; Nishiura, two females, 23-V-2010; all specimens H. Ono leg.

Family **Tetragnathidae** [Jn.: Ashinagagumo-ka]

51. *Leucauge venusta* (Walckenaer, 1842)

[Jn.: Minami-shirokanegumo]

Leucauge venusta: Yaginuma, 1979, p. 35. [Probably not *Leucauge venusta* (Walckenaer, 1842).]

Note. The identification of this spider with the New World species should be confirmed, but the present author could not find any specimen of the spider in question in the material.

Records. Chichijima (Nakamura and Kojima, 1971; Yaginuma, 1979) and Hahajima (Nagashima, 1975; Yaginuma, 1979) Islands.

52. *Leucauge* sp. indet.

Notes. Some specimens of an unknown species of this genus were found in the present material. The spider will be reported in another paper (Ono, 2011, in press).

Specimens examined. Chichijima Island: Omura, one female, 1-IV-1974; Mt. Asahiyama, one female, two immature females and one immature male, 26–27-V-2010, two males, 20–21-X-2010; Mt. Yoakeyama, one female and one juvenile, 22-X-2010; Komagari, one female and one male, 22-X-2010; Maruyama Tunnel, two females and one juvenile, 23-X-2010; all specimens H. Ono leg.

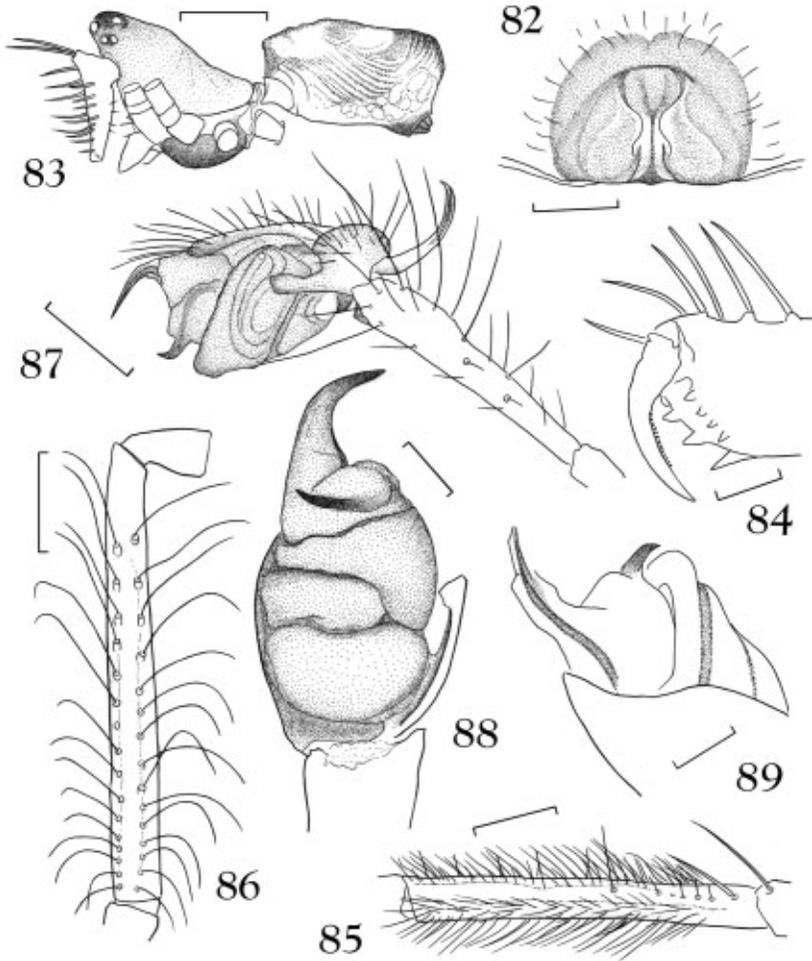
53. *Opadometa grata* (Guérin, 1838) [Jn.: Agotoge-shirokanegumo] (Figs. 82–89, 98–99)

Notes. This spider is herewith recorded from Japan for the first time. Mr. T. Nagashima found and observed this spider along a narrow path in Okamiyama Park at Omura. Juveniles of spiders have orange color of abdomen and make webs

with very fine threads in the shade of a tree. Because the threads are hardly visible and the coloration of spiders is confused with dark background, it is quite difficult to find them. After rearing some individuals, Mr. Nagashima recognized that the orange color of female was turned into silver in the adult spiders. Adult males are very small in size in comparison with females and the body color remains in orange. The spider was found also on Ioutou Island (Nagashima, 2010, pers. comm. with photograph).

Specimens examined. Chichijima Island: Okamiyama Park, Omura, one female, 29-VIII-2010, two males, 22-VIII-2010, T. Nagashima leg.

Description. Based on the above Japanese specimens. Body length: female 7.35 mm, male 1.86 / 2.06 mm; prosoma length: female 2.77 mm, male 0.86 / 1.01 mm; prosoma width: female 2.02 mm, male 0.69 / 0.75 mm; opisthosoma length: female 5.25 mm, male 0.98 / 1.16 mm; opisthosoma width: female 3.00 mm, male 0.79 / 0.86 mm; opisthosoma height: female 3.75 mm, male 0.64 / 0.78 mm. Carapace flat in female, high in male (Fig. 83), longer than wide, both the eye rows recurved in dorsal view. Chelicera of male is furnished with very strong spines dorsally (Figs. 83–84) and three teeth on promargin of fang furrow and four teeth on its retromargin. Female palp has a long claw. Legs hairy, femur of leg IV with rows of trichobothria (Fig. 86). Opisthosoma is high and expanded anteriorly in female, simple pyriform in male, longer than wide. Male palp and epigynum are illustrated in Figs. 82 and 87–89, respectively. Male palp is relatively long, with large palpal organ. Coloration and markings (in alcohol): Female: Carapace light yellow, without markings, chelicerae light yellowish brown, reddish apically, maxillae and labium blackish brown, and sternum dark yellow, black at the middle, legs dark brown, basal parts of segments lighter; opisthosoma dorsum silver with black lines and white dots. Males are paler than female, with characteristic silver coloration of the venter of opisthosoma and a large, round black marking around spinnerets. Color-



Figs. 82–89. *Opadometa grata* (Guérin, 1838), female (82) and male (83–89) (both from Omura). 82, Epigynum, ventral view; 83, pro- and opisthosoma, lateral view; 84, chelicerae, ventral view; 85, tibia of leg IV of female, retrolateral view; 86, femur of leg IV of male, ventral view; 87, male palp, retrolateral view; 88, same, ventral view; 89, embolic division of male palp, prolateral view. Scales: 0.25 mm for 82, 86–87; 0.5 mm for 83, 85; 0.1 mm for 84, 88–89.]

ation in living spiders is shown in Figs. 98–99.

1970c, 1977).

54. *Pachygnatha quadrimaculata* (Bösenberg et Strand, 1906) [Jn.: Yotsuboshi-hime-ashinagagumo]

Records. Ioutou Island (Nakamura and Kojima, 1971; Yaginuma, 1979). Locality not specified (Yoshida, 1969; Shinkai, 1969).

55. *Tetragnatha praedonia* L. Koch, 1878 [Jn.: Ashinagagumo]

Records. Locality not specified (Yaginuma,

1970c, 1977).

56. *Tetragnatha laqueata* L. Koch, 1871 [Jn.: Togenaga-ashinagagumo] (Fig. 100)
Notes. This is a beautiful green spider (Fig. 100) found under leaves of trees. It is widely distributed in pacific islands and seems to occur in Ogasawara by a natural distribution of ballooning.

Records. Chichijima (Yaginuma, 1986), Hahajima (Nagashima, 1975; Okuma, 1979, 1980; Yaginuma, 1979, 1986; Ono, present report) and

Minami-ioutou (Nishikawa, 1982; Ono, present report) Islands. Locality not specified (Tanikawa, 2007, 2009).

Specimens examined. Hahajima Island: Uchuzawa, two females and one male, 22-V-2010, H. Ono leg.; Motochi, one female, 24-V-2010, H. Ono leg. Minami-ioutou Island: two juveniles, 25-VI-2007, H. Karube leg.

57. *Tetragnatha maxillosa* Thorell, 1895

[Jn.: Yasagata-ashinagagumo]

Records. Chichijima (Nakamura and Kojima, 1971; Yaginuma, 1979; Yawata, 2001; Ono, present report) and Hahajima (Yaginuma, 1970a, 1979; Nagashima, 1975; Ohno, 1977; Tanikawa, 1989) Islands. Locality not specified (Yaginuma, 1970c, 1977; Tanikawa, 2009).

Specimens examined. Chichijima Island: Mt. Asahiyama, three females, one male and two juveniles, 26-V-2010; Sakaiura, one male, 28-V-2010; Ougiura, two juveniles, 28-V-2010; Kominato, three females, two males and two juveniles, 20-V-2010, one female, 27-V-2010, H. Ono leg.; all specimens H. Ono leg. Hahajima Island:

Okimura, one male, 24-V-2010, H. Ono leg.

58. *Tetragnatha boninensis* Okuma, 1981

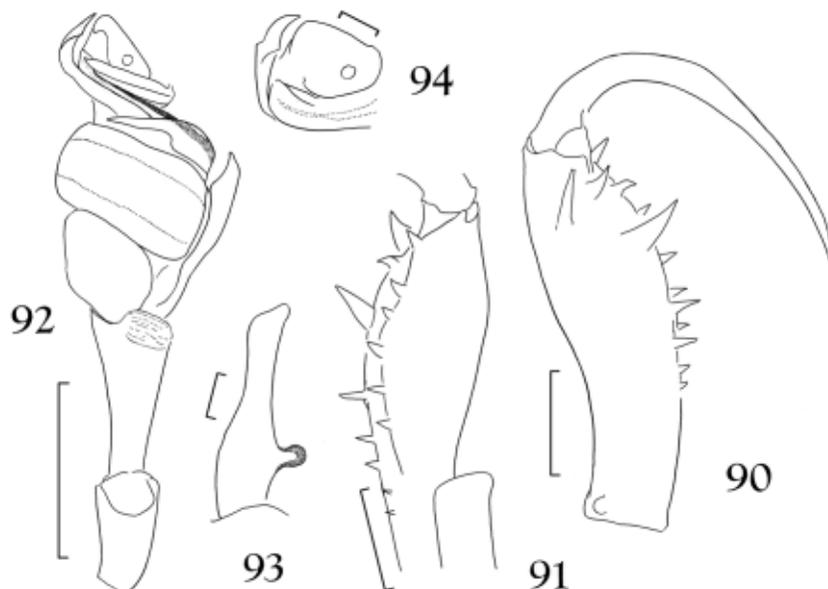
[Jn.: Ogasawara-ashinagagumo]

Records. Hahajima Island (Okuma, 1981). Locality not specified (Tanikawa, 2007).

59. *Tetragnatha* sp. indet. (Figs. 90–94)

Notes. Although the present author could not collect spiders of *Tetragnatha boninensis*, some specimens of a *Tetragnatha* were obtained, which were similar in habitus to this known species. However, the fresh specimens are much larger in size (5.6 and 6.8 mm) in comparison with *Tetragnatha boninensis* (4.0–4.9 mm) measured by Okuma (1981) and the details of chelicela (Fig. 90–91) and male palpal organ (Figs. 92–94) are also slightly different from those of *boninensis*.

Specimens examined. Chichijima Island: Kominato, one male, 27-V-2010, H. Ono leg. Hahajima Island: Okimura, one male, 24-V-2010, H. Ono leg.



Figs. 90–94. *Tetragnatha* sp. [Tetragnathidae], male (Okimura). 90, chelicera, dorsal view; same, ventral view; 92, male palp, ventral view; 93, paracymbium of male palp, retrolateral view; 94, tip of embolic division of male palp, prolateral view. Scales: 0.5 mm.



Figs. 95–100. 95, *Scytodes fusca* Walckenaer, 1837, female with eggs (at Miyano-hama; body length 7.5 mm); 96, a colony of *Oecobius concinnus* Simon, 1893 on a rock at the seashore of Oki-mura; 97, web structure (8 mm long) of *Oecobius concinnus* Simon, 1893; 98–99, *Opadometa grata* (Guérin, 1838), immature female with body length 9.0 mm, and adult male (99) with body length 3.0 mm (98–99, photograph by Tadayoshi Nagashima); 100, *Tetraghatha laqueata* L. Koch, 1871 (Uchuzawa; body length 8.1 mm).

Family **Araneidae** [Jn.: Koganegumo-ka]

60. *Cyrtophora* sp. indet.

Suzumia shimomurai Shimomura, 1933 (Jn.: Shimomura-suzumigumo), pp. 54–55 (photographs) and 79 (description with two photo-

graphs was made by Shimomura, although the author of the scientific name was given as “Kishida”; type area: Ogasawara Islands). [Regarded by Yaginuma (1979) as a synonym of *Cyrtophora moluccensis* (Doleschall, 1857).] *Cyrtophora moluccensis*: Yaginuma, 1979, p. 35,

fig. 1.

Notes. Tanikawa, Chang and Tso (2010) recently separated the spider hitherto determined as “*Cyrtophora moluccensis*” into three different species *C. cylindroides* (Walckenaer, 1842) (East Asia to New Guinea), *C. moluccensis* (Doleschall, 1857) (Southeast Asia, Mariana Islands to Australia) and *C. ikomosanensis* (Bösenberg et Strand, 1906) (Japan and Taiwan). On the other hand *Suzumia shimomurai* Shimomura, 1933 (*Suzumia* = *Cyrtophora*) may also be regarded as eligible. In the preface of the Shimomura’s book, plants and animals were observed by him mainly on Mukojima Island. The present author put here “*Cyrtophora* species” up for this “spider” because he examined only one small juvenile collected on Anijima Island and there is a possibility of existence of multiple species on the islands.

Records. Anijima (Yaginuma, 1979; Ono, present report), Chichijima (Shinkai, 1969; Yaginuma, 1970a, 1979), Hahajima (Ohno, 1977; Yaginuma, 1979), locality not specified (Shimomura, 1933; Yaginuma, 1977; Tanikawa, 2007, 2009).

Specimen examined. Anijima Island: one juvenile, 1-VI-2010, H. Mori leg.

61. *Cyclosa norihisai* Tanikawa, 1992 [Jn.: Ogasawara-gomigumo]

Cyclosa insulana: Shinkai, 1969, p. 27; Yaginuma, 1970a, p. 14, 1979, p. 35 (misidentification; nec *Cyclosa insulana* Costa, 1834).

Cyclosa argenteoalba: Yaginuma, 1979, p. 35 (misidentification; nec *Cyclosa argenteoalba* Bösenberg et Strand, 1906).

Cyclosa sp.: Nishikawa, 1982, p. 374.

Cyclosa norihisai Tanikawa, 1992, p. 41, 2009, p. 437 (type locality: Hahajima Island).

Records. Chichijima (Yaginuma, 1979; Tanikawa, 1989, 1992), Hahajima (Yaginuma, 1970a, 1979; Nagashima, 1975; Ohno, 1977; Tanikawa, 1989, 1992) and Minami-ioutou (Nishikawa, 1982) Islands. Locality not specified (Shinkai, 1969; Yaginuma, 1970c, 1977; Tanikawa, 2007).

Specimens examined. Chichijima Island: Mt. Asahi-yama, one female and two juveniles, 26-V-

2010; Mt. Yoakeyama, one female, 28-V-2010, seven females and two juveniles, 22-X-2010; Mt. Chuo-zan to Hatsuneura, one juvenile, 26-V-2010; Komagari, one female and one juvenile, 21-V-2010, one juvenile, 22-X-2010; all specimens H. Ono leg.

62. *Cyclosa maritima* Tanikawa, 1992

[Jn.: Hama-gomigumo]

Cyclosa laticauda: Yoshida, 1969, p. 19; Shinkai, 1969, p. 27 (misidentification; nec *Cyclosa laticauda* Bösenberg et Strand, 1906).

Cyclosa sp.: Yaginuma, 1970a, p. 15.

Cyclosa literalis: Yaginuma and Shinkai, 1975, p. 26 [misidentification; nec *Cyclosa literalis* (L. Koch, 1867)].

Cyclosa camelodes: Shinkai, 1977, p. 328; Yaginuma, 1977, p. 387; 1986, p. 120 [misidentification; nec *Cyclosa camerodes* (Thorell, 1878)].

Cyclosa maritima Tanikawa, 1992, p. 50; 2009, p. 437 (type locality: Chichijima Island).

Records. Mukojima (Yaginuma, 1970a; Nakamura and Kojima, 1971; Yaginuma, 1979), Chichijima island (Yaginuma, 1970a; Nakamura and Kojima, 1971; Yaginuma, 1979; Tanikawa, 1989, 1992; Yawata, 2001; Ono, present report), Minamishima (Yaginuma and Shinkai, 1975; Yaginuma, 1979), Hahajima (Yaginuma, 1970a; Nakamura and Kojima, 1971; Nagashima, 1975; Yaginuma, 1979; Tanikawa, 1989, 1992; Yawata, 2001; Nakajo, 2008; Ono, present report), Mukoujima (Yaginuma and Shinkai, 1975; Yaginuma, 1979), Ioutou (Tanikawa, 1989, 1992) Islands. Locality not specified (Yoshida, 1969; Shinkai, 1969, 1977, 2006; Yaginuma and Shinkai, 1975; Yaginuma, 1977; Tanikawa, 2007, 2009).

Specimens examined. Chichijima Island: Miyano-hama, one female, one male and three juveniles, 25-V-2010; Mt. Asahi-yama, one male and one juvenile, 20–21-X-2010; Kominato, seven females, three males and eight juveniles, 20–21 and 27-V-2010; all specimens H. Ono leg. Hahajima Island: Motochi, one female, 23-V-2010, H. Ono leg.

63. *Neoscona theisi* (Walckenaer, 1841) [Jn.: Hoshisuji-onigumo]

Records. Mukojima (Yaginuma, 1970a, 1979; Nakamura and Kojima, 1971), Anijima (Yaginuma, 1979), Chichijima (Yaginuma, 1970a, 1979; Nakamura and Kojima, 1971; Tanikawa, 1989; Ono, present report), Minamishima (Yaginuma, 1979), Hahajima (Yawata, 2001; Nakajo, 2008; Ono, present report), Nishijima (Yaginuma, 1979), Ioutou (Yaginuma, 1970a, 1979; Tanikawa, 1989) and Minami-ioutou (Nishikawa, 1982; Ono, present report) Islands. Locality not specified (Yoshida, 1969; Shinkai, 1969; Yaginuma, 1970c, 1977; Tanikawa, 2007, 2009).

Specimens examined. Chichijima Island: Miyahama, one female, 25-V-2010; Omura (Higashimachi), one female and one juvenile, 29-III-1974; Kominato, four juveniles, 20 and 27-V-2010; all specimens H. Ono leg. Hahajima Island: Motochi, two females, three males and 12 juveniles, 23–24-V-2010, H. Ono leg. Minami-ioutou Island: one female, 26-VI-2007, Y. Ito leg. and two juveniles, 26-VI-2007, H. Karube leg.

64. *Neoscona nautica* (L. Koch, 1875) [Jn.: Ieonigumo]

Records. Locality not specified (Yaginuma, 1970c, 1977).

Family **Ctenidae** [Jn.: Shibogumo-ka]

65. *Acantheis nipponicus* Ono, 2008 [Jn.: Iou-shibogumo]

Anahita fauna: Nishikawa, 1982, p. 374 (presumably misidentification; nec *Anahita fauna* Karsch 1879).

Acantheis nipponicus Ono, 2008, p. 168 (type locality: Minami-ioutou Island).

Records. Minami-ioutou Island (Nishikawa, 1982; Ono, 2008; Yoshida, 2009).

Family **Sparassidae** [Jn.: Ashidakagumo-ka]

66. *Heteropoda venatoria* (Linné, 1767)

[Jn.: Ashidakagumo]

Heteropoda venatoria: Shinkai, 1969, p. 48; Yagi-

numa, 1979, p. 35.

Heteropoda forcipata: Yoshida, 1969, p. 19; Yaginuma, 1979, p. 35 (misidentification; nec *Heteropoda forcipata* Karsch, 1881).

Heteropoda sp. (? *H. venatoria*): Nishikawa, 1982, p. 374.

Notes. Sparassid spiders are commonly seen on Chichijima Island not only in the buildings but also in the forests. The individuals found in forests were smaller than those in the artificial environments. Therefore, the small spiders in nature environments were identified as *Heteropoda forcipata* Karsch, 1881 at that time (at present *Sinopoda forcipata*). The present author recognized with Mr. T. Nagashima that all these spiders should be identified as *H. venatoria*. The spiders in forests should turn feral after artificial introduction.

Records. Chichijima (Yoshida, 1969; Shinkai, 1969; Yaginuma, 1970a, 1979; Nakamura and Kojima, 1971), Hahajima (Yaginuma, 1970a, 1979; Nagashima, 1975; Ohno, 1977) and Minami-ioutou Island (Nishikawa, 1982). Locality not specified (Yaginuma, 1970c, 1977).

Specimens examined. Chichijima Island: Kominato, eight juveniles, 20-V and 21-X-2010, H. Ono leg. (some females and males became adult after breeding).

Family **Philodromidae** [Jn.: Ebigumo-ka]

67. *Philodromus subaureolus* Bösenberg et Strand, 1906 [Jn.: Asahi-ebigumo]

Records. Locality not specified (Yoshida, 1969; Shinkai, 1969; Yaginuma, 1979).

Family **Gnaphosidae** [Jn.: Washigumo-ka]

68. *Cladothela boninensis* Kishida, 1928

[Jn.: Edaibogumo]

Records. Chichijima (Kishida, 1928; Yaginuma, 1970a, 1979) and Hahajima (Nagashima, 1975; Yaginuma, 1979) Islands. Locality not specified (Yaginuma, 1986; Kamura, 1991, 2009).

Family **Thomisidae** [Jn.: Kanigumo-ka]69. *Xysticus* sp. indet.

Notes. It seems strange that spiders of the genus *Xysticus* C.L. Koch, 1835 occur on a subtropical and oceanic island. The spider was identified as *Xysticus transversomaculatus* Bösenberg et Strand, 1906, as an informal record. The present author examined the specimen in question and recognized that it was really a *Xysticus* species but not the same as above species. The spider is probably *Xysticus pseudobliteus* (Simon, 1880) known from East Eurasia (Russia, Kazakhstan, Mongolia, China Korea) in the general appearance and the shape of epigynum. However, the present author is careful in determination because the male was not found on the same island.

Specimen examined. Anijima: one female, 1-VI-2010, H. Mori leg.

70. *Takachioha* sp. indet.

Oxyptila sp.: Yaginuma, 1979, p. 35.

Notes. The present author also examined some specimens of this spider collected by Mr. T. Nagashima on Hahajima Island (data here omitted). The spider was not a member of *Oxyptila* Simon, 1864, but of the genus *Takachioha* Ono, 1985. However, it could not be identified into species, because all the specimens examined were not matured.

Records. Chichijima (Yaginuma, 1970a, 1979; Nakamura and Kojima, 1971) and Hahajima (Nagashima, 1975; Yaginuma, 1979).

71. *Thomisus labefactus* Karsch, 1881

[Jn.: Azuchigumo]

Note. New record for Ogasawara.

Specimen examined. Chichijima Island: Mt. Chuoizan, one female, 20-I-1980, C. Okuma leg.

Family **Clubionidae** [Jn.: Fukurogumo-ka]72. *Clubiona* sp. indet.

Clubiona sp.: Yaginuma, 1979, p. 36.

Notes. It was known that spiders of this large and diverse genus also inhabit the islands, but

was hitherto not determined. After a careful examination of the fresh specimens obtained in the recent research, the present author recognized that those spiders belong to one species possibly new to science. The new species will be described in another paper (Ono, 2011, in press).

Records. Chichijima (Yaginuma, 1979; Ono, present report) and Hahajima (Nagashima, 1975; Yaginuma, 1979) Islands.

Specimens examined. Chichijima Island: Miyanoama, two females and one male, 25-V-2010, H. Ono leg.; Ougiura, one female, 26-V-2010, T. Nagashima and H. Ono leg.; Komagari, two females and two juveniles, 27-V-2010, H. Ono leg.; Kominato, one female, 20-V-2010, one male, 21-X-2010, H. Ono leg.

Family **Salticidae** [Jn.: Haetorigumo-ka]73. *Myrmarachne elongata* Szombathy, 1915
[Jn.: Yagata-arigumo]

Myrmarachne sp.: Yaginuma, 1979, p. 36.

Records. Chichijima (Ono, present report) and Hahajima (Nagashima, 1975; Ohno, 1977; Yaginuma, 1979) Islands.

Specimen examined. Chichijima Island: Kominato, one female, 1-IV-1974, H. Ono leg.

74. *Hasarius adansoni* (Audouin, 1826)

[Jn.: Adanson-haetori]

Records. Chichijima (Yaginuma, 1970a, 1979; Ohno, 1977; Ono, present report) and Hahajima (Nagashima, 1975; Ohno, 1977; Yaginuma, 1979). Locality not specified (Yoshida, 1969; Shinkai, 1969; Yaginuma, 1970c, 1977).

Specimens examined. Chichijima Island: Miyanoama, four juveniles, 25-V-2010; Omura, three males, 29–31-III-1974; Ougiura, one juvenile, 28-V-2010; Kominato, one female, 1-IV-1974, two females, one male and two juveniles, 20 and 27-V-2010; all specimens H. Ono leg.

75. *Phintella arenicolor* (Grube, 1861)

[Jn.: Magane-asahihaetori]

Records. Hahajima Island (Nagashima, 1975; Yaginuma, 1979).

76. *Phintella versicolor* (C.L. Koch, 1846)

[Jn.: Mesujiro-haetori]

Records. Chichijima (Yaginuma, 1979) and Hahajima (Yaginuma, 1970a, 1979; Nagashima, 1975; Ohno, 1977) Islands.

77. *Plexippoides doenitzi* (Karsch, 1879)

[Jn.: Denittsu-haetori]

Records. Locality not specified (Yoshida, 1969; Shinkai, 1969; Yaginuma, 1979).

78. *Plexippus paykulli* (Audouin, 1827)

[Jn.: Chasuji-haetori]

Records. Chichijima (Yaginuma, 1970a, 1979; Nakamura and Kojima, 1971; Ono, present report), Hahajima (Yaginuma, 1970a, 1979; Nagashima, 1975) and Minami-ioutou Island (Ono, present report). Locality not specified (Yoshida, 1969; Shinkai, 1969; Yaginuma, 1970c, 1977).

Specimens examined. Chichijima Island: Omura, one female, two males and one juvenile, 2-IV-1974, H. Ono leg. Minami-ioutou Island: one female, 26-VI-2007, H. Karube leg.

79. *Evarcha albaria* (L. Koch, 1878) [Jn.: Mami-jiro-haetori]

Records. Chichijima (Yaginuma, 1979) and Hahajima (Nagashima, 1975; Yaginuma, 1979) Islands.

80. *Menemerus bivittatus* (Dufour, 1831)

[Jn.: Agoguro-haetori]

Records. Chichijima (Nakamura and Kojima, 1971; Yaginuma, 1979) and Hahajima (Nagashima, 1975; Yaginuma, 1979; Nakajo, 2008) Islands.

81. *Menemerus brachygnathus* (Thorell, 1877)

[Jn.: Shirahige-haetori]

Notes. *Menemerus confusus* Bösenberg et Strand, 1906 is a synonym of the present species, but is not the same as *Hasarius fulvus* L. Koch, 1878 as given in the catalogues on the basis of their descriptions. Having examined the specimen labeled as the holotype of *Hasarius fulvus* preserved in the Natural History Museum in Wien,

the present author recognized that it should be changed with other specimens and have nothing to do with the original description by L. Koch.

Record. Chichijima (Yaginuma, 1979).

Zoogeographic notes

Insects of Ogasawara Islands have been well studied (Kurosawa, 1976a, b; Takakuwa, 2004) and more than 800 species are recorded at the present (Karube, 2004). The rate of species number of natural inhabitants is high in the insects as two thirds of the total species number, while remaining one third is the rate of immigrants. The half of the natural inhabitants namely one third of the whole are endemics (about 250 species and 31% in figures). Most of members of the insects as natural inhabitants of the islands show a marked trend to belong to fixed group and families, which have potential abilities of not only flying but also floating in the air.

Spiders, in comparison with beetles or flies, seem to have no great abilities in flying and floating, although many of them balloon well. They also have weak tolerance to the low temperature and dryness. These facts reveal the shortage of total species number of spiders on Ogasawara Islands, which reaches only 5% of the total number of known species of Japan.

The spiders of the islands are composed of only 24 species (30%) of natural inhabitants presumably across the sea and 70% artificially imported ones. The natural inhabitants are estimated at most as follows: *Ariadna insulicola*, *Zosis geniculatus*, *Lycosa boninensis*, *Lycosa matsushitai*, *Walckenaeria* sp., *Erigone prominens*, *Nippononeta masatakana*, *Meioneta boninensis*, *Meioneta ignorata*, *Argyrodes bonadea*, *Euryopis perpusilla*, *Leucauge* sp., *Opadometa grata*, *Tetragnatha laqueata*, *Tetragnatha maxillosa*, *Tetragnatha boninensis*, *Tetragnatha* sp., *Cyrtophora* sp., *Neoscona theisi*, *Acantheis nipponicus*, *Cladethela boninensis*, *Takachioa* sp., *Clubiona* sp. and *Myrmarachne elongata*. Of these only eleven species appear to be endemic to Ogasawara for the time being, that is, *Walckenaeria* sp., *Nippon-*

oneta masatakana, *Meioneta boninensis*, *Meioneta ignorata*, *Euryopsis perpusilla*, *Leucauge* sp., *Tetragnatha boninensis*, *Tetragnatha* sp., *Acantheis nipponicus*, *Cladothela boninensis* and *Clubiona* sp. These species could be specialized on the islands after reaching by chance in the distant past. Spiders of the families Lycosidae, Linyphiidae, Tetragnathidae and Clubionidae are occasionally found in the air and for instance some of them are tolerant to balloon from China to Japan across the Japan Sea more than 500 km in distance (Ono, 2002).

For a large number of artificially introduced species account soil dwellers and spiders living around buildings, which seem to be transported together with cargo of furniture, seedlings and soil. Several species such as salticids were not re-discovered during recent researches (see the above list) and could possibly become extinct. Some field observations indicate that reptiles of *Anolis carolinensis* (Iguanidae), toads of *Bufo marinus* (Bufonidae), and birds of mixed breed population of *Zosterops japonicus* subspecies are regarded as the worst three of introduced animals in Ogasawara, which destroy natural ecosystem around spiders on the ground and on the vegetations.

Dominant species are as follows: oonopids, *Heteroonops spinimanus* and *Ischnothyreus peltifer*, a linyphiid, *Erigone edentata*, a nesticid, *Nesticella mogera*, theridiids, *Coscinida japonica* and *Coleosoma floridanum*, anapids, *Mysmenella* sp. and *Pseudanapis aloha* on the forest floor; a pholcid, *Smeringopus pallidus*, an oecobiid, *Oecobius concinnus*, a theridiid, *Theridion melanostictum* and a sparassid, *Heteropoda venatoria* near buildings; an uloborid, *Zosis geniculatus*, a theridiid, *Argyrodes bonadea*, a tetragnathid, *Tetragnatha maxillosa* and araneids, *Cyclosa norihisai*, *Cyclosa maritima* and *Neoscona theisi* in the grass and bush.

Acknowledgments

The present author wishes to express his sincere thanks to Mr. Tadayoshi Nagashima, Chair

of the Board of Education, Ogasawara, Tokyo, Mr. Eiichi Shinkai, Kokubunji Municipal Assembly, Tokyo, Prof. Masatsune Takeda, Teikyo Heisei University, Tokyo, Dr. Taiji Kurozumi, Natural History Museum and Institute, Chiba, Mr. Shuhei Nakatsuji, the Environmental Bureau of the Tokyo Metropolitan Government, Mrs. Noriko Murai and Messrs. Masahide Kubota, Masanari Aoki, Masashi Mimura, Ryohei Takano, Hideyuki Mori, Japan Wildlife Research Center, Tokyo, Mr. Yoshimitsu Sou, Tokyo Metropolitan Ogasawara Subtropical Research Center, Dr. Masatoshi Takakuwa and Mr. Haruki Karube, Kanagawa Prefectural Museum, Odawara, Ms. Yoshimi Watanabe and Mrs. Tomoko Machida, National Museum of Nature and Science, Tokyo, for their practical supports for field research, offering important information and specimens, and preparing figures and data. This study was partly supported by the Grant-in-Aid for Scientific Research (C) No. 21540487 by the Japan Society for the Promotion of Science (JSPS).

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小笠原諸島のクモ類（クモ綱，クモ目）

小野展嗣

国立科学博物館が所蔵する小笠原諸島産のクモ類標本を分類学的に研究した。その結果と文献による記録を総合的に検討し、25科81種（うち11種は種名未確定）の目録を作成した。26種のクモが小笠原諸島から初めて記録された。そのうち *Epectris apicalis* Simon, 1893 [ヒノマルダニグモ（新称）；タマゴグモ科]、*Opopaea deserticola* Simon, 1891 [ミナミシヤラクダニグモ（新称）；タマゴグモ科]、*Oecobius concinnus* Simon, 1893 [マダラチリグモ（新称）；チリグモ科] および *Opadometa grata* (Guérin, 1838) [アゴトゲシロカネグモ（新称）；アシナガグモ科] の4種は日本初記録である。また、ヒメグモ科の1新種を *Euryopis perpusilla* sp. nov. [アサヒヒメグモ（新称）] と命名して記載した。空中飛行による分散の可能性および人為の影響などの動物地理学的あるいは生態学的な知見をもとに小笠原諸島のクモ相を解析した。日本から知られるクモのわずか5%の種数しか小笠原で見つからないことは、昆虫や陸貝などに比べるとクモ類が空中を浮揚あるいは海上を漂流する能力は低いことが推測された。小笠原のクモ相は24種の自然分布種および57種の人為移入種によって構成され、人為移入種の割合（70%）が極めて高いことが特徴である。現在のところ小笠原固有とみなされるのは、ツノヌカグモ属の1種 (*Walckenaeria* sp.)、ミナミイオウトウケシグモ（改称）、オガサワラケシグモ、サダヨリケシグモ、アサヒヒメグモ、シロカネグモ属の1種 (*Leucauge* sp.)、オガサワラアシナガグモ、アシナガグモ属の1種 (*Tetragnatha* sp.)、イオウシボグモ、エダイボグモおよびフクログモ属の1種 (*Clubiona* sp.) の11種である。人為的に移入されたと考えられる種のほとんどは、土壌性ないし建造物の周囲に生息する種で占められている。グリーンアノール *Anolis carolinensis*、オオヒキガエル *Bufo marinus* およびメジロ *Zosterops japonicus* 亜種間の雑種はさかんにクモを捕食しているところが観察され、危険な移入天敵と判断される。ヒノマルダニグモ、マルムネヒザグモ、チビホラヒメグモ、トガリクサチヒメグモ、オガサワラヒメグモ、ヨシダサヤヒメグモ、コツブグモ属の1種 (*Mysmenella* sp.)、タイヘイヨウスナツブグモ、ヤサガタアシナガグモ、オガサワラゴミグモ、ハマゴミグモおよびホシスジオニグモの個体数が多かった。