

Two New Species of the Genus *Cybaeus* (Araneae: Cybaeidae) from Kyushu, Japan

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Abstract Two new species of the genus *Cybaeus* L. Koch, 1868, belonging to the family Cybaeidae are described from Kumamoto and Nagasaki Prefectures, north western Kyushu, Japan, under the names, *Cybaeus kumaensis* sp. nov. and *Cybaeus taraensis* sp. nov.

Key words: Araneae, Cybaeidae, *Cybaeus*, new species, Kumamoto, Nagasaki, Japan

Spiders of the genus *Cybaeus* L. Koch, 1868, are typical soil dwellers, which make signal-line webs, using small cavities and holes on the ground surface in forests or in caves, and are obtained by sifting and trapping methods as well as by hand collecting. Forty-seven species are at present known under this genus from Japan since Simon (1886) described the first one as *Cicurina* from Yokohama. Although many species have been recorded in Japan, further new species are left undescribed, because spiders of the genus show a remarkable geographical diversity (Komatsu, 1968 a; Ihara, 1993, fig. 27).

In the present paper, two new epigeal species of the genus *Cybaeus* found in Kumamoto and Nagasaki Prefectures will be described. Nine species of *Cybaeus* (6 cave-dwellers and 3 epigeal species) were hitherto recorded from Kumamoto Prefecture, while four species (2 cave-dwellers and 2 epigeal species) were known from Nagasaki Prefecture (Komatsu, 1968 a, b, 1970; Yaginuma, 1970; Yamaguti & Yaginuma, 1971; Irie, 1998; Irie & Ono, 2000). The new species to be described herein are clearly separated from the known species by the shape of male palp and the structure of female genitalia.

All the type specimens of the new species are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo. Other specimens examined are preserved in the private collection of the senior author (T. Irie).

The abbreviations used in this paper are as follows: ALE, anterior lateral eye; AME, anterior median eye; PLE, posterior lateral eye; PME, posterior median eye; OA, ocular area; Cp, length of clypeus; PLS, PVS, RLS, RVS, VS, positions of the spines on legs as proposed by Komatsu (1968 a).

Before going further, the authors wish to express their hearty thanks to the late

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Cybaeus kumaensis sp. nov.

[Japanese name: Kuma-namihagumo]

(Figs. 1–10)

Measurements of the holotype and allotype (♂/♀; in mm). Body length 3.93/3.30; carapace length 1.90/1.80, width 1.30/1.16; abdomen length 2.03/1.50, width 1.53/1.16. Lengths of legs as shown in Table 1. Eye sizes; AME 0.04/0.04, ALE 0.10/0.11, PME 0.08/0.10, PLE 0.08/0.10. Distances between eyes: AME-AME 0.03/0.03, PME-PME 0.09/0.08, ALE-ALE 0.18/0.18, PLE-PLE 0.33/0.35. OA length 0.17/0.20, width 0.46/0.52, Cp 0.10/0.12.

Male (holotype). Carapace yellowish brown, slightly longer than wide. Row of anterior eyes straight (Fig. 1). Chelicera brown; promargin of fang furrow with 3 teeth, retromargin with 4 teeth and 4 denticles (Fig. 2). Sternum yellowish brown, almost as long as wide. Labium brown, almost as long as wide. Legs yellowish brown; leg formula 4,1,2,3. Spination of legs [following Komatsu (1968)] as shown in Figs. 5–8. Tibia I with PVS1-3, PLS3-4, RVS1-3. Tibia II with PVS1-2, PLS2-3. RVS1-2. Metatarsus I with PVS1-3, PLS2, RVS1-3, Matatarsus II with PVS1-3, PLS2, RVS1-3, VS. Legs with three claws: upper claw of 1st leg with 7 teeth, that of 4th leg with 6 teeth, lower claw of 1st leg with a tooth, that of 4th leg with 2 teeth. Abdomen gray, with a median, lanceolate mark, two pair of suboval spots and two chevron marks similar to those of other epigean species; oval in shape and longer than wide.

Male palp (Figs. 3–4): Tibia short and almost as long as patella. Patella with a digitiform apophysis furnished with 5 teeth. Genital bulb globular, as shown in Fig. 4.

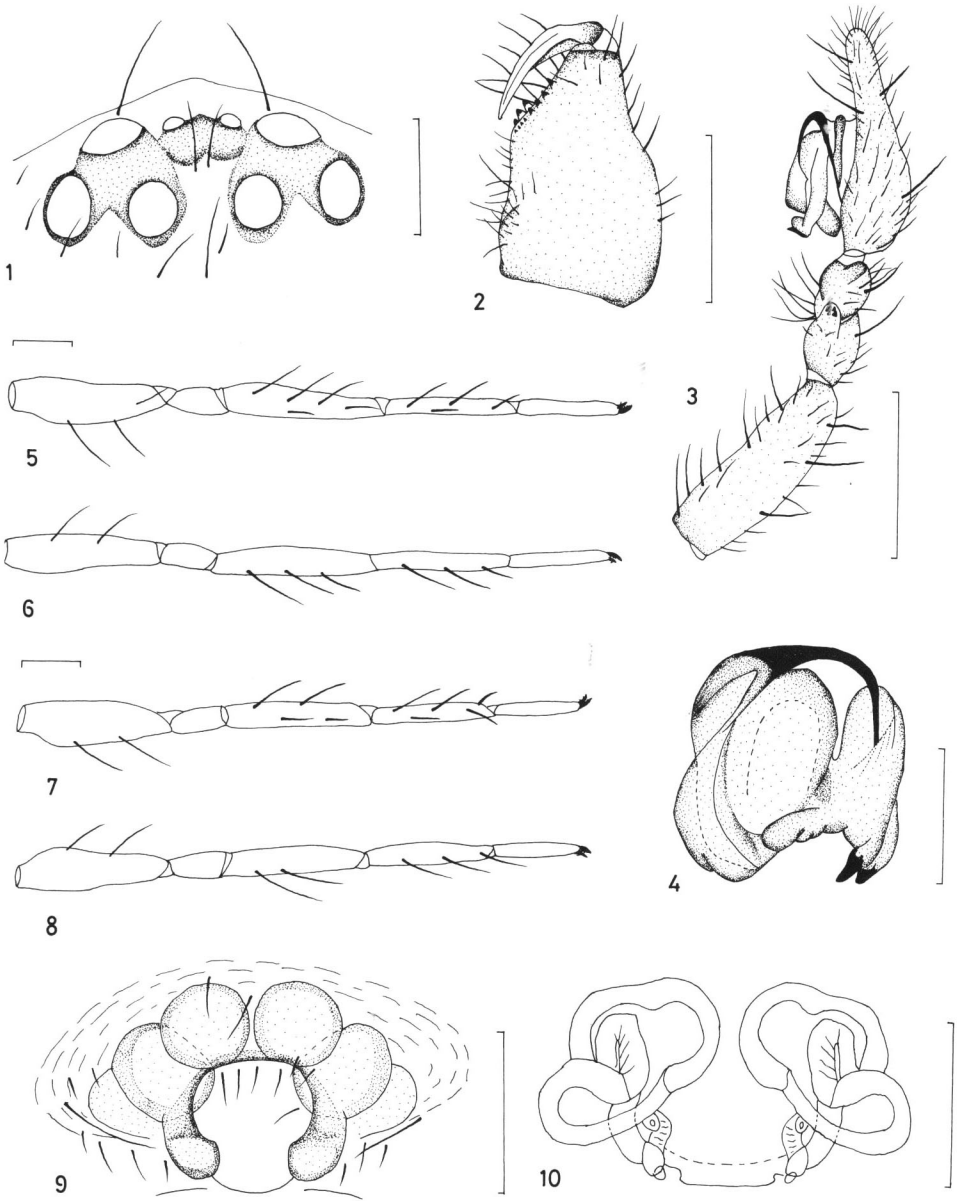
Female (allotype). Legs shorter than those of the male. Other characteristics in general appearance are same as those in the male holotype.

Female genitalia: as shown in Figs. 9–10.

Type series. Holotype: ♂, Itagi, Itsuki-mura, Kuma-gun, Kumamoto Pref., Kyushu, Japan, 26-X-2000, T. Irie leg. (NSMT-Ar 4781); allotype: ♀, same data as for the holotype (NSMT-Ar 4782).

Table 1. Measurements of legs of *Cybaeus kumaensis* sp. nov. (♂ holotype/♀ allotype; in mm).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	1.43/1.33	0.50/0.50	1.36/1.20	1.20/0.93	0.83/0.63	5.32/4.59
II	1.36/1.26	0.50/0.50	1.23/1.06	1.06/0.90	0.73/0.63	4.88/4.35
III	1.13/1.00	0.50/0.46	0.86/0.76	1.00/0.83	0.60/0.53	4.09/3.58
IV	1.36/1.33	0.50/0.43	1.33/1.16	1.46/1.26	0.76/0.66	5.41/4.84



Figs. 1–10. *Cybaeus kumaensis* sp. nov.: 1–8. ♂ holotype (NSMT-Ar 4781); 9–10. ♀ allotype (NSMT-Ar 4782). — 1, Ocular area, dorsal view; 2, left chelicera, ventral view; 3, left palp, retrolateral view; 4, apical part of the bulb of left palp, ventral view; 5, leg I, prolateral view; 6, leg I, retrolateral view; 7, leg II, prolateral view; 8, leg II, retrolateral view; 9, epigynum, ventral view; 10, internal structure of genitalia, dorsal view. (Scales: 1, 4, 9–10, 0.2 mm; 2–3, 5–8, 0.5 mm.)

Other specimens examined. 1 ♀, Shimo-kagiwara, Itsuki-mura, Kuma-gun, Kumamoto Pref., 4-V-1981, T. Irie leg.; 2 ♀, Hirasawazu, Itsuki-mura, Kuma-gun, Kumamoto Pref., 12-VI-1982, T. Irie leg.

Distribution. Japan, Kyushu, Kumamoto Pref.

Etymology. The specific name is derived from the type area.

Diagnosis. Both the new species described in the present paper closely resemble *Cybaeus higoensis* Irie et Ono, 2000, known from caves of Kumamoto and Miyazaki Prefectures, Kyushu, and these three species should be related to one another. All these species are relatively small-sized and have gray abdomen with distinct white markings with chevrons, bars or spots. They are, however, easily distinguishable in details of male palpal organ and the structure of female genitalia. The shape of their terminal apophyses are different from one another (cf. Figs. 4 and 14 and Irie & Ono, 2000, p. 175, fig. 4). The thumb-like apophysis on male palpal patella is low and with two large teeth in *Cybaeus taraensis* sp. nov., while it is developed and with several denticles in the other two species (cf. Figs. 3 and 13 and Irie & Ono, 2000, p. 175, fig.3). The epigynum is much wider than long in both the new species, while it is as long as wide in *Cybaeus higoensis*. The new species are epigeal spiders, while *Cybaeus higoensis* seems to be troglomorphic.

Cybaeus taraensis sp. nov.

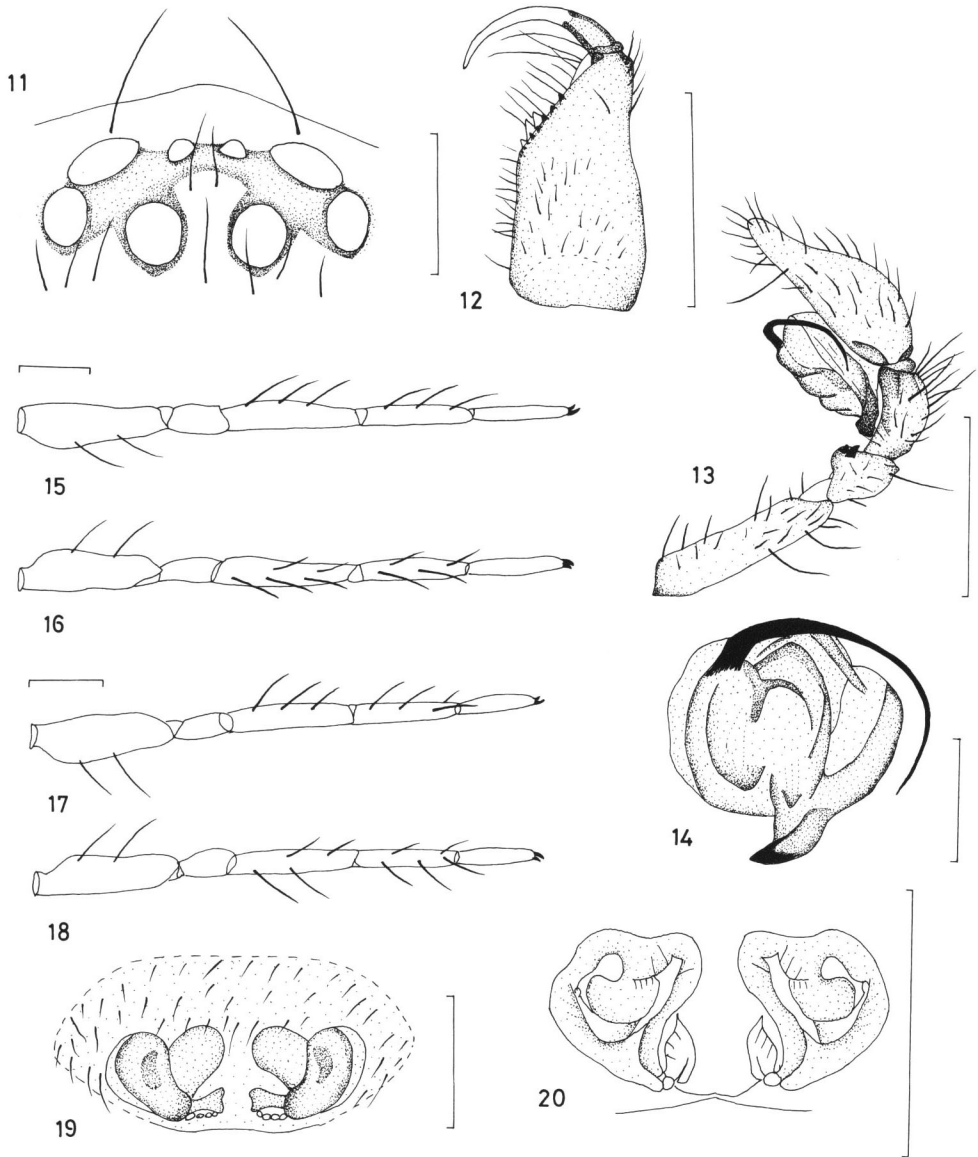
[Japanese name: Tara-namihagumo]
(Figs. 11–20)

Measurements of the holotype and allotype (♂/♀; in mm). Body length 2.96/3.16; carapace length 1.60/1.60, width 1.06/1.03; abdomen length 1.36/1.56, width 1.16/1.16. Lengths of legs as shown in Table 2. Eye sizes: AME 0.04/0.04, ALE 0.10/0.10, PME 0.09/0.08, PLE 0.10/0.10. Distances between eyes: AME-AME 0.03/0.03, PME-PME 0.04/0.04, ALE-ALE 0.13/0.16, PLE-PLE 0.26/0.30. OA length 0.16/0.18, width 0.38/0.41, Cp 0.06/0.10.

Male (holotype). Carapace pale yellowish brown, slightly longer than wide. Row of anterior eyes straight (Fig. 11). Chelicera pale brown; promargin of fang furrow with 3 teeth, retromargin with 5 teeth and 4 denticles (Fig. 12). Sternum yellow-

Table 2. Measurements of legs of *Cybaeus taraensis* sp. nov. (♂ holotype/♀ allotype; in mm).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	1.03/1.03	0.36/0.33	0.93/0.83	0.76/0.63	0.66/0.46	3.74/3.28
II	1.00/0.96	0.40/0.36	0.83/0.73	0.70/0.60	0.50/0.46	3.43/3.11
III	0.86/0.73	0.33/0.33	0.66/0.56	0.73/0.60	0.50/0.43	3.08/2.65
IV	1.00/1.00	0.40/0.36	0.93/0.86	1.00/0.76	0.53/0.50	3.86/3.48



Figs. 11–20. *Cybaeus taraensis* sp. nov.: 11–18. ♂ holotype (NSMT-Ar 4783); 19–20. ♀ allotype (NSMT-Ar 4784). — 11, Ocular area, dorsal view; 12, left chelicera, ventral view; 13, left palp, retrolateral view; 14, apical part of the bulb of left palp, ventral view; 15, leg I, prolateral view; 16, leg I, retrolateral view; 17, leg II, prolateral view; 18, leg II, retrolateral view; 19, epigynum, ventral view; 20, internal structure of genitalia, dorsal view. (Scales: 11, 14, 19–20, 0.2 mm; 12–13, 15–18, 0.5 mm.)

ish brown, almost as long as wide. Labium brown, almost as long as wide. Legs pale yellowish brown; leg formula 4,1,2,3. Spination of legs [following Komatsu (1968)] as shown in Figs. 15–18. Tibia I with PVS1-3, RVS1-3, RLS. Tibia II with PVS1-3, RVS1-2, RLS. Metatarsus I with PVS1-3, RVS1-3, RLS. Metatarsus II with PVS1-3, RVS1-3, RLS, VS. Legs with three claws: upper claw of 1st leg with 8 teeth, that of 4th leg with 6 teeth, lower claw of 1st leg with 2 teeth, that of 4th leg with 2 teeth. Abdomen gray, with two pairs of suboval spots, a pair of chevrons and a pair of bars; oval in shape and longer than wide.

Male palp (Figs. 13–14): Tibia short and slightly longer than patella. Patella with a digitiform apophysis low and furnished with 2 large teeth. Genital bulb globular, as shown in Fig. 14. Terminal apophysis of conductor large.

Female (allotype). Legs shorter than those of the male. Other characteristics in general appearance are same as those in the male holotype.

Female genitalia (Figs. 19–20). Epigynum wide, opening part indistinct.

Type series. Holotype: ♂, Mt. Tara-dake, Takaki-chô, Kitatakaki-gun, Nagasaki Pref., Kyushu, Japan, 27-IX-2000, T. Irie leg. (NSMT-Ar 4783); allotype: ♀, same locality and collector as for the holotype, 26-XI-2000 (NSMT-Ar 4784).

Distribution. Japan, Kyushu, Nagasaki Pref. (known only from the type locality).

Etymology. The specific name is derived from the type locality.

Diagnosis. See the description of the former new species.

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