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A New Species of the Genus *Cybaeus* (Araneae: Cybaeidae) Found in Limestone and Tuff Caves of Central Kyushu, Japan

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Abstract A new species of the genus *Cybaeus* belonging to the family Cybaeidae is described from limestone and tuff caves of central Kyushu, Japan, under the name of *Cybaeus higoensis* sp. nov.

Key words: Araneae, Cybaeidae, *Cybaeus*, new species, cave fauna, Kumamoto, Japan.

Although many cave-inhabiting spiders of the genus *Cybaeus* have been reported from Japan, only five species were described from limestone caves in central Kyushu (Komatsu, 1968 a, b, 1970; Irie, 1998), that is, *Cybaeus ashikitaensis* (Komatsu, 1968) from Ashikita-dô Cave, Ashikita-machi, *C. fuujinensis* (Komatsu, 1968) from Fûjin-dô Cave, Mifune-machi, *C. nichikoensis* (Komatsu, 1968) from Nichikô-dô Cave, Sakamoto-mura, *C. takasawaensis* (Komatsu, 1970) from Takasawa-dô Cave, Kuma-mura, and *C. itsukiensis* Irie, 1998 from Tsuzurase-dô Cave, Itsuki-mura; all caves are situated in Kumamoto Prefecture.

In the present paper, a new species of the genus *Cybaeus* found in limestone and tuff caves of Kumamoto and Miyazaki Prefectures, central Kyushu, will be described. The new species is readily separated from the above 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.

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).

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

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	1.80/1.83	0.66/0.70	1.80/1.66	1.60/1.33	1.13/0.76	6.99/6.28
II	1.76/1.73	0.40/0.66	1.53/1.50	1.50/1.33	1.00/0.83	6.19/6.05
III	1.53/1.50	0.63/0.56	1.70/1.13	1.40/1.26	0.90/0.83	6.16/5.28
IV	1.80/1.90	0.63/0.63	1.76/1.73	1.93/1.80	1.06/0.96	7.18/7.02

Cybaeus higoensis sp. nov.

[Japanese name: Higo-namihagumo]

(Figs. 1–10)

Measurements of the holotype and allotype (♂/♀; in mm). Body length 4.19/4.80; carapace length 2.13/2.20, width 1.50/1.60; abdomen length 2.06/2.60, width 1.46/2.20. Length of legs as shown in Table 1. Eye sizes: AME 0.05/0.05, ALE 0.12/0.10, PME 0.10/0.12, PLE 0.10/0.12. Distances between eyes: AME-AME 0.02/0.02, PME-PME 0.07/0.07, ALE-ALE 0.17/0.22. OA length 0.25/0.22, Cp 0.17/0.10.

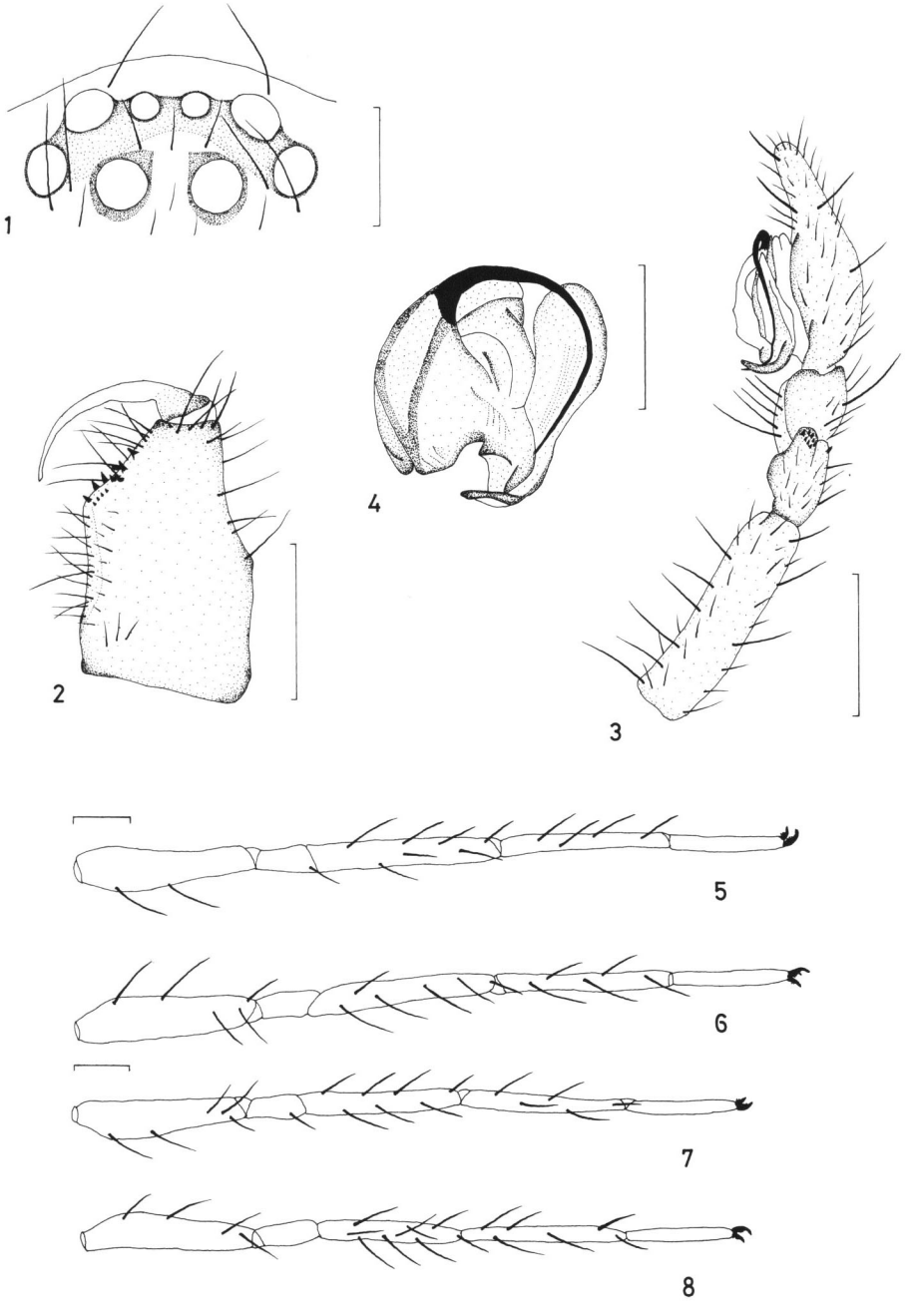
Male (*holotype*). Carapace yellowish brown; slightly longer than wide. Row of anterior eyes straight. Chelicera brown; promargin of fang furrow with 3 teeth, retromargin with 3 teeth and 4 denticles. Sternum yellowish brown; almost as long as wide. Labium yellowish brown; slightly wider than long, 5 : 4 in ratio. Legs yellowish brown; leg formula 4, 1, 2, 3. Spination of legs (following Komatsu, 1968) as shown in Figs. 5–8. Tibia I with PVS1-4, PLS2-4, RVS1-4, PLS. Tibia II with PVS1-4, PLS2-4, RVS1-4, RLS. Metatarsus I with PVS1-3, PLS2, RVS1-3, RLS. Metatarsus II PVS1-3, PLS2-3, RVS1-3, RLS, VS. Legs with three claws: upper claw of 1st leg with 10 teeth, that of 4th leg with 6 teeth, lower claw of 1st leg with 3 teeth, that of 4th leg with 2 teeth. Abdomen gray, with paired white chevron marks similar to those of *Cybaeus kuramotoi* Yaginuma, 1963 described from Chugoku District (Yaginuma, 1963); oval in shape and longer than wide.

Male palp: Tibia short and almost as long as patella. Patella with a thumb-like apophysis furnished with 8 teeth. Genital bulb globular, as shown in Fig. 4.

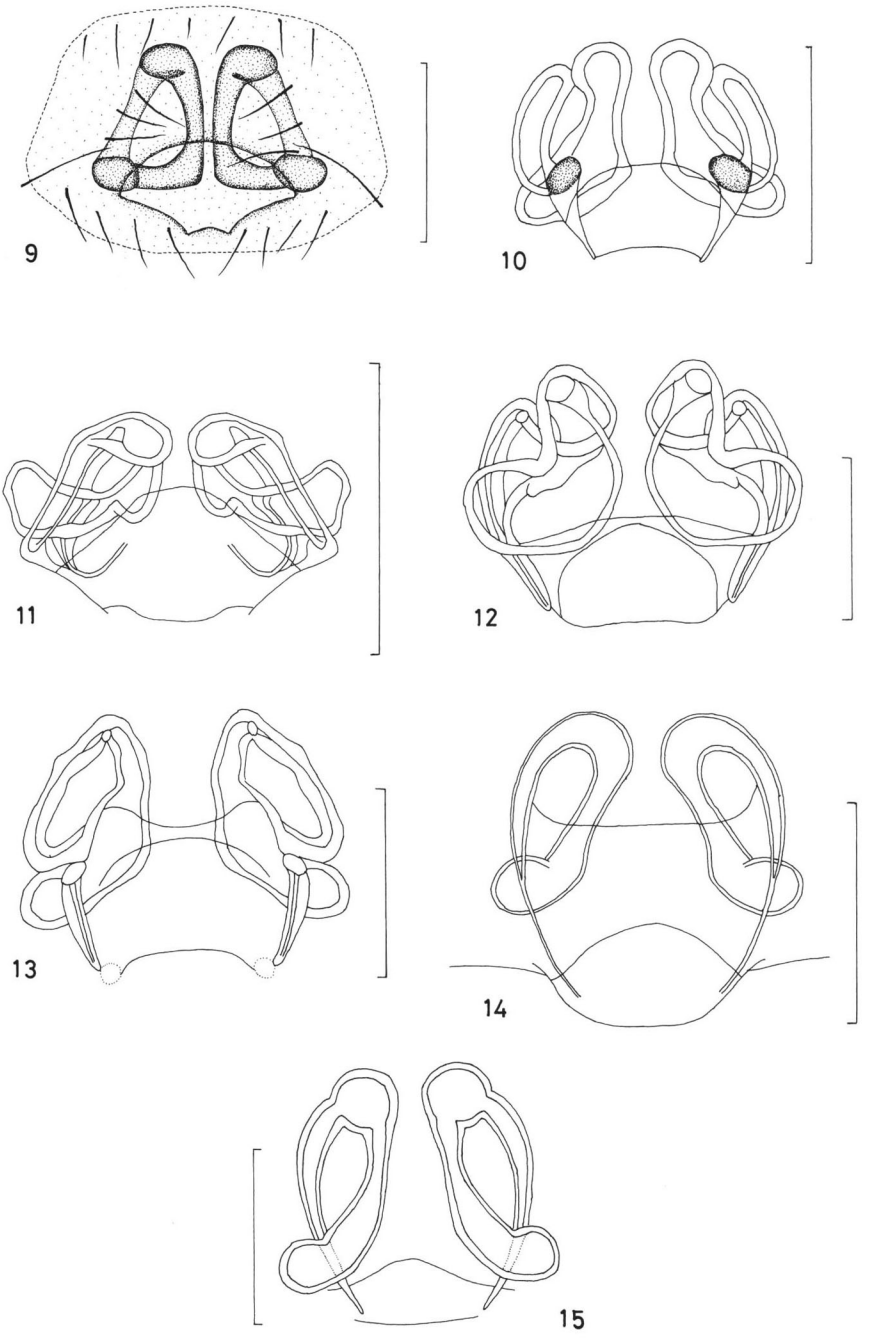
Female (*allotype*). Legs shorter than those of the male. Genitalia as shown in Fig. 10. Other characters are same as in the male holotype.

Variation. Body length (in mm): ♀ 4.33–4.86, ♂ 4.19–4.72. The number of teeth on the apophysis on male palpal patella: 8–15.

Type series. Holotype: ♂, Takasawa-dô Cave (limestone cave), Kuma-mura, Kuma-gun, Kumamoto Pref., Kyushu, Japan, 18–IX–1967, T. Irie leg. (NSMT-Ar 3849); allotype: ♀, Kuronita-no-tateana Pot (limestone cave), Kuma-mura, Kuma-gun, Kumamoto Pref., 3–XI–1968, T. Irie leg. (NSMT-Ar 3850).



Figs. 1–8. *Cybaeus higoensis* sp. nov., holotype ♂ (NSMT-Ar 3849). — 1, Ocular area; 2, left chelicera of male, ventral view; 3, left male palp, retrolateral view; 4, apical part of the bulb of left male palp, ventral view; 5, leg I of male, prolateral view; 6, leg I of male, retrolateral view; 7, leg II of male, prolateral view; 8, leg II of male, retrolateral view. (Scales: 1, 4, 0.3 mm; 2–3, 5–8, 0.5 mm.)



Figs. 9–15. Female genitalia of cave-duelling *Cybaeus* species from central Kyushu (9, epigynum, ventral view; 10–15, internal structure, dorsal view). — 9–10, *Cybaeus higoensis* sp. nov., holotype ♀ (NSMT-Ar 3850); 11, *C. ashikitaensis* (Komatsu, 1968), holotype ♀ (NSMT-Ar 4325); 12, *C. fuujinensis* (Komatsu, 1968), holotype ♀ (NSMT-Ar 4323); 13, *C. nichikoensis* (Komatsu, 1968), holotype ♀ (NSMT-Ar 4324); 14, *C. takasawaensis* (Komatsu, 1970), holotype ♀ (NSMT-Ar 4322); 15, *C. itsukiensis* Irie, 1998, allotype ♀ (NSMT-Ar 3846). (Scales: 0.3 mm.)

Other specimens examined. 1♀, same data as for the holotype; 1♀, Fûjin-dô Cave (limestone cave), Mifune-machi, Kamimashiki-gun, Kumamoto Pref., 10–X–1967, T. Irie leg.; 1♀ 1 juv., Nichikou-dô Cave (limestone cave), Sakamoto-mura, Yatsushiro-gun, Kumamoto Pref., 31–XII–1968, T. Irie leg.; 1♂, Yayama-no-ana Pot (limestone cave), Izumi-mura, Yatsushiro-gun, Kumamoto Pref., 11–V–1970, T. Irie and S. Arai leg.; 2♀2♂, Matsugi-inari-no-ana Cave (limestone cave), Shiiba-mura, Higashiusuki-gun, Miyazaki Pref., 7–IV–1971, T. Irie and S. Arai leg.; 1♂, Kyûsen-dô Cave (limestone cave), Kuma-mura, Kuma-gun, Kumamoto Pref., 4–I–1974, T. Irie leg.; 1♂, Oni-no-iwaya Cave (tuff cave), Kikusui-machi, Tamana-gun, Kumamoto Pref., 17–III–1976, T. Irie leg.; 1♀1♂ 1 juv., Sunoko-dô Cave (limestone cave), Seiwa-mura, Kamimashiki-gun, Kumamoto Pref., 14–X–1979, T. Irie, H. Nishino and Y. Takamatsu leg.

Distribution. Known from Kumamoto and Miyazaki Prefectures, Kyushu, Japan.

Etymology. The specific name is derived from "Higo," an old name of Kumamoto Prefecture.

Remarks. This new species can be easily distinguished from all the known related species in central Kyushu, *Cybaeus ashikitaensis*, *C. fuujinensis*, *C. nichikoensis*, *C. takasawaensis* and *C. itsukiensis*, by the structure of female genitalia. Type specimens of those known species deposited in the National Science Museum, Tokyo were re-examined and the female genitalia of each species were herewith illustrated (Figs. 11–15).

This new spider is cave-dweller and appears to be a trogrophilous species.

References

Irie, T., 1998. A new eyeless spider of the genus *Cybaeus* (Araneae: Cybaeidae) found in a limestone cave of Kyushu, Japan. *Acta arachnol.*, **47**: 97–100.

Komatsu, T., 1968a. Cave Spiders of Japan. II. *Cybaeus*, *Dolichocybaeus* and *Heterocybaeus* (Cybaeinae). 38 pp. Arachnological Society of East Asia, Osaka.

Komatsu, T., 1968b. Two new cave spiders of genera *Tetrablemma* (Tetrablemminae, Oonopidae) and *Dolichocybaeus* (Cybaeninae). *Acta arachnol.*, **21**: 35–38, pl.3.

Komatsu, T., 1970. Two new spiders of the genus *Dolichocybaeus* from Japan. *Acta arachnol.*, **23**: 13–16. pl. 4.

Yaginuma, T., 1963. Spiders from limestone caves of Akiyoshi Plateau. *Bull. Akiyoshi-dai Sci. Mus.*, (2): 49–62. (In Japanese, with English descriptions and summary.)