

## Description of the Female of *Clubiona zacharovi* Mikhailov, 1991 (Araneae: Clubionidae) from Korea

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## 보광염낭거미(*Clubiona zacharovi* Mikhailov, 1991) 암컷의 기재

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**ABSTRACT:** First known female of the sac spider *Clubiona zacharovi* Mikhailov, 1991 is described from Korea. This is a rare species inhabiting in the plant litter or under the stone in mountain sites.

**Key words:** Clubionidae, *Clubiona zacharovi*, female, description, Korea

**초록:** 보광염낭거미(*Clubiona zacharovi* Mikhailov, 1991)의 암컷을 우리나라에서 최초로 기재한다. 이 종은 식물의 잔사체나 돌 밑 등을 배회하는 희귀종이다.

**검색어:** Clubionidae, *Clubiona zacharovi*, female, description, Korea

*Clubiona* Latreille, established in 1804 based on the *Clubiona pallidula* (Clerck, 1757), distributed worldwide, is the largest genus of the family Clubionidae. A total of 581 species of 16 genera belonging to this family have been described to date (Platnick, 2012). *Clubiona*, which is known 366 species worldwide, is the only genus described from Korea and twenty-four species are represented by this genus to date in Korea (Namkung et al., 2009); *Clubiona coreana* Paik, 1990, *Clubiona diversa* O. P.-Cambridge, 1862, *Clubiona haeinsensis* Paik, 1990, *Clubiona hwanghakensis* Paik, 1990, *Clubiona irinae* Mikhailov, 1991, *Clubiona japonicola* Bösenberg & Strand, 1906, *Clubiona jucunda* (Karsch, 1879), *Clubiona*

*kasansensis* Paik, 1990, *Clubiona kimyongkii* Paik, 1990, *Clubiona kurilensis* Bösenberg & Strand, 1906, *Clubiona lena* Bösenberg & Strand, 1906, *Clubiona lutescens* Westring, 1851, *Clubiona mandschurica* Schenkel, 1953, *Clubiona mayumiae* Ono, 1993, *Clubiona neglectoides* Bösenberg & Strand, 1906, *Clubiona odesanensis* Paik, 1990, *Clubiona papillata* Schenkel, 1936, *Clubiona phragmitis* C. L. Koch, 1843, *Clubiona pseudogermanica* Schenkel, 1936, *Clubiona rostrata* Paik, 1985, *Clubiona soppaikensis* Paik, 1990, *Clubiona subtilis* L. Koch, 1867, *Clubiona venusta* Paik, 1985 and *Clubiona vigil* Karsch, 1879. Members of *Clubiona* are particularly diverse in the foliage layer of primary and secondary forests including agricultural ecosystems. *Clubiona zacharovi* was erected by Mikhailov (1991) based on the male collected from Maritime Province, Kedrovaya Pad Reserve, Russia. Though he denoted that this species may be found in Northeast China and Korea

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without examining specimen, actual existence of this species was not confirmed from Korea to date. In this paper, authors present a description of the first female of this species collected from Mt. Myeongji, Gyeonggi-do in Korea in the course of survey on the spider fauna of this area. The external morphology of the specimens was observed and female epigynum and genitalia were illustrated using a stereoscopic microscope, and metric characters were measured with an ocular micrometer. Female genitalia was illustrated after dissolving extraneous tissue with 10% KOH solution for 24 h. All measurements are given in mm. Leg measurements are given in the order of femur, patella+tibia, metatarsus and tarsus in parentheses. Specimen (#ARAPIV0000174008) is lodged in the collection of National Institute of Biological Resources, Korea (NIBR).

## Taxonomic accounts

**Order Araneae Clerck, 1757**

**Clubionidae Wagner, 1887**

***Clubiona* Latreille, 1804**

***Clubiona zacharovi* Mikhailov, 1991**

(Figs. 1a-c)

*Clubiona zacharovi* Mikhailov, 1991: p. 226, f. 52-53

*Clubiona* sp. (A) Namkung, 2001: p. 452, f. 34-30a-b

**Diagnosis** Female of *C. zacharovi* is distinguished from other members in the genus *Clubiona* by details of the internal structure of the epigyne. Epigynal plate slightly sclerotized, covered with stout hairs. A pair of elliptical spermathecae visible through the cuticle covering them. Epigynal plate protruded as V-shaped around paired spermathecae. Paired large circular copulatory openings distinct with dark margin,

disposed at the hind part of the epigynal plate.

**Measurements** Body length 8.52, Carapace length 3.73; width 2.49, Abdomen length 4.90; width 2.98, Cheicera length 1.63; width 0.92, Endite length 1.49; width 0.85, Labium length 1.07; width 0.50, Sternum length 1.92; width 1.28, Anterior eye row 1.07, Posterior eye row 1.49, Legs : I 8.21 (2.49, 3.27, 1.49, 0.96), II 8.63 (2.56, 3.48, 1.70, 0.89), III 7.46 (2.20, 2.77, 1.78, 0.71), IV 10.65(3.05, 3.41, 3.27, 0.92), Pedipalp 3.02 (1.03, 1.07, -, 0.92).

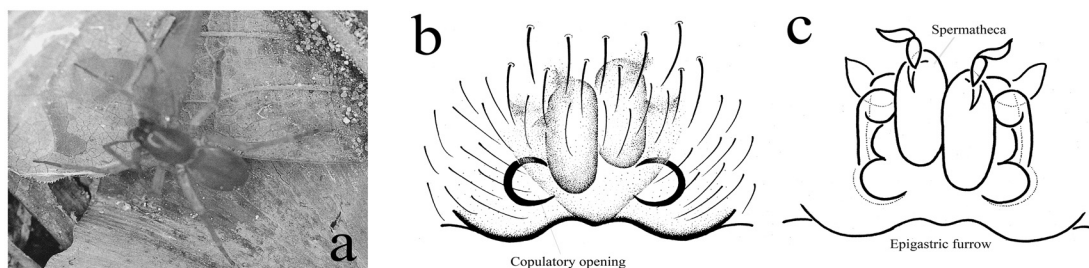
**Description Female:** Carapace yellowish brown, longer than wide (52:35). Head region a little raised. Median groove needle-shaped and distinctive. Cervical and radial groove indistinct (Fig.1a). Chelicera dark reddish brown with 6 promarginal teeth and 4 retromarginal teeth. Endite yellowish brown. Labium brown, longer than wide (21:10). Legs yellowish brown. Patella, tibia and metatarsus dark brown. Leg formula 4-2-1-3. Leg formula index 100:81:77:70. The femoral spine formula 1-1-2 in I and II, and 2-2-2 in III and IV. Dorsum reddish brown with long longitudinal cardiac pattern and many long hairs on edge of the anterior part, 3-4 pairs of arrow feather patterns and 5-6 rows of horizontal patterns on the posterior part. Paired large circular copulatory openings distinct with dark margin, disposed at the hind part of the epigynal plate (Fig. 1b, c).

**Male:** See Mikhailov (1991); p. 226, f. 52-53.

Specimen examined 1 female, 13-V-1995, Mt. Myeongji, Gapyeong-gun, Gyeonggi-do, Seung Tae Kim and Joon Namkung Leg (#ARAPIV0000174008 of NIBR).

**Ecological remarks** This species lives in the plant litter or under the stone in mountain sites.

**Distribution** Korea (newly recorded), Russia



**Fig. 1.** *Clubiona zacharovi* Mikhailov, 1991 (a: female wandering in the plant litters, b: female epigynum, ventral view, c: female genitalia, dorsal view).

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## Literature Cited

- Bösenberg, W., Strand, E., 1906. Japanische Spinnen. *Abh. Senck. naturf. Ges.* 30, 93-422.
- Cambridge, O.P., 1862. Description of ten new species of British spiders. *Zoologist* 20, 7951-7968.
- Karsch, F., 1879. Baustoffe zu einer Spinnenfauna von Japan. *Verh. naturh. Ver. preuss. Rheinl. Westfal.* 36, 57-105.
- Koch, C. L., 1843. *Die Arachniden*. Nürnberg, Eilfter Band, pp. 1-174.
- Koch, L., 1867. Die Arachniden-Familie der Drassiden. Nürnberg, Hefte 7, pp. 305-352.
- Mikhailov, K.G., 1991. The spider genus *Clubiona* Latreille 1804 in the Soviet Far East, 2 (Arachnida, Aranei, Clubionidae). *Korean Arachnol.* 6, 207-235.
- Namkung, J., 2001. The spiders of Korea. Kyo-Hak Publishing Co., Seoul, 648 pp.
- Namkung, J., Yoo, J.S., Lee, S.Y., Lee, J-H., Paek, W.K., Kim, S.T., 2009. Bibliographic Check list of Korean Spiders (Arachnida: Araneae) ver. 2010. *Journal of Korean Nature* 2(3), 191-285.
- Ono, H., 1993. Spiders of the genus *Clubiona* (Araneae, Clubionidae) from eastern Hokkaido, Japan. *Mem. natn. Sci. Mus. Tokyo* 26, 89-94.
- Paik, K.Y., 1985. Three new species of clubionid spiders from Korea. *Korean Arachnol.* 1(1), 1-11.
- Paik, K.Y., 1990. Korean spiders of the genus *Clubiona* (Araneae: Clubionidae) I. Description of eight new species and five unrecorded species from Korea. *Korean Arachnol.* 5, 85-129.
- Paik, K.Y., 1990. Korean spiders of the genus *Clubiona* (Araneae: Clubionidae) II. On the clubionid spiders reported from Korea before the report I. *Korean Arachnol.* 6, 63-89.
- Platnick, N.I., 2012. The world spider catalog, version 13.0. American Museum of Natural History, online at <http://research.amnh.org/iz/spiders/catalog>. DOI: 10.5531/db.iz.0001.
- Schenkel, E., 1936. Schwedisch-chinesische wissenschaftliche Expedition nach den nordwestlichen Provinzen Chinas, unter Leitung von Dr Sven Hedin und Prof. Sü Ping-chang. Araneae gesammelt vom schwedischen Arzt der Exped. *Ark. Zool.* 29(A1), 1-314.
- Schenkel, E., 1953. Chinesische Arachnoidea aus dem Museum Hoangho-Peiho in Tientsin. *Bolm Mus. nac. Rio de J. (N.S., Zool.)* 119, 1-108.
- Westring, N., 1851. Förteckning öfver de till närvarande tid Kända, i Sverige förekommande Spindlarter, utgörande ett antal af 253, deraf 132 äro nya för svenska Faunan. *Göteborgs Kongl. Vet. Handl.* 2, 25-62.