

Korean Spiders of Genus *Cybaeus* (Araneae, Argyronetidae) 2.

Two New Cave Spiders from Korea

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韓國產 굴독거미屬(물거미科)의 分類學的 研究 2.
——洞窟產 2 新種의 記載——

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摘 要

韓國產 굴독거미屬에 關해서는 이미 著者의 한 사람인 白의 報告(1966)가 있으나 今般 南宮煥이 各地의 洞窟에서 採集한 標本을 調査한 結果 다음 2 新種을 얻었기에 報告한다.

新種名 *Cybaeus mosanensis* n. sp. *C. whanseunensis* n. sp.

前記 白의 報告 中 韓國未記錄種으로 記載한 *C. nipponicus*는 南宮煥이 採集한 수컷의 palpus의 形態等에 依하여 이와는 뚜렷이 다른 한 新種으로 判明되었으므로 이에 *C. mosanensis*라 命名하여 여기에 다시 記載하였다. 암컷은 이미 前報에서 詳細히 記載하였으므로 本報에서는 수컷만 取扱하였다. 따라서 本報以前에 著者들이 報告한 *C. nipponicus*는 모두 *C. mosanensis*의 synonym으로 한다. 여기 記載한 2 新種 中 *C. mosanensis*는 洞窟 밖에서도 많이 發見되지만 *C. whanseunensis*는 지금까지 洞窟에서만 採集되었다. 이로서 韓國產 굴독거미屬은 *C. longus* Paik, 1966 및 *C. mosanensis*, *C. whanseunensis*의 3 種이 된다.

INTRODUCTION

In present paper, the author would like to describe about two new cave spiders of Genus *Cybaeus* from Korea. Paik (1966), one of the author, previously reported two new and one unrecorded species of Korean *Cybaeus*. The unrecorded species, *C. nipponicus*, which had been mentioned in the last report was not *C. nipponicus* but a new species.

This new species is described as *C. mosanensis* n. sp. in present paper. Since the description of female of *C. mosanensis* had already been published as a female of *C. nipponicus* in the last paper by Paik (1966), it is abridged in this paper.

Cave animals of Korea were reported by J. Namkung(1963, 1964) and K. C. Choi in mimeograph, but there is no mention about the Genus *Cybaeus* in Choi's report while Namkung's report contained following species:

1963 : Fauna of Limestone cave in Korea (in Korean).

Cybaeus sp.(1) *Cybaeus* sp.(2)

1964 : Ecology and Factor of Environment of Cave Animal in Korea (in Korean).

Cybaeus aquilonaris *C. nipponicus* *C. sp.*(1) *C. sp.*(2) *C. sp.*(3)

C. aquilonaris which previously reported by Namkung was identified as *C. mosanensis* in present studies. The specimens used in this study were collected by Namkung in caves of Korea.

Holotype of the new species deposited in the collection of Kyungpook National University. A part of paratype deposited in the collection of Kyungpook National University and the rest are deposited by J. Namkung.

DESCRIPTION

Cybaeus mosanensis n. sp. (figs. 1,2,3,4, and 5)

Korean name: Mosan-kultuck-komi (모산굴뚝거미)

Synonym: *C. nipponicus*, Paik, 1966 *Kor. Jour. Zool.* 9:1,31-33; J. Namkung, 1964 Ecology and Factor of Environment of Cave Animal in Korea.

C. aquilonaris, Namkung, 1964 *ibid.*

Male : Carapace dirty brown; longer than width. Longitudinal thoracic groove reddish brown. Cervical groove and radial furrow evident, suffused with dark grey. From ocular area to the thoracic groove, there are hairs arranged in three lines. Clypeus ca. five times the diameter of anterior median eye. Anterior eyes row straight in frontal view, posterior eyes row also straight. Anterior median eye smallest.

Eye ratio, AME<PME<ALE=PLE(4.5 : 7 : 9 : 9). Anterior median eyes separated from each other by 1.5 times their diameter, from anterior lateral eye by 1.8 times their diameter. Posterior median eyes separated from each other by 1.8 times their diameter, from posterior lateral eye by 1.6 times their diameter. Lateral eyes of both row separated by 0.8 times their diameter. Eyes on black spots. Median ocular area wider in behind than in front, the ratio 28:16, slightly wider than length in ratio 28:26. Chelicerae brown, lateral condyle yellowish brown and conspicuous. Upper margin of fang furrow armed with scopula and three teeth, basal one are very small. Lower margin of fang furrow armed with eight or nine minute teeth diminishing proximally.

Maxillae and labium similar in colour to chelicera, their anterior margin white. Maxillae parallel, with greyish brown scopula. Labium longer than width or equal to width, exceed middle of the maxillae, basal articular notches about one fourth its length.

Sternum yellowish brown, scattered black hair; heart-shaped, longer than width(189 : 168), widest between 2nd coxae. The anterior margin straight, the end produced between hind coxae.

Legs yellowish brown, each femur with three dark annulations, it is especially distinct on venter. Each tibia with two faint dark annulations. Leg formula 1,4,2,3. The number of spines on each segments as follows:

		Dorsal	Prolateral	Retrolateral	Ventral
Femur	I	1,1,1	0,1,1	0,0,0	0
	II	1,1,0-1	0,1,1	0,1,0-1	0
	III	1,1,1	0,1,1	0,1,1	0
	IV	1,1,1	0,1,1	0,0,1	0
Tibia	I	0,0,0	1,0,1	0,0,0	2,2,2,2
	II	0,0,0	1,1,1	0,0,0	2,2,1,2
	III	0,0,1	1,1,1	0,1,1	2,2,2
	IV	0,0,0	0,1,1	0,1,1	2,1,2

Abdomen oval; black in background, dorsum with several pairs of yellowish white markings. Belly greyish yellow.

Male palp: Patella and tibia short, ca. one third of the femoral length. Tibia shorter than the patella. Patella with a thumb-like apophysis on which about from ten to twenty black teeth exist. Tibia with a spatula-like apophysis.

Measurements (mm.): Male (July 21, '63; Mosan cave)

	Length	Width		Fem.	Pat.	Tib.	Meta.	Tar.	Total	
Total	7.05	—	Leg	I	4.44	1.48	4.96	4.32	2.43	17.32
Cephalothorax	4.11	3.05		II	3.90	1.48	3.79	3.48	2.11	14.45
Abdomen	2.74	3.59		III	3.27	1.27	2.64	2.95	1.79	11.61
Sternum	1.89	1.68		IV	3.90	1.27	3.69	4.33	2.11	15.10
Labium	0.64	0.63	Palp		1.79	0.57	0.47	—	1.79	4.62

Type locality: *Holotype*: one female, July 24, '66, Kabe, Keuze Isl., collected by K.Y. Paik; one young female, August 5, '58, Quelpart Isl., Kwaneumsa, collected by H.J. Lee; one young female, July 26, '63, Mt. Jiri, Hwaeumsa, collected by K.Y. Paik; one young female, October 9, '59, Mt. Kaya, collected by K.Y. Paik; three young female, October 9, '58, Mt. Kaya, collected by K. Y. Paik; two young female, April 18, '61, Mt. Kaya, collected by Y.K. Kim; one young female, March 4, '65, Mt. Palgong, collected by Y.K. Kim; seven young female, April 13, '58, Mt. Palgong, collected by E.I. Kim; one young female, October 2, '58, Mt. Palgong, collected by E. I. Kim; one young female, June 11, '61, Jik chi-sa, collected by K.Y. Paik; one young female, July 31, '62, Mt. So-paik, collected by K.Y. Paik; two young female, January 9, '61, Mt. So-paik, collected by K. Y. Paik; one young female, July 20, '60, Chung-joo, collected by J. Namkung.

Paratype: one male, June 21, '63, one female, June 22, '63, one female and two immature female, October 17, '63, Mosan cave, Munkyoung, Kyungpook prefecture, collected by J. Namkung; three subadult female and three subadult male, May 22, '64, Paikjok-san cave, Changhowon, Keungki prefecture, collected by J. Namkung; one male and one immature female, July 5, '64, Parkjui cave, Eumseung, Chungpook prefecture, collected by J. Namkung.

Remark: The female at a glance, very similar to *C. nipponicus*, but clearly discriminated from the latter in male.

1) The female of present species with an apophysis on patella, but latter without apophysis.

2) Length of palpal tibia subequal to the patella in present species. Length of tibia longer than the patella in *C. nipponicus*.

3) Anterior eyes row straight in frontal view, but it is procurved in *C. nipponicus*.

Cybaeus whanseunensis n. sp. (figs. 6, 7, 8, 9, 10, 11, 12 and 13)

Korean name : Whanseun-kultuck-komi(환선굴독거미)

Female: Carapace longer than width, yellowish brown, head has a tinge of brown than the thoracic part. Longitudinal thoracic groove reddish brown. Cervical groove and radial furrow evident. The ratio of width of head to that of thorax(h/t) is 0.57–0.61. From ocular area to the thoracic groove, there are hairs arranged in three lines.

Clypeus slightly less than eight times the diameter of anterior median eye. Posterior eyes row recurved, anterior eyes row recurved in frontal view. Anterior median eye smallest, about one third of the anterior lateral eye. Eye ratio, AME < PME < ALE < PLE — (2 : 5 : 6 : 7). Anterior median eyes separated from each other by 2.5 times their diameter, from anterior lateral eye by two times their diameter. Posterior median eyes separated from each other by 1.8 times their diameter, from posterior lateral eye by slightly more their diameter. Median ocular area wider in behind than in front in ratio 19 : 9, wider than length in ratio 19 : 14. Eyes on reddish brown spots. Chelicerae similar in colour to head, lateral condyle evident. Upper margin of fang furrow with scopula and three teeth, the middle largest. Lower margin with from eight to nine teeth, basal six are very minute. Tibia and tarsus of palpus similar in colour to head, the femora and patella yellowish brown. Maxillae and labium yellowish brown, their anterior margin whitish yellow. Maxillae slightly inclined inwards. Labium slightly wider than length (28 : 25), exceeds middle of the maxillae, basal articular notches about one fourth its length.

Sternum yellowish brown, with dark brown margins and scattered black hair; heart-shaped, longer than width (142 : 135), the end produced between hind coxae, anterior margin straight. Legs yellowish brown, without annulations.

Leg formula 4, 1, 2, 3. Tarsus and metatarsus with trichobothria, diminishing proximally on each segments.

The number of spines on each segments as follows:

		Dorsal	Prolateral	Retrolateral	Ventral
Femur	I	1, 1, 0	0, 1, 1	0, 0, 1	0
	II	1, 1, 1-0	0, 0, 1	0, 0, 1	0
	III	1, 1, 1	0, 0, 1	0, 0, 1	0
	IV	1, 1, 1	0, 0, 1	0, 0, 1	0
Tibia	I	1, 1, 1	0, 1, 0	0, 1, 0	6 pairs
	II	1, 1, 1	0, 1, 0	0, 1, 0	6 pairs
	III	1, 1, 1	1, 1, 1, 1*	1, 1, 1, 1*	3 pairs
	IV	1, 1, 1	1, 1, 1	0, 1, 1	2, 1, 2

* Occasionally the number varied 1, 1, 1.

Abdomen oval; uniformly grayish yellow white, but occasionally has a grayish yellow brown cardiac pattern. Spinnerets cylindrical, similar in colour to abdomen. Anterior longer than the posteriors, with two segments. Apical segment much shorter than basal. Apical segment of posteriors very short. Middle spinneret with 4 spigot. Colulus rediment.

Measurements (mm.): Female No. 4 (July 28, '63; Whanseun cave)

	Length	Width		Fem.	Pat.	Tib.	Meta.	Tar.	Total	
Total	6.52	—	Leg	I	3.27	1.16	3.38	2.85	1.89	12.44
Carapace	2.95	2.32		II	3.17	1.16	3.17	2.79	1.95	12.13
Abdomen	3.69	2.95		III	2.95	1.06	2.74	2.85	1.79	11.24
Sternum	1.45	1.39		IV	3.48	1.06	3.53	4.01	2.21	14.18
Labium	0.47	0.51	Palp		1.27	0.58	0.84	—	1.58	4.27

Male: Clypeus about ten times the diameter of anterior median eye. Eye ratio, AME<PME<ALE<PLE(1.5 : 5 : 6 : 8). Eyes anterior row equidistant, separated by 2.5 times of the diameter of anterior median eye. Posterior median eyes separated from each other by 1.8 times their diameter, from lateral eye by 0.8 times their diameter. Median ocular area wider in behind than in front in ratio 19 : 7, wider than length in ratio 19 : 11. The rest looks alike to female.

Male palp: Palpal patella with a thumb-like apophysis on which about ten black teeth exist. Tibia with a spatula-like apophysis on which dorsal base a spin exists.

Measurement (mm.): Male (December 27, '63; Whanseun cave)

	Length	Width		Fem.	Pat.	Tib.	Meta.	Tar.	Total	
Total	5.25	—	Leg	I	3.06	1.06	3.17	2.16	1.89	11.22
Carapace	2.85	2.16		II	2.85	1.06	2.89	2.74	1.84	11.23
Abdomen	2.53	1.89		III	2.74	1.06	2.53	2.74	1.68	10.59
Sternum	1.35	1.28		IV	3.38	0.95	3.27	3.69	2.16	13.34
Labium	0.41	0.43	Palp		1.16	0.45	0.68	—	1.18	3.47

Type locality: *Holotype:* One female, December 29, '65, Whanseun cave, Kangwon prefecture, collected by J. Namkung.

Paratype: four female, two male and one immature male, July 28, '63, Whanseun cave, Kangwon prefecture, collected by J. Namkung; three female, December 29, '65, Whanseun cave, Kangwon prefecture, collected by J. Namkung; three female, one immature female, one male and four immature male, January 15, '66, Whanseun cave, Kangwon prefecture, collected by J. Namkung; eight immature female, December 30, '65, Whanseun cave, kangwon prefecture, collected by J. Namkung; one female, one male and one subadult male, August 11, '63, Cheungpung

suheul cave, Jecheun, Chungpook prefecture, collected by J. Namkung; one male, October 20, '66, Cheungpung suheul cave, Jecheun, Chungpook prefecture, collected by J. Namkung; three female, January 20, '66, Chungpung suheul cave, Jecheun, Chungpook prefecture, collected by J. Namkung.

Remark: Present species very similar to *Cybaeus isikawai* (Kishida (MS)) but readily distinguished in following points:

- 1) In general, present species larger than the *C. isikawai*, the former has long legs than the latter.
- 2) The ratio of the width to the length of cephalothorax relatively wider in present species. The ratio as follows:

<i>C. isikawai</i> ; female	0.65
present species; female	0.75-0.83
- 3) Anterior median eyes separated from each other by 2.5 times their diameter in present species, on the contrary, they are separated each other by four times their diameter in *C. isikawai*.
- 4) Anterior median eye separated from anterior lateral eye by two times diameter of AME in present species, in *C. isikawai* separated by six times.

REFERENCES

The references listed in Paik's last paper were omitted in the present paper.

- Yaginuma, T., 1962. Cave spiders in Japan. *Bull. Osaka Mus. Nat. Hist.* 15, 65-77.
- Ishikawa, J., 1939. Spiders from Ryuga cave (Ryugado no kumo). *Acta Arachnol.* 4 : 4, 162-163.
- Komatsu, T., 1940. Five spiders from Ryuga cave. *Acta Arachnol.* 5 : 3, 186-195.
- Komatsu, T., 1942. Spiders from Saisho cave. *Acta Arachnol.* 7 : 2, 54-70.
- Komatsu, T., 1957. Some new cave spiders in Japan. *Acta Arachnol.* 14 : 2, 67-73.
- Komatsu, T., 1960. A new cave spider in Japan. *Acta Arachnol.* 17 : 1, 9-12.
- Komatsu, T., 1961. Cave spiders of Japan, their taxonomy, chorology and ecology. *Arachnol. Soc. East Asia.*
- Paik, K.Y., 1966. Korean spiders of genus *Cybaeus*(Araneae, Argyronetidae). *Kor. Jour. Zool.* 9 : 1, 31-38.

Explanation of Figures

Cybaeus mosanensis n. sp.

1. Left palpus, ventral view.
2. Left palpus, dorsal view.
3. Left palpus, ectal view.
4. Left palpus, inner view.
5. Right chelicera of male, inner view.

Cybaeus whanseunensis n. sp.

6. Left palpus, ventral view.
7. Left palpus, dorsal view.
8. Left palpus, ectal view.
9. Left palpus, inner view.
10. Patella of left palpus.
11. Epigyne.
12. Genitalia.
13. Right chelicera, inner view.

