Note of Anapidae (Araneae) spiders and *Conculus*, a new record genus from China

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Abstract: This current paper provides a brief overview of the research situation on Chinese Anapidae. A cave spider species found in cave of Chongqing, *Conculus lyugadinus* Komatsu, 1940 is described and illustrated. This was reported for the first time on the genus *Conculus* Komatsu, 1940 from China. All examined materials are deposited in the Zoological Museum of the School of Life Science, Sichuan University, Chengdu (SCUM).

Key words: Taxonomy; Araneae; Anapidae; new recorded genus; China

中国安蛛科(蜘蛛目)蜘蛛记述及一新记录属 *Conculus*

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摘要：本文简要综述了我国安蛛科的研究现状，并描述了一种产自重庆洞穴的安蛛——*Conculus lyugadinus* Komatsu, 1940，这是 *Conculus* 属在我国的首次报道。所有检视标本均保存在四川大学自然博物馆(SCUM)。

关键词：分类学；蜘蛛目；安蛛科；新记录属；中国

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The family Anapidae is very small araneomorph spiders, mainly distributing in litter layer and moss usually on the floor of forests, some inhabits in caves and under rocks. They unusually construct small, horizontal orb webs in the litter or above the water surface (Jocqué & Dippenaar-Schoeman, 2006).

It is relatively late to study on the family Anapidae in China. So far, only 6 genera and 8 species are recorded in China (Lin & Li, 2012; Platnick, 2012) (Table). The first anapid species was described from Hong Kong (Brignoli, 1981). The second species was reported from Zhejiang Province. This species was initially identified as *Comaroma maculosa* Oi, 1960, and recorded in Fauna of Zhejiang: *Araneida* (Chen & Zhang, 1991). Subsequently, it was considered as a new species: *Comaroma tongjunca* after redescribing (Zhang & Chen, 1994). Wunderlich do not believe this species belonging to the family Anapidae, and may be a theridiid, but he without reexamined type specimens (Wunderlich, 2004). In 1995, Wunderlich and Song research on the spider of tropical rainforest in Xishuangbanna of Yunnan, described the genus *Sinanapis* and recognized as new taxa of the family Anapidae (Wunderlich & Song, 1994). After entering this contury, Chinese study on Anapidae to gain a certain degree of progress. The Japanese araneologist found and reported the first new genus and species, *Enielkenie acaroides* from Taiwan (Ono *et al.*, 2006). Miller *et al.* investigated the orb-web symphytognathoid spiders in the Gaoligongshan region of Yunnan, and reported another new genus and species of the family Anapidae (Miller *et al.*, 2009). In recent, there are three new anapid taxa that was described from cave of Guangxi, tropical rainforest region of Yunnan and Hainan (Lin & Li, 2012).

Table The valid species of Anapidae recorded in China (2012)

Species	Namer	Year	Locality	Describing	Record
Comaroma maculosa	Oi	1960	Korea, Japan	♂♀	Invalid
Comaroma tongjunca	Zhang & Chen	1994	Zhejiang	♂♀	Valid
Conculus lyugadinus	Komatsu	1940	Chongqing	♂♀	New
Enielkenie acaroides	Ono	2007	Taiwan	♂♀	Valid
Gaiziapis zhizhuba	Miller, Griswold & Yin	2009	Yunnan	♂♀	Valid
Gaiziapis encunensis	Lin & Li	2012	Guangxi	♂♀	Valid
Minanapis menglunensis	Lin & Li	2012	Yunnan	♂♀	Valid
Pseudanapis serica	Brignoli	1981	Hong Kong	Only ♀	Valid
Sinanapis crassitarsa	Wunderlich & Song	1995	Yunnan	Only ♂	Valid
Sinanapis longituba	Lin & Li	2012	Hainan	♂♀	Valid

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This current paper deals with the partial spider specimens that were collected from the region of Chongqing and eastern Sichuan in October, 2010. These materials obviously belong to the family Anapidae spiders after carefully examining and identifying, and were recognized as a new recorded species, *Conculus lyugadinus* Komatsu, 1940 (Komatsu, 1940) is reported from the China for the first time.

Conculus lyugadinus Komatsu, 1940 **(Figs. 1A-N, 2A-E, 3A-C)**

C. lyugadinus Komatsu, 1940: 190, fig. 4, 4a-d; 1961: 23, fig. 13A-E.
C. l. Yaginuma, 1963: 53, fig. k-o; 1971: 125, fig. 102.1-5; 1986: 89, fig. 47.1.
C. l. Namkung, 2002: 143, fig. 15.1a-b; 2003: 145, fig. 15.1a-b.
C. l. Ono, 2009: 402, fig. 22-27.

Examined materials: 6 males and 7 females (SCUM), Xiannv Cave (29.18550°N, 106.91770°E; Alt.: 595 m), Shentong Town, Nanchuan District, Chongqing City, China, 19 October 2010, Y.C. Lin and L. Dou leg.

Diagnosis *Conculus lyugadinus* is similar to *C. grossus* (Forster, 1959), but can be differed from by the four large promarginal teeth on Chelicera (Fig. 1E, L), the presence of anterior median eyes in both sexes (Fig. 1D, K), the slcerotized and non-furcated patellar apophysis on male palp (Fig. 2A, B, E), the presence of a trichobotheria on palpal tibia (Fig. 2C, E), the strongly sclerotized embolus expand beyond palpal bulb (Fig. 2A~D), the two inverted pockets on epigynal plate (Fig. 3A) and the egg-shaped spermathecae (Fig. 3B~C).

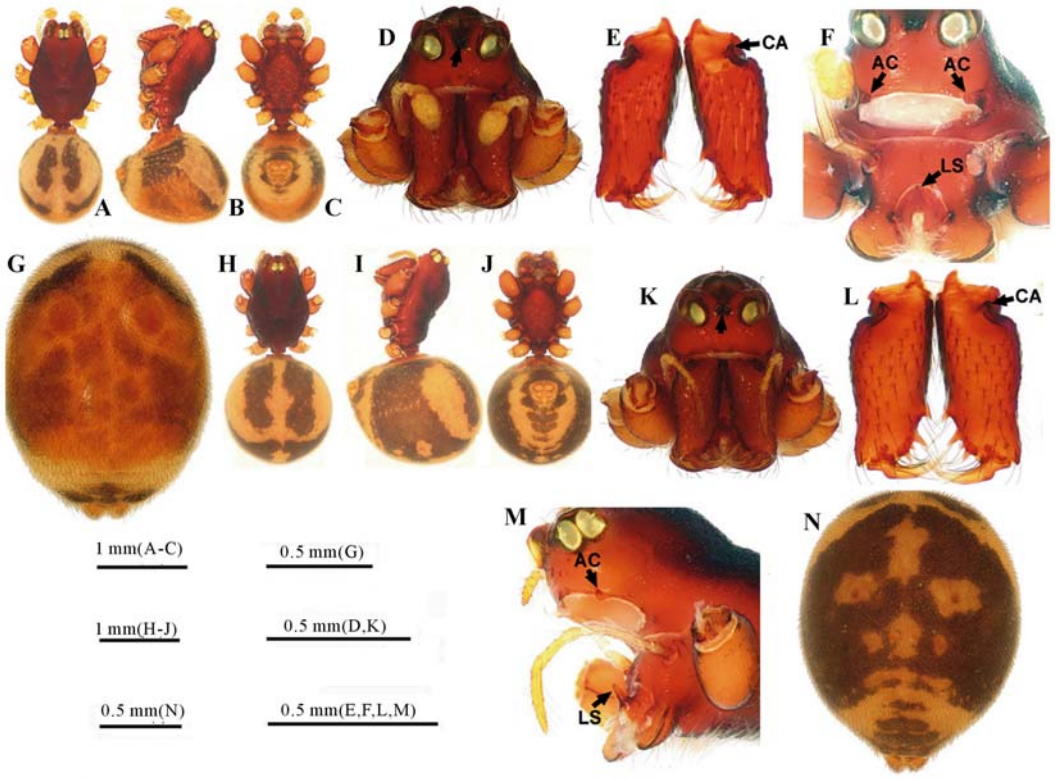

Fig. 1 ***Conculus lyugadinus*** Komatsu, 1940. Male (A~G) and female (H~N). A, H. Body, dorsal view; B, I. Ditto, lateral view; C, J. Ditto, ventral view; D, F and K. Prosoma, anterior view; M. Pars prosoma, lateral view; E, L. Chelicerae, anterior view; G, N. opisthosoma, posterior view
Abbrs: AC=anterolateral corners, CA=cheliceral apophysis, LS=labral spur

Description **Male:** total length 2.27. Prosoma length 1.13, width 0.75, maximal height 0.48. Opisthosoma length 1.09, width 0.93, height 1.27. Dorsal shield of prosoma brown, rhombic, with a pair of anterolateral and posterolateral corners, surface coarse and granular. Ocular area prepositive, eight eyes in two rows, eye base black, ALE＞PLE＞PME＞AME, AME tiny, ARE and PRE slightly recurved, ALE and PLE contiguous. Cephalic pars slightly raised. Clypeus height 0.11, marginally rounded. Chelicerae robust, pale brown, contracted basally, with a small cheliceral horn proximal-prolaterally, with four promarginal teeth and some long plumose setae distally. Endites red-brownish, longer than wide, narrow basally and wide distally, with serrula. Labium trapeziform, fused to sternum. Labral spur sharp and large. Sternum length 0.71, width 0.45, rhombic, red-brownish, modified by irregular pits and grains, strongly sclerotized ruga and fused to carapcae marginally. Legs yellow brown. Femur I slightly swollen. Patellae I-IV with a dorsal spine distally. Tibiae I-II with a spine and three

trichobotheria mesially, two spines and four trichobotheria on tibiae III-IV. Metatarsus I-IV with a trichobotherium respectively. Leg measurements: I 6.95 (2.23, 0.51, 2.07, 1.04, 1.09); II 4.70 (1.48, 0.41, 1.29, 0.82, 0.70); III 2.83 (0.87, 0.29, 0.63, 0.45, 0.61); IV 3.17 (1.04, 0.30, 0.80, 0.42, 0.61). Leg formula: 1-2-4-3. Opisthosoma round dorsally, with a pair of large black stripes mesially. Dorsal scutum rear. Spinnerets yellow, with black annular stripes, the anteriors larger than the posteriors. Anal tubercle large, yellow.

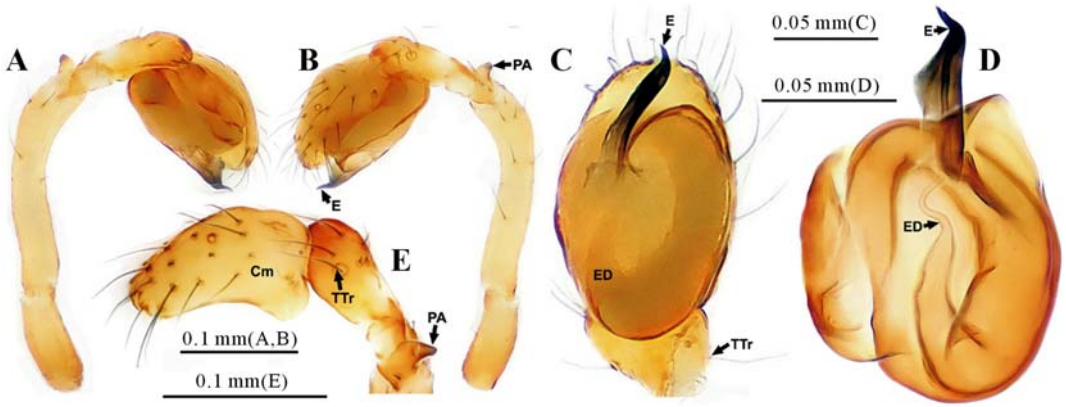

Fig. 2 ***Conculus lyugadinus*** Komatsu, 1940. Male. A~C. Left pedipalp (untreated). D. Pedipalpal bulb (lactic acid-treated). E. Cymbium, tibia and patella of pedipalp. A prolateral view; B and E retrolateral view; C ventral view; D pro-ventral view

Abbrs: Cm = cymbium, E = embolus, ED = ejaculatory duct, PA = patellar apophysis, TTr = tibial trichobothrium

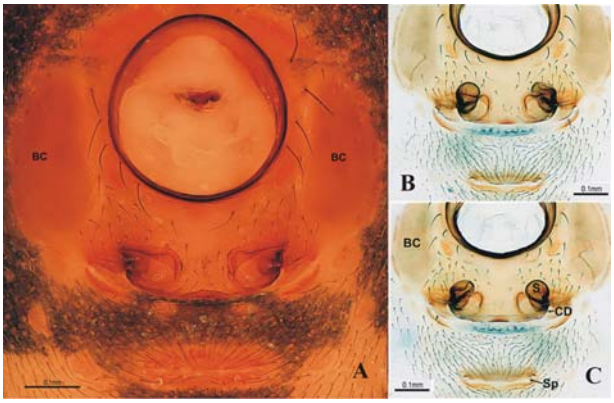

Fig. 3 ***Conculus lyugadinus*** Komatsu, 1940. Female. A~C. Epigynum. A (untreated) and B ventral view; C dorsal view. B and C (KOH-treated)

Abbrs: BC = booklung cover, CD = copulatory ducts, S = spermathecae, Sp = spiracle

Pedipalp small, yellow. Trochanter as long as 1/2 femur. Femur bended submesially. Patella short, with a retrolateral patellar apophysis proximally. Tibia wide distally, with a trichobotherium. Cymbium smooth, covered with long setae. Bulb smooth, slightly sclerotized, ovoid ventrally. Conductor absent. Embolus long, strongly sclerotized, basally wide, distally bended. Ejaculatory duct translucent, basally wide and distally narrow (Fig. 2A~E).

Female: total length 2.63. Body size larger than in male. Prosoma length 1.18, width 0.80, maximal height 0.50, Opisthosoma length 1.38, width 1.34, height 1.71. Clypeus height 0.09. Prosoma, eye arrangement, mouthparts, sternum and legs same as in male. Sternum length 0.77, width 0.49. The chaetotary of legs almost same as in male, but metatarsus I with two cusps, metatarsus IV without trichobotherium. Leg measurements: I 5.34 (1.73, 0.50, 1.48, 0.79, 0.84); II 3.93 (1.23, 0.41, 1.02, 0.59, 0.68); III 2.68 (0.80, 0.30, 0.59, 0.43, 0.55); IV 3.17 (1.02, 0.32, 0.78, 0.48, 0.57). Leg formula: 1-2-4-3. Opisthosoma similar to in male, but dorsal scutum absent and black stripes region broader than in male. Ventral scutum slightly sclerotized. Booklung cover large, long ovoid. Spiracle large and wide, located at between epigynum and spinnerets. Spinnerets and anal tubercle same as in male.

Epigynum covered with sparse setae, with a pair of small triangular inverted pockets. Copulatory opening indistinct. Vulva simple, spermathecae egg-shaped, strongly sclerotized, spaced by about 2 times their width.

Copulatory duct very short (Fig. 3A~C).

Natural history The specimens are found under stones and rocks in dark area or dysphotic zone of cave.

Distribution Korea, Japan and China (Chongqing).

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