

Far Eastern Entomologist

Дальневосточный энтомолог

Journal published by Far East Branch
of the Russian Entomological Society
and Laboratory of Entomology,
Institute of Biology and Soil Science,
Vladivostok

Number 324: 1-12

ISSN 1026-051X

November 2016

<http://urn:lsid:zoobank.org:pub:FD4647AA-563B-4D7B-8C2E-F3019CFF9F26>

A NEW SPECIES AND A NEW RECORD OF *CERAPACHYS* SMITH, 1857 (HYMENOPTERA: FORMICIDAE) FROM CHINA

Zhi-Lin Chen^{1,2)}, Fu-Ming Shi^{1,*}, Shan-Yi Zhou^{2,3,*}

1) College of Life Sciences, Hebei University, Baoding, Hebei, 071002, China.

2) Guangxi Key Laboratory of Rare and Endangered Animal Ecology, Guangxi Normal University, Guilin, 541004, China.

3) College of Life Sciences, Guangxi Normal University, Guilin, 541004, China.

*Corresponding authors E-mails: shif_m@126.com; syzhou@mailbox.gxnu.edu.cn

Cerapachys bispinatus Chen et Zhou, **sp. n.** (Formicidae: Dorylinae, Cerapachyini) is described based on 14 workers and 1 female from Southern China. *C. costatus* Bharti et Wachkoo, 2013 is recorded from China for the first time. A key to Chinese species of *Cerapachys* is provided.

KEY WORDS: Hymenoptera, Formicidae, Dorylinae, ants, *Cerapachys*, new species, key, distribution, fauna, China.

Ж. Л. Чень, Ф. М. Ши, Ш. Ю. Жоу*. Новый вид и новое указание муравьев рода *Cerapachys* Smith, 1857 (Hymenoptera: Formicidae) из Китая // Дальневосточный энтомолог. 2016. N 324. С. 1-12.

Из Южного Китая по 14 рабочим и одной самке описан новый для науки вид *Cerapachys bispinatus* Chen et Zhou, **sp. n.** (Formicidae: Dorylinae, Cerapachyini). Впервые для Китая указан *C. costatus* Bharti et Wachkoo, 2013. Дана определительная таблица китайских видов рода *Cerapachys* по рабочим.

* Корреспондирующий автор, Колледж наук о жизни, Университет Гуанси, Гуйлинь 541004, Китай.

INTRODUCTION

The genus *Cerapachys* was established based on the type species *C. antennatus* by Smith (1857). Brown (1975) made a great contribution to our understanding of this genus. He clarified the concept of *Cerapachys* and recognized 137 species placing in 18 informal groups. *Cerapachys* is one of the most species-rich genus of Dorylinae with a total number of 156 species (Bolton, 2016), which are distributed in all the zoogeographical regions of the World. Using the procedures followed by AntWeb (2016) and AntWiki (2016) we draw the species in zoogeographical regions. The results show that 48 species are recorded in the Australian region, 45 species in the Indo-Australian region, 26 species in the Afrotropical region, 29 species in the Oriental region, 8 species in the Palearctic region and 5 species in the Neotropical region.

In China, this genus is distributed in Southern and Central regions including ten species (Tang & Li, 1982; Tang *et al.*, 1985; Tang *et al.*, 1995; Fellowes, 1996; Xu, 1998; Xu *et al.*, 1999; Kadoorie & Botanic, 2001; Zhou, 2001; Xu, 2002; Huang *et al.*, 2005; Zhou, 2006; Chen, 2008; Borowiec, 2009; Terayama, 2009; Wang & Zhao, 2009; Wu *et al.*, 2009; Guénard & Dunn, 2012), namely *C. biroi* (Forel, 1907), *C. fossulatus* Forel, 1895, *C. guizhouensis* Zhou, 2006, *C. longitarsus* (Mayr, 1879), *C. reticulatus* Emery, 1923, *C. sauteri* Forel, 1913, *C. sexspinus* (Xu, 2000), *C. sulcinodis* Emery, 1889, *C. typhlus* (Roger, 1861), and *C. xizangensis* Tang et Li, 1982. It's worth noting that the genus *Yunodorylus* from Yunnan, China was described with a new species *Yunodorylus sexspinus* by Xu (2000), however, *Yunodorylus* was synonymized with the *Cerapachys* by Bolton (2003). Borowiec (2009) has made a detailed expatiation of the context, and pointed out that the place of "*Cerapachys sexspinus*" is ambiguous. In addition the molecular phylogenies studies has agreed with Borowiec' view (Brady *et al.*, 2006, Moreau *et al.*, 2006). *C. guizhouensis* was described from China by Zhou (2006), but has not been listed in the Catalogue of Ants of the World (Bolton, 2016).

New data on the genus *Cerapachys* are given below including the description of the new species, a key to the workers and a distribution map for known from China species.

MATERIALS AND METHODS

This study is based on the specimens deposited in the Insect Collection of Guangxi Normal University, China. The examination of the specimens was carried out with Leica M205A stereoscope. High-quality multifocused montage images were captured using Leica DFC 450. GPS coordinates were recorded from original collection labels, references and estimation from Google Earth (<http://earth.google.com/>). Map was constructed using the software package ArcGIS version 10.2. All measurements are in millimeters. Standard measurements and indices are mostly defined by Bolton (1975), with addition of ED and MSL, and abbreviated in text as follow: **CI** – Cephalic Index = $HW \times 100 / HL$; **DPI** – Dorsal Petiole Index = $DPW \times 100 / PL$; **DPW** – Dorsal Petiole Width: maximum width of petiole in dorsal view; **ED** – Eye

Diameter: maximum diameter of eye; **HL** – Head Length: straight-line length of head in perfect full-face view, measured from the mid-point of the anterior clypeal margin to the midpoint of the posterior margin. In species where one or both of these margins are concave, the measurement is taken from the mid-point of a transverse line that spans the apices of the projecting portions; **HW** – Head Width: maximum width of head in full-face view, excluding the eyes; **LPI** – Lateral Petiole Index = $PH \times 100 / PL$; **MSL** – Mesosoma Length (= alitrunk length): diagonal length of the mesosoma in lateral view, measured from the point at which the pronotum meets the cervical shield to the posterior basal angle of the metapleuron; **PH** – Petiole Height: height of petiole measured in lateral view from the apex of the ventral (subpetiolar) process vertically to a line intersecting the dorsalmost point of the node; **PL** – Petiole Length: length of petiole measured in lateral view from the anterior process to the posteriormost point of the tergite, where it surrounds the gastral articulation; **PW** – Pronotal Width: maximum width of pronotum measured in dorsal view; **SI** – Scape Index = $SL \times 100 / HW$; **SL** – Scape Length: straight-line length of the antennal scape, excluding the basal constriction or neck; **TL** – Total Length: total outstretched length of the individual, from the mandibular apex to the gastral apex.

TAXANOMY

Family Formicidae
Subfamily Dorylinae
Tribe Cerapachyini

***Cerapachys bispinatus* Chen et Zhou, sp. n.**

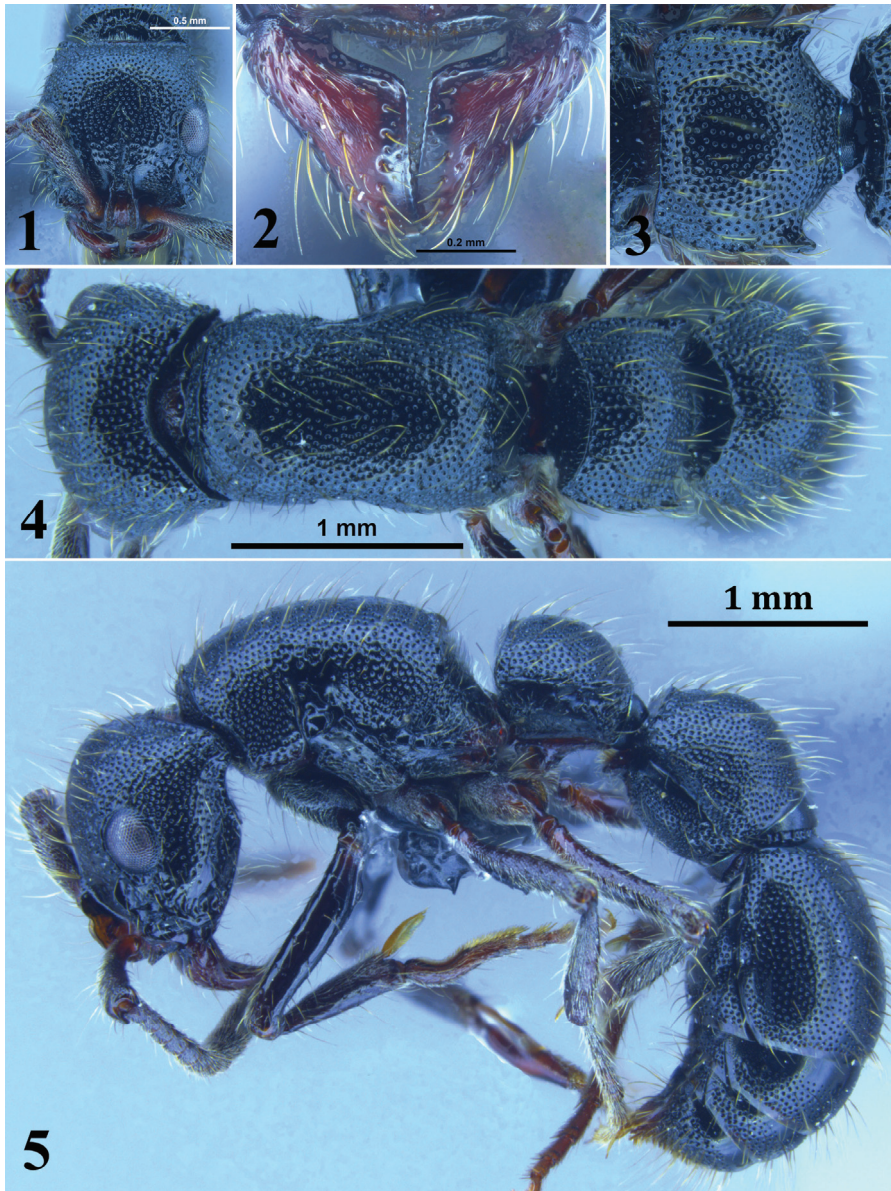
Figs 1–10

TYPE MATERIAL. Holotype – worker, **China**: Guangxi, Port of Fangcheng, Shiwandashan, 21°48'N, 107°14'E, 450 m, 24.VI 2015, coll. Zhilin Chen, No. G150177. Paratypes: 12 workers and 1 queen, the data same as holotype. [The type specimens are deposited in the Insect Collection, Guangxi Normal University, Guilin, China (GXNU); one paratype worker will be deposited in the Insect Collection, Southwest Forestry University, Kunming, Yunnan, China (SWFU)].

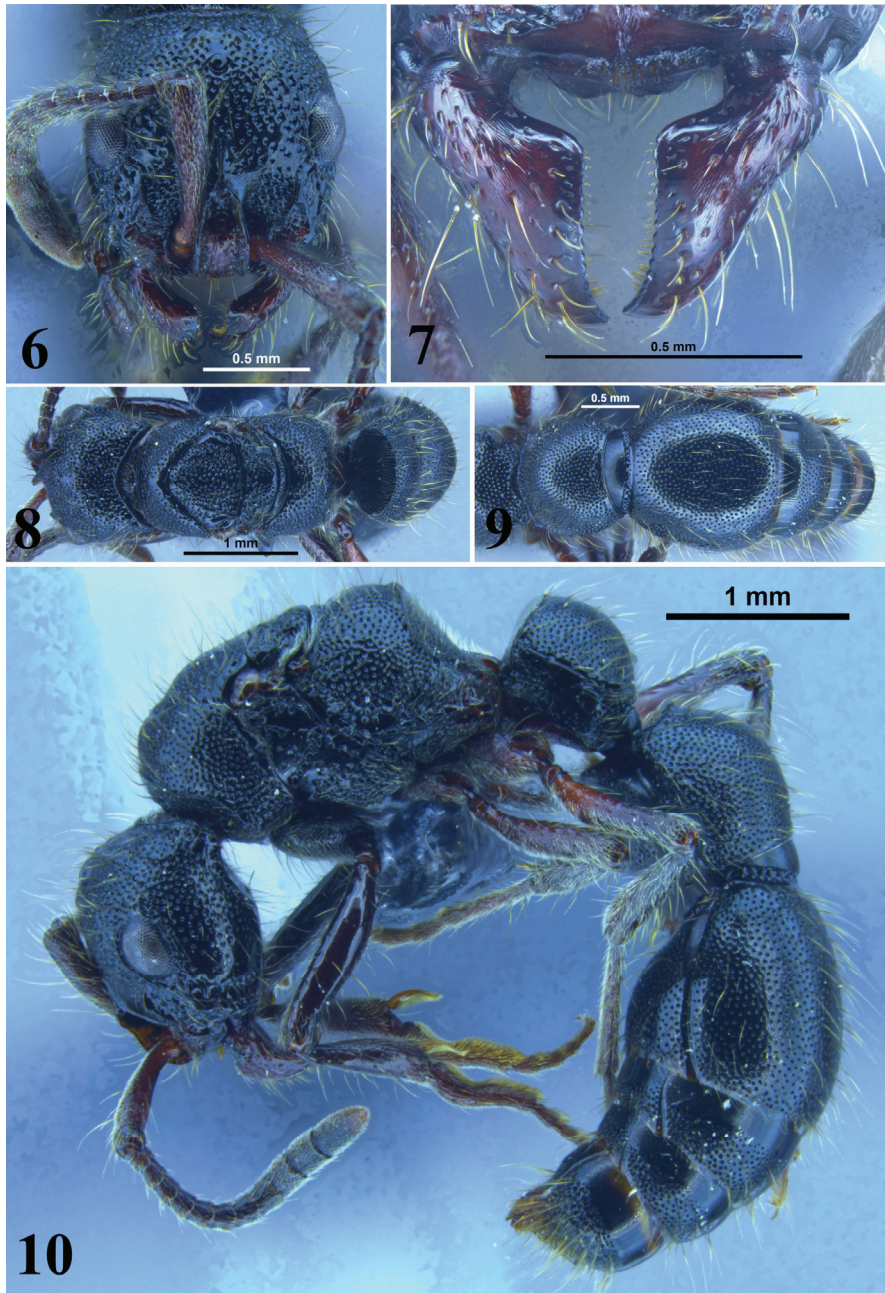
DESCRIPTION. **Holotype worker** (Figs. 1–5). TL 6.09, HL 1.21, HW 1.10, CI 91, SL 0.79, SI 75, ED 0.31, PW 0.85, MSL 1.54, PL 0.71, PH 0.78, DPW 0.85, LPI 109, DPI 120.

Paratype workers. TL 6.01–6.21, HL 1.20–1.25, HW 1.02–1.13, CI 88–94, SL 0.76–0.82, SI 73–78, ED 0.31–0.32, PW 0.83–0.87, MSL 1.52–1.57, PL 0.71–0.73, PH 0.75–0.79, DPW 0.83–0.88, LPI 103–111, DPI 117–123. (n = 12).

Paratype queen (Figs. 6–10). TL 6.09, HL 1.21, HW 1.05, CI 97, SL 0.84, SI 70, ED 0.39, PW 1.11, MSL 1.91, PL 0.80, PH 0.81, DPW 0.94, LPI 101, DPI 175.



Figs. 1–5. *Cerapachys bispinatus* sp. n., holotype worker (No. G150177). 1 – head in full-face view; 2 – mandible and clypeus in full-face view; 3 – petiole in dorsal view; 4 – body in dorsal view; 5 – body in lateral view.



Figs. 6–10. *Cerapachys bispinatus* sp. n., paratype queen (No. G150177). 6 – head in full-face view; 7 – mandible and clypeus in full-face view; 8 – body in dorsal view; 9 – gaster in dorsal view; 10 – body in lateral view.

In full-face view head sub-rectangular, slightly longer than broad (CI 91), posterior margin straight, posterior corners angular, lateral margin distinctly convex, posterior ridge prominent. Mandible elongated triangular, masticatory margin dentate. Clypeus more or less flat between the elevated frontal lobes; frontal carinae very short, constricted behind the frontal lobes; anterior clypeal margin with convex to bluntly pointed median lobe. Scape short, antenna 12-jointed, reaching posterior margin of eyes. Eyes large, situated at the middle of lateral margins of head.

In lateral view occiput lamella of head forming blunt point. Coarse, broad and deep scrobes extend from the base of mandible to the anterior margin of the eye. Dorsum of mesosoma moderately convex. Promesonotal suture reaching up to 3/5 of dorsal margin of mesosoma. Declivity of propodeum with distinct cariniform margins; propodeal declivity weakly concave. Petiole roughly trapezoidal, anterior surface sinuate, dorsal surface and posterior surfaces convex, anterodorsal corner angular. Subpetiolar process prominent, broad triangular, fenestra present. Sting extruding.

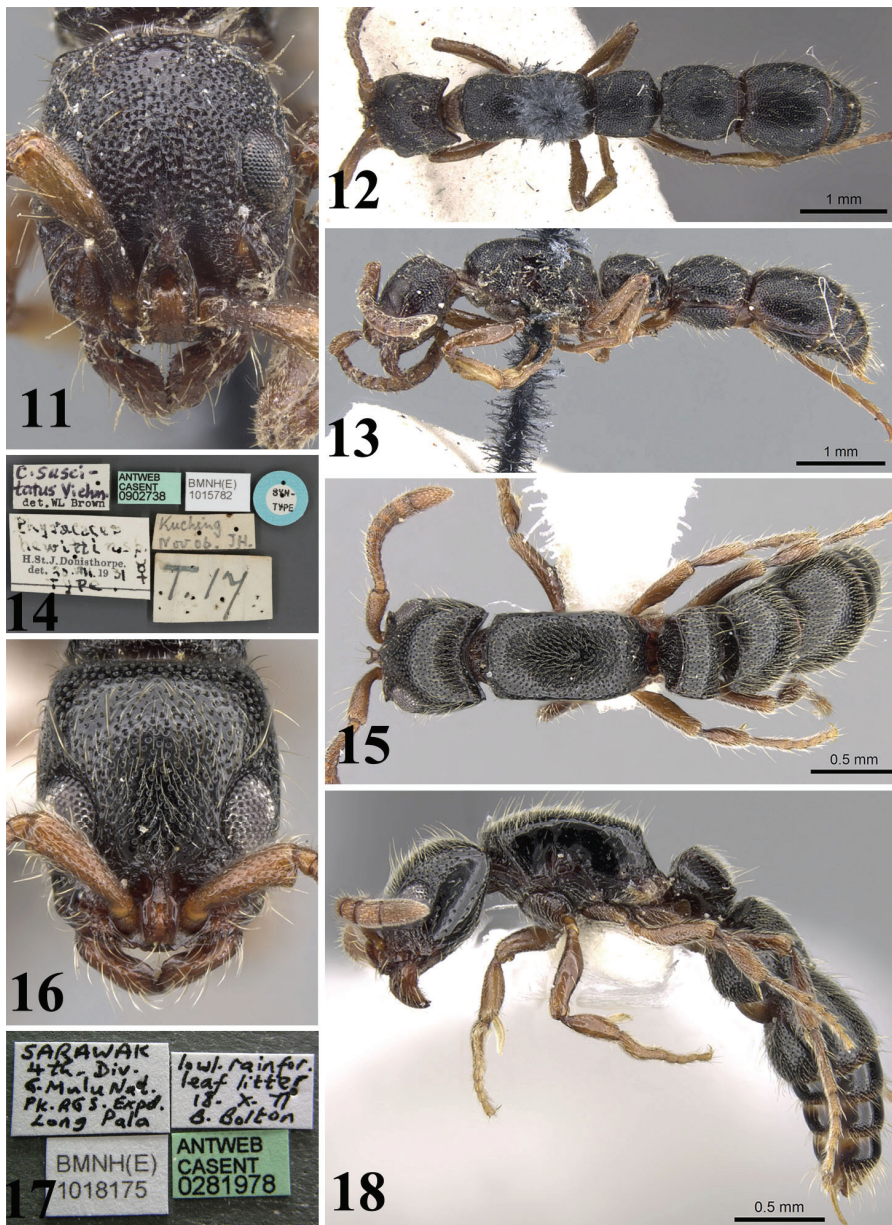
In dorsal view mesosoma constricted at mesothorax, distinctly widened posteriorly, anterior margin with ridge. Promesonotal suture and metanotal groove absent. Petiole distinctly broader than long, with overhanging dorsolateral margins, anterior margin concave, lateral margins almost subparallel, posterior margin continues, backward descends into a trapezoid, posterolateral corners of petiole projected into short blunt spines.

Almost whole body densely foveate; mandibles finely rugulose with scattered piligerous punctures; gena irregularly coarsely rugulose and suture finely rugulose; mesopleuron and lateral surfaces of petiole smooth and shiny; petiole transversely finely rugose. Anterior margin of clypeus with seven macrosetae, masticatory margin with a row macrosetae. Head, mesosoma, petiolar node and gaster with abundant suberect hairs; mesopedes and metapedes with abundant decumbent pubescence. Scape and tibiae with sparse sub-erect hairs and dense decumbent pubescence. Body black; mandible and clypeus dark brown; antenna and legs reddish-brown.

With similar morphological characters as worker, but relatively larger, three ocelli on vertex (two lateral and one median) distinct. Scape short, antenna 12-jointed, reaching the posterior margin of median ocellus. In lateral view oblique mesopleural furrow, promesonotal suture and metanotal groove distinct. In dorsal view lateral margins of mesosoma parallel; notaulus and scutoscutellar suture obvious; metanotum crescent-shaped.

ETYMOLOGY. The species is named after its character of posterolateral corners of petiole forming a pair of short blunt spines.

COMPARISON. The worker of new species may be confused with *C. suscitatus* (Figs. 11–14), but in full-face view head is sub-rectangular, almost equally as long as broad (CI 91) in *C. bispinatus* sp. n. while in *C. suscitatus* head is rectangular, distinct longer than broad (CI 81); in dorsal view petiole, is distinctly broader than long, posterior margin continuous, with trapezoid posterior face of petiole, posterolateral margins of petiole forming a pair of short distinct blunt spines in *C. bispinatus* sp. n., while petiole is rectangular, distinctly longer than broad, posterior margin demarcated, posterolateral margins of petiole without denticles or spines in *C. suscitatus*.



Figs. 11–18. *Cerapachys*. 11–14 – *C. suscitatus*, syntype worker (from www.AntWeb.org, CASENT09002738, specimen's photos by Will Ericson, label's photo by Alexandra Westrich); 15–18 – *C. hewitti*, non-type worker (from www.AntWeb.org, CASENT0281978, specimen's photos by Shannon Hartman, label's photo by Michele Esposito). 11, 16 – head in full-face view; 12, 15 – body in dorsal view; 13, 18 – body in lateral view; 14, 17 – labels.

The worker of *C. bispinatus* sp. n. is also similar to *C. hewitti* (Wheeler, 1919) (Figs. 15–18), but can be easily distinguished from the later by lateral surfaces of head and mesosoma with dense scattered fovea, while in *C. suscitatus* lateral surfaces of head and mesosoma are smooth and shiny with widely spaced piligerous fovea.

***Cerapachys costatus* Bharti et Wachkoo, 2013**

Figs 19–21

Cerapachys costatus Bharti & Wachkoo, 2013: 1191, figs 4-6 (w.). Type locality: India.

MATERIAL. China: Guangxi, Nonggang Natural Reserve, 22°28'N, 106°57'E, 320 m, 24.VI 2013, 3 workers, coll. Liwei Liang, No. G130254.

COMPARISON. This species shares characters with *C. crawleyi* and *C. sauteri*. *C. costatus* can be easily distinguished from *C. sauteri* by the rectangular head and



Figs. 19–21. *C. costatus*, worker (No. G130254). 19 – head in full-face view; 20 – body in dorsal view; 21 – body in lateral view.

postpetiole with longitudinal costate-sulcate sculpture, while in *C. sauteri* head is sub-triangular and postpetiole transversely costate-sulcate. *C. costatus* also is similar to *C. crawleyi*, but is easily separated from the later by longitudinal costate-sulcate of mesosoma, while the later sculpture is transverse costate-sulcate on mesosoma.

NOTES. Here this species is recorded from China for the first time.

Key to species of *Cerapachys* from China based on the worker caste

NOTES. *Cerapachys reticulatus* Emery is excluded from the key, because the worker caste is not well-known. *C. xizangensis* Tang et Li is most likely a synonym of *C. sulcinodis* Emery based on the details provided in the original description. Unfortunately, we could not examine the type material of *C. xizangensis* to confirm the synonymy. The distribution of the species of *Cerapachys* in China is shown on Fig. 22.

- 1 Antenna 9 segmented 2
- Antenna 11 or 12 segmented 3
- 2 Posterior margin of head broadly concave; body with closely spaced piligerous puncture; postpetiole more than half as long as the succeeding gastric segment *C. typhlus* (Roger)
- Posterior margin of head straight; body predominantly foveate; postpetiole less than half as long as the succeeding gastric segment *C. biroi* Forel
- 3 Antenna 11 segmented 4
- Antenna 12 segmented 5
- 4 Eyes absent *C. guizhouensis* Zhou
- Eyes distinct and prominent *C. fossulatus* Forel
- 5 Mesosoma costate-sulcate 6
- Mesosoma never costate-sulcate 7
- 6 Head rectangular; postpetiole with longitudinal costate-sulcate sculpturing *C. costatus* Bharti et Wachkoo
- Head sub-triangular; postpetiole with transversely costate-sulcate *C. sauteri* Forel
- 7 Petiole with longitudinal sculpture 8
- Petiole smooth, punctate or foveate, but never with longitudinal sculpture 9
- 8 Anterior face of petiole shallowly concave *C. xizangensis* Tang et Li
- Anterior face of petiole straight *C. sulcinodis* Emery
- 9 Eyes absent; petiole without overhanging dorsolateral margins *C. sexspinus* (Xu)
- Eyes distinct and prominent; petiole with overhanging dorsolateral margins 10
- 10 Body shiny, with widely scattered and indistinct punctures; postero-lateral margins of petiole with short bluntspines *C. bispinatus* Chen et Zhou, sp. n.
- Body dense foveate; post-lateral margins of petiole without a pair of denticles or spines *C. longitarsus* (Mayr)

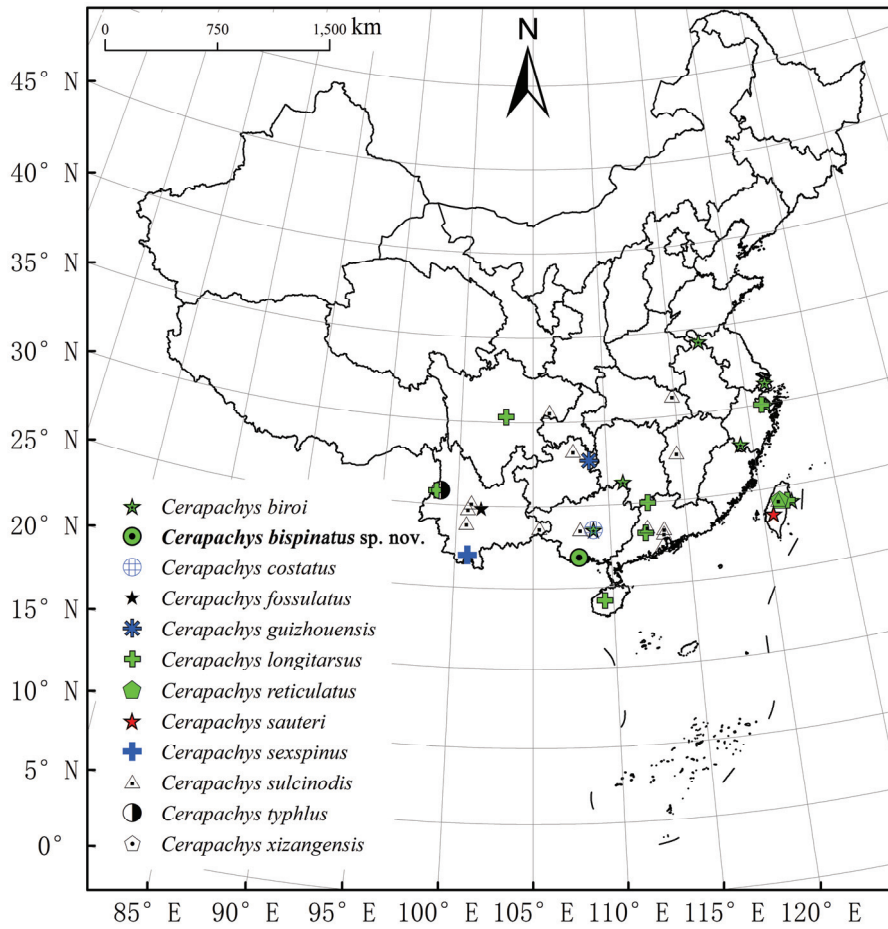


Fig. 22. Distribution map of the species of *Cerapachys* in China.

ACKNOWLEDGMENTS

This study was supported by the National Natural Science Foundation of China (Project No. 31372248) and the Ministry of Science and Technology of China (No. 2015FY210300). We would like to express our heartfelt gratitude to Aijaz A. Wachkoo (Department of Zoology and Environmental Sciences, Punjabi University, Patiala, 147002 India) for his valuable comments on and corrections to the manuscript. We thank Liwei Liang (Guangxi Normal University, China) for collecting the specimens of *C. costatus*. Sincere thanks to California Academy of Sciences (San Francisco) for their permission to use images from the www.antweb.org.

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