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Research article

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Taxonomic account of the ant genus *Syscia* Roger, 1816 (Hymenoptera, Formicidae) from Asia, with descriptions of two new species from China

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Abstract. The ant genus *Syscia* Roger, 1861 is a cryptobiotic group of the subfamily Dorylinae. In this study, eight species of this genus from Asia are recognized, including two new species, *Syscia arcodorsa* sp. nov. and *S. zhoui* sp. nov., both described from Guangxi in China. In addition, *Cerapachys guizhouensis* Zhou, 2006 is redescribed and transferred to *Syscia* as *S. guizhouensis* (Zhou, 2006) comb. nov. The species *Syscia typhla* Roger, 1861 is removed from the ant fauna of China. Lastly, a key to species of *Syscia* from Asia based on the worker caste is presented.

Keywords. Dorylinae, redescription, *Syscia arcodorsa* sp. nov., *Syscia zhoui* sp. nov., *Cerapachys guizhouensis* Zhou, 2006.

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Introduction

The ant genus *Syscia* Roger, 1861 (Hymenoptera, Formicidae, Dorylinae) was first proposed by Roger (1861) in a paper on ‘Ponera-like ants’ based on the type species *Syscia typhla* Roger, 1861, and was regarded as a member of the tribe “Cerapachysii”. Since then, the taxonomic status of this genus has changed many times by different myrmecologists, e.g., considered as a valid genus (Forel 1900; Dalla Torre 1903; Bingham 1903), as a subgenus of *Cerapachys* Smith, 1857 (Wheeler 1902, 1910, 1922; Emery 1902, 1911; Forel 1917; Donisthorpe 1943) or a junior synonym of *Cerapachys* (Kempf 1972; Brown 1975). More recently, Brady *et al.* (2014) found *Cerapachys* to be non-monophyletic. Additionally, according to phylogenetic inference based on molecular data for the major dorylomorph lineages, they found that Neotropical and Indomalayan species of *Syscia* together formed a clade distinct from other genera. Later, Borowiec (2016) systematically revised the generic classification of the subfamily Dorylinae Leach, 1815 based on molecular phylogenetic evidence and a critical reappraisal of doryline morphology. The result of their analysis divided the former *Cerapachys* into 9 different monophyletic genera and recognized *Syscia* as a valid genus again. Meanwhile, they comprehensively described the specific characteristics of different types of *Syscia*, and diagnosed their unique autapomorphic characteristics: basal segment of hind tarsus widening distally with a light patch of cuticle on the inner (flexor) side, and abdominal tergite IV anteriorly folding over sternite. That outstanding work provided a solid foundation for the subsequent classification of the genus *Syscia*.

Syscia is the only doryline genus with a disjunct distribution between the Old and New World. Members of this genus are usually found in leaf litter, rotting wood and soil cores, and are thus considered part of the cryptobiotic fauna (Borowiec 2016; Jaitrong *et al.* 2020; Longino & Branstetter 2021). Previously, only five species had been described worldwide (Borowiec 2016). Therefore, as Borowiec (2016) pointed out at the time, there might be more morphospecies presented in collections from the Old World and additional undescribed species in the New World. Since then, Jaitrong *et al.* (2020) described two new species from Thailand and Aswaj *et al.* (2021) described and illustrated one new species from India. Longino and Branstetter (2021) integrated ultra-conserved element (UCE) phylogenomics with traditional taxonomy to reveal and name 31 new species of *Syscia* in Central and South America, resulting in an increase in the number of known species of *Syscia* in the New World from 3 to 34. By contrast, the known species of *Syscia* in the Old World are still few, with only 5 recorded (Antweb 2022). Except for *Syscia typhla*, which is widespread, the remaining species of *Syscia* are generally native to their type-localities or surrounding country, e.g., *S. chaladthanyakiji* Jaitrong, Wiwatwitaya & Yamane, 2020 and *S. reticularis* Jaitrong Wiwatwitaya & Yamane, 2020 in Thailand, *S. humicola* Ogata, 1983 in Korea and Japan, and *S. indica* Aswaj, Sahanashree, Udayakantha, Aniruddha & Priyadarsanan, 2021 in India. The type-locality of *Syscia typhla* is Sri Lanka, and this species also was recorded in northern India (Ghosh *et al.* 2007), southern China (Xu 1998; Xu *et al.* 1999; Gu *et al.* 2019), and Japan (Sonobe 1973; Abe 1974). However, a detailed examination of relevant specimens of Xu (1998) and Xu *et al.* (1999), revealed that the specimens of *Ooceraea biroi* (Forel 1907) were misidentified as *S. typhla*. And the new species *S. zhoui* sp. nov. was misidentified as *S. typhla* by Gu *et al.* (2019). Therefore, there is currently no distribution of the *Syscia* in the ant fauna of China. Given the complexity and heterogeneity of the geography and climate in China, there are likely to be additional cryptic and undescribed species of *Syscia* to be discovered there.

In this paper, two new species are described, i.e., *Syscia arcodorsa* sp. nov. and *S. zhoui* sp. nov. *Cerapachys guizhouensis* Zhou, 2006 was combined in *Ooceraea* Roger, 1862 by Bharti *et al.* (2021). Here, we redescribe this species and revise it as a member of *Syscia*, *S. guizhouensis* (Zhou, 2006) comb. nov. A key to Asian species of *Syscia* based on the worker caste is provided.

Material and methods

The specimens of *Syscia arcodorsa* sp. nov. and *S. zhoui* sp. nov. were collected during field trips to Huaping village in the Huaping National Nature Reserve in Guilin City, and Pairu village in the Chongzuo White-Headed Langur National Reserve in Guangxi, China, by hand alive (Fig. 1), and later preserved in a vial containing absolute ethyl alcohol. Then the specimens were pin-mounted and examined with a Leica M205A stereo microscope. High-quality multifocused montage images were produced with the KEYENCE (VHX–6000) digital imaging system.

The examined specimens are deposited in the repositories with acronyms as follows: (1) GXNU (Insect Collection, Guangxi Normal University, Guilin, Guangxi, China); (2) SWFU (Insect Collection, Southwest Forestry University, Kunming, Yunnan Province, China); (3) IZCAS (Institute of Zoology, Chinese Academy of Sciences, Beijing, China). The type specimen images of *Syscia chaldathanyakiji*, *S. reticularis*, and *S. typhla* available on the AntWeb (<http://www.antweb.org>) were examined and compared. The general terminology of the *Syscia* worker ants follows Borowiec (2016) and Jaitrong *et al.* (2020). All measurements are given in millimeters.



Fig. 1. The sampled sites of *Syscia guizhouensis* comb. nov., *Syscia arcodorsa* sp. nov. and *Syscia zhoui* sp. nov. in China (Source: Esri, Maxar, GeoEye, Earthstar geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community).

Abbreviations for measurements and indices

BL	=	body length, the total body outstretched length of the individual in lateral view, from the mandibular apex to the gastral apex, calculated by summing lengths of head, mesosoma, petiole, and gaster
CI	=	cephalic index, $HW \times 100 / HL$
HL	=	head length, the maximum length of the head in full-face view, measured from a transverse line spanning the anteriormost points of the clypeus to that of posteriormost points of the cranium
HW	=	head width, the maximum width of the cranium in full-face view (excluding eyes)
ML	=	mesosomal length, maximum diagonal length of mesosoma in lateral view, measured from posterodorsal border of the pronotal flange to posterior basal angle of metapleuron
MW	=	mesosomal width, maximum width of promesonotum in dorsal view
SI	=	scape index, $SL \times 100 / HW$
SL	=	scape length, the maximum length of antennal scape excluding basal condylar bulb
PH	=	petiolar height, the maximum height of petiole in lateral view (including subpetiolar process)
PI1	=	petiolar index 1, $PL / PH \times 100$
PI2	=	petiolar index 2, $PW / PL \times 100$
PL	=	petiolar length, the maximum length of petiole in lateral view (excluding helium)
PPH	=	postpetiole height, maximum height in lateral view
PPI1	=	postpetiole index 1, $PPL / PPH \times 100$
PPI2	=	postpetiole index 2, $PPW / PPL \times 100$
PPL	=	postpetiole length, maximum length in dorsal view
PPW	=	postpetiole width, maximum width in dorsal view
PW	=	petiolar width, maximum width of petiole in dorsal view
WI	=	waist index, $PPW / PW \times 100$

Institutional abbreviations

GXNU = Insect Collection, Guangxi Normal University, Guilin, Guangxi, China

IZCAS = Institute of Zoology, Chinese Academy of Sciences, Beijing, China

SWFU = Insect Collection, Southwest Forestry University, Kunming, Yunnan Province, China

Results

Taxonomy

Class Insecta Linnaeus, 1758
Order Hymenoptera Linnaeus, 1758
Family Formicidae Latreille, 1809
Subfamily Dorylinae Leach, 1815

Genus *Syscia* Roger, 1861

Key to Asian species of *Syscia* Roger, 1861 based on the worker caste

1. Antennae with 9 segments (Figs 9A, 10D) 2
- Antennae with 11 segments (Figs 2C, 3A, 4D, 5A, 7A) 3

2. Mesosoma rather elongate, long-ellipsoidal, with lateral sides and anterior margin obviously convex in dorsal view (Fig. 9C); both anterior margin and posterior margin of petiole convex in lateral view (Fig. 9D); posteroventral corner of subpetiolar process blunt rounded in lateral view (Fig. 9D); postpetiole in dorsal view longer than wide (Fig. 9C) *S. typhla* Roger, 1861
 – Mesosoma rather robust, subrectangular with almost parallel lateral sides, and anterior margin slightly convex in dorsal view (Fig. 10C); both anterior margin and posterior margin of petiole straight in lateral view (Fig. 10D); posteroventral corner of subpetiolar process acute angled in lateral view (Fig. 10D); postpetiole in dorsal view wider than long (Fig. 10B) *S. zhoui* sp. nov.
3. Head in full-face view oval (Figs 2A, 8B) 4
 – Head in full-face view rectangular or trapezoidal (Figs 3B, 4A, 5A, 6A, 7A, 8B) 5
4. Body entire reticulate, with deep bottoms (Fig. 8)
 *S. reticularis* reticularis Jaitrong Wiwatwitaya & Yamane, 2020
 – Body covered with punctures or shallow fovea (Fig. 2) *S. arcodorsa* sp. nov.
5. Petiole in dorsal view broader than long (Fig. 3C); in lateral view the front and the back margins of the petiole vertical (Fig. 3A) *S. chaladthanyakiji* Jaitrong, Wiwatwitaya & Yamane, 2020
 – Petiole in dorsal view longer than broad or as long as broad (Figs 4C, 5B, 6B, 7B); in lateral view the front and the back margins of petiole steep or sloped (Figs 4D, 5D, 6C, 7C) 7
6. Subpetiolar process in lateral view subtriangular (Fig. 4C); anterior margin of petiole slightly convex (Fig. 4D) *S. humicola* (Ogata, 1983)
 – Subpetiolar process in lateral view subrectangular (Figs 5D, 6C, 6B, 7C); anterior margin of petiole slightly concave 7
7. Propodeal declivity straight or slightly convex in lateral view (Figs 6–7)
 *S. guizhouensis* comb. nov.
 – Propodeal declivity slightly concave in lateral view (Fig. 5)
 *S. indica* Aswaj, Sahanashree, Udayakantha, Aniruddha & Priyadarsanan, 2021

Syscia arcodorsa sp. nov.

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Fig. 2, Table 1

Diagnosis

Body color brown with antennae and legs yellowish brown. Head in full-face view oval, distinctly longer than broad; antennae 11-segmented. Mesosoma in dorsal view subrectangular; in lateral view, dorsal outline distinctly convex. Petiole in dorsal view subrectangular, slightly longer than broad; in lateral view, petiolar node (excluding sternite) trapezoidal, slightly longer than high; subpetiolar process in lateral view subtriangle. Postpetiole in lateral view slightly higher than long, sternite anteroventrally produced as a blunt angle directed downward and forward.

Etymology

The specific epithet refers to the dorsal outline of the arched mesosoma in lateral view.

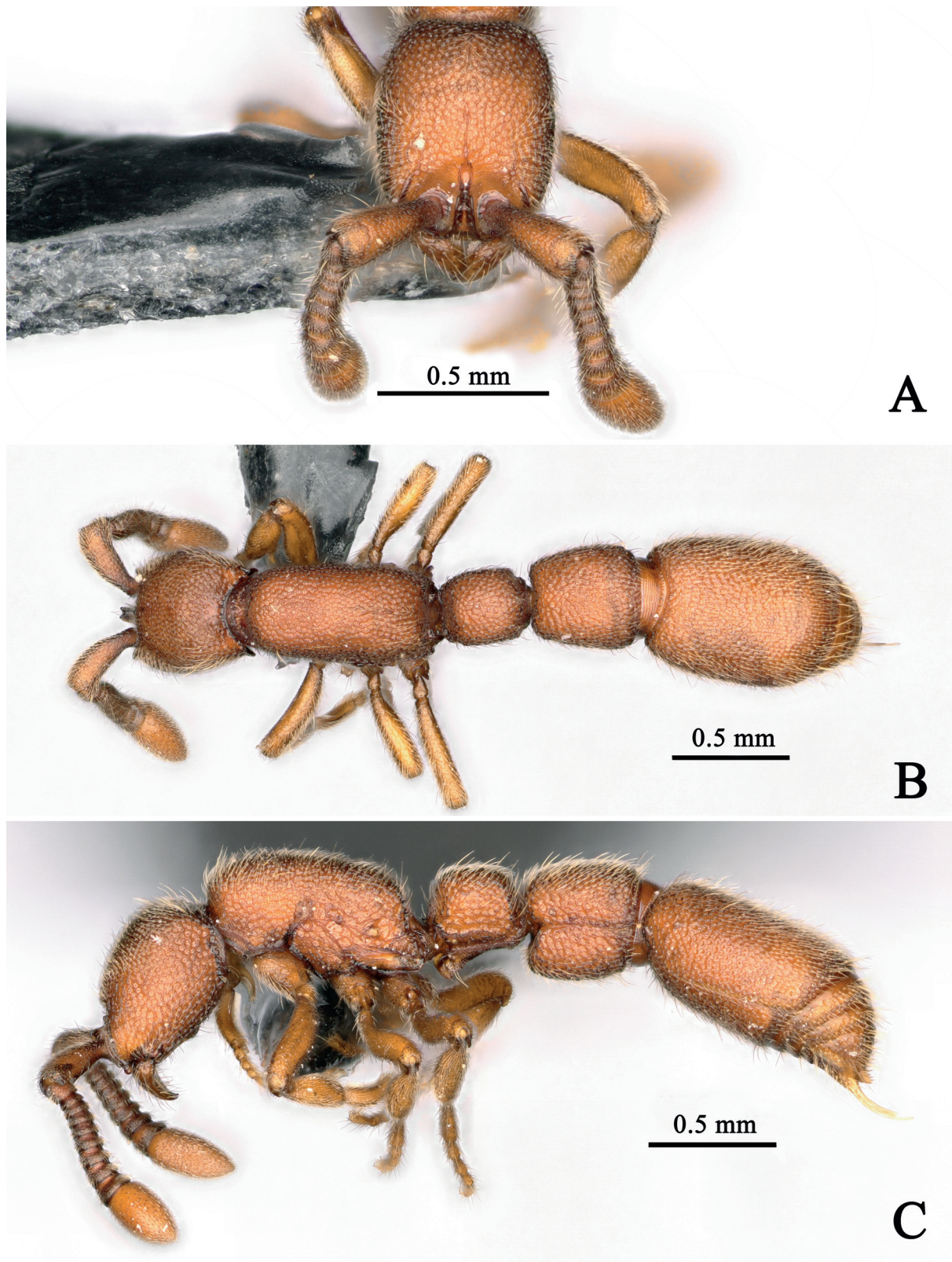


Fig. 2. *Syscia arcodorsa* sp. nov., holotype, worker (GXNU210848). A. Head in full-face view. B. Body in dorsal view. C. Body in lateral view (imaged by Zhilin Chen).

Type material

Holotype (worker)

CHINA • Guangxi, Guilin City, Longshen Town, Huaping Village in the Huaping National Nature Reserve; 25.626944° N, 109.183333° E; 503.50 m a.s.l.; 22 Jul. 2021; Zhilin Chen leg.; No. GXNU210848; GXNU: GXNU210848.

Paratypes (workers)

CHINA • 1 worker; same collection data as for holotype; GXNU: GXNU210848-1 • 1 worker; same collection data as for holotype; SWFU: GXNU210848-2 • 1 worker; same collection data as for holotype; IZCAS: GXNU210848-3.

Description

MEASUREMENTS AND INDICES. Holotype worker: BL 3.70, HL 0.63, HW 0.44, CI 70, SL 0.40, SI 91, MW 0.30, ML 0.70, PL 0.32, PH 0.30, PW 0.30, PI1 107, PI2 94, PPL 0.48, PPH 0.55, PPW 0.46, PPI1 86, PPI2 96, WI 152. Paratype workers: BL 3.61–3.73, HL 0.62–0.69, HW 0.43–0.49, CI 69–71, SL 0.36–0.43, SI 80–100, MW 0.33–0.35, ML 0.75–0.83, PL 0.27–0.33, PH 0.25–0.33, PW 0.25–0.33, PI1 100–108, PI2 96–100, PPL 0.44–0.45, PPH 0.42–0.45, PPW 0.40–0.50, PPI1 97–108, PPI2 89–100.00, WI 133–175 (n = 3) (individual measurements see Table 1).

Worker

HEAD. Antennae with 11 segments; apical antennal segment (XI) conspicuously enlarged, much broader than and longer than two preceding segments (IX–X) combined; scape short, not reaching mid-length of head when folded back (Fig. 2A). Head in full-face view oval, distinctly longer than broad, lateral margins convex, middle part of posterior margin slightly concave, with posterolateral corners rounded obviously (Fig. 2A). Frontal carinae short and narrow, not reaching to middle of head, with anterior half sharply elevated and posterior half low and vestigial in profile. Clypeus short, anterior margin almost straight. Eyes and ocelli completely absent (Fig. 2A). Mandibles triangular; masticatory margin serrated, without distinct teeth.

MESOSOMA. In dorsal view, rather robust, subrectangular, with lateral margins slightly convex, anterior margin convex, and posterior margin slightly concave (Fig. 2B); in lateral view, dorsal outline strongly convex; promesonotal suture and metanotal groove absent; mesopleuron demarcated from pronotum by distinct suture, but not demarcated from mesonotum and metapleuron; mesopleuron also not differentiated from metapleuron (Fig. 2C). Propodeal declivity feebly convex, encircled with distinct thin rim (Fig. 2C).

METASOMA. In dorsal view, petiole subrectangular, slightly longer than broad, lateral margins slightly convex (Fig. 2B); in lateral view, petiolar node (excluding sternite) trapezoidal with slightly convex dorsal outline, slightly longer than high, with bilateral edge sloped slightly (Fig. 2C). Subpetiolar process in lateral view subtriangle, with ventral outline concave (Fig. 2C). Postpetiole in dorsal view clearly larger than petiole, subtrapezoid, anterior margin slightly concave and shorter than posterior margin, lateral margins apparently convex (Fig. 2B); in lateral view, postpetiole slightly higher than long; dorsal outline slightly convex; postpetiolar sternite in lateral view low, with ventral margin slightly convex, anteroventrally produced as blunt angle directed downward and forward (Fig. 2C). Abdominal tergite IV (second gastral tergite) in dorsal view elongate, subrectangular with lateral margins convex, anterior margin obviously concave, and lateral margins slightly convex (Fig. 2B).

SCULPTURE. Entire body with numerous, relatively small, closely-spaced foveolae (Fig. 2). Antennal scape, outer surface of mandibles, and legs with fine dense micropunctures (Fig. 2A–C).

Table 1. The morphometric data of *Syscia arcodorsa* sp. nov., *S. zhoui* sp. nov. and *S. guizhouensis* comb. nov.

ABBV	<i>Syscia arcodorsa</i> sp. nov.				<i>Syscia zhoui</i> sp. nov.				<i>Syscia guizhouensis</i> comb. nov.			
	holotype	paratypes			holotype	paratypes			holotype	paratypes		
BL	3.70	3.61	3.73	3.75	3.55	3.98	3.75	3.80	3.20	3.10	3.25	3.20
HL	0.63	0.65	0.62	0.69	0.65	0.69	0.65	0.62	0.60	0.61	0.625	0.60
HW	0.44	0.45	0.43	0.49	0.53	0.56	0.55	0.50	0.45	0.43	0.45	0.43
CI	70	69	68	71	82	81	85	77	75	70	72	71
SL	0.40	0.36	0.43	0.43	0.42	0.43	0.43	0.43	0.31	0.30	0.33	0.32
SI	91	80	100	89	79	76	78	85	69	69	72	75
MW	0.30	0.33	0.35	0.33	0.38	0.31	0.39	0.38	0.33	0.35	0.33	0.34
ML	0.7	0.75	0.83	0.79	0.60	0.65	0.72	0.80	0.85	0.81	0.84	0.83
PL	0.32	0.27	0.33	0.30	0.30	0.30	0.30	0.33	0.35	0.33	0.325	0.34
PH	0.30	0.25	0.33	0.29	0.30	0.30	0.25	0.30	0.32	0.325	0.32	0.33
PW	0.30	0.25	0.33	0.30	0.30	0.35	0.25	0.33	0.27	0.26	0.28	0.26
PI1	107	108	100	105	100	100	120	110	107	102	102	105
PI2	94	96	100	100	100	117	83	98	77	79	85	75
PPL	0.48	0.44	0.45	0.45	0.44	0.48	0.45	0.49	0.41	0.40	0.42	0.43
PPH	0.55	0.45	0.42	0.45	0.45	0.48	0.43	0.44	0.45	0.42	0.43	0.43
PPW	0.46	0.44	0.50	0.40	0.40	0.43	0.42	0.45	0.42	0.4	0.43	0.43
PPI1	86	97	108	100	97	99	106	111	91	95	98	99
PPI2	96	100	92	89	91	89	93	93	102	100	102	101
WI	152	175	154	133	133	121	168	138	156	154	155	169

PILOSITY. Body entirely covered with long and short decumbent, sub-erect, and erect hairs.

COLORATION. Body brown. Antennae and legs yellowish brown (Fig. 2).

Distribution

China (Guangxi).

Habitat

The nest of *Syscia arcodorsa* sp. nov. was found in the Huaping National Nature Reserve, Guangxi, China. The sampled site is located in the evergreen broad-leaf forest, in the soil surface under the falling leaves near a flowing mountain stream.

Recognition

Syscia arcodorsa sp. nov. is similar to *S. reticularis*, because both of them have oval heads in full-face view. But it can be distinguished from the latter by the body covered with punctures or shallow foveae; however, the latter body is entirely reticulate, with deep bottoms.

This new species is also similar to an Indian species, *S. indica*, in general appearance of the workers with 11-segmented antennae. However, *S. arcodorsa* sp. nov. can be distinguished from the latter by the following characteristics: 1) head in full-face view oval, with posterolateral corners of head rounded obviously in *S. arcodorsa* (but head in full-face view rectangular, with posterolateral corners

of head angular obtusely in *S. indica*); 2) dorsal outline of mesosoma in lateral view curved or arched in *S. arcodorsa* (but almost straight in *S. indica*); 3) declivity of propodeum in lateral view almost convex in *S. arcodorsa* (but slightly concave in *S. indica*).

Syscia chaladthanyakiji Jaitrong, Wiwatwitaya & Yamane, 2020
Fig. 3

Syscia chaladthanyakiji Jaitrong *et al.*, 2020: 3, figs 1–6, 11 (w.q.) Thailand.

Diagnosis

Workers have 11-segmented antennae. Head in full-face view rectangular, longer than broad, with posterior margin straight. Mesosoma in dorsal view subrectangular with almost parallel lateral sides; in lateral view, dorsal outline is almost straight. Petiole in dorsal view rectangular, broader than long; in lateral view (excluding sternite) rectangular with convex dorsal outline, bilateral edge vertical; subpetiolar process in lateral view subtriangular with large acute tooth on anteroventral margin, with posterior outline strongly concave. Postpetiole in lateral view slightly higher than long, sternite anteroventrally produced as blunt angle directed downward and forward.

Material examined

Unexamined. But the holotype of *S. chaladthanyakiji* was examined from images available from AntWeb (<https://www.antweb.org>; THNHM-I-05483, imaged by Yudthana Samsung).

Syscia humicola (Ogata, 1983)
Fig. 4

Cerapachys humicola Ogata, 1983: 132, figs 1–13 (w. ergatoid q. m.). Japan.

Syscia humicola – Borowiec 2016: 224.

Diagnosis

Workers have 11-segmented antennae. Head in full-face view subrectangular, longer than broad, with posterior margin slightly convex and posterolateral corners angular. Mesosoma in dorsal view subrectangular, with almost parallel lateral sides; in lateral view, dorsal outline slightly convex. Petiole in dorsal view nearly subquadrate, as broad as long, with lateral sides convex; in lateral view (excluding sternite) trapezoidal, with slightly convex dorsal outline, bilateral edge sloped slightly; subpetiolar process in lateral view subtriangular, with posterior outline slightly concave. Postpetiole in lateral view as broad as long, sternite anteroventrally produced as nearly orthogonal directed downward and forward.

Type material

Paratype (worker)

JAPAN • 1 worker; Mt. Shiratake, Tsushima Nagasaki Pref.; 14 Jul. 1981; K.Ogata leg.; Colony No.CE-0003; currently stored at the IZCAS.

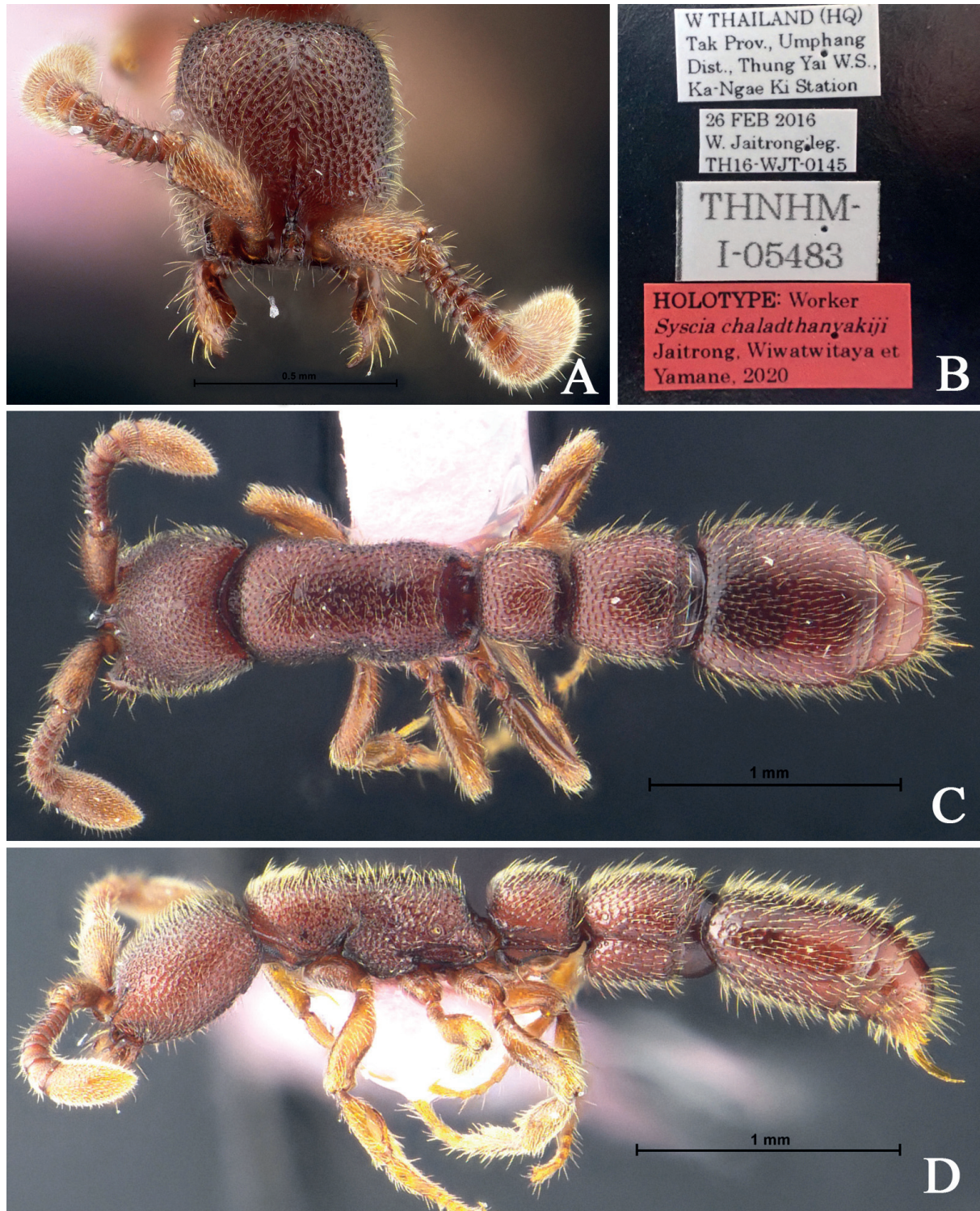


Fig. 3. *Syscia chaladthanyakiji* Jaitrong, Wiwatwitaya & Yamane, 2020, holotype, worker (THNHM-I-05483). **A.** Head in full-face view. **B.** Label. **C.** Body in dorsal view. **D.** Body in lateral view (images cited from <https://www.antweb.org>; imaged by Yudthana Samung).

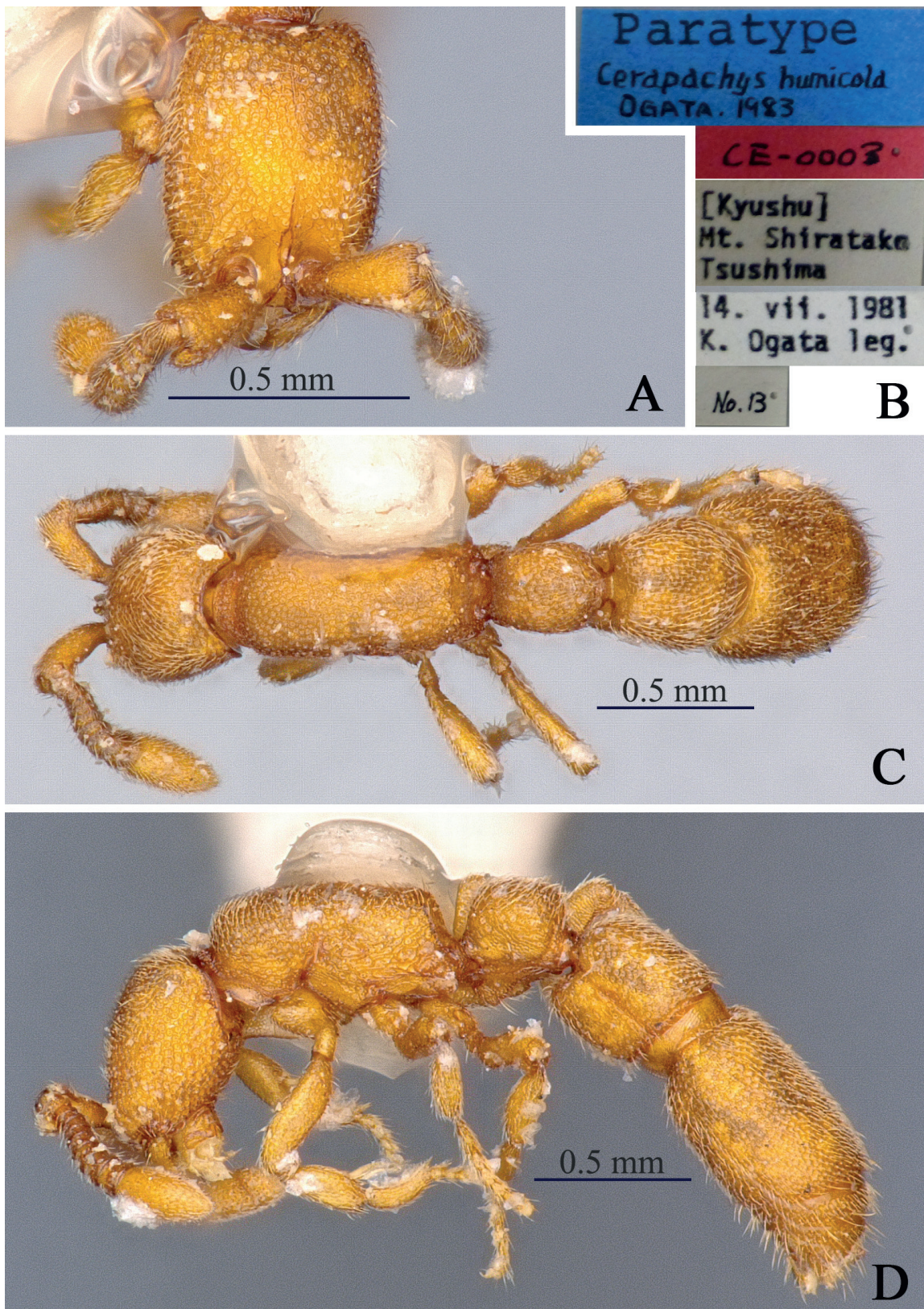


Fig. 4. *Syscia humicola* (Ogata, 1983), paratype, worker (IZCAS). A. Head in full-face view. B. Body in dorsal view. C. Body in lateral view (imaged by Zhilin Chen).

Syscia indica Aswaj, Sahanashree, Udayakantha, Aniruddha & Priyadarsanan, 2021
Fig. 5

Syscia indica Aswaj *et al.*, 2021: 67, figs 1, 3a–f (w.). India (Arunachal Pradesh).

Diagnosis

Workers have 11-segmented antennae. Head in full-face view subrectangular, distinctly longer than broad; lateral margins slightly convex. Mesosoma in dorsal view elongates with almost parallel lateral sides; in lateral view, dorsal outline almost straight. Petiole in dorsal view subrectangular, distinctly longer than broad; lateral margins almost parallel-sided; in lateral view (excluding sternite) trapezoidal, slightly shorter than high, dorsal outline slightly convex, bilateral edge slope slightly; subpetiolar process in lateral view subrectangular, ventral outline strongly concave; ventrolateral surface of petiole with two distinct almost parallel carinae just above subpetiolar process. Postpetiole in lateral view slightly shorter than high, sternite anteroventrally produced as blunt angle directed downward and forward.

Type material

Unexamined. But holotype of *S. indica* was examined from images available from Aswaj *et al.* (2021).

Syscia guizhouensis (Zhou, 2006) comb. nov.
Figs 6–7, Table 1

Cerapachys guizhouensis Zhou, 2006: 581, figs 1–2 (w.). China.

Ooceraea guizhouensis – Bharti *et al.* 2021: 181.

Diagnosis

Workers have 11-segmented antennae, body color brown with antennae and legs yellowish brown. Head in full-face view subrectangular, distinctly longer than broad. Mesosoma in dorsal view subrectangular with almost parallel lateral sides; in lateral view, dorsal outline slightly convex. Petiole in dorsal view elliptical, longer than broad, with lateral margins convex; in lateral view, petiolar node (excluding sternite) subtrapezoid with slightly convex dorsal outline, bilateral edge slope, and slightly concave; subpetiolar process in lateral view subtrapezoid, with posterior outline strongly concave, and ventral margin very short and almost straight. Postpetiole in lateral view slightly higher than long, sternite anteroventrally produced as nearly orthogonal directed downward and forward.

Type material

Holotype (worker)

CHINA • Guizhou, Tongren City, in the Fanjingshan National Nature Reserve; 27.911945° N, 108.696634° E; 2195.00 m a.s.l.; 3 Jun. 2002; Shanyi Zhou leg; No. GXNU 060127; GXNU: GXNU060127.

Paratypes (workers)

CHINA • 1 worker; same collection data as for holotype; GXNU: SWFU 060127-1 • 1 worker; same collection data as for holotype; SWFU: GXNU 060127-2 • 1 worker; same collection data as for holotype; IZCAS: GXNU 060127-3.

Other material examined

CHINA • 1 spec; Xizang, Linzhi City, Motuo Town, Motuo Village; 29.32° N, 95.34° E; 1230 m a.s.l. ; 27 Aug. 2016; Zhilin Chen leg.; No. G160363; GXNU: G160363.



Fig. 5. *Syscia indica* Aswaj, Sahanashree, Udayakantha, Aniruddha & Priyadarsanan, 2021, holotype, worker. **A.** Head in full-face view. **B.** Petiole and postpetiole in dorsal view. **C.** Body in dorsal view. **D.** Body in lateral view (images cited from Aswaj *et al.* 2021).

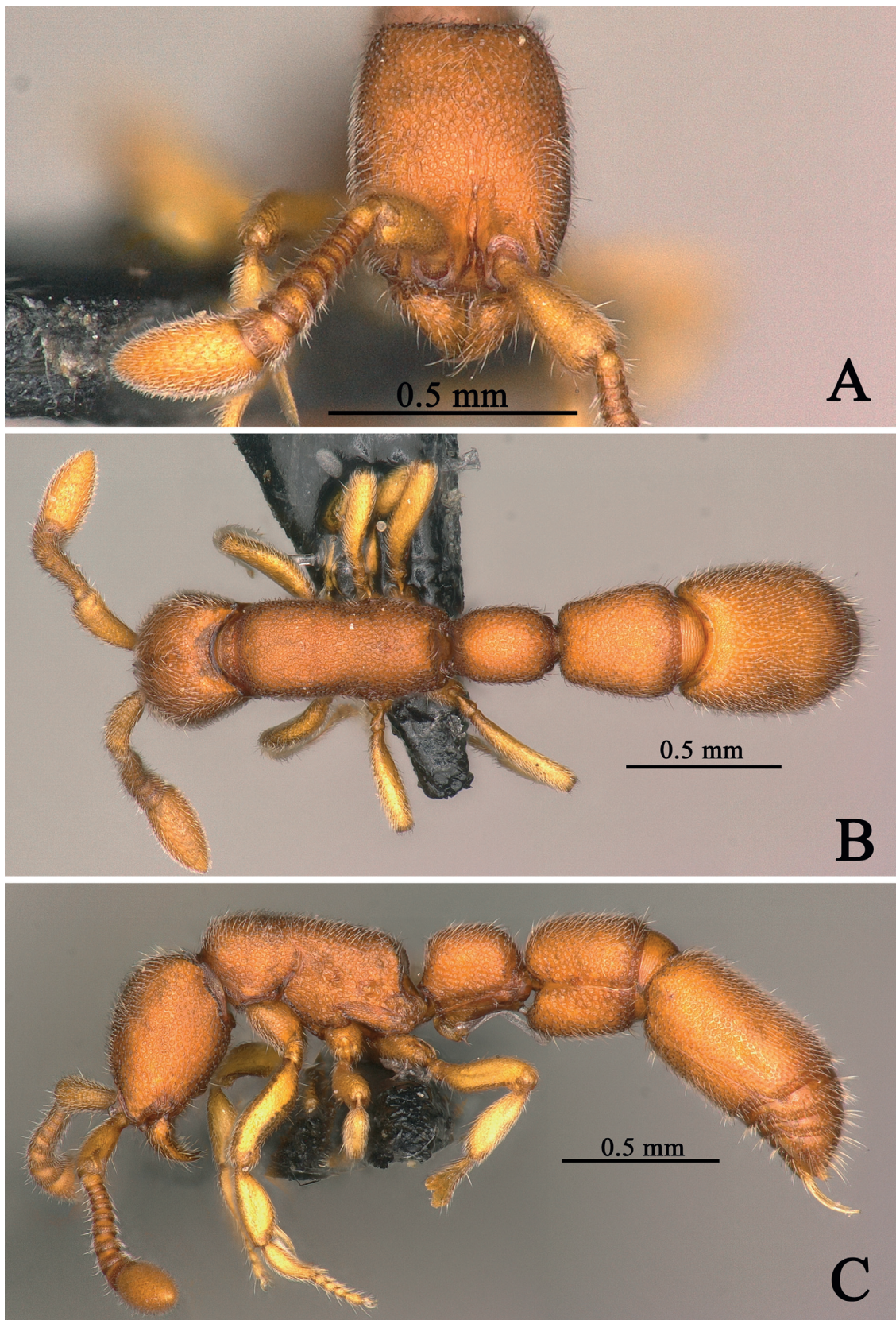


Fig. 6. *Sycia guizhouensis* (Zhou, 2006) comb. nov., holotype, worker (No. G160363). **A.** Head in full-face view. **B.** Body in dorsal view. **C.** Body in lateral view (imaged by Zhilin Chen).

Redescription

MEASUREMENTS AND INDICES. Holotype worker: BL 3.20, HL 0.60, HW 0.45, CI 75, SL 0.31, SI 69, MW 0.33, ML 0.85, PL 0.35, PH 0.32, PW 0.27, PI1 107, PI2 77, PPL 0.41, PPH 0.45, PPW 0.42, PPI1 91, PPI2 102, WI 156. Paratype worker: BL 3.10–3.25, HL 0.60–0.63, HW 0.43–0.45, CI 71–72.00, SL 0.30–0.33, SI 69–75, MW 0.33–0.35, ML 0.81–0.84, PL 0.33–0.34, PH 0.32–0.33, PW 0.26–0.28, PI1 102–105, PI2 75–85, PPL 0.40–0.43, PPH 0.42–0.43, PPW 0.40–0.43, PPI1 95–99, PPI2 100–102, WI 154–169 (n = 3) (individual measurements see Table 1).

Worker

HEAD. Antennae with 11 segments; apical antennal segment (XI) conspicuously enlarged, much broader than and longer than two preceding segments (IX–X) combined. In full-face view, head subrectangular, distinctly longer than broad, lateral margins slightly convex and convergent from middle to posterior, and posterior margin slightly concave, with posterolateral corner acute (Fig. 6A). Frontal carinae short and narrow, not reaching to middle of head, with anterior half sharply elevated and posterior half low and vestigial in profile. Clypeus short, anterior margin almost straight. Eyes and ocelli completely absent (Fig. 6A). Mandibles triangular; masticatory margin serrated, without distinct teeth (Fig. 6A).

MESOSOMA. In dorsal view, robust and subrectangular, with almost parallel lateral sides, anterior margin slightly convex, and posterior margin slightly concave (Fig. 6B); in lateral view, dorsal outline slightly convex; promesonotal suture and metanotal groove absent; mesopleuron demarcated from pronotum by distinct suture, but not demarcated from mesonotum and metapleuron; mesopleuron also not differentiated from metapleuron (Fig. 6C). Propodeal declivity straight, encircled with distinct thin rim (Fig. 6C).

METASOMA. In dorsal view, petiole elliptical, longer than broad (Fig. 6B); in lateral view, petiolar node (excluding sternite) subtrapezoid with slightly convex dorsal outline, anterior edge slightly concave and posterior edge sloped (Fig. 6C). Subpetiolar process in lateral view subtrapezoid, with posterior outline strongly concave, and ventral margin very short and almost straight (Fig. 6C). Postpetiole in dorsal view clearly larger than petiole, subtrapezoid, anterior margin slightly concave and shorter than posterior margin, lateral margins slightly convex (Fig. 6B); in lateral view, postpetiole higher than long; dorsal outline obviously convex; postpetiolar sternite in lateral view really low, with ventral margin convex, anteroventrally produced as nearly orthogonal directed downward and forward (Fig. 6C). Abdominal tergite IV (second gastral tergite) in dorsal view elongate, subrectangular with lateral margins slightly convex, anterior margin strongly concave, and lateral margins slightly convex (Fig. 6B).

SCULPTURE. Entire body with numerous, relatively small, closely-spaced foveolae (Fig. 6). Antennal scape, outer surface of mandible, and legs with fine dense micropunctures (Fig. 6).

PILOSITY. Body entirely covered with densely long and short decumbent, sub-erect and erect hairs.

COLORATION. Body brown. Antennae and legs yellowish brown (Fig. 6).

Distribution

China (Guizhou, Xizang).

Habitat

The nest of *Syscia guizhouensis* was found in the Fanjingshan National Nature Reserve, Guizhou, China. The sampled site is located in an evergreen broad-leaf forest, on the soil surface under the falling leaves.

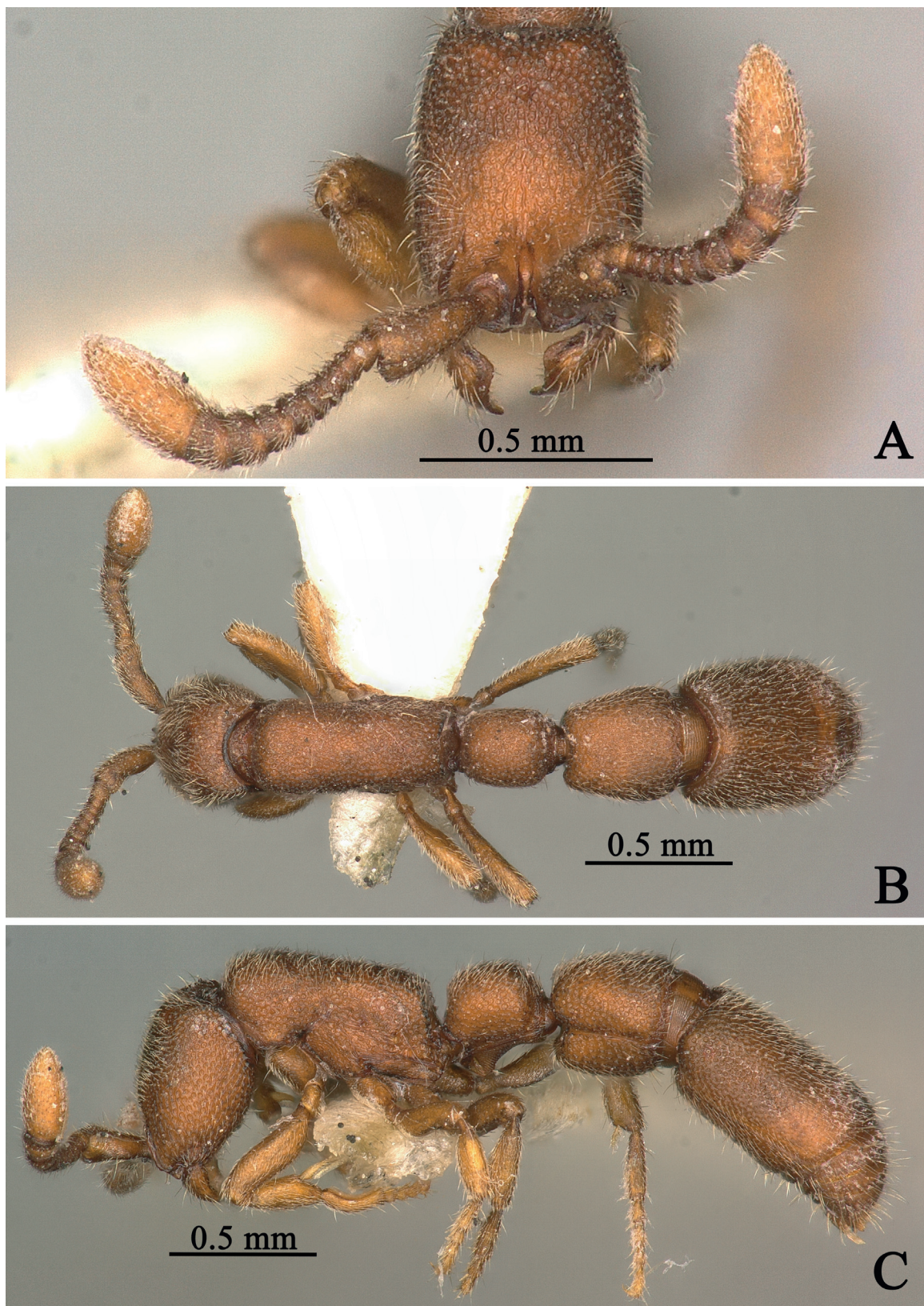


Fig. 7. *Sycia guizhouensis* (Zhou, 2006) comb. nov., worker (No. G160363). **A.** Head in full-face view. **B.** Petiole and postpetiole in dorsal view. **C.** Body in dorsal view. **D.** Body in lateral view (imaged by Zhilin Chen).

Recognition

Syscia guizhouensis is similar to *S. humicola*, but can be distinguished from *S. humicola* by the following characteristics: 1) subpetiolar process in lateral view subrectangular in *S. guizhouensis* (subpetiolar process in lateral view subtriangular in *S. humicola*); 2) in full-face view posterior half of the head trapezoidal, narrower posteriorly in *S. guizhouensis* (in full-face view posterior half of the head rectangular in *S. humicola*); 3) in lateral view anterior margin of petiole concave in *S. guizhouensis* (in lateral view anterior margin of petiole sloped and slightly convex in *S. humicola*).

Syscia guizhouensis is also similar to a species from Thailand, *S. chaladthanyakiji*, in the general appearance of workers with 11-segmented antennae. However, *S. guizhouensis* can be distinguished from *S. chaladthanyakiji* by the following characteristics: 1) dorsal outline of mesosoma in lateral view slightly convex in *S. guizhouensis* (nearly straight in dorsal view in *S. chaladthanyakiji*); 2) petiole in dorsal view obviously elliptical, longer than broad; in lateral view trapezoidal with slightly convex dorsal outline, bilateral edge sloped and anterior edge slightly concave in *S. guizhouensis* (obviously rectangular in dorsal view, broader than long; in lateral view rectangular with convex dorsal outline, bilateral edge vertical in *S. chaladthanyakiji*); 3) subpetiolar process in lateral view subtrapezoid, with posterior outline strongly concave, and ventral margin very short and almost straight in *S. guizhouensis* (subrectangular with ventral outline concave in *S. chaladthanyakiji*); 4) postpetiolar sternite in lateral view anteroventrally produced as nearly orthogonal directed downward and forward in *S. guizhouensis*. (reduced into blunt angle directed downward and forward in *S. chaladthanyakiji*); 5) body color darker, reddish brown in *S. guizhouensis* (brown in *S. chaladthanyakiji*).

Syscia reticularis Jaitrong, Wiwatwitaya & Yamane, 2020

Fig. 8

Syscia reticularis Jaitrong *et al.*, 2020: 6, figs 7–10, 11 (w.). Thailand.

Diagnosis

Workers have 11-segmented antennae. Body color dark reddish brown. Head in full-face view elliptical, distinctly longer than broad, lateral margins strongly convex, posterior margin almost straight, with posterolateral corner as blunt. Mesosoma in dorsal view rather robust, subrectangular, with almost parallel-sided lateral sides; in lateral view, dorsal outline slightly convex; propodeal declivity flat, encircled with indistinct rim. Petiole in dorsal view subquadrate, almost as long as broad, lateral margins nearly parallel-sided; in lateral view (excluding sternite) subrectangular, slightly shorter than high, dorsal outline convex, bilateral edge vertical; subpetiolar process in lateral view subrectangular with its ventral outline concave; ventrolateral surface of petiole with two distinct almost parallel carinae just above subpetiolar process. Postpetiole in lateral view rounded, shorter than high, with ventral outline concave; sternite anteroventrally produced as blunt angle directed downward and forward. Entire body finely reticulated with deep bottoms; antennal scape, outer face of mandible and legs punctate.

Type material

Unexamined. But the holotype of *S. reticularis* was examined from images available from AntWeb (<https://www.antweb.org>; THNHM-I-02624, imaged by Yudthana Samsung).

Distribution

Thailand.



Fig. 8. *Sycia reticularis* Jaitrong, Wiwatwitaya & Yamane, 2020, holotype, worker (THNHM-I-02624). **A.** Head in full-face view. **B.** Label. **C.** body in dorsal view. **D.** Body in lateral view (images cited from <https://www.antweb.org>; imaged by Yudthana Samung).

Syscia typhla Roger, 1861

Fig. 9

Syscia typhla Roger, 1861: 20 (w.). Sri Lanka.

Cerapachys typhla – Emery 1902: 24.

Cerapachys typhlus – Xu 1998: 119. — Xu *et al.* 1999: 382. — Gu *et al.* 2019: 147, misidentification.

Syscia typhla – Borowiec 2016: 224.

Diagnosis

Workers have 9-segmented antennae. Head in full-face view subrectangular, distinctly longer than broad, lateral margins slightly convex, posterior margin also slightly convex. Mesosoma in dorsal view rather elongate, long-ellipsoidal, with lateral sides and anterior margin obviously convex in dorsal view; in lateral view, dorsal outline convex; propodeal declivity feebly concave, encircled with, distinct thin rim. Petiole in dorsal view subtrapezoid in dorsal view, anterior margin shorter than posterior margin; in lateral view (excluding sternite) subquadrate, almost as long as high, lateral margins convex; subpetiolar process in lateral view subtriangle, with ventral corner clypeiform, ventral outline strongly concave. Postpetiole in lateral view subrectangular, shorter than high, with ventral outline slightly concave; sternite anteroventrally produced as blunt angle directed downward and forward.

Type material

Unexamined. But the type worker of *S. typhla* was examined in the online database of the AntWeb (<https://www.antweb.org/>; FOCOL0804, imaged by Christiana Klingenberg).

Distribution

Japan (doubtful), West Bengal, Sri Lanka.

Remarks

Based on a reexamination the specimens which were reported from Yunnan of China by Xu (1998) and Xu *et al.* (1999), we found that those specimens were misidentified as *Cerapachys typhlus*, but *Ooceraea biroi* (Forel, 1907). In addition, Gu *et al.* (2019) reported that the species *Cerapachys typhlus* was also distributed in Guangxi of China, which was a misidentification of *S. zhoui* sp. nov. Therefore, the species *S. typhla* is excluded from the ant fauna of China.

Syscia zhoui sp. nov.

urn:lsid:zoobank.org:act:02E6945A-8EE0-4244-85F8-6CC638006484

Fig. 10, Table 1

Cerapachys typhus Gu *et al.*, 2019: 147, misidentification.

Diagnosis

Workers have 9-segmented antennae, body color reddish brown with antennae and legs yellowish brown. Head in full-face view subrectangular, longer than broad. Mesosoma in dorsal view subrectangular with almost parallel lateral sides; in lateral view, dorsal outline slightly convex. Petiole in dorsal view subquadrate, with lateral margins convex; in lateral view, petiolar node (excluding sternite) subquadrate with slightly convex dorsal outline, bilateral edge sloped slightly; subpetiolar process in lateral view subtriangle. Postpetiole in lateral view slightly higher than long, sternite anteroventrally produced as nearly orthogonal directed downward and forward.

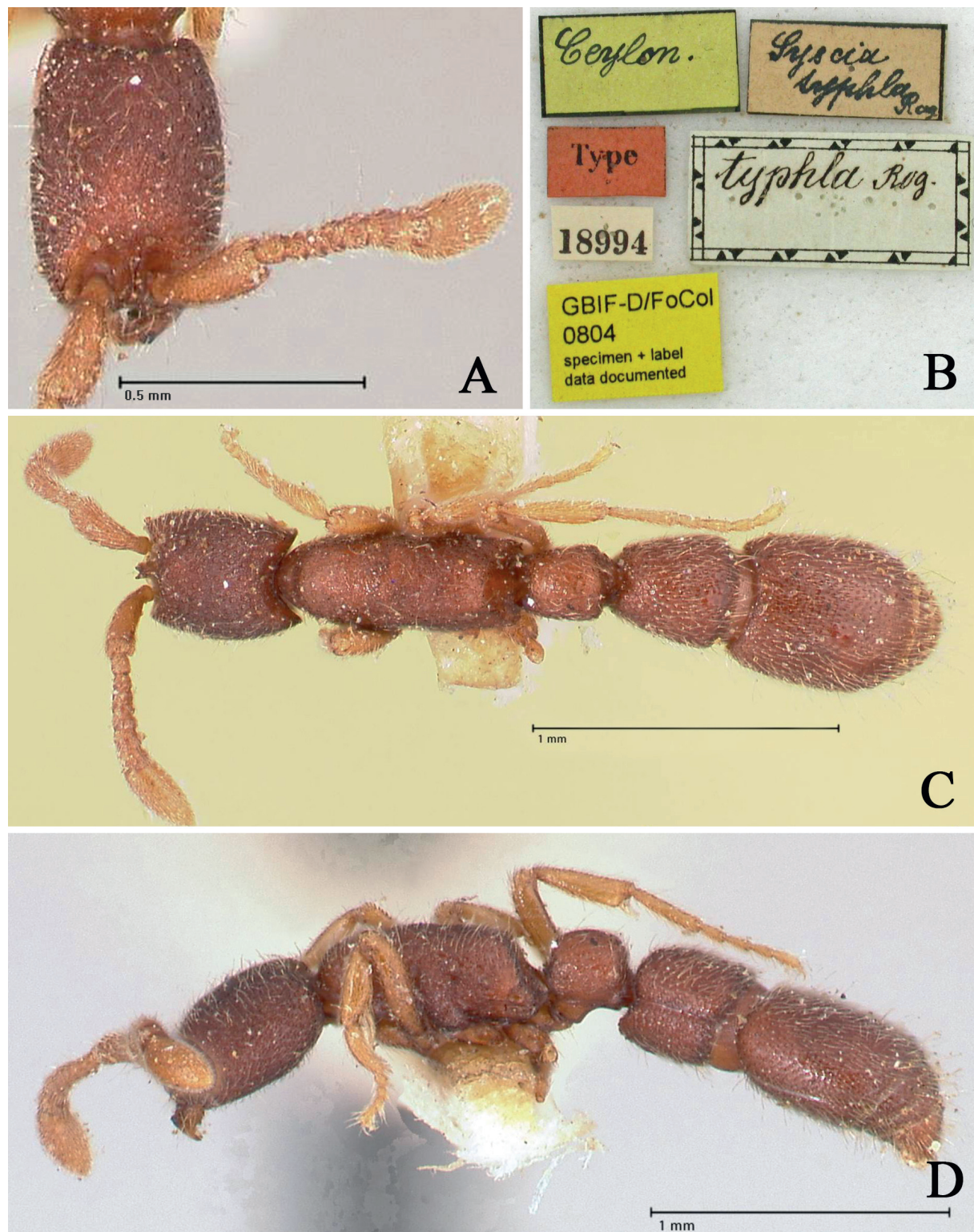


Fig. 9. *Syscia typhla* Roger, 1861, holotype, worker (FOCOL0804) **A.** Head in full-face view. **B.** Label. **C.** Body in dorsal view. **D.** Body in lateral view (images cited from <https://www.antweb.org>; imaged by Christiana Klingenberg).

Etymology

The new species is named in honor of Shanyi Zhou (Guangxi Normal University) for his outstanding contributions to the ant fauna of China.

Type material

Holotype (worker)

CHINA • Guangxi, Chongzuo City, Zuozhou Town, PaiRu Village in the Chongzuo White-Headed Langur National Reserve; 22.555816° N, 107.416772° E; 242.00 m a.s.l.; 13 Jun. 2016; Zhilin Chen leg.; No. GXNU160017.

Paratypes (workers)

CHINA • 1 worker; same collection data as for holotype; GXNU: GXNU160017-1 • 1 worker; same collection data as for holotype; SWFU: GXNU160017-2 • 1 worker; same collection data as for holotype; IZCAS: GXNU160017-3.

Description

MEASUREMENTS AND INDICES. Holotype worker: BL 3.55, HL 0.65, HW 0.53, CI 82, SL 0.42, SI 79, MW 0.38, ML 0.60, PL 0.30, PH 0.30, PW 0.30, PI1 100, PI2 100, PPL 0.44, PPH 0.45, PPW 0.40, PPI1 97, PPI2 91, WI 133. Paratype workers: BL 3.75–3.98, HL 0.62–0.69, HW 0.50–0.56, CI 77–85, SL 0.42–0.43, SI 76–85, MW 0.31–0.38, ML 0.65–0.80, PL 0.30–0.33, PH 0.25–0.30, PW 0.25–0.35, PI1 100–120, PI2 83–117, PPL 0.45–0.48, PPH 0.42–0.48, PPW 0.42–0.45, PPI1 99–111, PPI2 89–93, WI 121–168 (n = 3) (individual measurements see Table 1).

Worker

HEAD. Antennae with 9 segments; scape short, not reaching mid-length of head when folded back (Fig. 10A). In full-face view, head subrectangular, longer than broad, lateral margins slightly convex and convergent posteriorly, posterior margin slightly concave, with posterolateral corner acute (Fig. 10A). Frontal carinae short and narrow, not reaching to middle of head, with anterior half sharply elevated and posterior half low and vestigial in profile. Clypeus short, anterior margin almost straight. Eyes and ocelli completely absent (Fig. 10A). Mandibles triangular; masticatory margin serrated, without distinct teeth (Fig. 10A).

MESOSOMA. In dorsal view, robust and subrectangular, with almost parallel lateral sides, anterior margin slightly convex, and posterior margin slightly concave (Fig. 10B); in lateral view, dorsal outline slightly convex; promesonotal suture and metanotal groove absent; mesopleuron demarcated from pronotum by distinct suture, but not demarcated from mesonotum and metapleuron; mesopleuron also not differentiated from metapleuron (Fig. 10D). Propodeal declivity straight, encircled with distinct thin rim (Fig. 10D).

METASOMA. In dorsal view, petiole subquadrate, with lateral margins convex (Fig. 10C); in lateral view, petiolar node (excluding sternite) subquadrate with slightly convex dorsal outline, bilateral edge sloped slightly (Fig. 10D). Subpetiolar process in lateral view subtriangle, with ventraloposterior corner acute and posterior outline strongly concave (Fig. 10D). Postpetiole in dorsal view clearly larger than petiole, subtrapezoid, anterior margin slightly concave and shorter than posterior margin, lateral margins apparently convex (Fig. 10C); in lateral view, postpetiole apparently shorter than high; dorsal outline slightly convex; postpetiolar sternite in lateral view really low, with ventral margin convex, anteroventrally produced as nearly orthogonal directed downward and forward (Fig. 10D). Abdominal tergite IV (second gastral tergite) in dorsal view elongate, subrectangular with lateral margins slightly convex, anterior margin strongly concave, and lateral margins obviously convex (Fig. 10C).

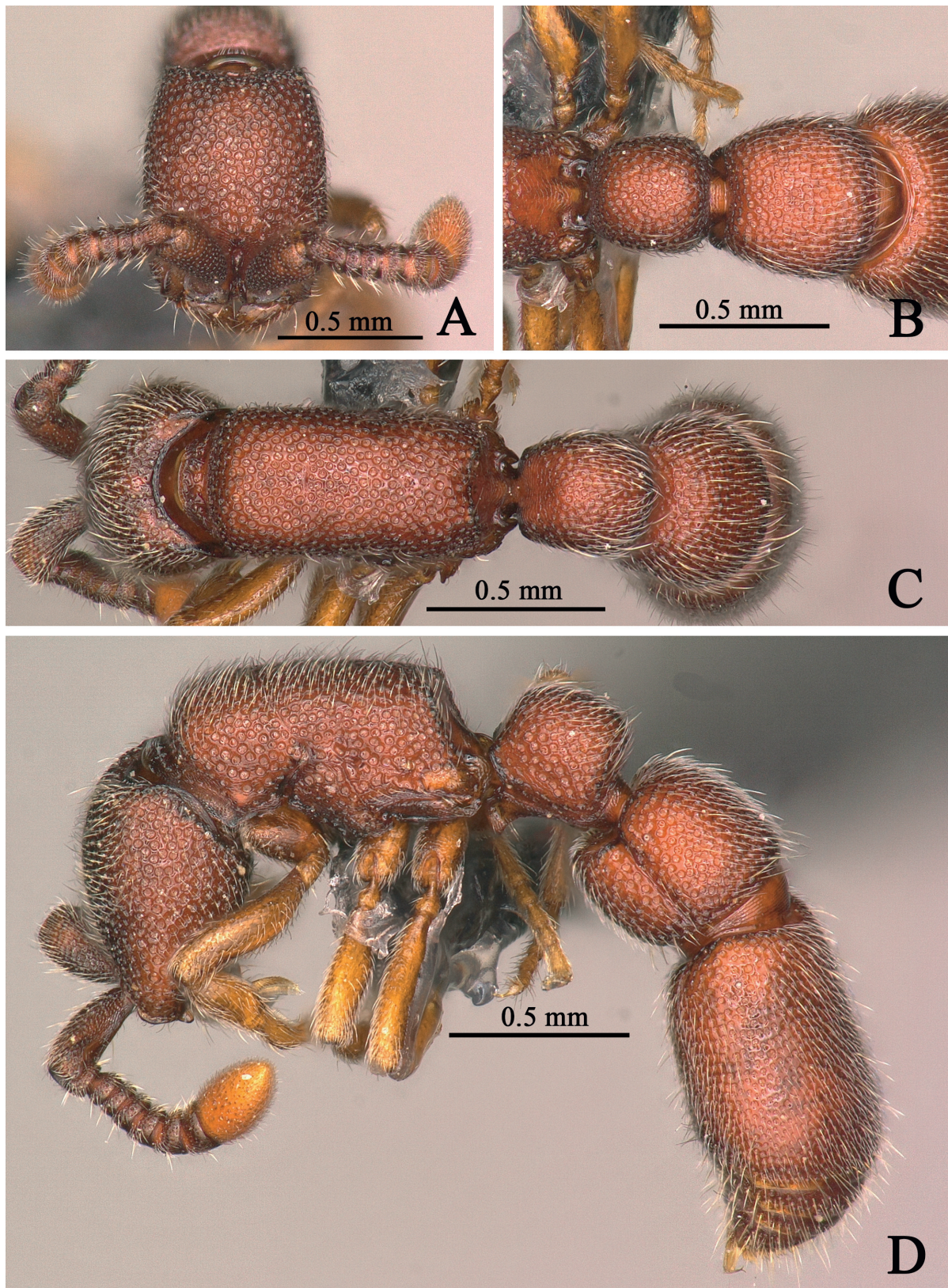


Fig. 10. *Syscia zhoui* sp. nov., holotype, worker (GXNU160017). **A.** Head in full-face view. **B.** Petiole and postpetiole in dorsal view. **C.** Mesosoma in dorsal view. **D.** Body in lateral view (imaged by Zhilin Chen).

SCULPTURE. Entire body with numerous, relatively small, closely-spaced foveolae (Fig. 10). Antennal scape, outer surface of mandible, and legs with fine dense micropunctures (Fig. 10A, D).

PILOSITY. Body entirely covered with densely long and short decumbent, sub-erect and erect hairs.

COLORATION. Body reddish brown. Antennae and legs yellowish brown (Fig. 10).

Distribution

China (Guangxi).

Habitat

The nest of *Syscia zhoui* sp. nov. was found in the Chongzuo White-Headed Langur National Reserve, Guangxi, China. The sampled site is located in an evergreen broad-leaf forest, on the soil surface under the falling leaves.

Recognition

Syscia zhoui sp. nov. is a special species with antennae 9 segments, similar to *S. typhla* Roger, 1861, distinctly distinguished from all other species in *Syscia* with antennae 11 segments. However, *S. zhoui* can be distinguished from *S. typhla* by the following characteristics: 1) head in lateral view trapezoidal in *S. zhoui* (head in lateral view oval in *S. typhla*); 2) mesosoma rather robust, subrectangular with almost parallel lateral sides, and anterior margin slightly convex in dorsal view in *S. zhoui* (mesosoma rather elongate, long-ellipsoidal, with lateral sides and anterior margin obviously convex in dorsal view in *S. typhla*); 3) both anterior margin and posterior margin of petiole straight in *S. zhoui* (both anterior margin and posterior margin of petiole convex in *S. typhla*); 4) ventroposterior corner of subpetiolar process acute angled in *S. zhoui* (ventroposterior corner of subpetiolar process blunt rounded in *S. typhla*); 5) postpetiole in dorsal view wider than long in *S. zhoui* (postpetiole in dorsal view longer than its width in *S. typhla*).

Discussion

Syscia is a representative group of rare ants belonging to the subfamily Dorylinae with a disjunct distribution between the Old and New World. Previously, *Syscia* was included in the genus *Cerapachys*, but recent phylogenetic studies have revived it as a valid genus. Before this study, only 5 species of *Syscia* were recorded in the Old World. The low number of species of *Syscia* in the Old World compared to the recorded species richness (34 species) found in the New World indicates that there should be more species of *Syscia* yet to be described from collections in the Old World. Eastern Asia and China represent one of the most important regions of the Old World, due to the vast land area, heterogeneous landscape, and diverse climate all contributing to a high biodiversity. In this paper, *S. typhla* is removed from the ant fauna of China, whereas two new species, *Syscia arcodorsa* sp. nov. and *S. zhoui* sp. nov. are added. *Cerapachys guizhouensis* Zhou, 2006 is re-described and revised as a member of *Syscia*, *S. guizhouensis* (Zhou, 2006). These results lay an important foundation for a new understanding of the myrmecofauna of China and Eastern Asia.

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